



1. The manuals include bottom center located page numbers; Index as included for each unit as attached.
2. Vacuum System Literature Additions
 1. AVC150D, Model Number Installed
 2. Safety Precautions;
Never attempt maintenance of this vacuum system while power is applied to the system from the disconnect panel. Verify the panel is in the off position prior to attempting any maintenance.
 3. Emergency Operations;
In the event of equipment failure or abnormal operation, disconnect power from unit at electrical disconnect box. Turn off the fresh water supply line to the separator system.
 4. Environmental Conditions;
The vacuum system should be installed in a clean, dry equipment room, on a stable, level surface. The ambient air temperature in the room should be between 40 degrees Fahrenheit (4 C) minimum to 100 degrees Fahrenheit (38 C) maximum. Temperatures outside of this range will detrimentally effect the overall operation and continued reliability of the system.
 5. Lubrication Data;
No lubrication is required for the vacuum system during its normal operating life.
 6. Removal and Replacement Instructions;
For entire system Removal, the reverse of the installation instructions on page 8 of the manual is used. For major system components, removal instructions are as follows;
Vacuum Producer –
 1. Disconnect power at electrical disconnect box.
 2. Remove power line conduit at blower motor.
 3. Disconnect intake and exhaust lines plumbed into blower housing.
 4. Unbolt blower head assembly from mounting platform, 4 places.
 7. Replacement Parts List included in manual, Page 14.
 8. Corrective maintenance man-hours;
 1. Complete System Installation – 4 hours
 2. Blower Head Replacement – 1 hour
 3. Separator Replacement – 1 hour
 4. Solids Collector Replacement – 0.5 hour
 5. Vacuum Relief Valve Replacement/Adjustment – 0.25 hour
 6. Electrical Repair, Control Box – 1 hour
 7. Electrical Repair, Separator System – 1 hour
 8. Separator Drain Pump Impeller Replacement – 0.5 hour
 9. Identification of Parts;
Parts of the vacuum system are identified on Pages 1, 8, 9, 10, and 11 of the Installation and Operation Manual.
 10. Personal Training Requirements;
Only a qualified technician familiar with electrical and mechanical systems should perform maintenance on the vacuum system. Identification and replacement of major system components should only be done by qualified personnel. Regular maintenance and cleaning can be done by anyone after carefully reading the installation and operation manuals for this equipment, and following the instructions as outlined.
 11. Test Equipment and Special Tool Information;
Tools required for major component replacement are; a standard inch end wrench and ½" socket set, ¼" – 1 1/8", with 8" extension, a true RMS voltmeter and ammeter, a plastic fuse puller, a six inch pipe wrench, an 8" adjustable end wrench, and a medium standard and phillips screwdriver.
 12. Local Representative and Service Facility;
Virge Hoadley, Apollo Manufacturer Representative, ph (805)306-0618 fax (805)306-0619

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Installation Instructions Centrifugal Vacuum Systems

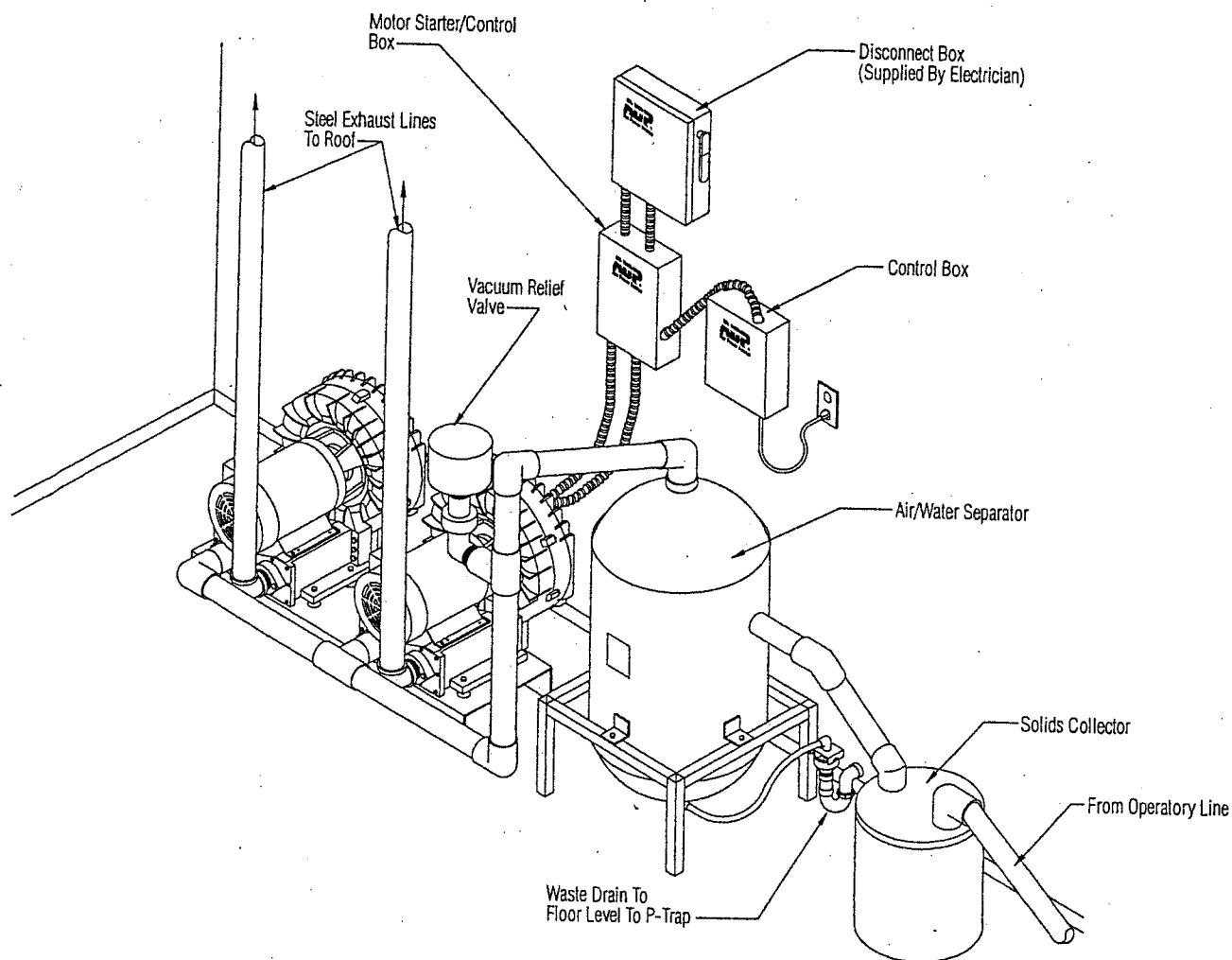
Index for Installation and Operations Manual

Page	Subject
1	Unpacking the System
2	System Specs and Installation Requirements
3	Simplex Unit Electrical Diagram, General
4	Simplex Unit Electrical Diagram, Control Box
5	Duplex Unit Electrical Diagram, General
6	Simplex Unit Electrical Diagram, Control Box
7	Vacuum Piping Guidelines
8	Vacuum System Installation Instructions
9	Initial Start-Up Instructions
10	Vacuum System Operating Description
11	Vacuum System Operating Description (cont'd)
12	Periodic Maintenance Instructions
13	Vacuum System Troubleshooting
14	Replacement Parts List & Warranty Information



Installation & Operation

Centrifugal Vacuum System



Description:

This Apollo Dental Product vacuum system should only be installed by qualified personnel. The instructions outlined in this manual are applicable for all ADP Centrifugal Vacuum Systems. Should any questions arise during installation, call ADP's Technical Support between the hours of 6:00 a.m. to 5:00 p.m. (Pacific Standard Time).

Note: This manual should remain with vacuum system at all times.

Unpacking The System:

1. Remove the plywood shipping frame.
2. Check to be sure that the pump is not damaged.
3. Remove the pump from the shipping platform.
4. Place rubber shock mounts directly under tank feet.



Installation & Op.
Centrifugal Vacuum Sys.
Technical Service - (800) 233

Centrifugal Vacuum System Specifications:

Model	Max. Users	Sound Levels	Width	Depth	Height	Weight
AVC50S	11	78 db-A	90 in.	43 in.	51 in.	280 Lb.
AVC75S	15	80 db-A	90 in.	43 in.	51 in.	310 Lb.
AVC60D	12	81 db-A	108 in.	43 in.	51 in.	325 Lb.
AVC100D	22	82 db-A	108 in.	43 in.	51 in.	685 Lb.
AVC150D	30	84 db-A	108 in.	43 in.	51 in.	735 Lb.

Hook-Up Requirements:

Prior to installation the following connections are required. These should be supplied by licensed plumbing and electrical contractors and **Must Be Installed In Accordance With Local Code.**

Electrical Hook-Up Requirements:

Low Voltage Line

Run (2) 8-3 thermostat wires from remote control switch if low voltage switching is desired.

Line Voltage:

A single phase 115 volt, 60 Hz. and three phase 208-230 volt, 60 Hz. supply circuits with approved ground connections is required. The following electrical data is provided for use in complying with local codes. (460V is available on request).

Model	Voltage	Total Amperage	Phase	Recommended Breaker Size
AVC50S	208-230/460	16 / 8	3	30 / 20
AVC75S	208-230/460	21 / 10.5	3	40 / 20
AVC60D	208-230/460	38 / 19	3	2 @ 30 / 2 @ 20
AVC100D	208-230/460	32 / 16	3	2 @ 30 / 2 @ 20
AVC150D	208-230/460	40 / 20	3	2 @ 40 / 2 @ 30

Plumbing Hook-Up Requirements:

1. Water Line

1/2" cold water line with shut "OFF" valve terminating in 1/2" FPT. Line should be flushed out prior to connection.

Important: Water is essential for the flush operation. The supply must not be restricted or interrupted.

2. Waste Line

1" PVC Floor Sink located within 3' of vacuum systems.

3. Vacuum Line

Terminal vacuum line in a vacuum piping system are given in the following sections. Continuously running sinks or cuspidors should **Never** be connected to the vacuum piping system.

