

DENTALEZ® TECH TIPS

Volume 1, January 2001

Cleaning the aXcs® Light



The DentalEZ aXcs Operator Light prevents eyestrain and fatigue by providing even, color-corrected illumination with a minimum of shadows to the oral cavity. The aXcs Light also

has a full focus 20 to 40 inches from the shield and dual color temperature of 4200 and 5500 degrees Kelvin.

To ensure correct installation, carefully read all the instructions in the manual during installation. Also, be sure to review the operation procedures, care guidelines, notices and warnings with the doctor's staff.

The following is the proper procedure for Bulb Replacement and Cleaning of the aXcs Light.

1. Turn the light off and allow it to cool before removing the shield. Failure to do so can cause injury by burning!
2. Remove the shield by squeezing the ends towards each other gently and pulling forward.
3. Remove the bulb by wrapping it in a

tissue and gently pull forward. Take care to avoid touching the bulb glass as it may shorten the bulb life.

4. Use only denatured alcohol to clean the glass reflector and the bulb.

5. Use only mild detergent and water to clean the shield.

6. The painted surfaces of the light can be cleaned by using a solution of mild detergent and water or typical commercial cleaner that does not include alcohol.

7. The bulb can be replaced by firmly pushing the contact pins back into the lamp socket.

**Remember to
allow light to
cool before
removing the
shield!**

8. Replace the shield by gently squeezing the sides of the shield and gently pushing it into the housing. You will hear a definite "pop" when the shield is seated properly. Failure to properly seat the shield could cause it to fall off and cause injury!

In addition to the many benefits of the aXcs Dental Light, it is designed to provide trouble-free service when installed, operated and maintained properly.



**Shield will "pop" when
seated properly.**

The Importance of Air

As a Technician you know the importance of the air compressor. Clean, dry compressed air can provide years of trouble free service when the correct compressor is chosen for the practice.

Most compressors in use today are lubricated with dryers and filters to insure good quality air. The DentalEZ Lubricated 700 Series has been accepted as the quietest compressor in the market today. In fact the noise level could be compared to that of a Microwave Oven. The size and weight of the 700 Series is 20 to



CA-713

50% less than the typical Copeland type compressor that has been sold for the past 20 years. This is a true benefit when only one technician is available for the installation. If the doctor is expanding the practice and you have a two user Copeland, you can put a five user 700 Series in the same location because of its size. And because it is so quiet, a location close to the operator is no longer a problem. By locating the compressor close to the point of use, the operator, you reduce the opportunity for moisture to form in the cool airlines.

One of the problems that can be encountered with any compressor system is excess moisture. This often occurs if the compressor is located too far from the operator causing moisture to form in the cool copper airlines. Excess moisture can also occur if a unit is in a hot, non-ventilated room, which causes the compressed air to be higher in temperature. A dryer system installed on the compressor will help eliminate this problem.

There are maintenance requirements that are critical to the life and proper functionality of a lubricated compressor. An automatic tank drain system provided with the 700 Series prevents moisture from collecting in the tank. This reduces bacteria growth and moisture in the

airlines. The tank drain can be adjusted by turning the thumb knob for the proper cycle for the humidity level of the area that the unit is installed.

Another feature of the 700 Series Lubricated Compressor is a regulating valve. This is important if the doctor is using air abrasion, which requires additional air pressure. This valve can be adjusted to 120 lbs. pressure, which will satisfy most air abrasion system requirements.

Lubricated compressors have been the standard in the industry for years, but with the increase in resin restorations and use of composites, oil free air is more and more critical. Mention to the doctor that the better choice compressor for this type of practice is a LubeFree Compressor. The CustomAir 800 & 900 Series LubeFree



CA-825

Compressors, like our lubricated, are 20 to 50% lighter and smaller in size than others in the industry. This is a benefit when installing in a small location. The units come standard with a pre-filter and our exclusively designed Dual Column Desiccant Drying System. This system is unique in the fact that it cleans the desiccant of moisture every two minutes to insure that clean, dry air is always being sent to the operator. Our history of required replacement of this system is a minimum of three years, which proves our LubeFree is virtually maintenance free.

The key to longevity in a Lubricated Compressor is proper maintenance, and an important reason to choose LubeFree is that they are practically maintenance free. So don't forget to let the doctor know there are choices when he needs to replace a compressor.

DentalEZ Group

DentalEZ Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

www.dentalez.com

DENTALEZ[®] TECH TIPS

Volume 2, April 2001

Preventing X-ray Drifting

The HDX Intraoral X-ray features a standard arm with a horizontal reach that will easily accommodate a two-operator swing through layout. With this much reach, and the ability of the arm to move both horizontally and vertically, the arm has the potential to drift out of position. Here are a few tips on adjusting the HDX X-ray Unit to prevent Arm Assembly and Tube Head from drifting.

Arm Assembly Drifting Horizontally:

Make sure Wall Plate Assembly is level horizontally and plumb at the initial installation of the unit. Horizontal adjustment can be made by loosening the top and bottom mounting screws of the Wall Plate Assembly and leveling the Wall Plate Assembly. If the wall that the Wall Plate Assembly is mounted on is not plumb there are two adjustment set screws on the arm pivot support that can be used to adjust the arm pivot support until it is plumb. (Refer to page 10 of HDX Intraoral X-ray Installation, Operation and Maintenance Manual, p/n 353002 or 353010.)

If the complete Arm Assembly, including horizontal arm and scissors arm section, is drifting you can adjust tension on the brakes at the top of Wall Plate Assembly and before the scissors arm section. Tension should be adjusted to allow the scissors arm to rotate before the horizontal arm by turning the hex socket head screw with a 9/64" hex wrench, clockwise to increase tension and counterclockwise to decrease tension. (Refer to page 12 of HDX Intraoral X-ray Installation, Operation and Maintenance Manual, p/n 353002 or 353010.)

Arm Assembly Drifting Vertically:

Determine if the spring tension in either or both arm sections of the scissors arm requires adjustment. Adjustment to the spring arm that is coming off the horizontal arm requires that the two covers be removed from the center pivot. Then position the arm so that the threaded rod is viewable. Using a large screw driver adjust tension by turning the rod ¼ to ½ turns at a time. Turning counterclockwise increases tension and clockwise decreases. Adjustment to the distal arm, which is the arm that Tube Head Assembly is mounted to, requires removal of distal arm cover and orient arm so threaded rod is in view. Using a large screw driver adjust tension by turning the rod ¼ to ½ turns at a time. Turning counterclockwise increases tension and clockwise decreases. Replace covers once correct tensions to the springs are achieved. (Refer to page 27 and 28 of HDX Intraoral X-ray Installation, Operation and Maintenance Manual, p/n 353002 or page 30 and 31 of HDX Intraoral X-ray Installation, Operation and Maintenance Manual, p/n 353010.)



Tube Head Drifting:

A plastic bearing in the distal arm functions as a brake for the tube head. To make adjustments, remove distal arm cover and find the set screw on top of the bearing located directly opposite the head support screw. Using a 1/16" hex wrench, turn set screw clockwise to increase brake friction. Reinstall cover onto distal arm once the correct tension is achieved. (Refer to page 12 of HDX Intraoral X-ray Installation, Operation and Maintenance Manual, p/n 353002 or 353010.)

SJ-27 - The 700 Series Compressor Lubricant

Inside a 700 Series Compressor is a piston moving inside a cylinder at 3500 rpm. In order for this piston to function without any problems it needs a lubricant. The CustomAir 700 Series lubricated Compressors require DentalEZ's SJ-27 oil as the only lubricant for the 700 series. This lubricant makes sure the compressor is in warranty compliance and will continue to function properly.



CA-711 Why SJ-27 oil? You can probably imagine what happens when 2 pieces of metal are rubbing against each other. They are generating a tremendous amount of heat. This heat needs to be released and a lubricant is also needed to make sure that the 2 pieces of metal do not melt together. When you then start to evaluate different lubricants, you realize that no two lubricants are the same. For the 700 Series Compressor to work correctly it needs a

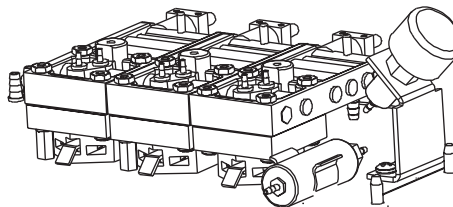
synthetic lubricant that is high temperature resistant. After many years of research it was decided to create our own oil to meet this

No two lubricants are the same.

requirement. That oil is the SJ-27. SJ-27 is unique in the way that it can withstand the extremely high temperatures generated inside the 700 Series Compressors. By using SJ-27 you can extend the life of the compressor and you do not have to worry about burning valve plates, frozen pistons or high oil-consumption. All these symptoms relate back to using the wrong oil, which is why it is extremely important that you only use SJ-27 and no other lubricants. SJ-27 can be used in other lubricated compressors with success, but NEVER use anything other lubricant with in the CustomAir 700 Series of air compressors.

Handpiece Control Block

The new improved aXcs delivery system was introduced in June of 2000. The improvements resulted in improved stability, easier installation and better aesthetics. When you combine these improvements with the simplicity and reliability of our diaphragm style pinch valve system, you have one of the best delivery systems on the market.



The principle of the pinch valve was introduced on our signature unit and remains the same today in the aXcs units; an air signal coming from the handpiece hanger is applied on the diaphragm when the handpiece is in the hanger. The diaphragm then applies pressure on the inserts that are in the housing. These inserts are pressed hard enough by the diaphragm that it "pinches" off the flow of the tubing that is running through the body of the pinch valve.

The mounting position of these "pinch valves" has changed over the years to accommodate the changing unit head styles. Today, the pinch valves are incorporated into the manifold blocks themselves. These manifold blocks separate and distribute the drive air, coolant air, and coolant water, as well as provide the user a central location to adjust the flow of the drive air, and coolant water.

These manifold blocks are made of ABS plastic. The plastic is used because it is durable, and very resistant to the many different chemicals that are introduced to it in the air and water lines. This eliminates the corrosion that is associated with a brass valve, or a nickel-plated valve.

DentalEZ is so confident in the pinch valve system that we are offering a lifetime warranty on the entire pinch valve system.

DentalEZ Group

DentalEZ Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

www.dentalez.com

DENTALEZ[®] TECH TIPS

Volume 3, July 2001

DV-112 - Extra Attention

The DV-112 Dynamic Dry Evaluation System is the newest dry vacuum in our product line. With new products come new features that enhance the performance and improve the reliability of the products, but they are not effective if they are not understood. The DV-112 has several features that are very helpful in today's market of dealing with limited office space and mobile clinics.



- **Reduced Utility Costs**
Waterless design means zero water bills and zero sewer bills. And, the DC power source consumes 80% less electricity than comparable AC motors.
- **Consistent High Vacuum Flow**
The powerful performance is not affected by the opening and closing of HVEs.
- **No Filters or Collection Traps to Clean**
The dental team can apply this time and effort to more productive activities.
- **Built-In Air-Water Separator**
No need for additional equipment to remove harmful gases.
- **Easy Installation**
The Dynamic Dry's small size and exclusive quick connect system allows for fast and less expensive installations.

- **Extended Motor Life**

On/Off switches are installed in the operatory to dramatically extend motor life.

Some of these features and characteristics require extra attention.

- The DV-112 has a gravity drain. This means that the unit has to be placed above the highest level of the drain line.
- The DV-112 requires an intake air temperature that does not exceed 80°F. This allows the motor to run cooler, and in turn, extend the life expectancy of the motor.
- The DV-112 has an exhaust that must be piped to outside the building. This is for a couple of reasons, first the air is hot, and contains contaminated air. Secondly, the DV-112 can be used with Nitrous Oxide without using an air/water separator but only if it is exhausted outside.
- For safety and to prolong motor life, the DV-112 is designed to run with an internal timer that shuts down the pump after 2 hours of continuous use. Power to the unit must be turned off to reset the internal timer.
- Use of a chair side switch or a hanger activated switch provides on-demand suction and prevents the unit from running continuously. It is not recommend that the unit be hooked up to a master panel, unless the master panel is used just to control the power to the unit.

If you understand all of the features/benefits and follow the installation/maintenance manual and schedule, the DV-112 should provide you with years of worry free service.

aXcs CMU - Purging the Water Lines

The aXcs Chair Mounted Unit (CMU) is designed to provide years of trouble-free service when installed, maintained and operated properly.

