

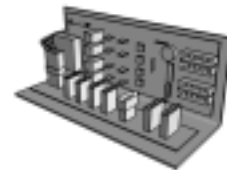
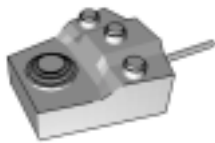
CHAIR ELECTRICAL SYSTEMS

HSP Integra 2001 DENTAL CHAIR

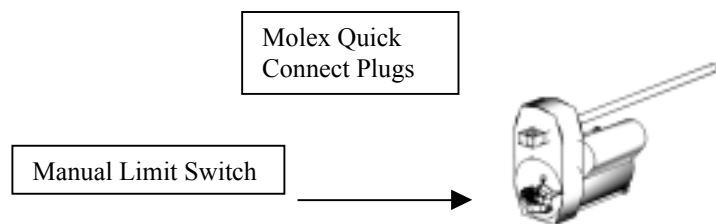


Locating Electrical Failure: By following the checklist below, one can limit the diagnosis to a certain part (motor, circuit board, foot-control, security/safety switch or wiring). The dental chair has been designed with a simplified electrical system.

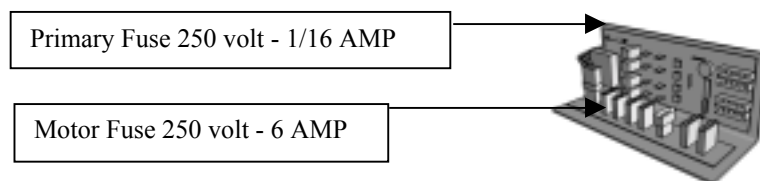
The integrated circuit board controls all the automated functions of the chair, which is activated by the individual buttons on the foot-control. The electrical current (+) starts from the main power supply cord that plugs, by a molex quick connect plug, into the circuit board. The chair back and base motors, the foot-control, the security/safety switch all plug, by a molex quick connect plug, into the circuit board.



The maximum manual limit switches for chair base and back up and down movements are controlled by the switches incorporated inside the metal cap located at the rear end of the chair motors.



There are two fuses on the circuit board. The first is located in the upper left-hand corner of the circuit board. The second is located in the lower left hand corner of the circuit board.



To locate any potential electric failure:

1. Check that all molex quick connect plugs are properly connected.

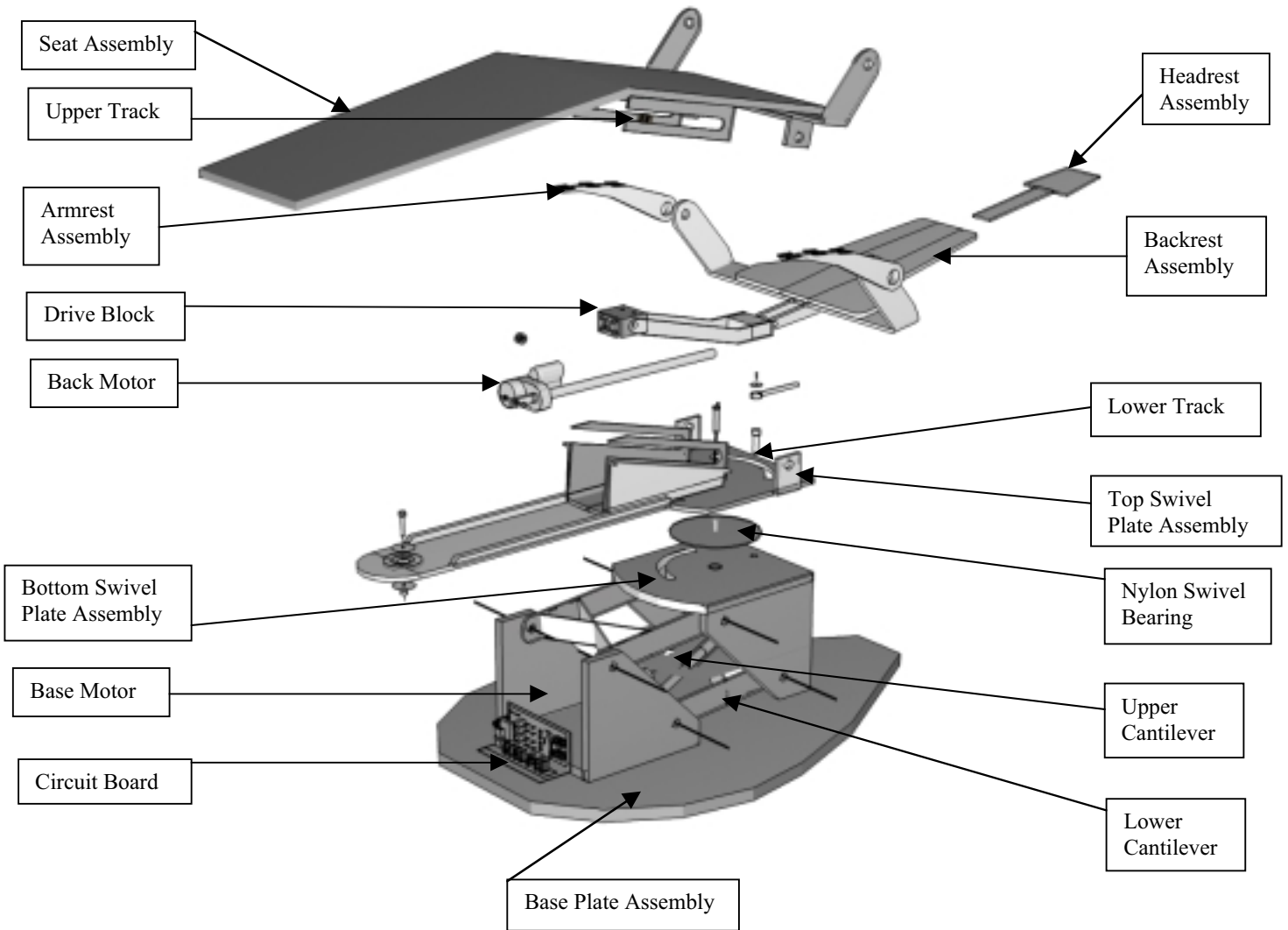
If any plug is found not to be properly connected, re-connect and check molex plug for proper connection.

