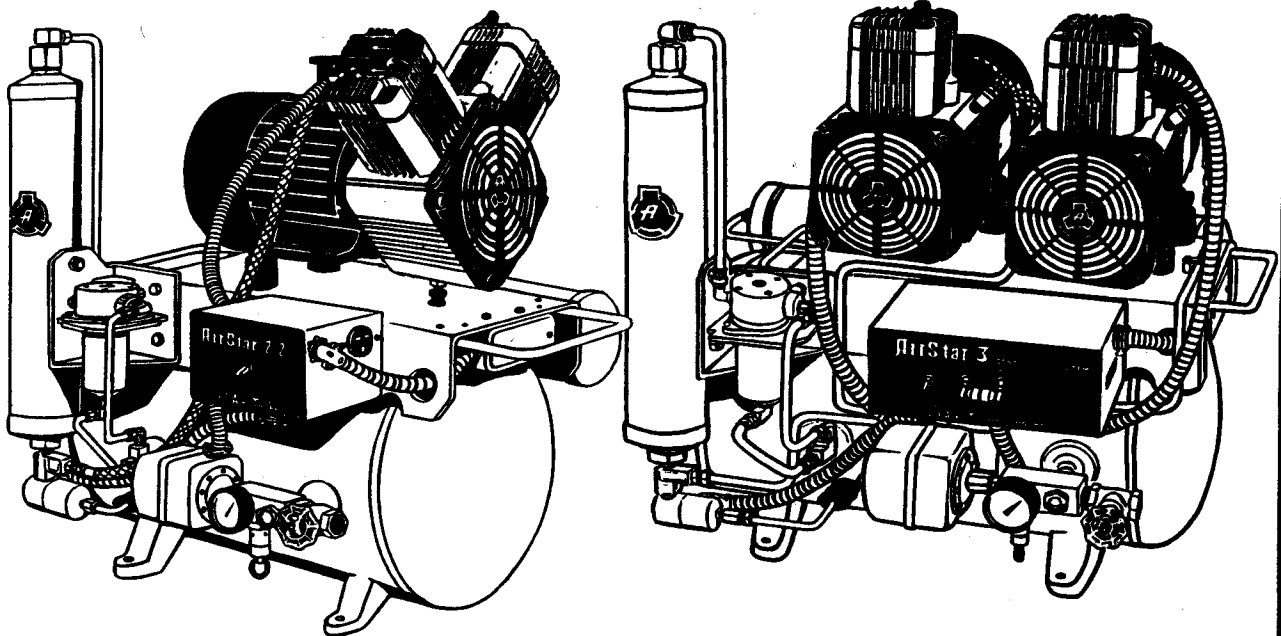


AirStar®

DENTAL AIR SYSTEM INSTALLATION AND OPERATION INSTRUCTIONS



 **AIR
TECHNIQUES**
INC.

TABLE OF CONTENTS

	PAGE
FEATURES OF THE AirStar DENTAL AIR SYSTEM	2
PRE-INSTALLATION CONSIDERATIONS	
Location of the AirStar Dental Air System.....	4
Electrical Specifications.....	4
Dimensions.....	4
Air User Capabilities.....	5
Pump-Up, Recovery and Purge Time.....	5
INSTALLATION INSTRUCTIONS	
Unpacking.....	5
Optional Sound Reducing Cover.....	5
Connecting Air System Plumbing.....	5
Connecting Electrical Service.....	5
Check-Out Procedure.....	8
MAINTENANCE SCHEDULE	8
TROUBLE SHOOTING	9
REPLACEMENT PARTS LIST	12

Congratulations on your purchase of the AirStar Dental Air System. The AirStar will deliver 100% Oil-Less, Ultra-Dry, and most importantly, Hygienically Clean air for all of your compressed air applications. You can have confidence that your cosmetic dentistry procedures have been performed utilizing compressed air which meets or exceeds the fine quality composite manufacturers demand for success.

And, the AirStar Dental Air System's Hygienically Clean air will enhance your infection control procedures by eliminating an environment that can serve as a medium for promoting bacterial growth.