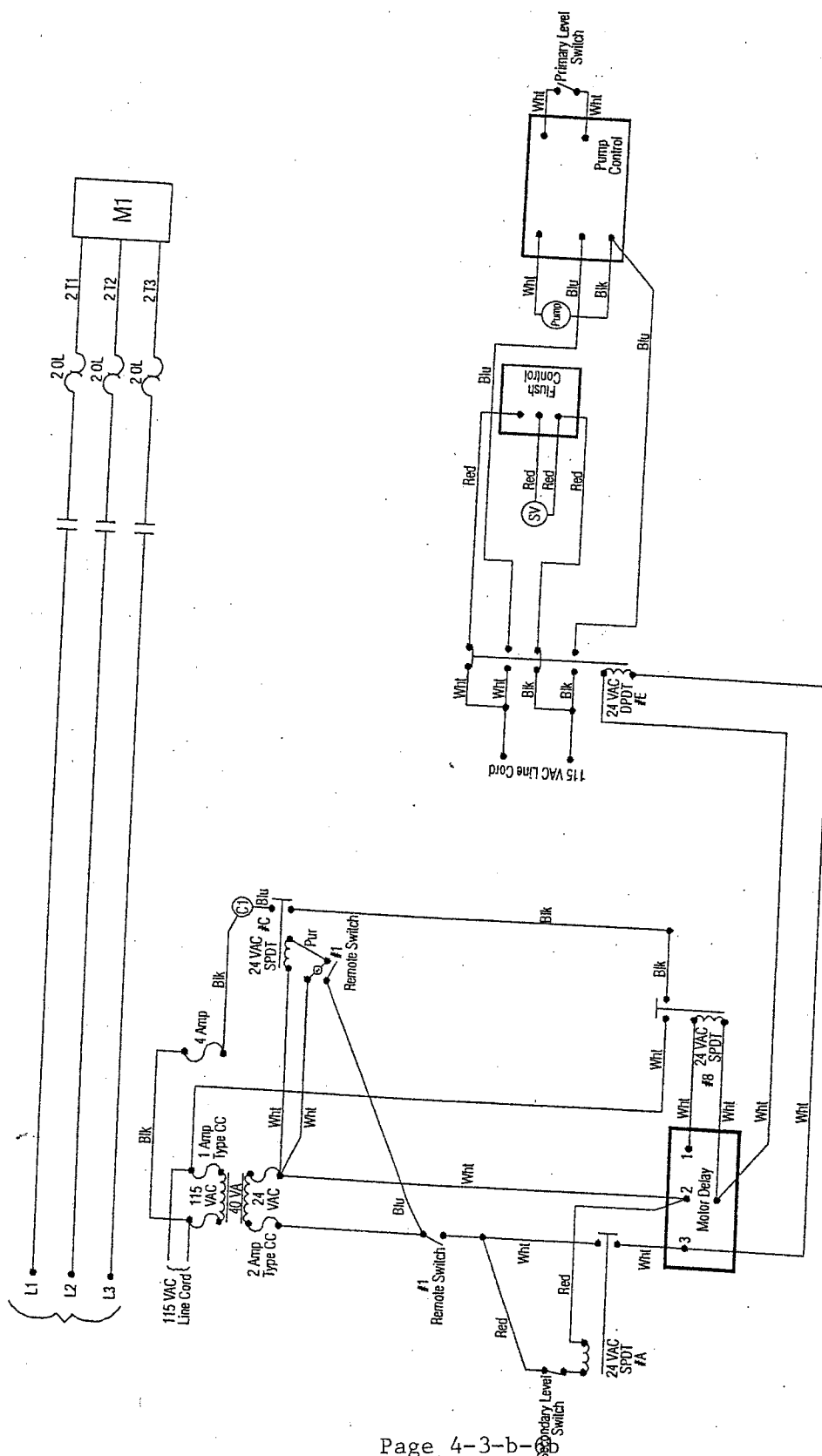
- | | | | |
|----------|------------|-----------|------------|
| • AVC50S | 1 1/2" PVC | • AVC75S | 3" PVC |
| • AVC60D | 2 1/2" PVC | • AVC100D | 2 1/2" PVC |
| | | • AVC150D | 3" PVC |

4. Exhaust Line(s)

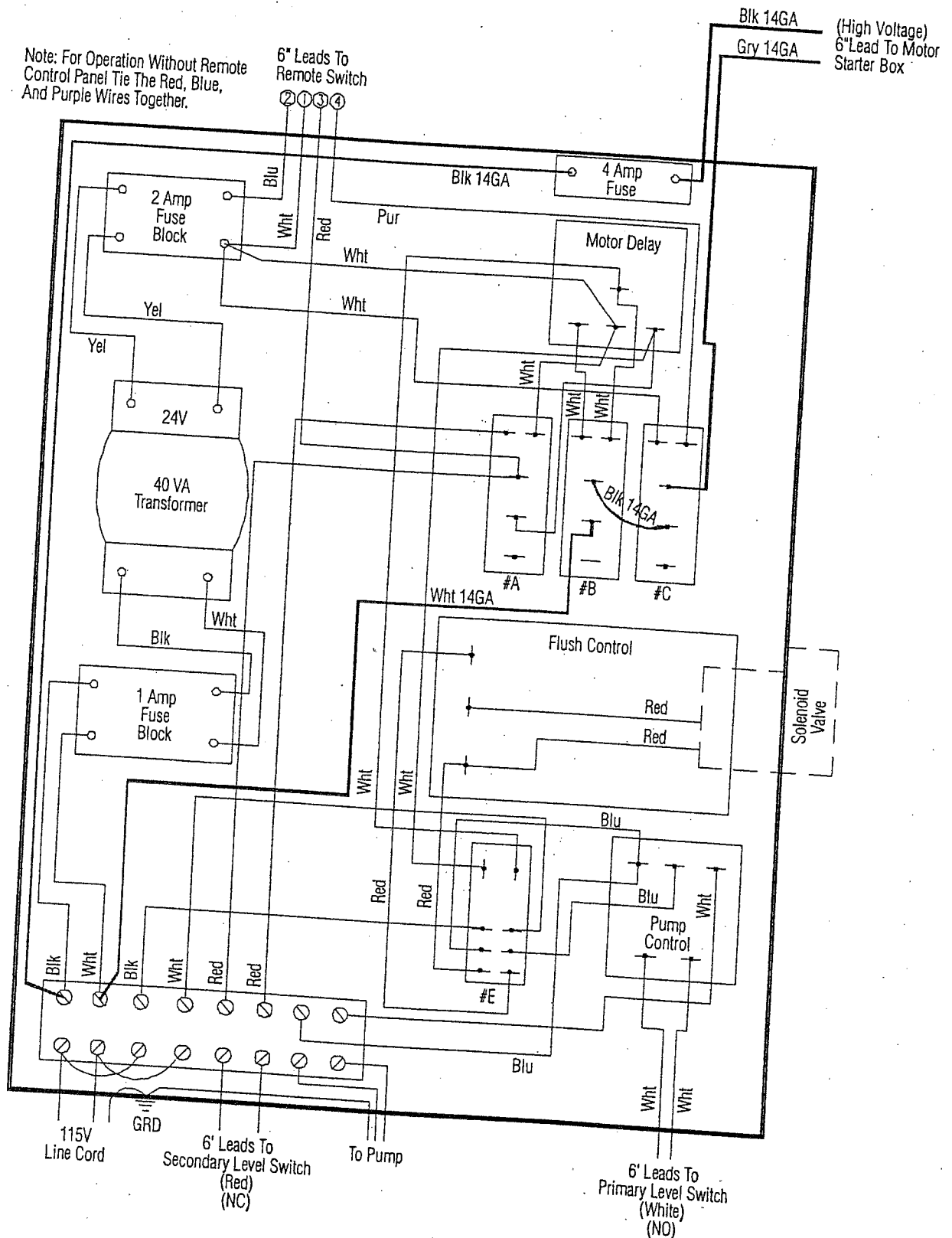
Support Steel Pipe Terminating In.

- | | | | |
|----------|-----------------|---------------|-----------------|
| • AVC50S | 2 1/2" FPT Pipe | • AVC60D (2) | 2" FPT Pipe |
| • AVC75S | 2 1/2" FPT Pipe | • AVC100D (2) | 2 1/2" FPT Pipe |
| | | • AVC150D (2) | 2 1/2" FPT Pipe |

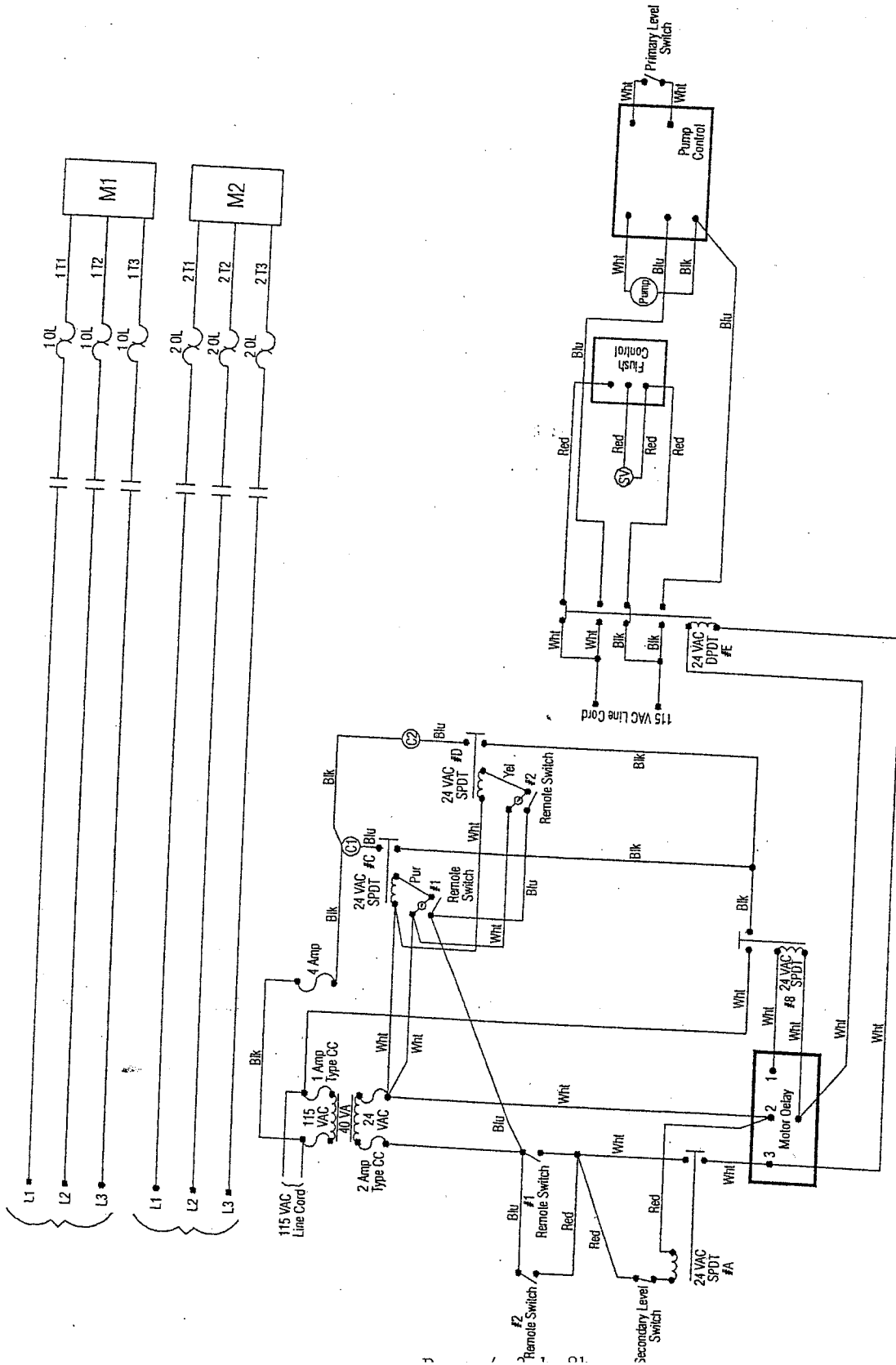
Electrical Hook-Up Requirements (Continued)