One of the standard features on the aXcs CMU is individual handpiece coolant water adjustment. Using one of the sterilizable keys provided, purging the water lines after the installation is complete and before adjusting the coolant water will provide the handpiece tubing with a continuous flow of coolant water.

The following is the proper procedure for purging the aXcs CMU:

1. At the foot control, flip the toggle valve to WET.
2. Using the coolant water adjustment tool, open all the coolant adjustments to the full, open position by rotating totally counter-clockwise.
3. While facing the delivery head, start with the handpiece tubing (without handpiece attached) on the far left, remove the tubing from the holder; then fully depress the foot control to allow water to flow into a sink or other container.
4. After 30 to 45 seconds moving from left to right add the next handpiece tubing while the first is still running, so that both tubings are flowing simultaneously and non-stop.
5. After 30 to 45 seconds add the third tubing while the first and second tubings are running, so that all three are running simultaneously and non-stop for 30 to 45 seconds.
6. After purging the water lines attach handpiece and adjust the coolant water clockwise to decrease water flow. On tubing with a slow speed handpiece, use the plastic clamp in the delivery head on the coolant water line coming out of the pinch valve (blue in color). By sliding the tubing to the narrow end of the clamp the coolant water flow will cease.

The coolant water adjustment should only be used for adjusting the flow of the coolant water and not an on/off for the water. On/off can be accomplished with the wet/dry toggle on the foot control. Using the coolant water adjustment to shut the water off will damage the manifold and could result in no control of the flow of water or no water.



CMU-A

The coolant water adjustment should only be used for adjusting the flow of the coolant water. Using the coolant water adjustment to shut the water off will damage the manifold!

DentalEZ Group

DentalEZ Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 4, October 2001

Common Replacement Parts

Since DentalEZ® has a commitment to our mission of "Continuous Improvement" we often find that the "improvement" leaves technicians with many choices to make when it comes time to order a replacement part.

This tip is going to give you some of the more frequently requested parts along with the proper part number to use when ordering parts for the E3000™, aXcs® and J-Chairs®.

E3000 Chair with chair/unit mounted touchpad, 4/5 button foot control or both.

Back Potentiometer (Spiral Bar Type)	3801-430
Back Potentiometer (Cable or Track Type)	3801-546
Touch Pad (White)	3801-644
Touch Pad (Greige)	3801-843
Foot Control (White 4 or 5 button)	3625-558
Foot Control (Greige 4 or 5 button)	3625-493
Foot Control (White 3 button)	not available
Arm Assembly (White Left Side)	3801-880
Arm Assembly (White Right Side)	3801-881
Arm Assembly (Greige Left Side)	3801-882
Arm Assembly (Greige Right Side)	3801-883

aXcs Chair with chair/unit mounted touchpad, 4/5 button foot control or both.

Back Potentiometer	3801-662
Touch Pad (White)	3801-644
Touch Pad (Greige)	3801-843
Foot Control (White 4 or 5 button)	3625-558
Foot Control (Greige 4 or 5 button)	3625-493
Arm Assembly (White Left Side)	3801-884
Arm Assembly (White Right Side)	3801-885
Arm Assembly (Greige Left Side)	3801-886
Arm Assembly (Greige Right Side)	3801-887
Brake Cover (White)	3801-908
Brake Cover (Greige)	3801-825

aXcs Chair with chair/unit mounted touchpad, foot control or both.

Back Potentiometer	3801-819
Touch Pad	3801-824
Foot Control	3625-574

J-Chair with chair/unit mounted touchpad, foot control or both.

Touch Pad	3801-759
Foot Control	3625-548

J-Chair with switches on side of back and touchpad or foot control.

Left Side Back Switches	3801-895
Right Side Back Switches	3801-894
Touch Pad	3801-759
Foot Control	3625-548

This is not a complete list of parts for the chairs, but it is intended to provide a list of commonly used parts and the proper part number.

DentaleZ Group

DentaleZ Equipment & CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentaleZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

Continuous improvement is part of our "Mission Statement" at DentaleZ Group, and the J-Chair® and aXCs® Chair's electronic control packages keep in line with this Mission.

The electronic control packages are designed to sound specific beep code signals to alert the operator or technician of certain control conditions. Understanding the beep codes enables the operator or technician to isolate the conditions and take appropriate actions.

In conjunction with the beep codes, there are LED lights on the main control

Beep Code	Condition	Action
Constant fast beep (FB)	Special installation mode (base automatically rises)	Disconnect the chair power. Move #1 DIP switch to ON. Reconnect the chair power.
Constant short beep (SB)	Base lower safety cover contacted and moved up activating switches (LS2 & LS3) Cover is jammed	Move the base up and remove obstruction under cover. Move cover around until it's free then push the cover up to make sure it's working properly.
Constant (SB)(SB)	Base upper limit switch (LS1) activated (base exceeded its upper travel limit)	Reprogram the chair's travel limits.
Constant (SB)(SB)	Back upper limit switch (LS4) activated (back exceeded its upper travel limit)	Reprogram the chair's travel limits.
Constant (SB)(SB)	Seat upper limit switch (LS5) activated (seat exceeded its upper travel limit)	Reprogram the chair's travel limits.
Constant (SB)	Seat lower limit switch (LS6) activated (seat exceeded its lower travel limit) Auxiliary limit switch (LS7) wire connectors unplugged	Reprogram the chair's travel limits. Make sure connectors are plugged in securely.
(SB)(SB)(SB) When any control button is pressed (except auxiliary light relay)	Auxiliary limit switch activated (user installed option) Handpiece safety wire connectors unplugged	Determine where the switch is installed and why it was activated. Then appropriately deactivate switch. Make sure connectors are plugged in securely.
When any control button is pressed	Handpiece safety switch activated (user-installed option)	Determine where switch is installed and why switch is activated. Then appropriately deactivate switch.
While in travel limits programming mode (DIP switch #4 is ON) and either auto 1 or 2 button is pressed)	Auto position program is not activated because one or more potentiometers are disconnected or out of range Cannot program travel limits because one or more potentiometers are disconnected or out of range	Determine which potentiometer is locking out the auto programs by checking the service LED codes or by moving each function until a constant (FB) is signaled while the function is in motion. Check the indicated potentiometer's wiring and linkage for proper function. Then check the potentiometer resistance and voltage. Determine which potentiometer is locking out the travel limits program by checking the service LED codes or by moving each function until a constant (FB) is signaled while the function is in motion. Check the indicated potentiometer's wiring and linkage for proper function. Then check the potentiometer's resistance and voltage.
Constant (FB) Only while a function is moving	The potentiometer on the activated moving function is disconnected or out of range	Verify the suspected potentiometer by checking the service LED codes. Check the potentiometer's wiring and linkage for proper function. Then check the potentiometer's resistance and voltage.

board that will also indicate certain control conditions. Understanding these LED codes will also enable the operator or technician to isolate the condition and take appropriate action.

The two tables below list the various Beep and LED codes of the J-Chair and aXCs Chair's electronic control packages.

LED Code	Condition	Action
* * *	Special installation mode	Disconnect the chair power. Move #1 DIP switch to On. Reconnect the chair power.
○ ○ *	A/D converter failure	Replace the chair main control board.
○ * ○	EEPROM failure	Replace the chair main control board.
○ * *	Handpiece safety wire connectors unplugged	Make sure connectors are plugged in securely.
○ * *	Handpiece safety switch activated (user-installed option)	Determine where the switch is installed and why it was activated. Then appropriately deactivate the switch.
● ○ ○	Base lower safety cover contacted and moved up activating switches (LS2 & LS3) Cover is jammed	Move base up and remove obstruction under the cover. Move the cover around until it's free, then push the cover up to make sure it's working properly.
● ● ○	Base upper limit switch (LS1) activated (base exceeded its upper travel limits) Back upper limit switch (LS4) activated (back exceeded its upper travel limit)	Reprogram the chair's travel limits. Reprogram the chair's travel limits.
● ○ ●	Seat upper limit switch (LS5) activated (seat exceeded its upper travel limit) Seat lower limit switch (LS6) activated (seat exceeded its lower travel limit)	Reprogram the chair's travel limits. Reprogram the chair's travel limits.
○ ● ○	Auxiliary limit switch (LS7) wire connectors unplugged	Make sure connectors are plugged in securely.
○ ○ ●	Auxiliary limit switch activated (user-installed option)	Determine where the switch is installed and why it was activated. Then appropriately deactivate the switch.
○ ○ ●	Back potentiometer (P1) is disconnected or out of range	Check the base potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
○ ● ●	Back potentiometer (P2) is disconnected or out of range	Check the back potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
● ● ●	Seat potentiometer (P3) is disconnected or out of range	Check the seat potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
○ ○ ○	Controller M (main) will not calibrate	Check wiring for breaks or loose connections. Check for stuck switches. Make sure a controller is connected to the M wiring. If only one controller is used, it should be connected to M.
* ○ ○	Controller A (auxiliary) will not calibrate	Disconnect and reconnect chair power forcing controller calibrations. Replace controller if it still will not calibrate. Check wiring for breaks or loose connections. Check for stuck switches. If a controller is not connected to A, change #2 DIP switch to OFF so it will not calibrate.
* ○ *	Base potentiometer (P1) is disconnected or out of range	Disconnect and reconnect chair power forcing controller calibrations. Replace controller if it still will not calibrate.
○ ○ ●	When chair is idle Base potentiometer (P1) is disconnected or out of range	Check the base potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
○ ● ●	When chair is idle Back potentiometer (P2) is disconnected or out of range	Check the back potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
● ● ●	When chair is idle Seat potentiometer (P3) is disconnected or out of range	Check the seat potentiometer's wiring and linkage for proper function. Then check its resistance and voltage.
○ ○ ○	Normal	

Electronic Control Packages

DENTALEZ[®] TECH TIPS

Volume 5, January 2002

CustomAir[®] Vacuums and Compressors - Keep it Cool

Air compressors and vacuums need one thing to ensure proper operation - COOL AIR. All CustomAir compressors and vacuums require cool air to be supplied to the motors for maximum operation and performance. Here are some reasons why and how cool air will benefit your CustomAir Equipment.

Dry Vacuums

CustomAir Dry Vacs are known for their compact design and clean, finished look, but these features come at a cost. Since the blower motors are using air from the intakes to produce a vacuum, cool air must be supplied to the motors or they could overheat and eventually fail.

CustomAir motors are located in the top portion of the unit housing and are designed to run up to 3500 RPM continuously. This type of high performance will create tremendous heat so proper ventilation is necessary.

If the vacuum is placed in a utility closet, tight corner, or any other area where an ambient air source is not provided, the unit will overheat. All



DV-301

CustomAir Dry Vacs require the air intake to be plumbed to an ambient air source that does not exceed 80°F. The installation hardware included with all Dry Vac units contains the necessary hoses to connect the intake to a good air source. Please see the list on other side for ambient air source ideas.



DV-112

During daily operation, the Dry Vac motors will get hotter and hotter as the day goes on. It is just as important for the hot air to be evacuated from the unit as it is for the unit to receive cool air. If the hot exhaust air is not evacuated from inside the unit and from the room where it is located, the unit will overheat and eventually fail. Proper installation includes

connecting the exhaust hose (included in the installation hardware), allowing the air to be exhausted to another area of the building. One of the most common ways to do this is with an outside air vent similar to that of a clothes dryer or above a drop ceiling.

Cool air must be supplied to the motors or they could overheat and eventually fail.

-continued on back-

CustomAir® Vacuums and Compressors - Keep it Cool (continued)

Air Compressors (Lubricated and LubeFree)

CustomAir Compressors are also known for their compact design and quiet operation. Even though the compressors are small enough and quiet enough to place out of a utility closet (under a lab table for example),



CA-711

clean, dry and cool air is very important for all CustomAir compressors. As the motor on a compressor is running, it gets hotter. This causes the air that the motor is generating to be hotter as well. All CustomAir Compressors use an exclusive fan cooled radiator to help keep the air cool before it is going to be stored in the tank. This helps keep moisture to a minimum. If the air entering the fan cooled radiator is too hot, moisture may form when it is cooled as it goes through the radiator and into the tank. To help keep the air as cool as possible, the motors must be cool.