FEATURES OF THE AirStar® DENTAL AIR SYSTEM

DRYING CHAMBER

Humid compressed air travels from the AirStar's Oil-less Compressor Head to the bottom of the drying chamber. As the air travels upward through the drying chamber it interacts with a desiccant bed which removes impurities and water molecules from the compressed air. Air exiting the top of the drying chamber is ultra-dry.

PURGE TANK

Dry air travels from the top of the drying chamber to the manifold located on top of the Automatic Regenerative Hygrostatic System. Here the air flow is split. The majority of the air is placed in the storage tank ready to use. However, a portion of the air is placed in the Purge Tank. When the AirStar completes its cycle at 100 PSI, air from the Purge Tank travels back through an orifice in the manifold and expands. This air then removes water molecules previously absorbed by the desiccant in the drying chamber.

AUTOMATIC REGENERATIVE HYGROSTATIC SYSTEM

The Automatic Regenerative Hygrostatic System is a patented feature of the AirStar Dental Air System. It monitors the dryness of the air within the Storage Tank. A small increase in humidity causes the Automatic Regenerative Hygrostatic System to open a valve from the Storage Tank to provide additional regeneration air. This will continue until the air again becomes ultra-dry.

SOLENOID UNLOADER VALVE

The purge air is evacuated to the atmosphere through the Solenoid Unloader Valve. The valve closes when the compression cycle begins and the motor runs. It opens when power to the motor is cut and the compression cycle has ended, venting the drying system to the atmosphere.

SELECTOR SWITCH

AirStar 3 and 5 feature a selector switch which connects the solenoid unloader valve with either head. This switch permits the use of one head, if necessary.

PRESSURE SWITCH

The pressure switch monitors the air pressure in the Storage Tank. When the pressure drops to 80 PSI, electrical contacts inside the pressure switch close, supplying electrical power to the AirStar's Oil-less compressor head(s). The pressure settings on the Pressure Switch are factory set and should not be changed for any reason.

INTAKE FILTERS

The Intake Filter eliminates pollutants from the air suctioned into the AirStar's compression chamber. It is an important component that contributes to the AirStar's ability to provide hygienically clean air.

OIL-LESS COMPRESSOR HEAD

The AirStar Oil-less compressor head is 100% Oil-less by design. No lubricating oil is ever required. The narrow diameter of the AirStar's pistons reduces the downward forces on the connecting rod, enhancing bearing life. This, combined with a long piston stroke makes the AirStar an extremely efficient producer of compressed air.

POWER SWITCH PANEL

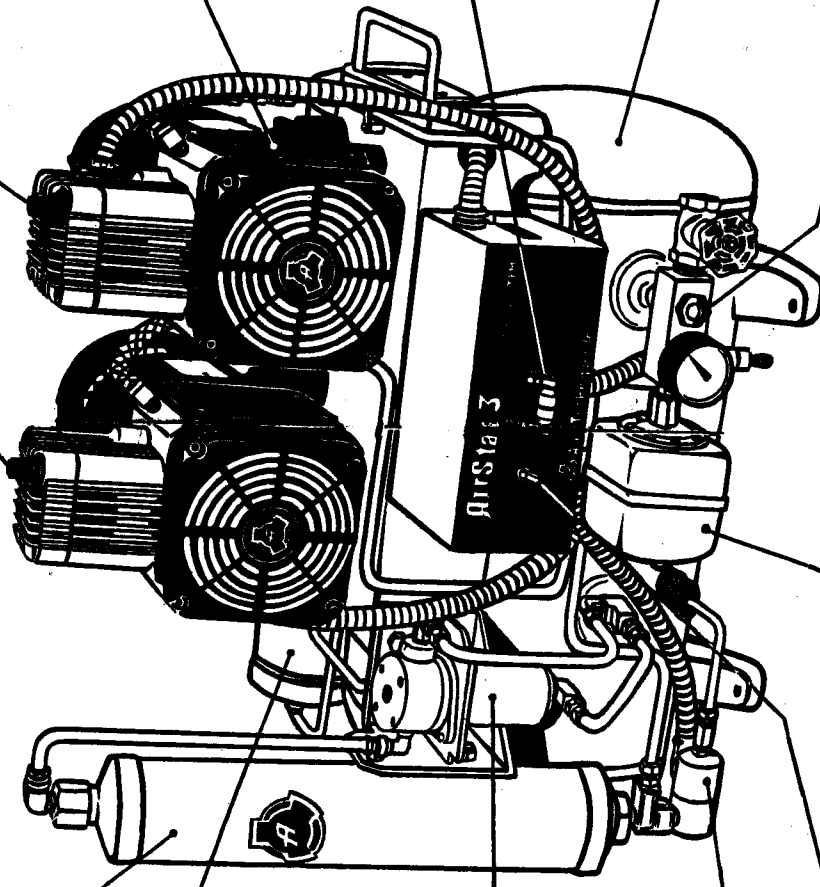
The power switch panel serves two functions: activation of power and overload protection for the AirStar's Oil-less compressor head. On twin and triple head AirStar Systems (AirStar 3, AirStar 5 and AirStar 7), the Power Switches are ganged together, providing an additional Fail-Safe feature. Should one power switch shut down due to an overload protection requirement, the other switch (or switches on AirStar 7) will also shut down. The resulting loss in system pressure will alert you that a possible problem exists.