Electrical Hook-Up Requirements (Continued) Single Head Models

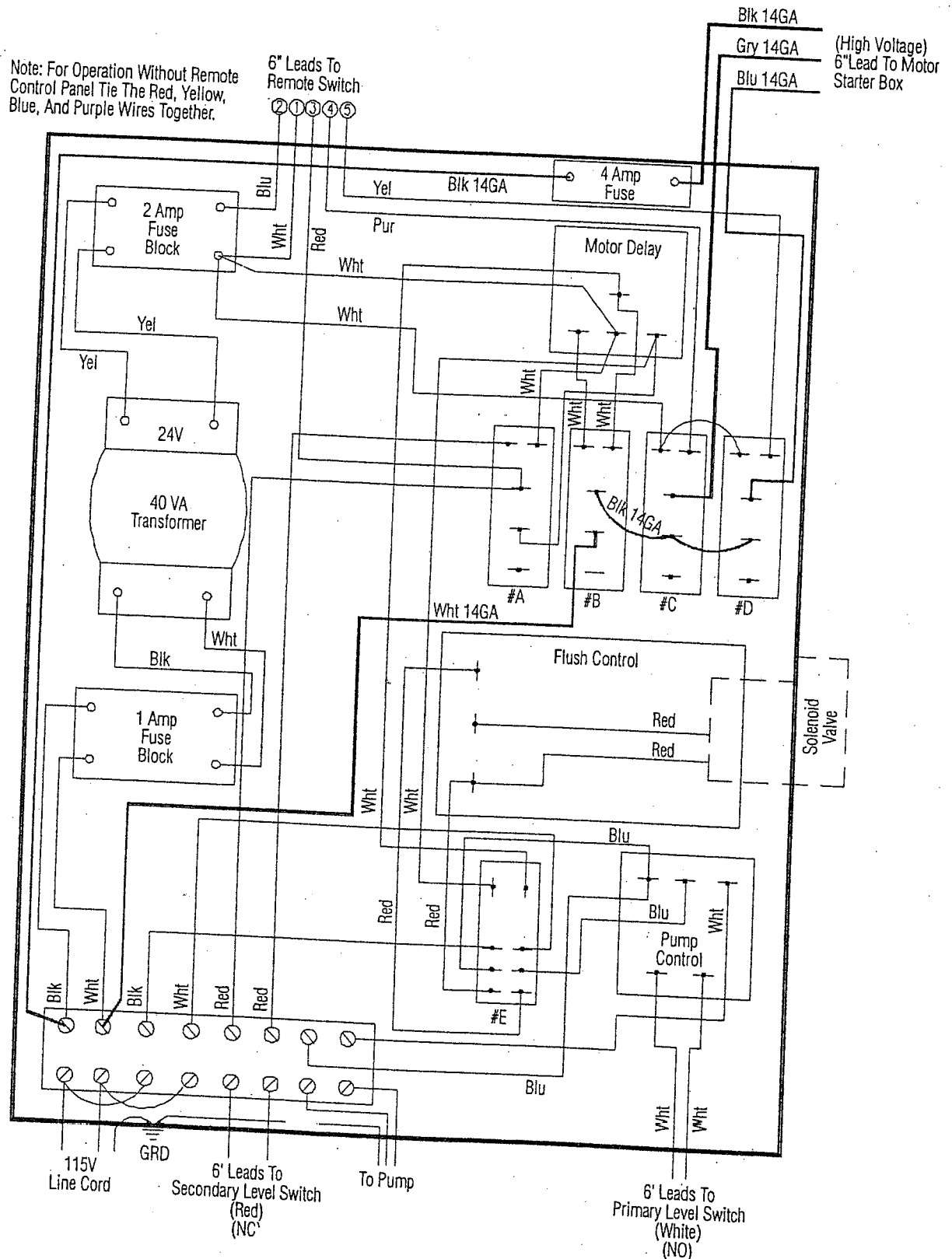


Electrical Hook-Up Requirements (Continued) Twin Head Models



Electrical Hook-Up Requirements (Continued) Twin Head Models

Note: For Operation Without Remote Control Panel Tie The Red, Yellow, Blue, And Purple Wires Together.



Vacuum Piping System Guidelines:

The design of the vacuum piping can have a large effect on the efficiency and reliability of a dental vacuum system. Experience has shown that the most effective vacuum piping design are based on the pressure losses sustained in the lines. The losses must be kept to a minimum. It is very important that the line sizing be large enough to accommodate the required flow with very little pressure loss. The Vacuum Line Sizing Chart below is based on the criteria described above.

Vacuum Line Sizing Chart:

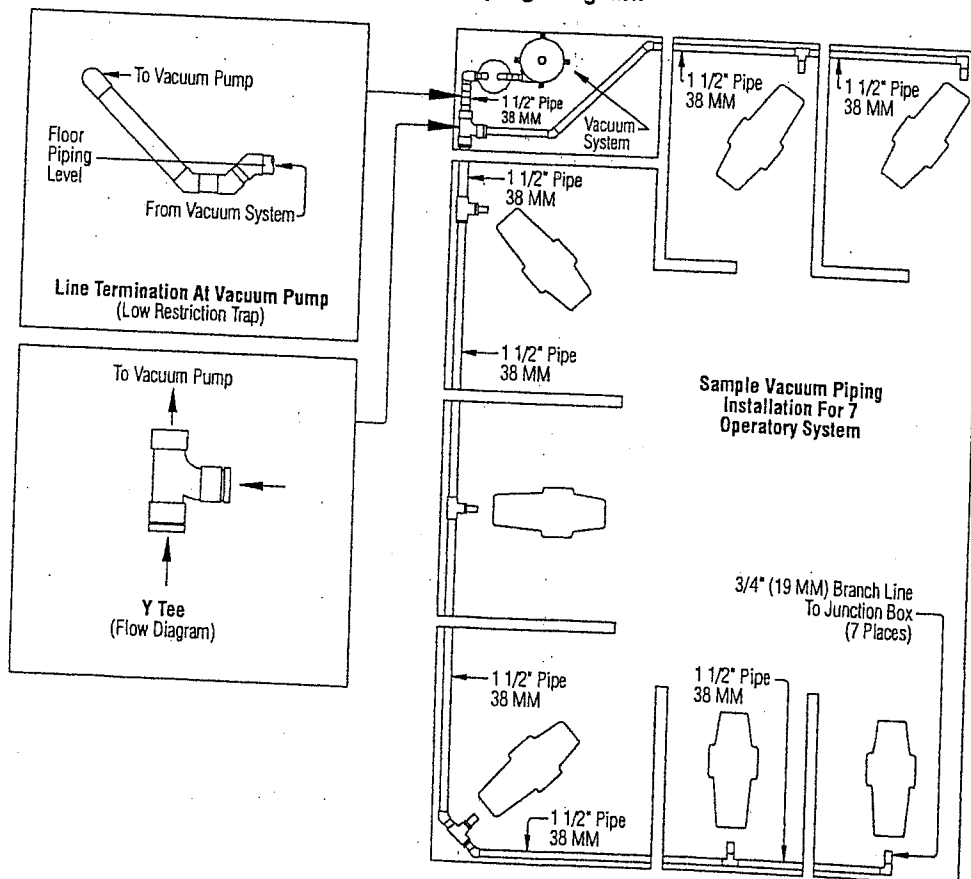
Note: Use the number of operatories being supplied, not the number of outlets within the operatory to determine line size at any given point. Branch lines to individual operatories off the main suction line should be 3/4" diameter.

Number Of Operatories Supplied Through Line	Pipe Diameter In Inches
1 - 8	1 1/2"
9 - 14	2"
15 - 20	2 1/2"
21 - 30	3"

The vacuum lines should be supported to prevent sag and should be sloped 1/4" for every 10' towards the vacuum pump. It is of primary importance to minimize 90 degree turns in the system. These will not only cause vacuum losses, but will also provide areas where sediment can accumulate. A combination of two 45 degree elbows are preferable to a 90 degree elbow. Restrictions in the line will also cause vacuum losses, Y-Tee fittings should be used whenever possible.

A sample Vacuum Piping Diagram is shown below. Consult ADP Technical Support for further information regarding vacuum line sizing.