The most important element of a compressor installation is the quality of air the motors are receiving. If the intake air is hot and humid, the motors will run much hotter which means the compressed air will be hotter.



CA-925

Continuous exposure to hot air causes poor air quality and will eventually cause overheating and product failure. LubeFree compressors use the air intake and surrounding air to stay cool. However, lubricated



CA-823D

compressors use oil as well as the air intake to keep the motors cool. When the motors get too hot, the oil breaks down to a vapor and can easily be passed out of the motors. To keep a CustomAir Compressor running properly, always have the air intakes plumbed to an ambient air source that does not exceed 80°F.

Ambient Air Source Ideas

- Hallway:** Use a vented cap to access air from a nearby climate controlled hallway.
- Drop Ceiling:** Out of the utility room through the drop ceiling to the drop ceiling of a climate controlled area.
- HVAC System:** Use the return plenum of the building HVAC system. The return plenum will have cool, dry air.

DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

www.dentalez.com

DENTALEZ® TECH TIPS

Volume 6, April 2002

Troubleshooting: M Control



The J-Chair® and the aXCs® Chair both use a very advanced electronic control board that is equipped with self diagnostic programs. These programs allow the chair to calibrate itself to the particular line voltage fluctuations, perform self-tests of controls and all potentiometers, as well as checking the

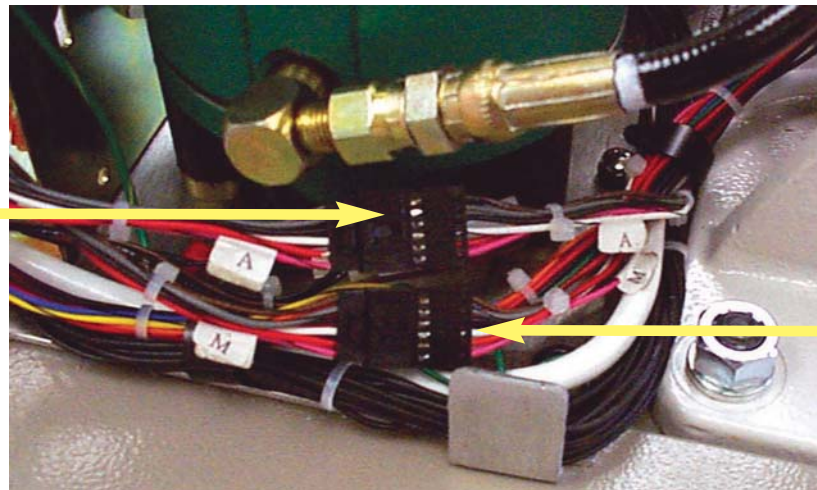
circuitry while sitting idle or while the chair is moving.

The board automatically initiates all of these tests on certain time intervals as well as every time the chair is powered up. If there is a problem found, an LED code would be displayed on the series of 3 LED's located on the PC Board. One of the harder codes to troubleshoot is the M Control not calibrated. The first LED blinking indicates this on the PC Board.

What this means is the board is not seeing the control device that is plugged into the M harness in the chair after it performed a calibration check. This problem could be as simple as a loose connection in the M harness connectors, or as complex as a faulty control device board.

The first step in troubleshooting this

Auxiliary
Wiring
Harness
Connector



Main
Wiring
Harness
Connector

code is to check all the connections in the M harness. This includes the connector directly behind the PC Board mounting plate in the base of the chair. Check directly under the seat cushion where you plug the control device harness in. In the J-Chair the M harness is the harness used for the back switches and this gives us another connection to check. You will need to check the connector on the board in the back.

If after checking all the connections and unplugging the chair and plugging it back in, you still have the LED indicator blinking on the PC Board you can check voltage through the harness at the connector in the back or under the seat cushion. You are looking for 12 VDC between the Green wire and the Black wire in the M harness. If you do not have voltage here, then you need to look for a break in the wire harness. If no breaks are found then replace the Main PC Board. If voltage is present, then you can check the switches by unplugging one side, repowering the chair and checking the LED. If the LED is still blinking then plug the switches back in, and unplug the other set of switches and repeat the process.



Electronic Control Board

If you are working on an aXcs Chair then you will not have back switches. You will be able to disconnect the touchpad membrane pad from the touchpad board, but keep the touchpad board connected. If the LED is still blinking after you repower the chair, you have determined the touchpad board is bad. If the LED stopped blinking then you have found a faulty set of switch banks or a faulty touchpad membrane depending on the chair that you are working on.



Visit www.dentalez.com to obtain earlier Tech Tips. Volumes 1-5 of the quarterly newsletters are available for download. Also available are Technical Manuals for the StarDental, Dentalez Equipment and CustomAir brands of the Dentalez Group.

Dentalez Group

Dentalez® Equipment & CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

Dentalez Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 7, July 2002

StarDental® Titan® E-lectric Handpiece System- Service Friendly

Electric powered handpieces have been used throughout Europe for some time. Recently we have started to see an increase in the use of electric powered handpieces in the U.S. One of the reasons for the increase is that the electric handpiece has a high torque which results in the ability of the handpiece to maintain constant power, even when cutting through a tooth. The new Titan® E-lectric handpiece, with its attachments, provides cutting speeds that cover both air driven low speed and high speed ranges. And the good news is that the system can be hooked up to run on any existing air driven unit.

Electric motor systems easily connect to the delivery system's high-speed tubing and enable precise speed control by setting the control unit or using the existing foot control. The incoming air pressure should be set with a simulator gauge inserted between the control unit and motor tubing to assure maximum performance. The considerably lower pressure requirement of the Titan E-lectric system will help extend the life of the air compressor.

When attaching the handpiece to the motor, it is necessary to twist the handpiece until you hear a click to assure fiber optic light transmission. The 3.3 v.d.c. lamp is easily replaced by unscrewing the tubing from the motor and sliding the motor sheath away from the motor assembly. Push the old lamp out of the top of the motor assembly and replace with the new lamp. (see Figure 1) If there is still no light, confirm 3.3 v.d.c. to the motor by measuring from the 2 brass posts at the motor end of the tubing. If no reading,

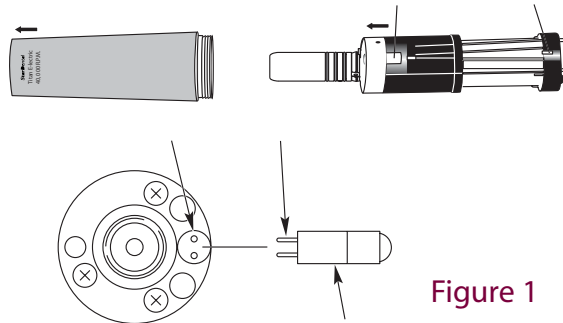


Figure 1

disconnect motor tubing from control and measure v.d.c from 2 brass posts on the out tubing connection on the back of the control.

The Titan E-lectric anti-twist tubing is the lightest and most flexible tubing

available today and unlike some other models is not permanently attached to the control unit, allowing for easy replacement if necessary. The Titan E-lectric control unit is backed by the longest warranty in the industry, 3 years.

All fiber optic stand-alone units for clinical use have a DC powered motor with carbon brushes. Motor performance becomes inconsistent and sluggish after approximately 500 hours of use. The inexpensive brushes can easily be replaced by disconnecting the motor from the motor cord, removing the two screws holding the brushes and replacing with new. (see Figure 2)

Not only are electric motors LubeFree, they may cease to function when overexposed to lubricant. Standing attachments upright on a paper towel after lubricating will greatly reduce the amount of lubricant that can drain into the motor. Following these simple steps will give your doctor a well running handpiece for years to come.

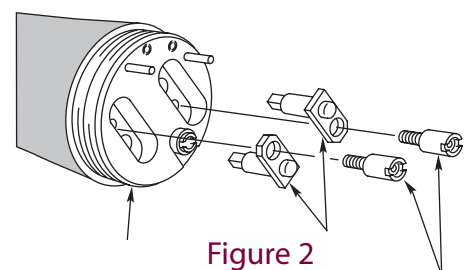


Figure 2

Understanding the Chair Control Device

As a technician you are faced with troubleshooting several different problems over a wide variety of manufacturers, on a wider variety of equipment. With DentalEZ® chairs, LEDs can assist in diagnosing the problem. The following information is designed to help you interpret the the control device on DentalEZ chairs.

When a control device button on a chair is pushed it sends a voltage down to the board. The board then interprets and reacts to the voltage. So, you can say that every function has a voltage, including when the chair is idle. Along with these voltages, there is an acceptable tolerance, which is +/- .150 VDC.

The first step in troubleshooting would be to find the wire harness for the control device with which you are having difficulty. Then find the connector that connects this device to the main chair harness. This is going to be the test point for the voltage. If you are working on a J-Chair®, V-Chair™, or aXcs® Chair then the first check is going to be between the Black and Red wires on the chair harness side of the connector with the control device plugged in. You are looking to get 12VDC +/- .150, with your black lead on black, which is ground, and your red lead on red. This is confirming that the board is sending a working voltage out to the control device. If you do not have this voltage reading, then you need to check the wire connections down around the pump area of the chair, and also the wires to insure that none of them are broken or damaged. If you do have voltage then we know that the board is sending out the proper voltage. Chart 1 shows the functions for the J-Chair, V-Chair, and aXcs Chair with the corresponding voltages.

Function	Control Signal VDC
ANY TWO	4.688 +/- .150
OPERATOR A/B	4.375 +/- .150
AUTO #1	4.063 +/- .150
AUTO #2	3.750 +/- .150
AUTO #3	3.438 +/- .150
AUTO #4	3.125 +/- .150
SEAT DOWN	2.813 +/- .150
SEAT UP	2.500 +/- .150
BASE DOWN	2.188 +/- .150
BASE UP	1.875 +/- .150
BACK DOWN	1.563 +/- .150
BACK UP	1.250 +/- .150
RELAY	0.938 +/- .150
IDLE	0.000 +/- .150

Chart 1

These voltages are to be measured between Black (ground) and the white (signal) wires when you are pushing a function button. (Note that if you are working on the controller that is plugged into the "A" harness then the wire colors will be Black and White with a Black Trace.) If you have these voltages and you are still having problems with the chair, then you must check the connector in the pump area and check for broken or damaged wires and connectors.

If you are working on an E3000 chair or the early aXcs Chair then the voltage being sent to the control device is 5 +/- .150 VDC. It should be measured between Green (ground) and Black. The signal voltages, which will be measured between Green (ground) and Red when a function button is pushed are shown in Chart 2.

These are the signal voltages for the E3000 chair and the early aXcs Chairs. If you have any doubt as to which model aXcs Chair you are working on, look at the PC Board in the base of the chair. If the board has an interface board on it, and does NOT have LED's or dipswitches, then it is the earlier aXcs model chair.

Also keep in mind that if you are working on an older touchpad and any of the buttons are cracked on the overlay, then the overlay needs to be replaced. It is possible for a cracked overlay to hold down an actuator, but not completely and send a partial voltage which is then added to the function that is pushed. If this happens then the chair will do something totally different from the function you chosen.

If you require further assistance contact Technical Support is at 1-866-DTE-INFO.

Function	Control Signal VDC
AUTO #3	3.200 +/- .150
AUTO #2	2.900 +/- .150
AUTO #1	2.600 +/- .150
BASE DOWN	2.300 +/- .150
BASE UP	2.000 +/- .150
BACK DOWN	1.700 +/- .150
BACK UP	1.400 +/- .150
ANY TWO	1.100 +/- .150
IDLE	0.800 +/- .150

Chart 2

DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 8, October 2002



700 Plus Series Compressors

Similar to improvements made from model year to model year with automobiles, the 700 Series Compressors have undergone some changes as well. The culmination of these changes is the 700 Series "Plus" models. These modifications

were made to improve the product and the quality of air that is being delivered to the operatories.

Cooling Fans and Addition of Dryer Membrane

The 700 series compressors, prior to the fans being installed, were capable of a 50% maximum duty cycle. When properly sized, the units actually ran at a 38% duty. Giving us a 12% buffer.