STORAGE TANK

The storage tank serves as a reservoir for compressed air, and allows the AirStar's Oil-less Compressor Heads to periodically rest. During this resting period the drying system is purged. Only 100% Oil-less, Ultra-dry air enters the Storage Tank.

MOISTURE MONITOR

The moisture monitor provides a visual indication of air quality within the Storage Tank. A blue color indicates that the air is dry.



The features described above combine to make the AirStar Dental Air System virtually a self maintaining compressed air system. There is no need to check or change oil, drain tanks or worry about the quality of your compressed air. Only the finest quality compressed air will be delivered by the AirStar Dental Air System.

PRE-INSTALLATION CONSIDERATIONS

Location of the AirStar Dental Air System

- (1) Inspect the area where the AirStar Dental Air System is to be installed. It should be:
 - (a) Well ventilated to prevent overheating during high air demand periods. If other equipment is to be located in the same area, it will be necessary to make sure the temperature in this area does not rise above 105° F.
 - (b) Clean and dry to prevent clogging of air intake filters.
 - (c) Structurally sound (i.e., provides a firm level surface onto which the AirStar will be placed)

Electrical Specifications

- (2) Consult the electrical specifications below to provide the proper circuit requirements for the appropriate AirStar Dental Air System model:

MODEL	KW	VOLTAGE RATING	MINIMUM VOLTAGE REQUIRED ^(a)	FULL LOAD AMPS	BOOST TRANSFORMER PART NUMBER	MINIMUM CIRCUIT BREAKER (AMPS)	MIN. WIRE SIZE
AirStar 1	.6	115	105	10.7	67500	20	12
AirStar 2-1	1.1	115	105	19.0	67500	30	10
AirStar 2-2	1.1	230	208	10.7	67000 or 67002	20	12
AirStar 3	1.2	230	208	9.8	67000 or 67002	20	12
AirStar 5	2.2	230	208	19.0	67000-1	30	10
AirStar 7	3.3	230	208	28.5	67000-1	40	8

- (a) Minimum voltage required is 208/105 volts. Below this voltage install the appropriate boost transformer.
- (b) The electrical circuit should conform to local electric codes.
- (c) Optimum Air System life and trouble-free operation depend upon a correct installation.
- (d) Consult factory if the electrical supply or the installation site does not conform to the specifications above.
- (e) If a Remote Control Panel System is to be installed, consult the Remote Control Panel System Installation and Operating Instructions. A copy of these instructions may be obtained from Air Techniques.