Vacuum Piping Diagram



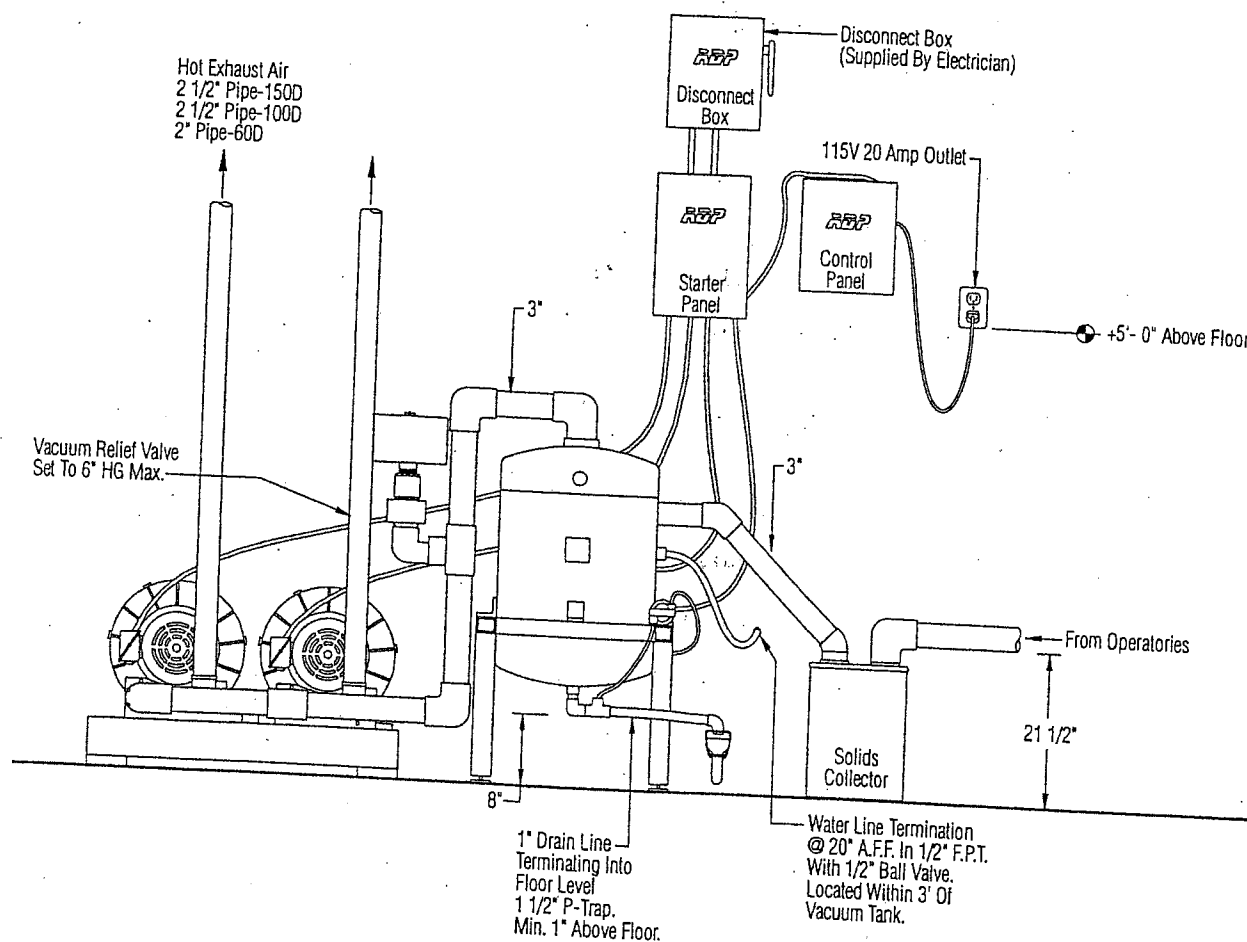
Installing The Vacuum System:

1. Place the vacuum on a solid level floor within 3' of the floor sink.
2. Connect solids collector to separation tank using the provided PVC assembly.
3. Connect vacuum line from operatories to the solids collector using PVC and necessary fittings.
4. Attach, glue and route 1" drain hose assembly.
5. Connect 1/2" water line to solenoid valve using the provided flexible water hose.
6. Connect steel exhaust piping to outlet side of each pump.

Note: Exhaust air may reach +200 degrees Fahrenheit. Exhaust piping must be supported.

7. Connect high voltage electrical supply line to the pump as indicated in the electrical diagram. See Page 3.
8. For low voltage remote control, connect low voltage wires to wires of corresponding number from the ADP Master Control Panel vacuum switch. **See following diagram for sample installation.**

Installation Diagram



Initial Start-Up:

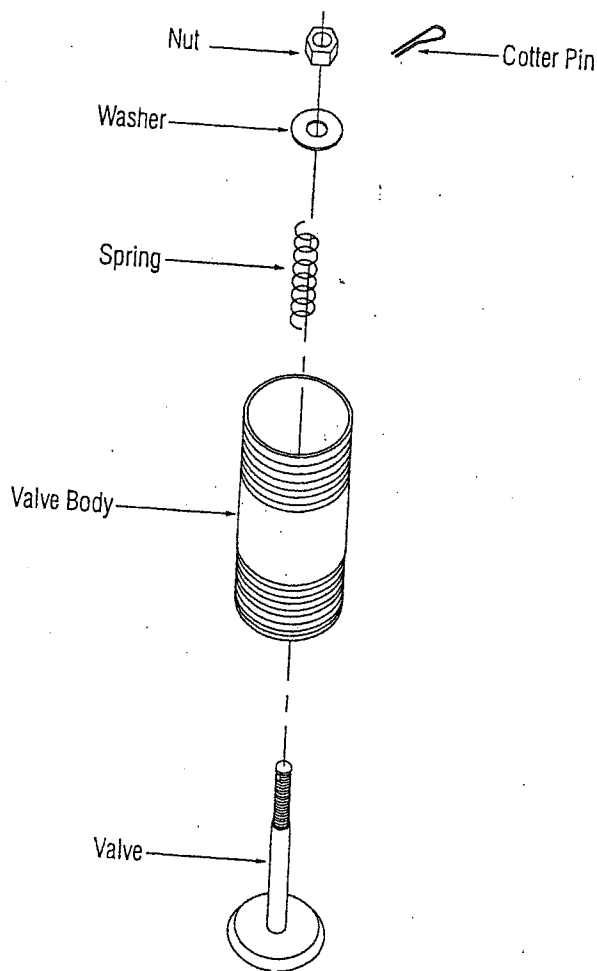
1. Check that the water supply valve is **OPEN**.
2. Start the pump via voltage switch or main circuit breaker.
3. Check vacuum gauge to ensure that the pump is functioning properly. Vacuum relief is factory preset for 6" Hg Vacuum.
4. Check for system leaks.
5. Momentarily turn power "**OFF**" then back "**ON**". The system should then go through a three minute delay before it restarts.

Vacuum Level Adjustment:

The vacuum level is adjustable in the range of 3" to 6" Hg. All of the vacuum relief regulator valves should be set for the same relief operating vacuum level. With vacuum "**ON**" and all evacuators **CLOSED**:

1. Remove cotter pin. **See drawing below.**
2. Turn adjustment nut **clockwise for higher** vacuum level, **counter-clockwise for lower** vacuum level.
3. Replace cotter pin.

Note: Never adjust vacuum level over 6" Hg.



Operation:

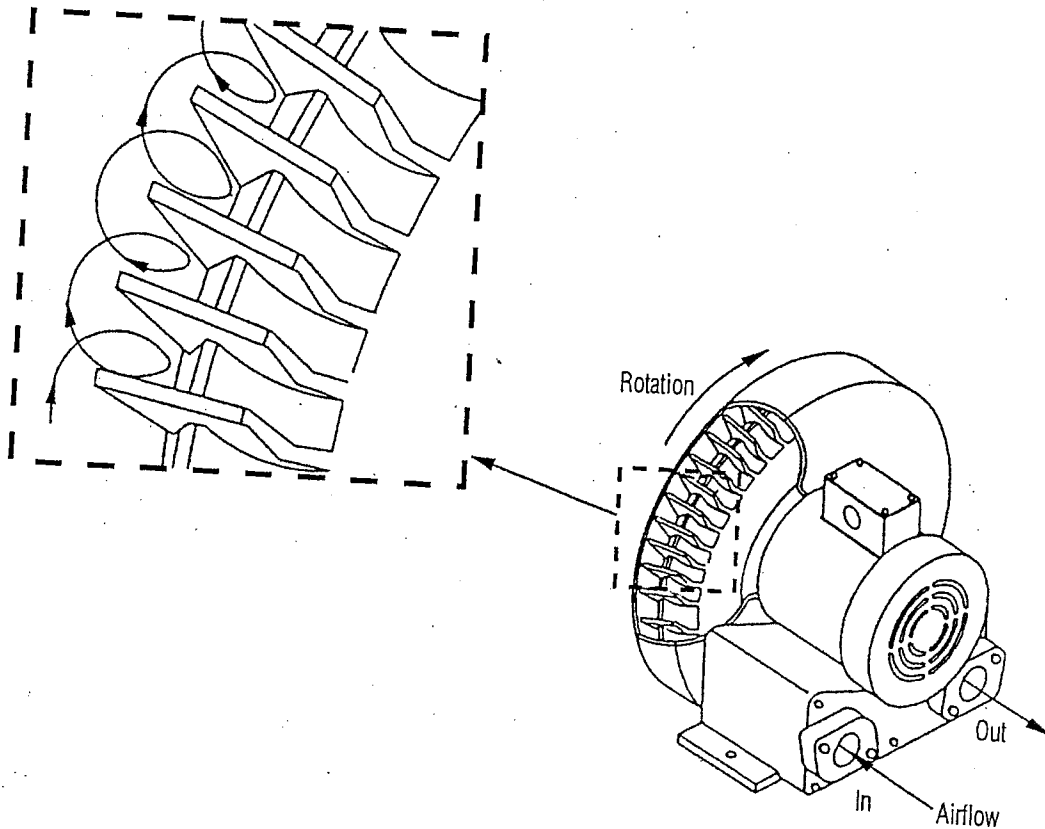
General Description

The ADP Centrifugal Vacuum Pump is a non-positive displacement pump that provides high flow rates, low power consumption and vacuum level up to 6" of mercury.

The pump is designed to run continuously and can therefore be left **"ON"** over the course of the workday.

Principles Of Operation

As the impeller rotates, the blades pass over the inlet port and draw air into the housing. Centrifugal force moves the air from the base of each blade to the tip, the air then impacts the walls of the housing and is reflected back down to the base of the succeeding blade. This process is repeated several times during each revolution of the impeller compressing the air on each cycle, until it reaches the outlet port where the housing diameter is reduced, diverting the air out of the housing.