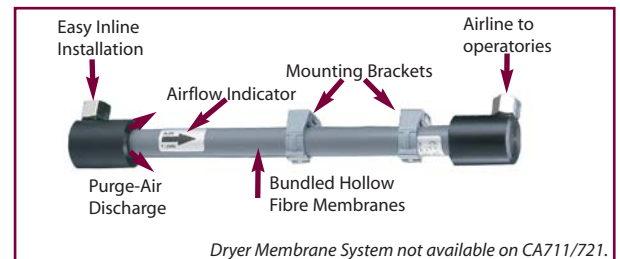
The membrane dryer consumes 10-12% capacity because of the constant air purge (See next feature). We have now used up our 12% buffer and the units will be stressed.

The addition of the cooling fans below the heads adds 30% to the capable duty cycle of the compressors by maintaining a cooler motor and motor oil temperature. We are now at an 80% capable duty cycle for the motors. Our demand is calling for 50% (original 38% + 12% for the dryer) maximum duty cycle. This gives us a 30% buffer.

Dryer Membrane Operation

The Dryer Membrane is a "bundle" of hollow membrane tubes. The compressed air enters the dryer membrane and runs through the membrane tubes. As it is going through the membranes, the temperature of the air is suppressed by 30°. It is very important that the dryer is mounted in a cool, dry, area away from direct heat. If the dryer membrane is in an excessively hot environment, the temperature of the air will not be sufficiently reduced and

moisture will not be purged out of the dryer. As the temperature is being suppressed, moisture is allowed to permeate out of the "bundle" of hollow membranes and is released to the inside of the long grey tube (See illustration). The moisture is then purged through the orifice at the end caps. *This purge is normal and necessary to discharge the moisture from the air. Do not attempt to stop leak by removing and/or tightening end caps. They are pre-set at the factory and tampering of the device will ruin the seals. Removal of end caps also voids dryer membrane warranty.*



Larger Diameter Autodrain Hose/Relocation of the Pressure Regulator

The diameter of the drainage hose at the bottom of the coalescing filter has been enlarged. This allows more air to pass through when the float is open. This is more effective at draining the bottom of the bowl and ensures that the float will "close" correctly when the bowl is completely drained. The pressure regulator has also been moved to the "right" side of the combination filter, allowing a constant 90-120psi through the combination filter. This also is more effective at evacuating the bowl and resetting the float assembly. These changes were implemented to reduce sticking autodrain floats. Part number JA4087600 can be ordered for in warranty units for upgrading (at no charge after old unit is returned).

CFM Rating

CustomAir compressors are very different from any other dental compressor in that the operating pressure range is from 90psi to 120psi. The higher operating pressure of 90-120 maintains a higher pressure of air at the junction box for the

-continued on back-

700 Plus Series Compressors continued

delivery units. This eliminates "power drop" in the handpieces due to low pressure from the junction box to the handpiece.

You may have had some discussion concerning the Cubic Feet Per Minute (CFM) ratings of compressors or use CFM rating as the *only* factor in determining the proper compressor for an office. Factors that effect the proper sizing of a compressor include the motor size and ratings (horsepower and CFM), capable duty cycle of the motors, operating pressure range, and tank size. Taking all factors into consideration, testing shows that if sized correctly, the CustomAir units are more than capable of handling the air demand as dictated by the number of users. Oversizing a compressor will alleviate this stress and give the office the opportunity to expand.

**CFM rating is not the final
determining factor in
evaluating the capabilities of a
compressor**

Things are not always what they appear which is why CFM rating is not the final determining factor in evaluating the capabilities of a compressor. Please see the following technical specifications for two sports cars.

	<u>2001 Chevrolet Corvette</u>	<u>2002 Acura NSX</u>
Engine	5.7 liter OHV V-8	3.2 liter dohc 24V V-6
Horsepower	350 bhp @ 5600 rpm	290 bhp @ 7100 rpm
Torque	375 lb-ft @ 4400 rpm	224 lb-ft @ 5500 rpm

Don't be misled by the numbers. The Corvette has 2 more cylinders, 60 more horsepower, and an unbelievable 151 more pounds of torque. Both cars have a 6 speed manual transmission. You would think that the Corvette with its big V-8 brute power would be quicker; by a lot. Surprise!!! In 0-60 testing, as published in Road & Track Magazine, the Acura was quicker in 0-60 mph by .3 sec, scoring a 4.9 seconds compared to the Corvette's 5.2 seconds. Like the horsepower rating on the sports cars, don't get consumed by the CFM rating. There are other factors that determine the performance and capabilities of a compressor.

Old to New: aXcs® CMU Unit Covers

When DentalEZ® switched from the AS3000 to the aXcs style delivery units, we were living up to our motto of *Efficiency in Dentistry*®. The new look aXcs unit added many benefits that included a design that allowed the user to change the handpiece pressure without having to lift the delivery head cover. The design moved the handpiece blocks in the head and changed the location of the pressure gauge. The pressure gauge was altered from the small rectangular style mounted in the back of the head out of plain sight. It is now a small round gauge that is mounted in the front face of the unit in plain sight.

In making this improvement, it was necessary to mount the gauge on an angle in the right front of the unit. When the cover was closed it would on occasion hit the gauge. This was not a problem when the unit was new because the plastic cover was still "flexible." But as the unit got a little older and the plastic aged and broke down due to cleaning chemicals, it became brittle and started cracking and fracturing.

cover, but to the handpiece block and water flow control valves as well. The change to the cover moved the gauge from being mounted to the chassis of the unit, to now being mounted on the cover itself. So now, if the cover is lifted, the gauge will now tilt with the cover. The changes to the handpiece block included removing the flow control valve from the block and adding a separate independent flow valve and also add a backing plate that would remove any deflection or flex in the block.

If you have customers who are experiencing problems with the covers cracking, DentalEZ does have a Cover retrofit kit available. The part number for this kit is 3658-380.

The replacement of these covers under warranty is being handled on a case by case basis. If you have questions about warranty, contact your DentalEZ Territory Manager, or DentalEZ Customer Service toll free at 1-866-DTE-INFO.

On November 1, 2001, DentalEZ started shipping aXcs units that had improvements not just to the

DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

www.dentalez.com

DENTALEZ[®] TECH TIPS

Volume 9, January 2003

This tech tip is going to touch on a not-so-common question, but a very important one, to some. Some doctors are very particular about the office and their equipment, while others are not so meticulous. For those who are, they strive to keep everything just so, including the chair upholstery.

I am sure you have been asked, "How do I clean the upholstery?" by some member of the office staff. One thing is for sure, the patient takes notice of the condition. Do they leave because a chair is stained? Generally not. But, does it leave a lasting negative impression? Absolutely.

So, here is how to clean our chair upholstery:

Because any cleaning product may be harmful or irritating:

- Use protective gloves and eye protection in a well-ventilated area.
- Do not inhale or swallow any cleaning product.
- Protect surrounding surfaces and clothing from exposure.

When using strong cleaning agents, such as bleach or alcohol, it is advisable to first test them in an inconspicuous area to be certain they will not damage the upholstery, plastic or metal surfaces of the chair. *(Results may vary under actual conditions.)*

Chair Upholstery

1. To remove light soil:

- a. Prepare a solution comprised of one part household dishwashing liquid and nine parts warm water.

Cleaning Upholstery



- b. Apply the dishwashing liquid solution to the upholstery using a sponge or soft, damp cloth. *If necessary, a soft bristle brush may be used.*

- c. Using a soft cloth dampened in clean water, wipe away any residue and dry.

2. To remove heavy soil:

- a. Dampen a soft, white cloth with lighter fluid (naphtha) and rub the area gently.
- b. Using a soft cloth rinse thoroughly with clean water and pat surface dry.

3. To remove stains using

bleach:

- a. Prepare a solution comprised of one part household bleach (sodium hypochlorite) and nine parts water.
- b. Apply the bleach solution to the stain using a dampened, soft, white cloth.
- c. Allow the bleach solution to puddle on the affected area, or apply a bleach solution-soaked cloth to the area for approximately 30 minutes.
- d. Using a soft cloth dampened in plain water, rinse the treated area thoroughly to remove any bleach residue.

4. To remove stains using alcohol:

- a. Dampen a soft, white cloth with rubbing alcohol and rub the stain gently.
- b. Using a soft cloth dampened in clean water, rinse the treated area thoroughly to remove any alcohol residue and pat dry.

5. To restore luster:

- a. Apply a light coat of spray furniture wax containing lemon.
- b. Wait 30 seconds and lightly buff the surface using a clean, white cloth.

Now that you are armed with this information, you have the answer if the office staff should ask.

Vacuum Cleaning



Let's take a walk back in time for a minute. "Do you remember when your next call was at Dr. Jone's office and it was for that nasty

vacuum pump in the crawl space under the building that no one has ever cleaned?" As you were under there with the spiders, snakes, critters and cobwebs do you remember thinking, "I wish these people would either learn to clean this thing or get another tech to come clean it." I do, and that is why this tech tip is coming out.

It wasn't that long ago when we didn't worry about what cleaner we used in the vacuum lines, if we used any at all. I can remember when I got started in the industry, we advised the staff to use a bleach and water mix to clean the lines. Boy, how that has changed! In today's world of chemical advancement and technology we have cleaners for this portion of the vacuum line and cleaners for that portion of the vacuum line.

If I had a dollar for every time I have heard "**What cleaner do I need?**" And "**How often do I need to use the cleaner?**" I would not be writing this article, I would be out bass fishing enjoying retirement. But I didn't get those dollars and you are reading the article so let's look at this and answer the questions once and for all.

First, **CustomAir sells VAC-U-EZ, this is a non-foaming, enzymatic cleaner that is recommended for our vacuum systems.** "Does this mean that this is the only cleaner you can use?" No, but **we do recommend that any cleaner used with our systems be a non-foaming cleaner.** This is especially critical in the Dry Vac systems. This is because the floats in the tank that

protect the motors will not be activated by the foam, thus allowing the foam to get to the motors. This will cause rust and eventually cause terminal failure.

I can tell you which cleaner we don't recommend, bleach. Bleach is no longer the preferred cleaner of the vacuum pumps. It is cheaper and easier to obtain, but it is found to damage the pumps. If the bleach was used straight or in a high content mixture it is capable of breaking down the screens and brass components in the wet pumps. It doesn't happen overnight, but it has happened in as little as 3 weeks.

The second question is not as difficult to answer as the first. You should clean your lines everyday. This is a very good habit to get into, but more often it is not the case. There are several excuses that are handed out as to why they don't, but there is only one argument for doing it, the life of the pump and the efficiency of the vacuum. Not only does using the cleaner keep debris from building and growing in the pumps and tanks, but it also helps keep the lines clear of debris. It cuts down on the growth of bacteria in the lines, which in turn allows debris to move easier, cutting down the possibility of restriction.



So, you have cleaned the trap on the vacuum pump and you go upstairs to talk to the staff about the proper maintenance and maintenance intervals. **Don't forget to mention to use a non-foaming vacuum cleaner and to stop using bleach.** And of course remind them to **check the traps weekly** on the pump. But knowing that the pump is in the crawl space, they won't, so it is even more important that they use a non-foaming cleaner such as VAC-U-EZ.



DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

www.dentalez.com

DENTALEZ® TECH TIPS

Volume 10, April 2003

Exhaust Requirements

RAMVAC® builds a full spectrum of 100% water-free dental vacuum equipment designed for decades of maximum reliability.

RAMVAC's power comes from its lubricated, rotary vane, positive displacement pump which has proven itself as a powerful and reliable source of vacuum.

On the other hand, this positive displacement pump comes with the kind of pulsating exhaust you get from the positive displacement engine in your car or truck. So we need to treat this pulsating exhaust pipe similarly to the way we would treat the installation of an exhaust pipe on your vehicle.

Just imagine what would happen to your car if you were to weld the exhaust pipe to the frame, or tie it tightly to the undercarriage with a piece of wire. The vibration would be incredible! That's exactly what happens if we tie the exhaust pipe from a RAMVAC tightly to any solid part of the building.

We must support the exhaust pipe loosely in

order that we not transfer its vibration. We must also terminate this exhaust pipe outside the building, as all dental vacuum systems are biohazards.

We must make certain that neither rain nor varmints can get into the exhaust by using one of the methods found on the RAMVAC Pre-Installation Guide.

Following the above procedures will help you avoid the #1 problem in RAMVAC installations.



BIOHAZARD

Breathing the exhaust from any dental vacuum system may be harmful. Exhaust to outside of building. Follow NFPA 99c & RAMVAC instructions.