Dimensions

- (3) At least 12 inches clearance should be provided on each side of the AirStar Dental Air System for service access. Also, enough space should be provided in front to allow access for installing and servicing. Consult the table below for the dimensions of the appropriate model:

MODEL	WIDTH	DEPTH	HEIGHT	HEIGHT w/SOUND REDUCING COVER	SHIPPING WEIGHT (lbs.)	TANK SIZE	
						(cu.ft.)	(gal.)
AirStar 1	22½"	16"	28"	30"	160	.8	6
AirStar 2-1 & 2-2	30"	21"	27"	29"	185	1.6	12
AirStar 3	30"	21"	27"	30"	240	1.6	12
AirStar 5	36"	25"	32"	34"	300	2.7	20
AirStar 7	41"	27"	35"	-	450	4.0	30

Air User Capabilities

- (4) Correct sizing of the AirStar Dental Air System for the anticipated air demand is important. The table below shows the number of simultaneous air handpiece users and performance characteristics of each Air System

MODEL	MAXIMUM SIMULTANEOUS AIR HANDPIECE USERS	NUMBER OF HEADS	PUMP-UP TIME (Seconds) 0-100 PSI	RECOVERY TIME (Seconds) 80-100PSI	PURGE TIME (Seconds) 100-0 PSI
AirStar 1	1	1	160	47	30-35
AirStar 2-1 & 2-2	2	1	145	45	70-80
AirStar 3	3	2	150	46	70-80
AirStar 5	5	2	115	37	100-120
AirStar 7	7	3	120	37	110-135

To assure optimum compressor life and trouble-free operation, the air demands of the installation should not exceed the air handpiece users stated above.

INSTALLATION INSTRUCTIONS

Unpacking

- (1) Move the AirStar Dental Air System as near to the installation site as space will permit.
- (2) Cut and remove strapping from carton - lift carton straight up over the unit and set aside.
- (3) Remove plastic covering and any internal strapping from the AirStar Dental Air System.
- (4) Loosen and remove the four bolts that fasten the tank feet to the shipping pallet.
- (5) Remove the unit from the shipping pallet. Set pallet aside.
- (6) Place the AirStar Dental Air System where it is to be installed.

Sound Reducing Cover

Some Airstar Dental Air System models may be equipped with an optional Sound Reducing Cover. The Sound Reducing Cover is supplied by two different means:

- (a) Factory Installed - proceed to connect air system plumbing.
- (b) Shipped separately for field installation - unpack the Sound Reducing Cover and follow the installation instructions enclosed with the cover.

Connecting Air System Plumbing

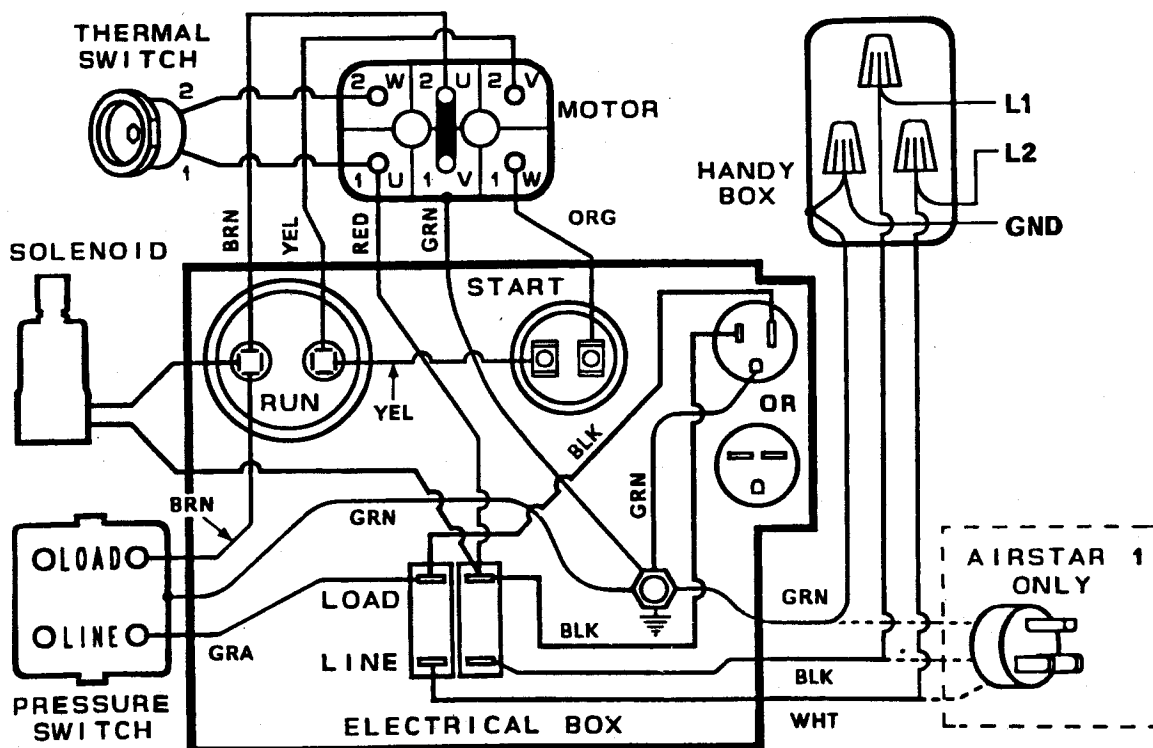
- (1) The AirStar Dental Air System is equipped with a Tank Outlet Assembly which includes a 1/2" F.N.P.T. shut-off valve and a 4-foot length of Pressure Hose.
- (2) Fittings are provided for the Pressure Hose to connect to 1/2" male or female tapered pipe thread.