Automatic Liquid Level Safeguard System

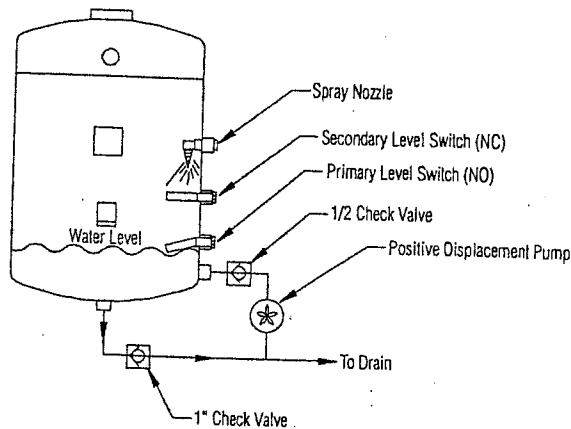
Description

The ADP Centrifugal Vacuum Systems come equipped, as standard, with an Automatic Liquid Safeguard System. The Automatic Liquid Level Safeguard System protects the pump(s) from accidental liquid ingestion without interrupting system operation.

Operation

As the liquid level reaches a set point inside the tank, the primary float switch closes and energizes the positive displacement pump which in turn expels liquid waste. This cycle is repeated only as needed through the course of the workday. If the liquid level should ever exceed the primary level switch boundary, the secondary level switch will be employed to shut the system down for a three minute period, allowing the liquid waste to drain.

Note: The three minute shut-down will also occur if there is momentary loss of power to the system.



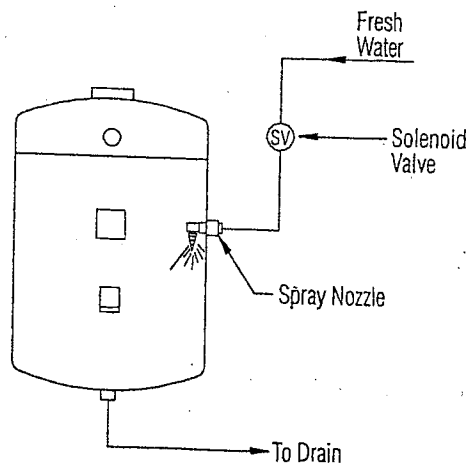
Automatic Tank Flush Cycle

Description

The ADP Centrifugal Vacuum Systems come equipped, as standard, with an Automatic Tank Flush Cycle. The Automatic Tank Flush Cycle rinses the tank every night after shut-down. Water consumption is kept to a minimum with 4.2 gallons/cycle.

Operation

Upon shut-down the swing check valve opens and allows the liquid waste to drain. After a two hour delay, the flush cycle initiates and rinses the tank with a three minute spray of water.



Maintenance:

ADP Centrifugal Vacuum pumps are designed for ease of operation and minimal maintenance. The following periodic maintenance is recommended. If the pump is functioning properly no other maintenance is necessary.

Vacuum Relief Valve (Cleaning):

Periodic cleaning of the vacuum relief valve is required for proper operation.

1. Turn vacuum "OFF".
2. Remove vacuum relief valve muffler/filter.
3. Clean muffler/filter with compressed air.
4. Disassemble vacuum relief valve as demonstrated in the illustration on Page 7.
5. Clean vacuum relief valve thoroughly and reassemble.

Note: Piston must move freely.

6. Install valve and muffler/filter.
7. Start vacuum and adjust relief valve to 6" mercury max.

Emptying Solids Collector Drum:

The solids collector drum should be emptied annually. The disposal of the hazardous waste must follow local codes.

1. Turn vacuum "OFF".
2. Remove PVC piping from inlet and outlet.
3. Loosen lid locks and remove lid.
4. Dispose of waste water per local code.

Vacuum Maintenance Guide Chart:

Maintenance Procedure	Daily	Weekly	Semi-Annually	Annually
Cleanse Vacuum Piping System	...			
Clean In-Operatory Strainers		...		
Check Vacuum Level		...		
Clean and Dust Off Vacuum Pump			...	
Empty Solids Collector Drum				...

PROBLEM: Motor will not start when turned "ON".

Cause: No power to pump motor.

Remedy: 1. Check for proper voltage at pump start contactor (208 VAC \pm 10%). If proper voltage is not present, check circuit breakers and supply circuit.
2. If low voltage switching is being used, bypass low voltage circuit by connecting the red, blue, yellow and purple wires from the top of the electrical box.

Cause: Defective transformer or fuse.

Remedy: 1. Check the voltage. If it isn't between 20 and 28 VAC the fuse or the transformer is defective, or there is a faulty connection within the box.

Cause: Faulty level switch.

Remedy: 1. Check for continuity between the two leads from the secondary level switch.

Cause: Defective coil.

Remedy: 1. If the voltage of step 3 was within limits, and there is continuity in step 4, replace starter contactor coil.

PROBLEM: Pump runs but creates insufficient "suction".

Cause: Vacuum Solids Collector clogged.

Remedy: 1. Clean, or replace, as indicated in maintenance section.

Cause: Faulty vacuum system.

Remedy: 1. Remove the vacuum inlet line from the pump. If there is good suction at the pump, but none or little in the system, the system is clogged or contains leaks. Locate the problem and repair.

PROBLEM: Pump runs but creates insufficient "suction".

Cause: Inadequately sized pump.

Remedy: 1. Check usage chart for maximum number of simultaneous users. Upgrade if necessary.

Cause: Stuck vacuum relief valve.

Remedy: 1. Clean or replace vacuum relief valve.

PROBLEM: Pump will not run continuously.

Cause: Overheating. Thermal protection shutdown.

Remedy: 1. Check for adequate ventilation. The motor is air cooled and a ventilation fan may be required.

Cause: Circuit breaker tripping.

Remedy: 1. Check for incorrectly sized or defective circuit breaker.

Cause: Faulty relay.

Remedy: 1. Replace relay if contacts fail to remain closed.

Replacement Parts List:

Description	Part Number
Drum - Solids Collector with Lid	TVA90500
Gauge - Vacuum	PGA70415
Impeller - Liquid Discharge Pump Replacement	MMS80472
Motor - 3 HP	HRM10110
Motor - 5 HP	HRM10115
Motor - 7.5 HP	HRM10120
Pump - Liquid Discharge	MMS80470
Solenoid - Panel Mount	PVV10479
Starter Contactor - Under 5 HP	ETR10470
Starter Contactor - 7.5 HP	ETR10472
Switch - Level 1/2"	ECS10461
Timer - Pump Control	EMS80502
Timer - Flush Control	EMS80503
Timer - Motor Delay	EMS80501
Transformer - 230V/24 VAC 100 VA	ETR10502
Valve - 1/2" Check	PVV50656
Valve - 1" Check	PVV50658
Valve - 3" Check	PVV50660
Valve - Relief / Regulator	SVA50558

Warranty Information: 2 Year

All ADP units are thoroughly inspected and tested in accordance with rigid specifications and standards. Our products are guaranteed against any defective material and workmanship from the date of shipment; provided, that the installation, operation, and maintenance is done in accordance with ADP procedures as outlined in our Installation and Maintenance Guides. Warranty cards must be returned to ADP within ten days of installation to effect warranty. No other warranties or guarantees, expressed or implied are made.

ADP's obligation under the warranty is to provide parts for the repair or, at its option, to provide the replacement product (excluding labor). All special, incidental and/or consequential damages are excluded. We will not issue credit for complete air compressors or vacuum systems without first attempting to correct the problem in the field. Written notice of breach of warranty must be given to ADP within the warranty period. The warranty does not cover damage resulting from improper installation or maintenance, accident or misuse. The warranty does not cover damage resulting from the use of cleaning, disinfecting or sterilizing chemicals and processes. The warranty does not cover vacuum failures due to hard water deposits. Failure to follow instructions provided in ADP's Installation and Maintenance Guides may void the warranty.

INSTALLATION

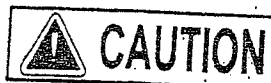
1. Permanently installed compressors must be located in a clean, well ventilated dry room so compressor receives adequate supply of fresh, clean, cool and dry air. It is recommended that a compressor, used for painting, be located in a separate room from that area wherein body sanding and painting is done. Abrasive particles or paint, found to have clogged the air intake filters and intake valves, shall automatically void warranty.
2. Compressors should never be located so close to a wall or other obstruction that flow of air through the cooling fan, which cools the compressor, is impeded. Permanently mounted units should have cooling fan at least 12" from wall.
3. Place stationary compressors on firm level ground or flooring. Permanent installations require bolting to floor, and, bolt holes in tank or base feet are provided. Before bolting or lagging down, shim compressor level to avoid putting a stress on a tank foot. Champion vibro-isolator pads must be used for warranty to apply. Tanks bolted directly to a concrete floor without padding will not be warranted against cracking.
4. If installing a base mounted unit, make certain the pressure switch furnished with the unit is installed in the proper location for start/stop control.



Do not install isolating valves between compressor outlet and air receiver. This will cause excessive pressure if valve is closed and cause injury and equipment damage.



Always use an air pressure regulating device at the point of use. Failure to do so can result in injury or equipment damage.



- Do not install in an area where ambient temperature is below 20 degrees F. or above 100 degrees F.
- Do not install unit in an area where air is dirty and/or chemical laden.
- Unit is not to be installed outdoors.

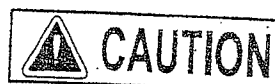
ELECTRICAL POWER SUPPLY

It is essential that the power supply and the supply wiring are adequately sized and that the voltage correspond to the unit specifications.

All wiring should be performed by a licensed electrician or electrical contractor. Wiring must meet applicable codes for area of installation.

Recommended electrical wiring specifications are listed on page 6.

If ordered with a mounted starter, compressor unit is pre-wired at factory. It is necessary only to bring lines from properly sized disconnect switch to magnetic starter mounted on compressor, and attach to terminals as indicated on schematic diagram located inside cover of control. Be sure that power circuit and voltage correspond with the specifications.



Make sure motor is wired so that motor/fan rotate in the direction indicated by the arrow located on fan and fan guard. Wrong direction rotation for any length of time will result in damage to compressor.

GROUNDING INSTRUCTIONS

This product should be connected to a grounded, metallic, permanent wiring system, or an equipment-grounding terminal or lead on the product.

AIR LINE PIPING

Connection to air system should be of the same size, or larger, than discharge pipe out of unit. Recommended pipe sizes are listed on page 6. A union connection to the unit and water drop leg is recommended. Facility air piping should be periodically inspected for leaks using a soap and water solution for detection on all pipe joints. Air leaks waste energy and are expensive. Facility air piping materials should be in conformance with any codes or local requirements.

PREPARATION FOR INITIAL START-UP AND OPERATION

1. Pull main disconnect switch to unit to assure that no power is coming into the unit. Connect power leads to starter.



Do not attempt to operate compressor on voltage other than that specified on order or on compressor motor.