Outside End

Shroud and screen outside end to prevent entry of water, debris, and small animals. Locate inconspicuously - sound and sight. Locate to prevent exhaust from entering building.

Exhaust Piping:

Bison

Size: 2" (50 mm)

Type: CPVC Sch 80 or metal (NOT tar coated)
(optional: use PVC Sch 40 after first 10 feet of run)

Bulldog

Type: for Vacuum 9" Hg. Or Weaker: Use 2" (50 mm) PVC Sch 40

Type: for Vacuum Stronger than 9" Hg.: Use 2" (50 mm) CPVC Sch 80 or metal (NOT tar coated)
(optional: use PVC Sch 40 after first 10 feet of run)

Bulldog & Bison

Run Dedicated Exhaust Line:

DO NOT connect to plumbing vents.

Support Loosely:

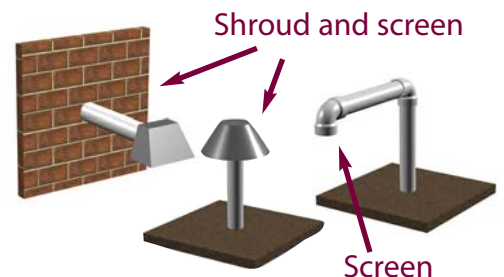
DO NOT allow piping to touch ductwork.
DO NOT make solid attachment to building structure.

Seal: All joints must be oil-tight.

Slope: All horizontal lines toward Bison/Bulldog.

Rubber Roofs:

Contact RAMVAC at 1-800-5-RAMVAC



Exhaust line minimum 15 feet long or Exhaust Conditioner required.



Master Control Panels and RAMVAC S1 Electrols

DentalEZ® has for years offered Master Control Panels to remotely switch equipment such as the Vacuum Pumps, and Air Compressors. We have a Master Control Panel for just about every situation you can suggest, and if we don't, we can couple them together to achieve the required goal.

Recently a new situation has arisen that you should be aware of. Since DentalEZ acquired RAMVAC in July 2002, and the DentalEZ Territory Representatives started handling the line on Jan. 1, 2003, we are seeing utility room packages being sold with the Bulldog or Bison pumps. The Bulldog and Bison pumps come standard with their own S1 Electrol to control them. This S1 Electrol has several important functions from acting as the low voltage relay, to serving as the processor that displays the alarm or warning signals.

The DentalEZ low voltage control for the Master Control Panel uses 24VAC (Volts AC). This 24VAC is produced by the transformer in the control box. One leg of the 24VAC is then carried to the switch on the black wire. When the switch is closed, it returns to the relay coil on the yellow wire. The other leg of the 24VAC is split in

the box with one branch going to the relay coil and the other branch being carried to the switch on the brown wire, which is for the light only.

The S1 Electrols on the RAMVAC pumps use 12V for internal switching and control. But as stated earlier, there is more to the S1 Electrol than just acting as a low voltage relay. It also makes the light on the master panel blink when there is a fault detected.

Note: Some people might notice that when connecting a RAMVAC vacuum to the Master Control Panel the switch for the S1 Electrols is not quite as bright as the other switches. If this is a concern you can replace the switch with the 12V switch supplied with Master Control Panel.



This switch is the identical twin to the current switch, but in the 12V version. You would wire it up the same way you would if you were using the 24VAC switch. The table below shows you how.

If you have any questions concerning this procedure call RAMVAC Technical Service at 1-800-5RAMVAC (1-800-572-6822) or 1-866-DTE-INFO (1-383-4636).

Switch Terminal Number	Location	Connects	S1 Electrols Terminal
#4	Left - Bottom	↔	G
#3	Right - Top	↔	H
#2	Right - Middle	↔	F

DentalEZ Group

DentalEZ® Equipment & CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

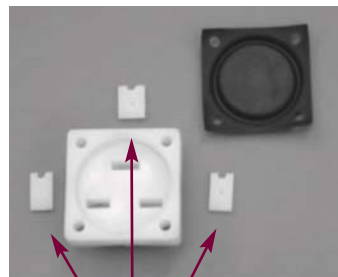
DENTALEZ[®] TECH TIPS

Volume 11, July 2003

The NEW Galaxy[™] Unit is Bringing out the Best!

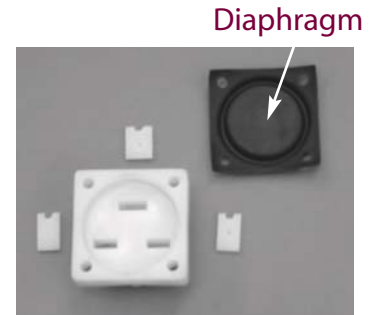
Well here we are again. Time for the tech tip of the quarter. This issue is going to be a little different from the rest. Instead of providing you information on repairs or troubleshooting, this issue will present you with information to better understand the evolution of our Delivery System Pinch Valve.

Since the 1980's, when the Signature unit was introduced, we have used a true pinch valve (not to be confused with a kink valve). The pinch valve takes air pressure that comes through the handpiece hanger valve and applies that air pressure to a diaphragm in the control block. This diaphragm in turn pushes down on 3 little pinch valve pins.



Pins

These pins then push down on the tubing, pinching it off. When the handpiece is taken out of the hanger, air pressure is released off of the diaphragm; which in turn releases the pinch valve pins. The tubing corresponding to that handpiece hanger opens allowing air and water to flow through the tubing. The system used by DentalEZ does not require plungers, stems, or o-rings to make it work for either the air or water. And because there are no metal parts corrosion is never an issue.



Diaphragm

While the pinch valve system is simple and reliable, the physical makeup of the plastic block could lead to cracks developing over time. In addition, the control block bars were placed in the block using epoxy and could sometimes come loose, creating air leaks. Finally, the water spray adjustment valve was often used in the field as a water shut off, causing the needle valve to break.

Area of potential crack

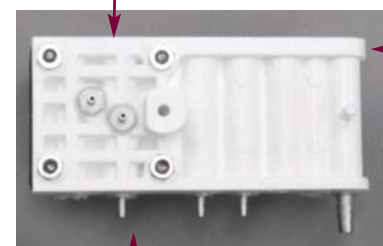


Water spray adjustment needle valve

Epoxy bars

This situation led us to redesign the block, keeping the unique features of the pinch valve while changing the physical makeup of the block.

Reinforced block

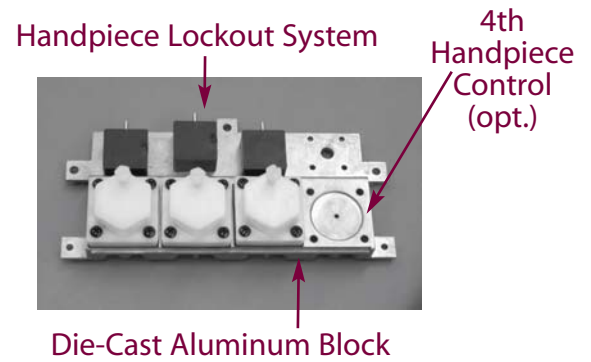


Removed water spray adjustment

Threaded bars

In November of 2001, these issues were corrected by adding reinforcement to the blocks, changing the control bars to a threaded type and eliminating the H₂O spray valve, and adding a true water shut-off knob.

In February of 2003 we introduced the new Galaxy™ Unit. The new unit features a die-cast aluminum block. This block will continue to use the pinch valve type system that has worked for many years, but it will include the following changes: The block will be a standard mold that is capable of a 4th handpiece control, (though 3 will be standard), the fittings will be the standard 10-32 threaded fittings. In addition the water valve will remain outside of the block, so that water will NOT travel through the block, eliminating the possibility of corrosion. The new Galaxy unit also features a handpiece lockout system. This eliminates the possibility of activating a second handpiece when one handpiece is already out of the hanger.



Through years of success and experience, DentalEZ still believes in the pinch valve system. This evolution of the physical make up of the block will lead to years of reliable performance.

Should you have any questions about what has been mentioned here please contact Technical Service or your local DentalEZ Representative.

Call 866-DTE-INFO for more information about the DentalEZ pinch valve or the new Galaxy Unit.



DentalEZ Group

DentalEZ® Equipment & CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ[®] TECH TIPS

Volume 12, October 2003

The Galaxy[™] Unit

As you are all aware by now, the Galaxy Unit and the Lumina Light were introduced and shipping of the product has begun. This tech tip will point out some things that might be confusing since the product is brand new, and provide you with some important facts to remember.

Let us start with the Lumina Light. The Lumina Light comes standard with a motion sensor that is built in the head. The sensor is set between 2"-6" from the factory. We have taken calls that the light would turn on and off as you moved the light. After trouble shooting the problem it was found that the adjustment was out a little and the sensor was picking up the chair or some other item outside of the 2"-6" range. This is very easily determined by looking at the underside, right beside the sensor. There are 2 LEDs. One is green and one is orange. If the sensor is getting power the green LED will be lit. This should be on anytime the light has power. The orange LED is lit when the sensor is sensing something. Meaning that if you were to stick your hand up to the light, and not move it away the orange LED would be lit, but as soon as you move your hand the light will switch it's present condition (ON/OFF). If you experience this out-of-range problem, simply find the hole in the front of the light. (At the bottom). Inside that hole is a potentiometer. Turn the potentiometer with a small common screwdriver counter-clockwise to shorten the distance from the sensor to where it senses an object.

Now, moving on to the Galaxy Unit. The built in Titan E-lectric handpiece is similar to that of any Fiber Optic system that is installed; it requires a 24VAC transformer. If the Galaxy unit that you are installing has a built-in Titan E-lectric handpiece then it will be necessary to have either a transformer P/N 3625-640 or a Power Module P/N 3625-570. The Power Module is a big multi-tab transformer that is contained in a box in the USC. Use it if you are installing several items that require a transformer such as FO, a light, a scaler, or anything like that. If the unit only has the built in Titan E-lectric, it is more practical to just order the transformer.

Continuing on with the electric handpiece, we now have a great solution to offer the doctor who has a unit other than a DentalEZ Galaxy and wants to have an electric handpiece. You can easily install our StarDental Titan E-lectric Integrated System. It is not big and bulky and doesn't have all those extra tubings running all over the place. We provide the controller, which is comprised of membrane controls and an LED information display, the board that mounts in the delivery head and uses the drive air for the regular handpiece that was removed for the electric handpiece, and the transformer which provides the power. Most unit manufacturers provide you extra wires in the unit already so it will be easy to use those wires to run your 24VAC up to the board in the head. This system comes with the hardware to mount the control and board, making this an easy alternative to such a tough demand.

A Galaxy Magellan CMU with a bottled water system option requires you to install the water bottle system. The proper way to hook it up is to connect the top line of the bottle system to the line that runs to the USC, and connect the bottom line of the bottled system to the line from the delivery head side. We use metal-threaded unions, so now we cut the 1/4" green line and put the union in there. This does 2 things. First, it keeps the water line intact for those who don't order the bottled water system. Secondly it puts the proper ends on the lines to hook up to the bottled water system. So now when you go to install the bottled water system on your unit, you will open the access cover, reach in and unscrew the union. Then screw the appropriate union mate that is already installed on the bottled water manifold and valve. You will still have to connect the yellow 1/8" tubing to the bottled water system, but now we provide a metal union that will connect to the other union half that is already in place on the bottled water system.

We hope that you find these few pieces of information helpful in your continued support of DentalEZ.

Wet Vacuum Pumps

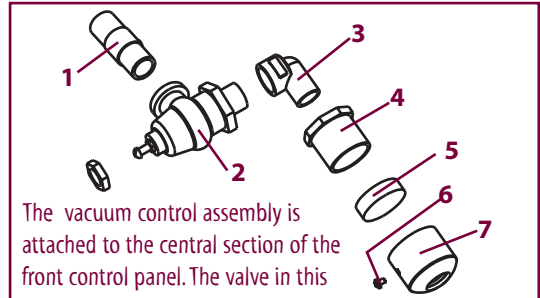
Ever wonder how important water is to a "Wet Vacuum" pump?

Water creates a seal around the pump, lubricates the pump and creates the vacuum required for a dental office to operate. Without clean water in the required quantities, a "wet vacuum" pump is a non-functional vacuum pump. Operation of any "wet vacuum" should be a simple matter, however, like most equipment, they do require some maintenance. Usually this equipment is jammed underneath a sink or thrown in a closet somewhere. Out of sight and out of mind...truly unappreciated and shown no affection until.....Bam! No vacuum!