Connecting Electrical Service

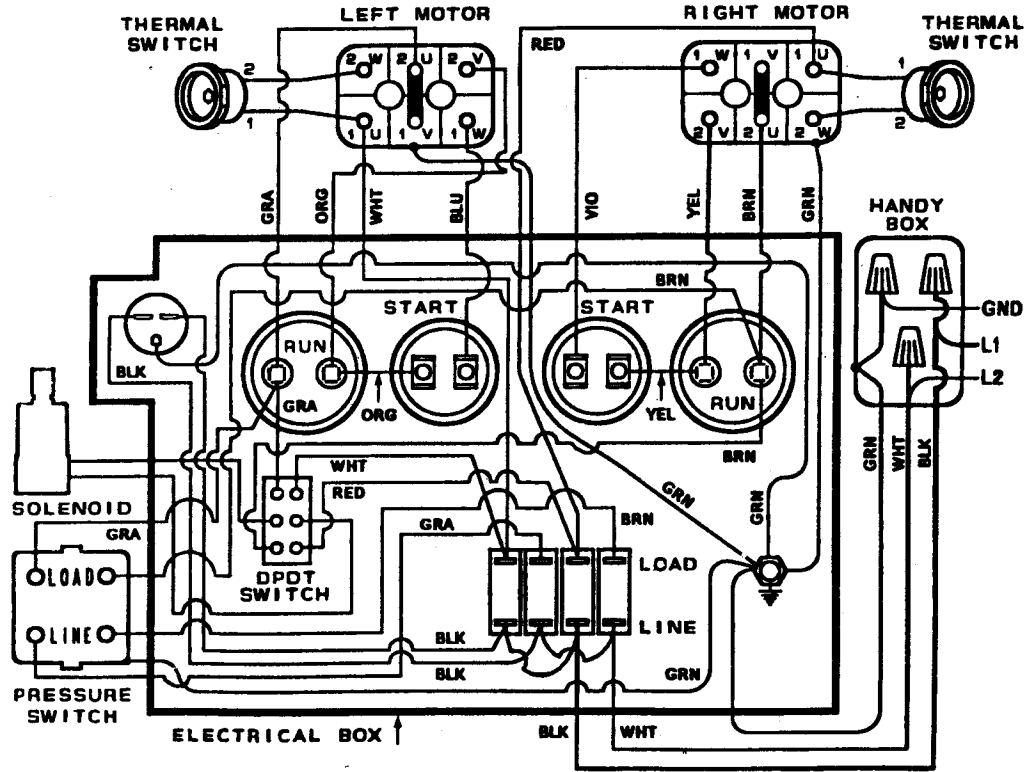
- (1) Model AirStar 1 is shipped with a 115 volt line cord and may be plugged into a grounded electrical outlet which complies with both the AirStar's electrical specifications (see table) and local electrical codes.