2. Inspect unit for any visible signs of damage that would have occurred in shipment or during installation.
3. Activate main disconnect switch
4. "Jog" motor and check for proper rotation by direction arrow. If rotation is wrong, reverse input connections on the magnetic starter.
5. Close receiver outlet hand valve and start unit.
6. With receiver hand valve closed, let machine pump up to operating pressure. At this stage the automatic controls will take over. Check for proper cycling operation.
7. Check for proper operation of any options furnished with the unit
8. When the initial run period has shown no operating problems, open receiver hand valve and to air system. The air compressor unit is now ready for use.

GUIDE TO MAINTENANCE

To obtain reliable and satisfactory service, this unit requires a consistent preventive maintenance schedule. A maintenance schedule form is included to aid in keeping the proper records.



Before performing any maintenance function, switch main disconnect switch to "off" position to assure no power is entering unit. Lock out or tag out all sources of power. Be sure all air pressure in unit is relieved. Failure to do this may result in injury or equipment damage.

DAILY MAINTENANCE

1. Drain moisture from tank by opening tank drain cock located in bottom of tank. Do not open drain valve if tank pressure exceeds 25 PSIG.
2. Turn off compressor at the end of each day's operation. Turn off power supply at wall switch.

WEEKLY MAINTENANCE

1. Clean dust and foreign matter from cylinder, cylinder head, motor, fan, air lines, crankcase and aftercooler, (if so equipped).
2. Remove and clean intake air filters.



Do not exceed 15 PSIG nozzle pressure when cleaning element parts with compressed air. Do not direct compressed air against human skin. Serious injury could result. Never wash elements in fuel oil, gasoline or flammable solvent.

3. Check V-belts for tightness. The V-belts must be tight enough to transmit the necessary power to the compressor. Adjust the V-belts as follows:

Remove bolts and guard to access compressor drive.

Loosen mounting hardware which secures motor to base. Slide motor within slots of baseplate to desired position.

Apply pressure with finger to one belt at midpoint span. Tension is correct if top of belt aligns with bottom of adjacent belt. Make further adjustments if necessary.

Check the alignments of pulleys. Adjust if necessary.

Re-install guard and secure with bolts.



Never operate unit without belt guard in place. Removal will expose rotating parts which can cause injury or equipment damage.

EVERY 90 DAYS OR 500 HOURS MAINTENANCE

1. Check entire system for air leakage around fittings, connections, and gaskets, using soap solution and brush.
2. Tighten nuts and capscrews as required.
3. Pull ring on all pressure relief valves to assure proper operation.

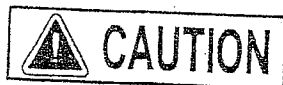
GENERAL MAINTENANCE NOTES

PRESSURE RELIEF VALVE: The pressure relief valve is an automatic pop valve. Each valve is properly adjusted for the maximum pressure of the unit on which it is installed. If it should pop, it will be necessary to drain all the air out of the tank or line in order to reseal properly. Do not readjust.

TANK DRAIN VALVE: Drain valve is located at bottom of tank. Open drain valve daily to drain condensation. Do not open drain valve if tank pressure exceeds 25 PSIG. The automatic tank drain equipped compressor requires draining manually once a week.

PRESSURE SWITCH: The pressure switch is automatic and will start compressor at the low pressure and stop when the maximum pressure is reached. It is adjusted to start and stop compressor at the proper pressure for the unit on which it is installed. Do not readjust.

COMPRESSOR VALVES: Once per year, or if compressor fails to pump air or seems slow in filling up tank, disconnect unit from power source and remove valves and clean thoroughly, using compressed air or a soft wire brush. After cleaning exceptional care must be taken that all parts are replaced in exactly the same position and all joints must be tight or the compressor will not function properly. When all valves are replaced and connections tight, close hand valve at tank outlet for final test.



Valves must be replaced in original position. Valve gaskets should be replaced each time valves are serviced.

CHECK VALVE: The check valve closes when the compressor stops operating, preventing air from flowing out of the tank through the pressure release valve. After the compressor stops operating, if air continues to escape through the release valve, it is an indication that the check valve is leaking. This can be corrected by removing check valve and cleaning disc and seat. If check valve disc is worn badly, replace same.



Before removing check valve be sure all air is drained out of tank and power is disconnected. Failure to do so may result in injury or equipment damage.

PARTS REPLACEMENT SCHEDULE

1. Replace compression rings every 3 years (2 years if 60 or more hours/week run time).
2. Replace control rings every 3 years (2 years if more hours/week run time).
3. Change both main shaft and con rod bearings every 4 years (3 years if 60 or more hours/week run time).
4. Replace head valves every 2 years (1 year if 60 or more hours/week run time).

TROUBLE SHOOTING GUIDE FOR COMPRESSOR



Always disconnect unit from power supply and relieve all pressure from air tank before performing any maintenance. Tagout or Lockout disconnect switch. Failure to do so may result in equipment damage or injury. Never use gasoline or flammable solvent on or around compressor unit. Explosion may result.

SERVICE PROBLEM

A	Motor will not Start
B	Motor is Noisy or Overheats
C	Motor Stops
D	Compressor Runs Hot
E	Compressor Pumps Too Slowly
F	Compressor Won't Shut Off
G	Noisy Check Valve
H	Abnormal Pressure Fluctuation
I	Air Escapes From Pressure Switch Unloader When Stopped
J	Compressor Cycles (runs) Too Often
K	Starter Kicks Out

POSSIBLE CAUSE OF PROBLEM

	K	J	I	H	G	F	E	D	C	B	A	
1												
2												1
3												2
4												3
5												4
6												5
7												6
8												7
9												8
10												9
11												10
12												11
13												12
14												13
15												14
												15

FOR EXPLANATION SEE NEXT PAGE

EXPLANATION OF TROUBLE SHOOTING GUIDE

- 1-2. Check all fuses and switches on lines to motor to be sure it is receiving power. Check for loose or faulty wires.
3. A magnetic starter embodies a reset button which may be used to place the motor back in service after some unusual power conditions.
- 4-5. A pressure switch uses a diaphragm to open and close a set of points. Points may become pitted or dirty through use. Clean by "touching" up with sandpaper or replace. See instructions in pressure switch cover.



Disconnect unit from power source before checking pressure switch.

6. Low voltage is prime cause of motor trouble. Ask your power company to test for low voltage.
7. Water in the form of vapor is compressed along with incoming air and condenses in tank. Tank must be drained daily so that full storage capacity of tank may be used. To drain, reduce tank pressure, open valve at bottom of horizontal tank or vertical tank.



Do not open drain valve if tank pressure exceeds 25 PSIG

8. The fins on the cylinder, head, and tubing should be free of dirt which acts as an insulation. This is easily done by periodically blowing them clean or through the use of a wire brush.
9. The flywheel must rotate in the direction shown by the arrows.
10. Compressor valves may become fouled by ingesting foreign matter. To service, remove valve covers, extract valves and clean. Reinstall, taking caution that all parts are returned to their original position. Use new valve gaskets.
11. All air lines from compressor to tank and from tank to air operated devices should be tight. A soap solution will show bubbles when put on a leaky joint.
- 12-13. Before servicing check valve, be sure pressure in tank is **ZERO**. Replace check valve.
14. Determine what parts or areas are causing the restrictions. These parts should be cleaned or replaced.



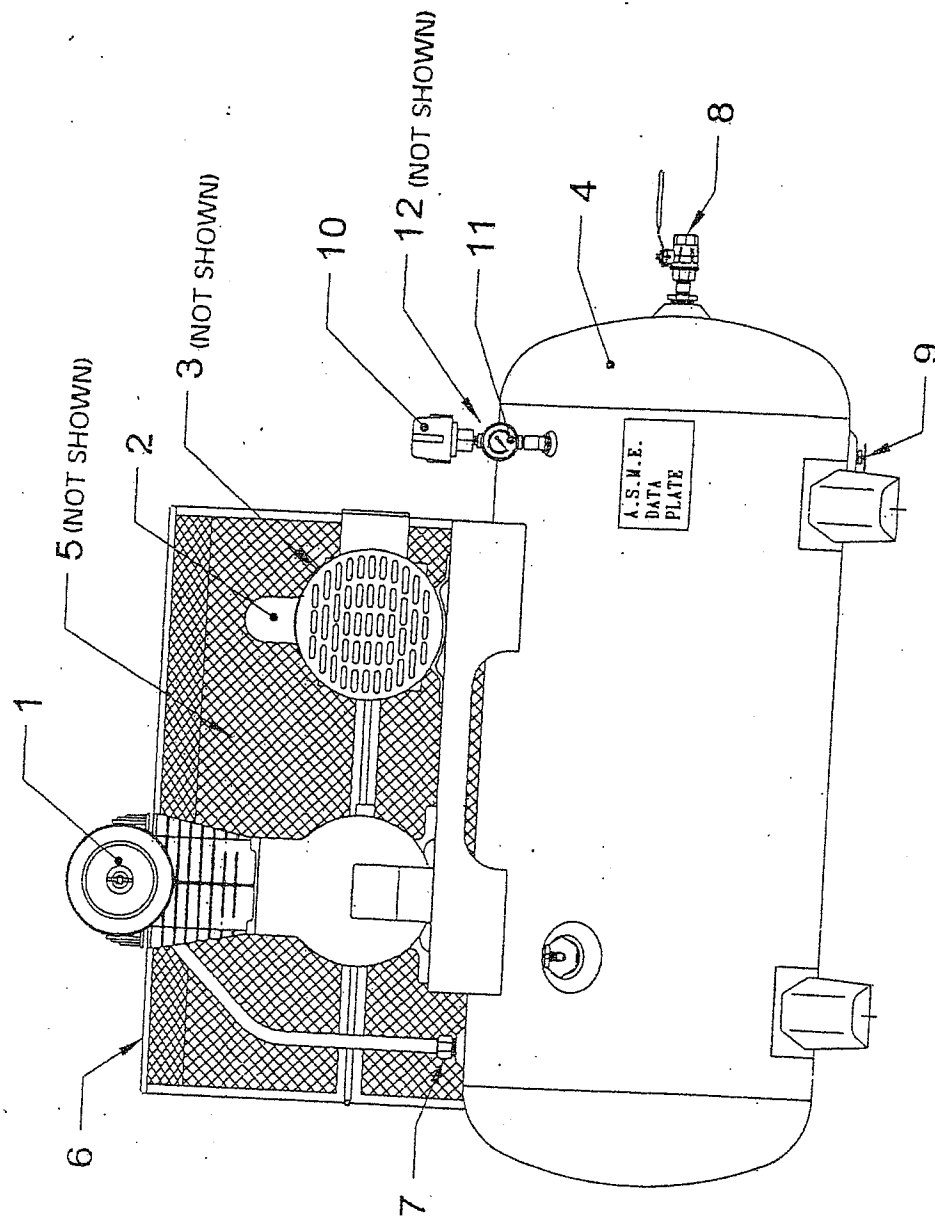
Disconnect unit from power source and relieve tank pressure before servicing these components.