If it sounds like I've been there, I have. And with very little effort, most problems associated with "wet vacuum" systems can be eliminated.

Every "wet pump" we offer comes with a water and vacuum control system. Every one of these control systems have items that need to be maintained. Flow control valves and filters need to be replaced. Check valves need to be cleaned and/or replaced. Any of these items that do not function properly can cause pump failure.

Routine cleaning and maintenance procedures will enable our customers to function at maximum profitability while minimizing downtime and frustration levels. An ounce of prevention is worth a pound of cure!

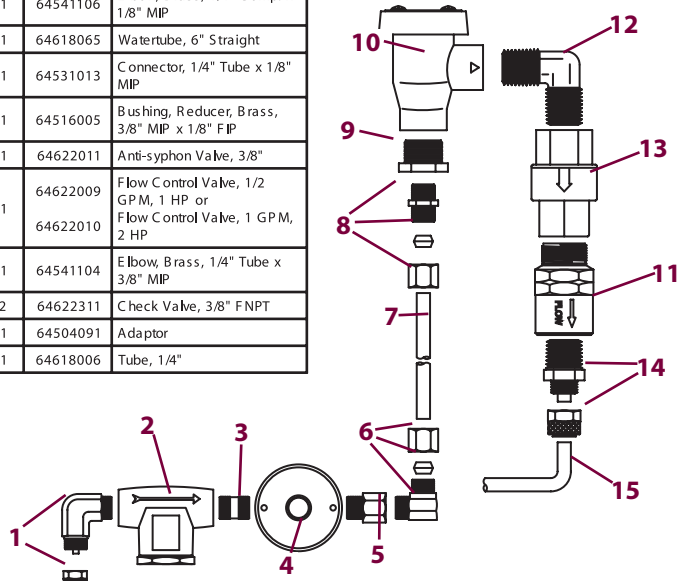


The vacuum control assembly is attached to the central section of the front control panel. The valve in this assembly provides automatic regulation of the vacuum flow in the system. The vacuum level can be adjusted for different system requirements. The vacuum gauge is connected to a fitting on this assembly.

No.	Qty.	Part No.	Description
	1	64501170	Vacuum Control Assembly
1	1	64504104	Adapter, PVC 3/4" MIP x 1" Shank
2	1	64622001	Vacuum Relief Valve
3	1	64541016	Elbow, Brass, Street 3/4"
4	1	64516008	Bushing, PVC, 1-1/4" Slip x 3/4" FIP
5	1	64545043	Filter Element, Vacuum Relief Valve
6	1	64611085	Screw, 8 x 1/4" Phillips
7	1	64521009	Cap, PVC, 1-1/4"

No.	Qty.	Part No.	Description
	1	64572023	Water Control Assy, 1 HP
	1	64572024	Water Control Assy, 2 HP
1	1	64541004	Elbow, Brass, 1/4" Tube x 1/8" MIP
2	1	64545002	Water Filter, 1/8"
3	1	64578002	Nipple, Brass, 1/8" MIP
4	1	64568156	Solenoid Valve
5	1	64504072	Adapter, Brass, 1/8" MIP x 1/8" FIP
6	1	64541106	Elbow, Brass, 1/4" Comp. x 1/8" MIP
7	1	64618065	Watertube, 6" Straight
8	1	64531013	Connector, 1/4" Tube x 1/8" MIP
9	1	64516005	Bushing, Reducer, Brass, 3/8" MIP x 1/8" FIP
10	1	64622011	Anti-syphon Valve, 3/8"
11	1	64622009	Flow Control Valve, 1/2 GPM, 1 HP or
		64622010	Flow Control Valve, 1 GPM, 2 HP
12	1	64541104	Elbow, Brass, 1/4" Tube x 3/8" MIP
13	2	64622311	Check Valve, 3/8" FNPT
14	1	64504091	Adaptor
15	1	64618006	Tube, 1/4"

The water control system of the Dual Wet Vacuum System provides the pumps with the water flow required for proper suction and cooling. Automatic and independent water control is provided for each pump. Filters protect the system from damage due to solid materials in the water supply. Flow valves control the amount of water supplied to each pump.



DentalEZ Group

DentalEZ® Equipment & CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 13, January 2004

Top Ten Tech Tips of 2003

We have had an abundance of informative Tech Tips published and we hope that you are taking advantage of this information to educate yourselves and our customers. We also know that repetition is vital when learning is involved. Review these Tech Tips carefully and then...teach! An informed customer will become a loyal and satisfied customer.

There are many topics we can review, but these, provided in no particular order, are the ones we felt were most important:

1. Installation of compressors:

There are space limitations, sound issues, power availability and air intake problems. The physical space that any compressor is installed in is critical. The perfect place would be air conditioned with lots of airflow. Temperature would never exceed 80 degrees, there would never be a hot water heater or a vacuum system in the same location. Does this actually happen? Nope, but it's a matter of choice. Let's see what the "right way" and the "wrong way" do for our customers.

Right Way:

- Much longer compressor life.
- Lower required maintenance costs.
- High quality air.
- Much higher quality bonding and sealing procedures.
- Reduced "downtime".
- Increased profitability.

Wrong Way:

- Decreased compressor life.
- Increased maintenance costs.
- Air quality issues.
- Increases bonding/sealing failure margin.
- Increased "downtime".
- Decreases profitability.

In life there are usually many ways to do

things the "right way"...not so when dealing with compressors.

2. Vacuum line cleaning:

Vacuum lines should be cleaned EVERY DAY! You can use VAC-U-EZ sold by CustomAir® for both waterless vacuum systems and our "wet ring pumps". RAMVAC® requires the use of RAMCLEAN® vacuum cleaner.

These cleaners sanitize and deodorize piping, hoses, collection tanks and separators. They also dissolve organic material that can create blockages in the lines. Cleaning compounds are required to be NON-FOAMING. By the way, BLEACH IS NOT A VACUUM CLEANER! If you use bleach, you will damage the vacuum pumps, piping and collection tanks.

3. Compressor maintenance:

Every compressor sold requires maintenance of some sort. While we do offer LubeFree compressors that are low maintenance, that does not mean "maintenance free". Each compressor has intake filters, dust and coalescing filters that need to be replaced at least annually. Lubricated 700 Series compressors require the use of SJ-27 Oil, which must be changed at least annually. Using any other type of oil will result in compressor failure!

4. RAMVAC Exhaust Requirements:

Run a dedicated exhaust line. DO NOT connect this exhaust line to any plumbing vents. Never allow this exhaust line to contact other ductwork. DO NOT make solid attachment to building structure. This exhaust line will vibrate and any attaching hardware needs to be able to "give". All fittings must be oil tight and exhaust lines need to slope towards the RAMVAC power unit.

5. StarDental® Fiber Optic Handpieces:

Sterilization can take a toll on the fiber optic bundles within your handpieces. Always ensure that you wipe off the twin fiber optic bundles at the head of the handpiece and at the tubing end of the handpiece. This will keep grime from collecting on the bundle and help keep your light at maximum intensity. The swivel also has fiber optic bundles at both ends that require cleaning using the same technique.

6. DentalEZ® chairs and stools upholstery maintenance:

In cleaning lightly soiled areas, we recommend mild dishwashing liquid and warm water. For a heavily soiled area, you can use lighter fluid and rub the area gently. You can also use a bleach solution at a 1-part bleach 9-parts water ratio. Rub the area with a clean white cloth. If mineral spirits, alcohol, or lighter fluid are used, once the luster is gone, apply a light coat of furniture polish, wait 30 seconds and then buff with a clean white cloth.

7. The pinch valve and block system:

The block in a DentalEZ unit is a true pinch valve and not a kink valve. Remember that the pinch valve system that DentalEZ uses does not require plungers, stems, or o-rings to make it work for either air or water, and we only have one diaphragm per handpiece tubing. Since February 2003, the block system assembly is die-cast aluminum and has neither air nor water passing through it. The air and water pass through the tubings which run through the pinch body, so the possibility of corrosion is eliminated. Also with the die-cast block, you get the added potential of easily adding a fourth handpiece with minimal effort and expense.

8. Lumina™ Light:

The Lumina Light has the optic sensor that enables us to use it in a hands-free mode for turning the light on and off. The proper setting of the sensor is 2"-6" from the bottom of the light head. This is easily adjusted. In the front of the light at the bottom, there is a little hole that gives you

access to the potentiometer for adjusting the sensitivity level. Turning it counter-clockwise a little bit shortens this distance and turning clockwise lengthens this distance. There are also 2 LEDs in the head to assist in trouble shooting. The green LED shows that the unit does have power, and the orange LED shows that the optic sensor is sensing something, so when it is moved it will change from its current state, either on or off.

9. Bottled water system for the Galaxy Magellan CMU:

The picture that was supplied in the original instruction manual was a bit confusing and sometimes led to improper installation. So we eliminated that potential by making cuts in the unit tubings and adding the appropriate fitting to the tubings and the bottled water system. Now when you install the bottled water system and you reach the access hole in the pole, all you do is unscrew the unions in the tubing and screw the matching fittings from the bottled system to the unions.

10. Built-in Titan® E-lectric handpiece:

Installing a Galaxy Unit with a built-in E-lectric handpiece requires a source of power. If the unit is purchased with a power module then nothing additional is needed, but if there is no power module a transformer, P/N 3625-640, must be included.

For the doctor who wants a built-in system, but does not have a DentalEZ Galaxy unit, the Titan E-lectric integrated unit is the solution. This system is not big and bulky, and it doesn't have a bunch of tubings running around the unit. The membrane display mounts to the delivery head and the board mounts inside the head. It will also require a transformer just like any Fiber Optic system that is added to any unit. Most unit manufacturers run wires through the arm system for supplying power to additional accessories that are added after the fact, so this should not be a problem. This system comes with everything to meet the tough demand that was asked of you.

DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ[®] TECH TIPS

Volume 14, April 2004

Troubleshooting Dual Wet Vacuum Systems

These tips are provided in no particular order. They are things that you will have to diagnose every day. Included are electrical problems, vacuum problems and pump component faults. Let's start with...

PUMP NOT RUNNING:

Check the obvious! Check the circuit breaker. Check for loose or broken wiring connections. Check the fuse. If you didn't use your meter, you didn't check the fuse...you guessed! Check for proper voltage. Voltage range for the MC201 is 208-230V @ 7.5A per motor. Voltage range for the MC202 is 208-230V @ 15A per motor. Sharing a dedicated line between motors is never a good idea. Each motor should have a dedicated line located on its own circuit breaker. Any voltage reading lower than 208V will cause problems and needs to be boosted to recommended voltage levels.

Check the obvious!

There are two major components inside the control box, 1) a step down transformer that takes line current (115V or 230V) and steps it down to 24V and, 2) the relay. The relay has 30A capability and is controlled by the 24V current received from the transformer. Using a non-conductive device, push in the tabs on the relay. If the motor does start but will not continue to run unless you are holding the tabs in, the probable cause for the motor not to start when using your switch would be a defective transformer or coil in the relay.

Using your meter, verify the voltage coming from the secondary of the transformer. If it is less than 21V, replace the transformer. If it is more than 21V, replace the relay.

A motor that "hums" is an indication of a bad capacitor.

A "tight" or noisy motor is an indication that the bearings need replaced, the pump was improperly shimmed or that debris of some type exists in the pump.

Poor ventilation, low line voltage or a vacuum relief valve that is improperly adjusted will cause the motor to overheat. Check for insufficient water supply.



Check water flow through the solenoid by loosening the fitting on the right side of the solenoid valve. If water flows out with power on, turn the power off. Water flow should stop. If not, replace the solenoid valve. You must determine the proper voltage of the solenoid valve! There are vacuum pumps in existence that used 240V and 115V water solenoids! Pumps manufactured now use 24V, but that was not always the case, so use caution!

LOW VACUUM:

Dirty filters! The screen filter needs to be cleaned once a week.

Water Control Assembly clogged not allowing proper water flow through the pump.

Loose or broken or clogged vacuum lines.

Swing check valves clogged.

Vacuum relief valve clogged.