- (2) All other AirStar Dental Air System models must be wired directly from an electrical box which complies with local electrical codes or from the Remote Control Panel Contactor Assembly (if so equipped) to the Airstar's Handy Box or Electrical Control Box Assembly as follows:
- On AirStar 2-1, AirStar 2-2, AirStar 3, and AirStar 5 remove screws holding cover of Handy Box. The Handy Box is located on the right end of the main tank.
On Airstar 7 remove Electrical Control Box Assembly cover. It is fastened with Phillips head screws. Pull cover away from box (note that for easier access, the top cover may also be removed).
 - Sufficiently open cable connector to allow the electrical supply cable to be inserted. On AirStar 2-1, AirStar 2-2, Airstar 3, and AirStar 5 models the cable connector is located on the right side of the Handy Box.
On AirStar 7 models, the cable connector is located on the bottom right side of the Electrical Control Box Assembly.
 - Strip away outer casing from electrical supply cable to allow enough tail length within the Electrical Control Box Assembly. Strip 3/8" to 1/2" of the insulation from the power leads.
 - Insert cable assembly through the cable connector until outer casing penetrates at least 1/2" to 1" through strain relief. Secure cable by tightening the cable connector screws.
 - Connect ground wire using wire nut provided in handy box. (On AirStar 7 use ground stud.)
 - Connect remaining cable leads by following the appropriate diagrams shown.
 - Replace Handy Box cover or Electrical Control Box Cover and secure with screws removed in step 2a.
 - If equipped with an optional Sound Reducing Cover, plug the cord from the cover into the power receptacle located on the side of the Electrical Control Box assembly.