15. Intake filter should be cleaned weekly to allow unrestricted flow of entering air. To service filter, remove wing nut, metal cover and filter element. Element may be blown clean with an air nozzle if moderately dusty. Heavily fouled elements should be replaced. Never clean element with fuel oil, gasoline, or flammable solvent.

MTOII UNITS
PARTS LIST
MAJOR COMPRESSOR COMPONENTS

MODEL NUMBER	1 PUMP	2 ELEC. MOTOR	3 MOTOR PULLEY		4 AIR RECEIVER	5 V-BELT	6 BELTGUARD	7 CHECK VALVE	8 HAND VALVE	9 TANK DRAIN VALVE	10 PRESSURE SWITCH	11 PRESSURE GAUGE	12 PRESSURE RELIEF VALVE
			1 PHASE	3 PHASE									
B2MTOII	CE20	2HP					P11729D			---	---	---	---
B3MTOII	CE30	3HP					P11729D			---	---	---	---
B5MTOII	VE50	5HP	P07784A-PULLEY P09855A-BUSHING	P07784A-PULLEY P09855A-BUSHING		B48	P11729D			---	---	---	---
I2MTOII-3	CE20	2HP					P11729D	P07538A		P05813A	P05007A	MS19C	M2839
I3MTOII-3	CE30	3HP					P11729D	P07538A		P05813A	P05007A	MS19C	M2839
I2MTOII-6	CE20	2HP			P01136D		P11729D	P07538A	M2685	P05813A	P05007A	MS19C	M2839
3MTOII-6	CE30	3HP			P01136D		P11729D	P07538A	M2685	P05813A	P05007A	MS19C	M2839
5MTOII-6	VE50	5HP	P07784A-PULLEY P09855A-BUSHING	P07784A-PULLEY P09855A-BUSHING	P01136D	B48	P11729D	P07538A	M2685	P05813A	P05007A	MS19C	M2839
2MTOIID-6	CE20 (2)	2HP(2)					P11729D	P07538A (2)		P05813A	P05007A	MS19C	M2839
3MTOIID-6	CE30 (2)	3HP(2)					P11729D	P07538A (2)		P05813A	P05007A	MS19C	M2839
5MTOIID-8	VE50 (2)	5HP(2)	P07784A-PULLEY (2) P09855A-BUSHING (2)	P07784A-PULLEY (2) P09855A-BUSHING (2)		B48	P11729D (2)	P07538A (2)		P05813A (2)	P05007A	MS19C	M2839

PARTS LIST
MAJOR COMPRESSOR COMPONENTS
MTOII UNIT



SERVICE PARTS LIST FOR OIL-LESS COMPRESSORS

HP SIZE COMPRESSOR	1-1½-2 CCE20	3 CCE30	5 CVE50
PARTS DESCRIPTION	P/N	P/N	P/N
	QUANTITY PER COMPRESSION	QUANTITY PER COMPRESSION	QUANTITY PER COMPRESSION
PISTON RING SET	P11859A	P11866A	P11859A
	1	1	2
SUCTION VALVE W/GASKET	P11860A	P11867A	P11860A
	1	1	2
DISCHARGE VALVE W/GASKET	P11861A	P11868A	P11861A
	1	1	2
VALVE COVER "O" RING	P11862A	P11869A	P11862A
	2	2	4
CYLINDER/HEAD GASKET	P11863A	P11863A	P11863A
	1	1	2
CYLINDER/HEAD GASKET	P11864A	P11864A	P11864A
	1	1	2
INTAKE FILTER ELEMENT	P11865A	P11865A	P11865A
	1	1	2

HAZARD DECAL LISTING

ITEM

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q

DESCRIPTION

Retain Labels
DANGER - Breathing Air
DANGER - Drain Tank Daily
DANGER - Valve Maintenance
DANGER - High Voltage
DANGER - Auto Start
WARNING - Pressure/Safety Valve
WARNING - Rotating Parts
WARNING - Hot Surfaces
WARNING - Tank Pressure
CAUTION - Clean Filters
Unit Location
Rotation Direction
Pressure Setting: Master
Pressure Setting: 70-100 PSIG
Maintenance Instructions
Service Information

PART NO.

P09879A
P09376B
P09430B
P09750B
P04934B
P10249B
P09752B
P10250B
P09758A
P04983A
M1736
P04518A
M442
P09388A
P04990A
P10248B
P04995A

HAZARD TAG LISTING

ITEM

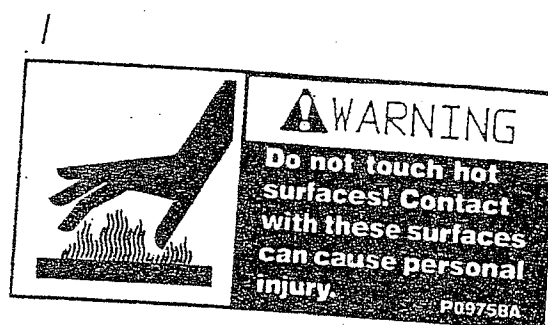
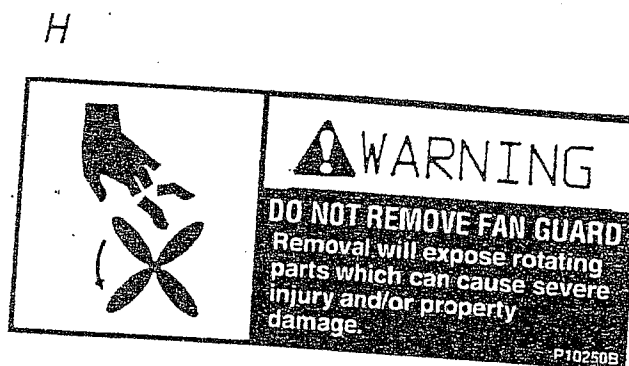
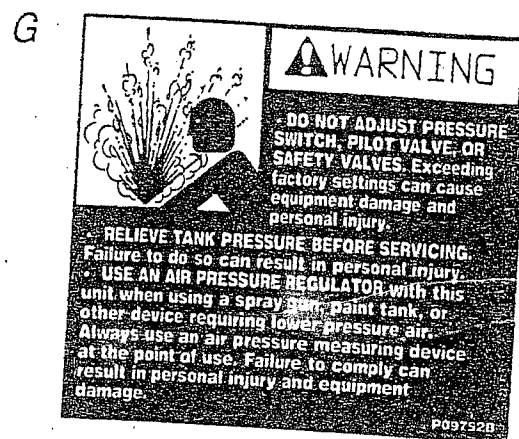
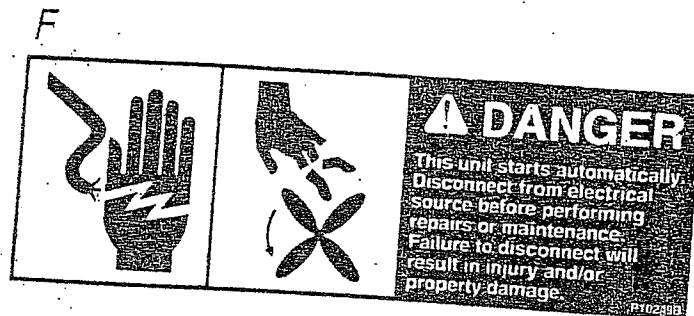
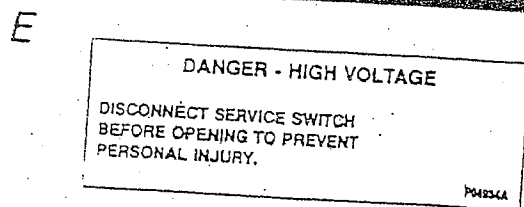
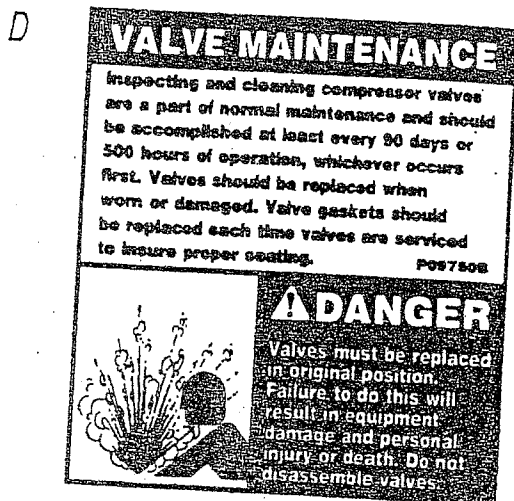
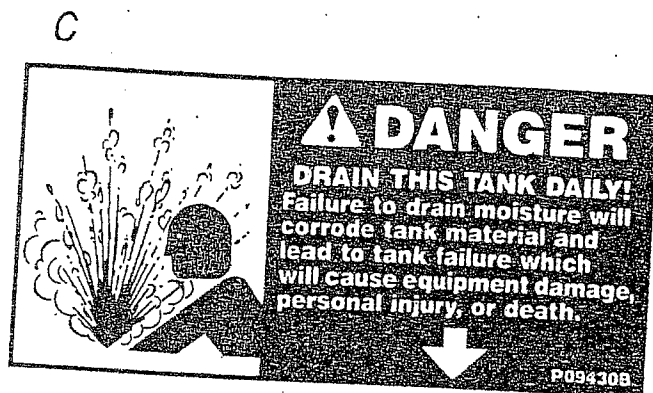
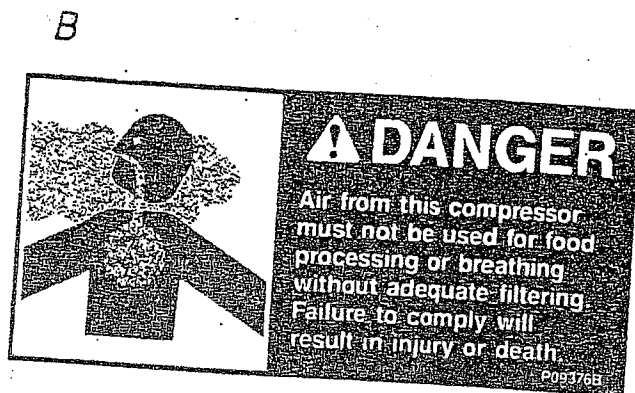
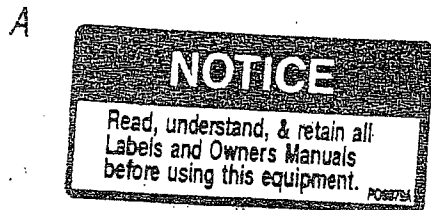
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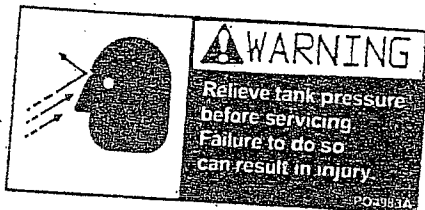
DESCRIPTION

IMPORTANT - Electrical Specs
DANGER - Valve Instructions
WARNING - Read Owners Guide

PART NO.