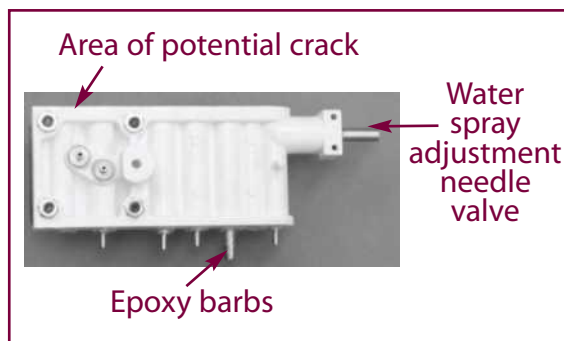
Water flow through this pump is vital! Water flow for a 1 HP pump should be ½ gallon per minute. Water flow for a 2 HP pump should be 1 gallon per minute. Ensure that the metering valve on the right side of the water assembly is working properly.

DO NOT LEAVE THE PUMP RUNNING WITHOUT WATER!

Knowing these basic checks and tests can help you maintain these pumps and provide a vacuum system that will function for many years to come.

Die Cast Aluminum Block Conversions

As we discussed back in issue 11, DentalEZ® has put a die-cast aluminum block in the Galaxy™ unit. Since 1978, DentalEZ has used a pinch valve system to control the handpiece air and water. This pinch valve system is time and performance tested. It has been used through the years in our delivery units and currently in the Galaxy units. We did make an improvement to the already dependable pinch valve system. In the Galaxy unit, we made a die-cast aluminum block. This was done to eliminate the potential of a plastic block cracking that was seen in the aXcs® unit.



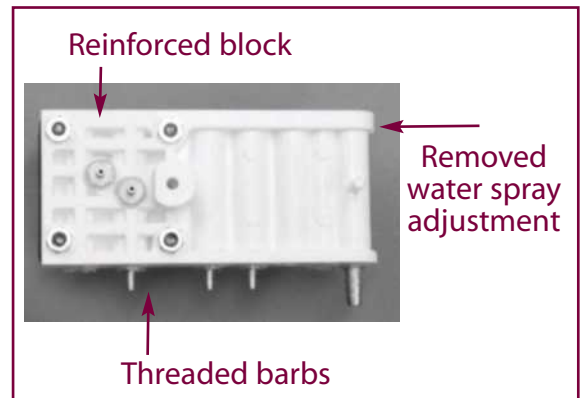
At this time we have created two kits to convert aXcs units from the plastic blocks to the aluminum block system. This is in addition to the new reinforced plastic blocks that are a direct replacement.

If you are at an account that has a cracked block that needs to be replaced there are a few things to be aware of. First, your unit must be in the warranty period as defined by DentalEZ. Second, the aluminum block system will not be sent out as the first repair item, you must use the proper reinforced plastic system first. This is because not all plastic systems are faulty, and when the cracks first occurred we replaced individual blocks and not the entire block assembly. So in order to maintain a standard, we will replace the complete 3 handpiece plastic block system, not just the supply, plugged, or center blocks. This insures us that all blocks are of the new reinforced plastic. This also gives DentalEZ a gauge for warranty issues. And finally be aware that this is a little labor intensive, and labor is not covered under the DentalEZ warranty.

If you have considered the above items then use the following guide to choose the proper conversion system for your needs.

If you have an aXcs traditional delivery head that has the plastic blocks that have the flow adjustment stems in the block, you will need P/N 3658-385. This kit will be the die-cast block with additional parts to connect it, a head cover, gauge bracket to relocate the gauge, and three coolant water adjustment valves.

If you have an aXcs traditional delivery head that has the plastic blocks that do not have the water flow adjustment stems in them, the serial number will be 3613 and above, then you will need to order P/N 3658-386. This will include the manifold and the additional hardware required to hook it up. You will not receive the cover or the gauge bracket because you will already have the separate coolant valves and the gauge was already moved to the cover.



Retro kits are not currently available for the Euro style units. We are working on this and will let you know when they are available.

Please keep in mind that the retro fit kit is not a drop-in replacement. You will need to drill approximately 5 holes. These kits come with detailed instructions and all of the hardware that you will need to complete the task.

If you should need any questions answered, please feel free to contact our Technical Service Department at 1-866-DTE-INFO.

DentalEZ Group

DentalEZ® Equipment &
CustomAir
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 15, July 2004

Vacuum Stabilizer Control (VSC) System Response

The RAMVAC® Vacuum Stabilizer Control (VSC) harnesses digital technology power to create a simple, economical and easy to install automatic control system for dual RAMVAC Power Units.

Users turn the entire system on and off from a single switch. The VSC takes over to automatically alternate Power Units and

run the standby Power Unit only when needed to match varying demand.

If a "Fault" (out-of-the-ordinary) condition occurs, the VSC automatically responds by appropriately controlling the Power Units and illuminating LEDs to announce system status.

VSC Fault Response Chart

Fault	Power Unit (PU)	Remote Light	Automatic System Control	Action Required
Low Oil	<ul style="list-style-type: none"> - If "Low Oil" PU was running, it will turn off - "Low Oil" LED illuminates - Standby PU turns on 	Flashes Rapidly	Reverts to Manual Control	Replenish oil Cycle Remote Switch* "Low Oil" cause
Moisture in Filtrols ("MIF")	<ul style="list-style-type: none"> - If "MIF" PU was running, it will turn off - "MIF" LED illuminates - Standby PU turns on 			Reset (see User Guide) Cycle Remote Switch* Determine "MIF" cause
Water in Exhaust ("WIE")	<ul style="list-style-type: none"> - If "WIE" PU was running, it will turn off - "WIE" LED illuminates - Standby PU turns on 			Reset (see User Guide) Cycle Remote Switch* Determine "WIE" cause
Maintenance Required	"Maintenance Required" LED illuminates	Flashes Slowly	Continues	See User Guide for routine maintenance instructions

*After a "Fault" has been corrected, cycle the remote control switch (push it to the "off" position, then push it "on") to return the VSC system to normal operation.

Lumina™ Light Tips



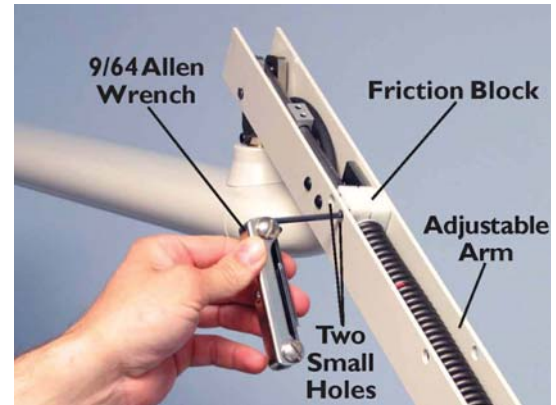
There are several adjustments that are possible on the Lumina™ Light. As we have discussed in previous issues, it is easy to adjust the sensitivity distance of the sensor. This is done by adjusting the potentiometer on the front of the light head. Counter-clockwise turns shorten the distance and clockwise turns increase the distance. This is factory set at a distance that should be no more than 6".



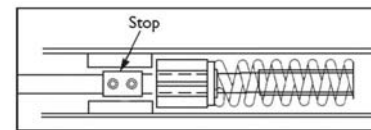
A few other adjustments which might be necessary are the friction block adjustment and the vertical stop adjustment.

If the friction block is not properly adjusted it can cause the light to emit a squeak when it is moved up and down. To gain access to this block, remove the cover of the flex arm. The friction block is the white block with the 2 set screws in it. Use a 9/64 allen wrench to slightly loosen the set screws in the block. If the movement becomes too free you will

need to adjust the tension on the spring. By removing the tension of this block, you should have removed the squeak that was being produced by moving the light.



The other very important adjustment is the vertical stop. This is very useful if you are installing a light in a low ceiling environment. The vertical stop block is the little aluminum block on the tension rod at the back of the spring. To adjust this vertical stop to fit your ceiling height, just loosen the screws in the block and slide it forward toward the back of the spring. Set it in the position that will stop the light in the proper position for your installation.



All of the Lumina Lights (the post mount, the track mount, the ceiling mount and the cabinet mount) have these 3 adjustments. In most cases, you will not need to use any of these adjustments, but just in case, we are sure that you will find these useful, and helpful.

If you have any questions or problems please call DentalEZ Technical Service at 1-866-DTE-INFO (1-866-383-4636).

DentalEZ Group

DentalEZ® Equipment &
CustomAir®
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 16, October 2004

How Long Will Hg5 Amalgam Separator Cartridges Last?

The quick answer: "An average of six months."

Extra Considerations

Is it possible that a cartridge will last less than six months? Yes. Very possible. Is it possible that a cartridge will last more than six months? Yes. Very possible.

The question "How long will the cartridges last?" is an important one but it is hard to answer quickly without resorting to an "average" answer. It's very much like the answer to the question "How often will I have to empty my waste paper basket?"

The "six months on the average" is SolmeteX's best guess after working with the product for the past several years. They think it is representative of typical offices.

More specifically, how long a cartridge lasts depends on how much debris gets into it. It might be helpful if you remind everyone that the debris that gets in depends on two factors:

1. How much debris is aspirated from the treatment rooms.
2. How much debris is sitting in the vacuum lines when the Hg5 is installed.

Obviously, the more debris aspirated, the faster the cartridge will fill. Maybe not quite so obvious is that if you install a Hg5 in an office with old vacuum lines at the

same time you replace the vacuum system, you may pull a large quantity (quarts and more) of sludge out of the lines during the first day (maybe in the first few hours). This can fill a cartridge very quickly, but it is not representative of what will happen over the next decade.

..... Could My Hg5 be Filling Up with Prophylaxis Paste?

The only correct answer: Yes!!



The Hg5 separates by three methods:

1. Sedimentation (heavy particles sink)
2. Filtration (large particles can't pass through the filter element)
3. Absorption (mercury containing particles get stuck on the Kelex© resin beads).

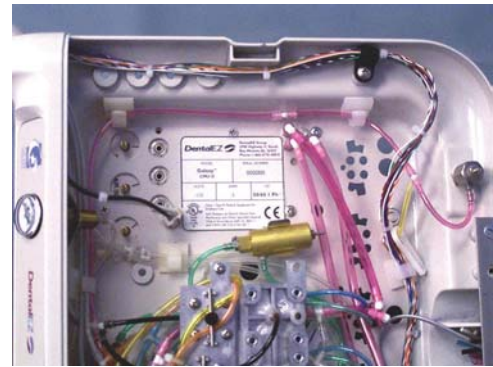
Only method 3 (an Hg5 exclusive) is able to separate only amalgam. Methods 1 and 2 do not discriminate between amalgam particles and any other particles. If the particle is too heavy or too big, it gets stopped.

Unfortunately most separation takes place by methods 1 and 2. (Remember- other brands of amalgam separators use just these two methods, while the Hg5 uses all three).

So, "Could my cartridge be filling up with prophylaxis paste?" Yes. It certainly can. It's the nature of amalgam separators at this stage of the game. Amalgam separators separate more than amalgam!

Serial Number Locations

When you call into technical service and want help with a piece of equipment, the first question is what model or what's the serial number? The reason we ask is there are improvements being made to equipment on an ongoing basis. That is why our mission statement is "Continuous Improvement." The serial number helps us to know if changes have been made to the equipment that could solve your particular situation. The following is a guide to let you know where to find the serial numbers on all of our current equipment:



Galaxy™ Chair Mounted Units- Lift the control head cover and it's on the chassis on the left side.



J/V Generation™ Chair- Located on the casting directly below the seat about where the knees would be if sitting in the chair.



Lumina™ Light Unit Mount- Located on the underside of the primary or rigid arm.

Lumina Track Mount Light- Located on the end of the track assembly.

Lumina Ceiling & Cabinet Mount Light- Located on the top of the arm assembly.

Lumina Wall Mount Light- Located on the side of the wall mount cover.

Dental Aux. Unit (DAU) - Located on the false panel in the center storage area.

CV101 Vacuum Pump - Located to the left of the intake manifold.

CV102 Vacuum Pump - Located directly behind the intake manifold.

Dual Vacuum System - Located on the left side of the switch panel, also on white tag on each pump cartridge on the side facing the outside of the cabinet.



J-Chair®/ V-Chair™- Located on the casting directly below the seat about where your knees would be if sitting in the chair.