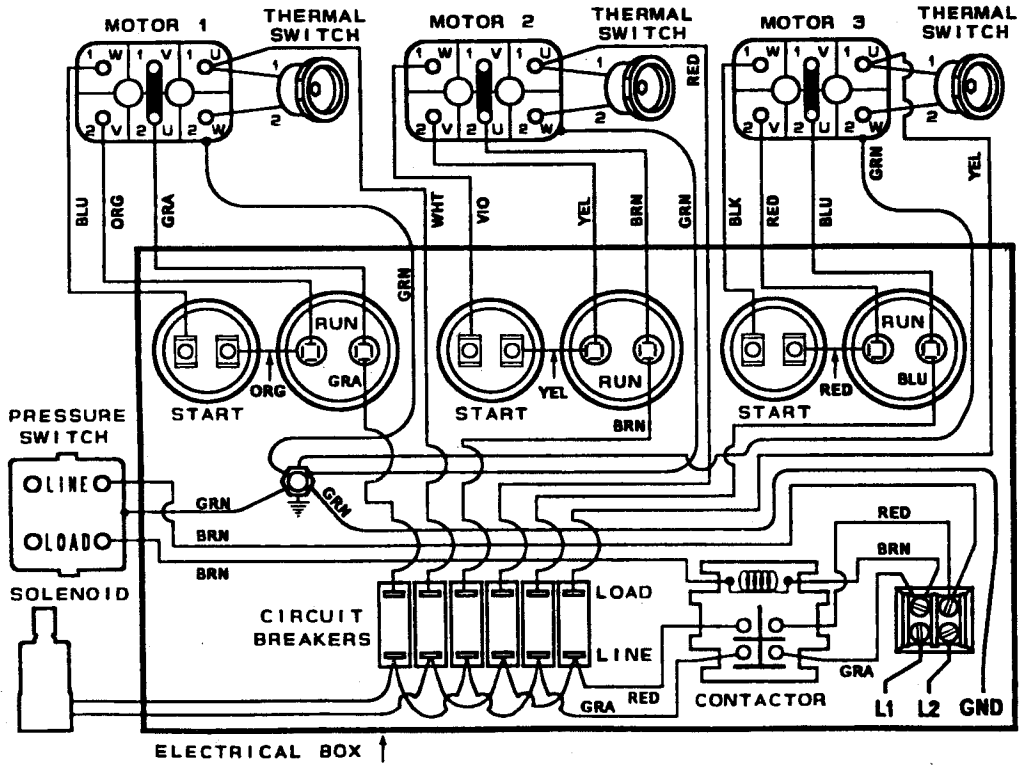
AirStar 1, AirStar 2-1, AirStar 2-2



AirStar 3, AirStar 5



AirStar 7



Check-Out Procedure

- (1) Check that intake filter(s) are fully seated into the compressor head(s) and that Tank Outlet Valve is closed.
- (2) Tank Pressure Gauge should be at 0 PSI. If not, drain tank.
- (3) Apply electrical power to the AirStar Dental Air System. Check incoming line voltage. It should be at least 105 volts on AirStar 1 and AirStar 2-1; or, 205 volts on AirStar 2-2, AirStar 3, AirStar 5 and AirStar 7. This voltage should remain at or above these levels while the AirStar is running. If not, install the appropriate boost transformer and ascertain that the correct main circuit breaker and wire size are being utilized.
- (4) Turn on the AirStar's power switch, and determine the pump-up time from 0-100 PSI. Compare to table 4 on page 5.
- (5) Drain tank to 80 PSI and determine the recovery time from 80-100 PSI. Compare to table 4 on page 5.
- (6) If the pump-up, recovery or purge times differ from those listed in table 4, page 5, consult factory.
- (7) Check plumbing connections for air leaks.
- (8) The AirStar Dental Air System installation is now complete.

MAINTENANCE SCHEDULE

INTAKE FILTERS

Change Intake Filters at least once a year, or more often in dusty environments. Order the appropriate quantity of Intake Filters: Part number 89831 for your model (See Parts List, page 12).

MOISTURE MONITOR

Periodically inspect Moisture Monitor. Consult Trouble Shooting Section if the Moisture Monitor is not blue.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE MEASURES
1. Compressor motor does not start.	1. No electrical power	1. Check circuit breaker at main power panel.
2. Compressor motor runs, but, is noisy.	2a. Intake filter(s) are not seated correctly.	2a. Remove filters(s). Replace if clogged or dirty. When installing, make sure filter chamber is clean and rubber flange on top of filter is pushed all the way down onto the metal cylinder.
	2b. Intake filter(s) are clogged by dirt.	2b. Replace filter(s). Intake filters must be replaced at least once a year, or more often in dusty environments.
	2c. Discharge hose, motor fan cowling or motor mounts are loose.	2c. Call for Service.
3. Compressor motor tries to start , but power switch trips off.	3a. Voltage too low.	3a. A minimum of 105 volts on AirStar 1 and AirStar 2-1 is required. A minimum of 208 volts on AirStar 2-2 , AirStar 3, AirStar 5 and AirStar 7 is required. If voltage is below the minimum required, a boost transformer must be installed. Consult your dealer.
	3b. Unloader valve does not open when compression cycle ends.	3b. Check Unloader Valve . Call dealer for service.
	3c. Defective power switch.	3c. Replace power switch. Call dealer for service.
	3d. Fail safe Power Switches for AirStar 3, AirStar 5 and AirStar 7.	3d. See below.
	<p>For normal operation BOTH switches, (or all three switches on the AirStar 7), must be turned on simultaneously. Be sure to leave ganging bar in place. If a Remote Control Panel is used, then all switches on the AirStar Power Switch Panel should be left in the ON position.</p> <p>These are Fail-Safe power switches with individual circuit breakers. If one Switch trips off, the other(s) will also trip off. The resulting system pressure loss signals that a potential problem exists.</p> <p>DIAGNOSTIC PROCEDURE FOR DETERMINING CAUSE OF TRIPPED POWER SWITCH</p> <ol style="list-style-type: none"> 1. Power Switches should be off. Now turn them on simultaneously. If there is a problem, they will all trip off. 2. Remove ganging bars between switches. 3. Turn ON one power switch. If it trips off, the problem is in that compressor head. Complete the remaining steps. remember to call your dealer for service. 4. If it runs, the compressor head is OK. Now shut it off. 5. Check the other compressor head(s) following steps 3 and 4. 6 You may operate the AirStar with one (or two heads on AirStar 7) temporarily while awaiting service. 7. If each compressor head runs separately, but, they won't run together, the voltage is too low, (See #3a); or power supply cable is too small (See pre-installation considerations); or, there is a loose electrical connection, (call dealer for Service). 	