P05257A
P09852A
P04996A





K

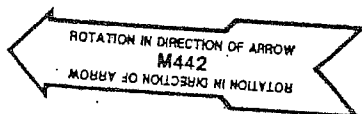
CAUTION, SERVICE FILTER ELEMENTS WEEKLY
MORE OFTEN IN DUSTY CONDITIONS M1736

L

UNIT LOCATION

When mounting or installing, do not block air flow to flywheel/fan. Maintain a min. of 12 in. from wall or other solid obstruction.

P04518A



N

UNIT PRESSURE SETTING P09388A

UNIT PRESSURE FACTORY SET AT 70-100 PSIG P04990A

P

MAINTENANCE INSTRUCTIONS FOR OIL - LESS UNITS

WARNING Turn off power and relieve tank pressure before servicing to avoid possible injury and/or property damage.

The following instructions are based on normal operation. Always refer to owners manual for detailed instructions. If the unit is in an excessively dusty area, increase frequency of all maintenance.

DAILY

- Drain any condensate from receiver.
- Listen and look for any unusual noise or vibration and service as required.

WEEKLY

- Service air filter.
- Clean all external parts of compressor and driver.
- Pull ring on safety valve to see that it is operational and replace if sticking.

MONTHLY

- Inspect and repair entire air system for leaks.

EVERY 3 MONTHS

- Remove valve assemblies and clean as required.

P04990A

Q

SERVICE INFORMATION

FOR SERVICE CALL "SERVICE DEPARTMENT" AT 815 /875-3321 OR WRITE TO:
CHAMPION PNEUMATIC MACH. CO.
1301 NORTH EUCLID AVE.
PRINCETON, ILLINOIS 61356 P4995A

R

IMPORTANT

MOTOR BURN-OUTS ARE NOT COVERED BY WARRANTY - Unless motor is equipped with Factory Installed thermal overload protection - (In either motor or starting switch)

IMPORTANT NOTICE

THIS MOTOR AND STARTER IS WIRED FOR AN AC CIRCUIT OF

☐ 115 VOLT ☐ 60 CYCLE ☐ 1 PHASE
☐ 230 VOLT ☐ OTHER ☐ 3 PHASE
☐ 460 VOLT

OTHER ELECTRICAL SPECS

CHAMPION PNEUMATIC MACHINERY CO., INC. P05257A



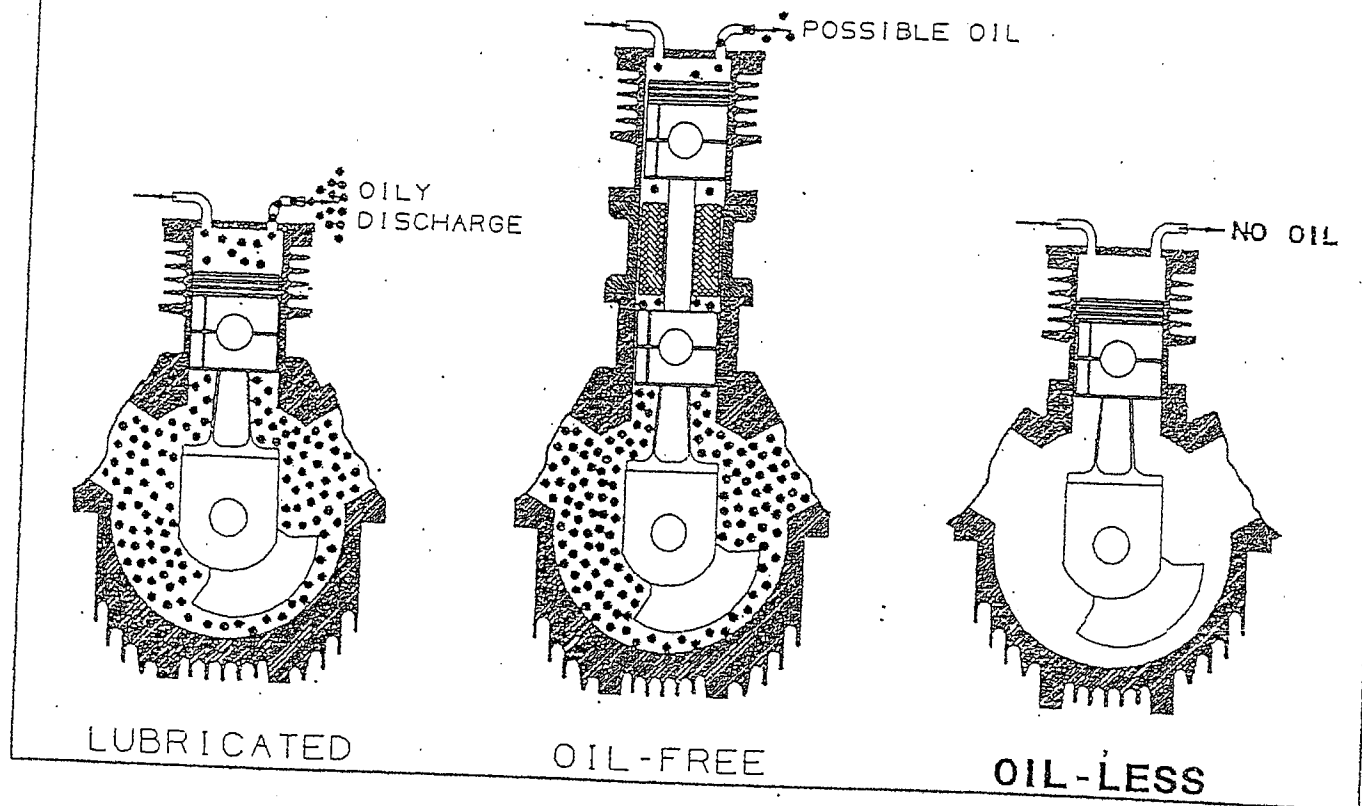
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WARNING

DO NOT OPERATE UNIT BEFORE READING AND UNDERSTANDING OWNERS GUIDE FOR INSTALLATION, ASSEMBLY, AND OPERATION OF THIS EQUIPMENT. FAILURE TO COMPLY CAN CAUSE INJURY AND/OR PROPERTY DAMAGE.

P4996A

THE DIFFERENCE IS . . .



Lubricated compressors are constructed with an oil filled crankcase. As a result oil vapor is always present in the compression chamber and the discharge air.

Recent advancements in the application of pneumatic power are resulting in an increased use of air-operated equipment that cannot tolerate compressor oil in the air stream. Also, there is a corresponding increase in our need to limit the pollution of our

atmosphere.

Filtration, the common solution, is both expensive and requires constant maintenance to prevent failure.

Yesterday's state of the art solution employed various techniques to separate a dry cylinder from an oil lubricated crosshead piston and crank mechanism. With all oil seals functioning perfectly, the discharge air might possibly be

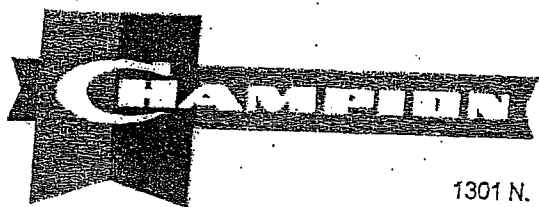
99.9+% oil-free. With wear, the possibility of additional oil migration increases.

* It should also be noted that with the compressor providing 99.9+% oil-free air, a 10 horsepower machine could discharge as much as 2.5 gallons of oil per year into the system.

* *Inroads for Oil-Free Air*, February, 1975 issue of *Factory Magazine*.

Oil-less air is no longer a specialty item, it is a mandate for the future!





PNEUMATIC MACHINERY CO., INC.

1301 N. EUCLID AVE. • PRINCETON, ILLINOIS 61356-9990
• Phone: 815-875-3321 • Fax: 815-872-0421

Owner's Responsibilities

INSTALLATION:

Compressor must be located in a clean, well-ventilated, dry room to insure an adequate supply of fresh, clean, cool and dry air.

Compressor cooling fan should have a minimum clearance of 14" from any obstruction to insure proper cooling of unit.

Lagging compressor unit to the floor is required. Tank-mounted units must have the legs shimmed to avoid undue stress on the tank welds. For warranty to apply, tank must be mounted on vibro isolator pads. Lag bolts should be "snug", and not tight.

Necessary electrical wiring and connections should be made by a qualified electrician and must be installed in accordance with all national and local electrical codes.

MAINTENANCE:

Refer to owner's manual for safety rules and detailed maintenance instructions and service schedule.

Refer to Maintenance Schedule outlined in Owners Manual and perform maintenance based on accumulated running time on hourmeter.

Keep complete unit clean.

Keep intake filters clean. Inspect and clean valves every 5,000 hours.

Keep belts adjusted properly.

Keep nuts, bolts, capscrews and all fittings tight. Refer to manual for torque recommendations.

Failure of owner to comply with safety rules, installation and maintenance procedures outlined in Owner's Manual will void warranty.

FREIGHT DAMAGE:

Freight damages do not constitute warranty or service adjustment. **CHAMPION'S** terms are **FOB** point of shipment/factory, and **CHAMPION'S** responsibility ceases upon delivery of material to carrier and obtaining receipt for same. It is the responsibility of the receiving customer to file damage, shortage or concealed damage claim with the delivering carrier on receipt of material.