Silhouette® Chair- Lift the seat standing at the toe and look under the back assist spring on the right side.

Asst. Work Center - Located under the sink on the left side wall.

Doctors Work Center - Located under sink on left side wall.

DentalEZ Group

DentalEZ® Equipment &
CustomAir®
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 16, January 2005

Top Five Tech Tips of 2004

1. Troubleshooting Dual Water Ring Pumps

When troubleshooting, always check the obvious. Voltages are very important because if a voltage is too high or too low it can create problems for the electrical components in the system. Use your meter to check fuses on pumps that aren't running: relays require a minimum of 21V to energize. For low vacuum always remember to check water supplied to the pump; 1 HP pumps use ½ gallon of water per minute and the 2 HP uses 1 gallon per minute. When a water recirculator is used make sure the office staff is using their recirculator cleaner once or twice a month to keep the recirculator clean and free of clogs.

2. Vacuum Stabilizer Control (VSC) System Response

The RAMVAC® Vacuum Stabilizer Control (VSC) harnesses digital technology power to create a simple economical and easy to install automatic control system for dual RAMVAC Power Units. Users turn the entire system on and off from a single switch. The VSC takes over to automatically alternate Power Units and run the standby Power Unit only when needed to match demand. If a "Fault " condition occurs, the VSC responds by appropriately controlling the Power Units and Illuminating LEDs to announce system status.

3. How Long Will Hg5 Amalgam Separator Cartridge Last?

The average life expectancy on the Hg5 cartridge is six months, depending on two factors: the amount of debris aspirated from treatment rooms and the amount of debris sitting in vacuum lines when Hg5 is installed.

4. Lumina™ Light Tips

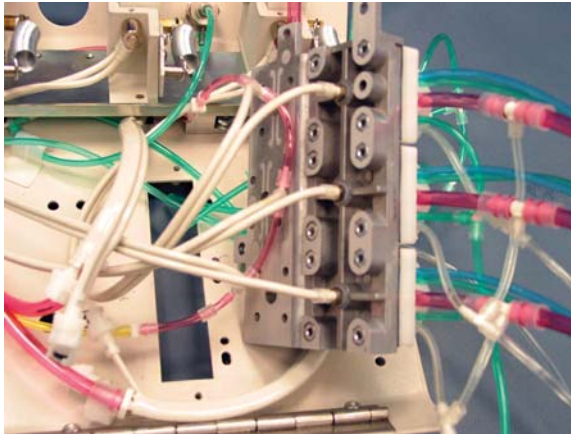
The Lumina™ light infrared hands free on/off switch has adjustable sensitivity and is located on the bottom of the face of the light. Using a small common screwdriver, turn the adjustment screw counter-clockwise to shorten the distance and clockwise to increase the distance needed to activate the infrared switch. If arm is squeaking when moved vertically it may need a slight adjustment of the friction block. The Lumina light also has a simple vertical stop adjustment which would be adjusted for ceiling mounted lights and track lights to stop the arm from hitting the ceiling.

5. Die Cast Aluminum Block Conversions

This is probably the greatest quality improvement to the DentalEZ® delivery units. If you have customers that have problems with cracking or leaking manifolds, lack of water control or no water at all, then the new die cast aluminum manifold should solve all your problems. Now there are several kits available for the aXcs units and older units such as the AS3000 chair mounted units. Please keep in mind the retro kits are not drop-in replacements, there is some drilling that takes place. All the kits come with detailed instructions, the necessary hardware and tubing schematics showing before and after. When you are calling for the part numbers, we'll need to know the model and serial number or if the water adjustment is part of the manifold if no serial number is available. (See more detail on next page of this issue.)

Die Cast Manifold Conversions

In the Volume 14, April 2004 issue of the DentalEZ Tech Tips we introduced you to two conversion kits for the aXcs Traditional style delivery units. Since that time, in keeping with our mission of "Continous Improvement," we have developed conversion kits to be used on several other styles of delivery systems.



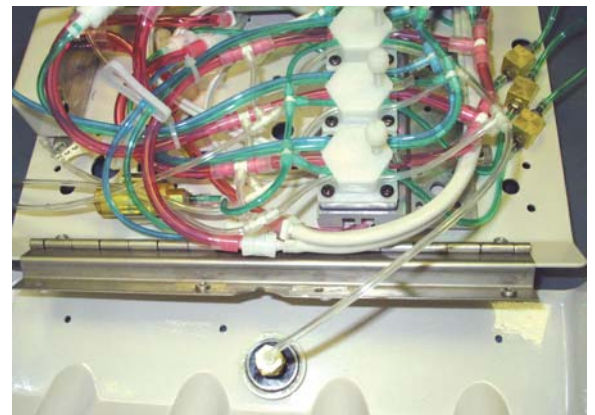
All of the kits include all necessary valves and tubings needed to do the upgrade. Also, the kits will have templates for drilling holes necessary for installing any additional valves and the new manifolds. There are installation instructions as well as before and after tubing schematics to make the installation as easy as possible. When requesting replacement manifolds, if the plastic are no longer in stock, the units will need to be upgraded to the die cast aluminum style manifolds. There is no doubt this will cure any problems with manifolds the office has experienced. Also, when you call, it is very important to have the model and serial numbers whether it is a traditional style or euro style unit. This information is very important in providing you with the correct kit.

The current upgrade kits are as follows:

- 3658-395 --- AS3000 Traditional Style head
- 3658-387 --- AS3000 Euro Style head

- 3658-385 --- aXcs Traditional style (with water adjustment on manifold)
- 3658-387 --- aXcs Euro style (with water adjustment on manifold)
- 3658-386 --- aXcs Traditional Style (with water adjustment seperated from manifold)
- 3658-388 --- aXcs Euro Style (with water adjustment seperated from manifold)
- 3658-392 --- DAU unit LH or RH (with water adjustment on manifold)
- 3658-393 --- DAU unit LH or RH (with water adjustment seperated from manifold)
- 3658-394 --- L/R DAU (with water adjustment seperated from manifold)
- 3658-396 --- OPC Cart
- 3658-397 --- MPC cart

It will probably take an 1 ½ to 2 hours for the first time you do the conversion. Once the conversion is complete, you will eliminate any problems the office may have experienced with the plastic type manifold.



Remember, for technical assistance, please call our Technical Service Representatives at 866-DTE-INFO:

Bill Paulson, Technical Service Manager, Ext. 3226
David Agerton, Ext. 3207
Kelly Allen, Ext. 3325
Jim Fillingim, Ext. 3326

DentalEZ Group

DentalEZ® Equipment &
CustomAir®
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain

DENTALEZ® TECH TIPS

Volume 18, April 2005

Utility Room News

RAMVAC® Installations Made Easy

RAMVAC installations run the gamut from "Everest climbing" difficult to "duck soup" simple. You can stack the odds towards duck soup by using two RAMVAC installation aids:

- Installation Guide
- Installation Checklist

The RAMVAC Installation Guide is packed with information on site requirements, dimensions, plumbing, and electrical specifications. Page 5 of the guide covers the easy to do but often overlooked requirements for a safe, clean, quiet and economical exhaust. Every RAMVAC comes with a guide, plus you can print a guide from the DentalEZ Group website or get a copy by contacting RAMVAC.

The Installation Checklist can help you make sure you've got a complete installation with no loose ends. It's in triplicate so there's an end-user copy, a dealer copy, and one for RAMVAC (required for warranty initiation). The checklist shows the end-user that someone cares enough to do the job right and document the effort. Like the Installation Guide, a checklist is packaged with every RAMVAC.

Vacheck® and Flowcheck™

Just like a skateboard and a Boeing 747 are both transportation devices, the Vacheck and Flowcheck are both devices that can check treatment room vacuum performance. But like the transportation devices, these airflow evaluators are very different from each other.

Use the Vacheck to help determine piping clogs by comparing one operatory to another. Or use it to determine overall vacuum. The Vacheck shows if



HVE performance "passes or fails" what we consider to be minimally useful performance, approximately 7.25 SCFM. The Vacheck tells you "ok" or "not-ok." It does not measure in numbers.

Just place the Vacheck flow tube into an open ½" HVE valve. Hold the valve and flow tube vertically and carefully, place the Vacheck flow bushing into the tube up to the machined start line. For a valid test, you must make sure you hold the HVE valve vertically and leave the hole in the underside of the flow bushing completely open (keep your fingers away). Now let go of the flow bushing. If it falls out of the tube, the vacuum performance fails to meet the RAMVAC standard of 7.25 SCFM.



The Flowcheck measures HVE flow in SCFM and provides a quantitative evaluation of performance. Use the Flowcheck to measure your existing vacuum and then use it to specify required performance for a new vacuum system.

Once the doctor specifies the performance he wants in terms of Vacheck or Flowcheck tests, it's a simple process to use these devices to verify new system performance. Testing with either device can identify clogged lines, poorly cleaned solids separators and vacuum hoses. They can pinpoint the vacuum source or flow ability locations responsible for poor performance.

Using these vacuum aids on a troubleshooting call can help you more accurately find and solve your doctor's vacuum problem or help you demonstrate to the doctor his need for a new vacuum system.

Dental Vacuum Mystery Exposed!

Is there a conspiracy to make dental vacuum mysterious? You'd almost think so. Otherwise, we'd know:

- that testing vacuum with our finger can send us on a wild goose chase

continued on back

Dental Vacuum Mystery Exposed!

continued from front

- that sizing a vacuum system according to the number of chairs often leads to disaster
- when it's best to use a water ring pump (CustomAir), or a rotary vane (RAMVAC type) pump

Now the drapes are off and the truth is revealed by "The Dental Vacuum Bible," our new "tell all" dental

vacuum expose. Here are a few things you can expect to discover:

- How to get the best dental vacuum bang for your buck.
- How to get rock solid, day-in-and-day-out reliability.
- How to get all the dental vacuum performance you need.
- How to avoid dental vacuum catastrophes.

To get your free "Vac Bible" contact your local DentalEZ® rep or RAMVAC.

Technical Service

What's Changed and Why:

Until recently, when you called into technical service we would take your call without asking a lot of questions not related to your problem. Now it seems like we burden you with all kinds of questions like your name, company, phone numbers and serial numbers for the products you are working on. Why? We at DentalEZ decided there is a lot of valuable information that can be used in a variety of ways so we have created a tech log; calls that come into technical service are being entered into this log. The information can be helpful in several ways:

Tracking calls:

We have the ability to review previous calls, which can reduce the amount of time it takes when you phone in a second time. So even if you get another technician the next time you call, he/she can pull up that information and you won't have to repeat yourself. We can take serial numbers that are provided and pull up all the calls we received regarding that piece of equipment. The information also helps us get back in contact with you should the need arise.

Quality:

The information in the call log is reviewed on a regular basis and when we see problems that are quality issues such as missing parts, damaged equipment, etc, we can address the problems quickly. When we get a call that we feel is a quality issue we actually flag the call which will automatically e-mail the call to our quality manager and the ball starts rolling. The call log can also help us spot trends with our product and allows us to be proactive instead of reactive.

Training:

Information can be used to assist in training of new technicians, determine training needs both internally and with our dealers. The log also gives new technicians the ability to query calls for problems they have never handled and see how they were resolved instead of transferring a call to someone else or even causing a caller to wait for another technician.

Improvements:

When we are made aware of problems with installations, we look at the product for improvements that will alleviate those problems making installations easier and smoother, making your job easier.

There is already a huge database of information and soon we will be able to pull your information up using your phone number. That way if you are in the database, we won't have to ask you for the following information:

- Your name
- Your phone number
- Company name and location
- The product and serial number you are calling about
- Installation date

At DentalEZ our mission statement is "Continuous Improvement" and this is another tool that helps us reach our goal of providing you, our customers, with the best product available. Product that is easy to install and simple to maintain making us "The Company of Choice."



DentalEZ Group

DentalEZ® Equipment &
CustomAir®
2500 Highway 31 South
Bay Minette, AL 36507
866-DTE-INFO

StarDental®
1816 Colonial Village Lane
Lancaster, PA 17601
866-DTE-INFO

RAMVAC®
3100 First Avenue
Spearfish, SD 57783
866-DTE-INFO

DentalEZ Great Britain
Cleveland Way
Hemel Hempstead
Hertfordshire HP2 7DY
Great Britain