TROUBLE SHOOTING

PROBLEM	CORRECTIVE MEASURES	
4. Compressor runs, but will not build up pressure to 100 PSI.	4a. Unloader valve does not close when compressor runs.	4a. Check unloader valve. Call dealer for service.
	4b. Clogged or dirty intake filters.	4b. Replace intake filters.
	4c. Leak in Compressor.	4c. Close the Storage Tank outlet valve. Check compressor discharge tubing, cylinder head(s), bolts, packing gland in outlet valve, pressure relief valve and all fittings for leaks. Repair as necessary. (verify pump-up time for the specific model number - See page 5)
	4d. Pressure Switch needs adjustment.	4d. Turn off power switch(es). Drain Storage Tank slowly until pressure switch clicks. Storage Tank pressure should be 80 PSI on the pressure gauge. Turn on power switch and verify pump-up time for specific model number as shown on page 5. Call dealer for service if pump-up time is incorrect.
5. Compressor cycles with no air being used.	5a. Automatic Regenerative Hygrostatic System engaged.	5a. This is not a malfunction. If air demand exceeds the level the Airstar was designed to deliver, the drying system will require additional purging. The Automatic Regenerative Hygrostatic System will engage under these circumstances.
	5b. Leak in Compressor.	5b. See 4c.
	5c. Leak in office air system.	5c. Look at the Moisture Monitor on the Storage Tank Outlet Assembly. If it is: blue, perform Step 1; pink or white, perform Step 2.
		<ol style="list-style-type: none"> 1. With the AirStar's Power Switch on, drain the Storage Tank to 80 PSI allowing the AirStar to start. When it shuts off at 100 PSI, close the Storage Tank Outlet Valve. Wait 5 minutes. While observing the pressure on the pressure gauge, open the Storage Tank Outlet Valve. If the pressure drops, the air leak is in the office air system or delivery units and not in the AirStar. Call your dealer or a plumber for service. 2. Call your dealer for service.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE MEASURES
6. Moisture Monitor is not blue.	6a. Leak in Compressor or in office air system.	6a. See 4c and 5b.
	6b. Unloading System is not functional.	6b. Check to see that Solenoid Unloader Valve closes when compressor runs and opens when it stops. If it is not, call your dealer for service.
	6c. Automatic Regenerative Hygrostatic System is not functional.	6c. Call your dealer for service.

AirStar® DENTAL AIR SYSTEM PARTS LIST

DESCRIPTION	PART NUMBER	Quantity Required					
		AirStar 1	AirStar 2-1	AirStar 2-2	AirStar 3	AirStar 5	AirStar 7
Compressor Head .6 KW, 115V	83601-1	1					
Compressor Head .6 KW, 230V	83601-2				2		
Compressor Head 1.1 KW, 115V	80601-1		1				
Compressor Head 1.1 KW, 230V	80601-2			1		2	3
Run Capacitor 15 mfd	80062R				2		
Run Capacitor 20 mfd	81163-4			1		2	3
Run Capacitor 45 mfd	80177R	1	1				
Start Capacitor 161-193 mfd	82016			1	2	2	3
Start Capacitor 233-280 mfd	81016	1					
Start Capacitor 460-552 mfd	80176		1				
Circuit Breaker, 11 Amp	82902	1					
Circuit Breaker, 9.5 Amp	80932			1		2	3
Circuit Breaker, 7 Amp	83912				2		
Circuit Breaker, 19 Amp	80912		1				
Pressure Switch	85465	1	1	1	1	1	1
Moisture Monitor	60013	1	1	1	1	1	1
Automatic Regenerative Hygrostatic System	85199					1	1
	85198	1	1	1	1		
Ganging Bar Kit for Power Switches	80912-4				1	1	
	80916-4						1
Intake Filter	89831	1	2	2	2	4	6
Unloader Valve Muffler	80055	1	1	1	1	1	1
Contactors	85082						1
Solenoid Unloader Valve Kit (For use with AirStars not originally equipped with Solenoid Unloaders)	85377-1	1	1				
	85377-2			1			
	85378				1	1	
	85379						1
Solenoid Unloader Valve only	85423	1	1				
	85424			1	1	1	1