2. Check to verify if both fuses are in good working order.

If either fuse has failed, replace fuse with same specifications printed on fuse.

3. One can verify that the electrical current is flowing to each electrical component by the use of a voltmeter.

HSP Integra 2001 DENTAL CHAIR



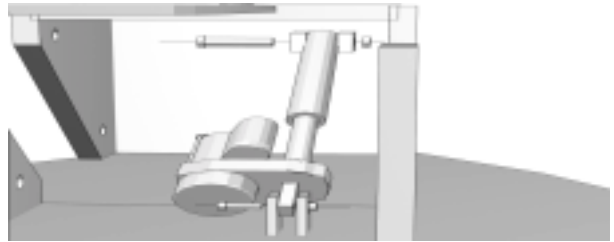
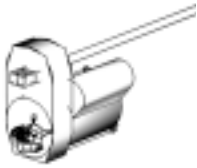
The HSP Integra Chair is constructed of solid steel welded assemblies. This exploded view is designed to show the basic chair frame components and step by step procedures for assembling the component chair frame. NOTE: During normal servicing of the chair there should be no reason for disassembling the chair frame.

MAJOR CHAIR COMPONENTS

HSP Integra 2001 Dental Chair

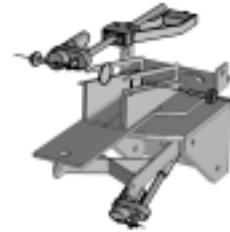
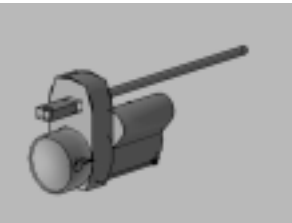
CHAIR MOTOR

Base Motor: 115 Volt 60Hz - 2.4 ANT - Duty I On 5 Off Min - 14-1/2" Single Lead Screw



Back Motor: 115 Volt Hz -2.4 AMP - Duty I On 5 Off Min -19-1/2" Single Lead Screw

The manual limit switches are built-in and are located under the back end cap on the motor.



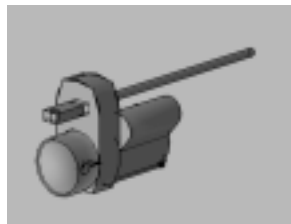
CAPACITORS FOR BASE AND BACK MOTORS

27.5 WD +/- 10%

240 VAC 60 HZ

Located and built on the side of the motors. To replace capacitor, remove two screws on capacitor cover.

If capacitor is changed, the new one must be equal to the original capacitor.



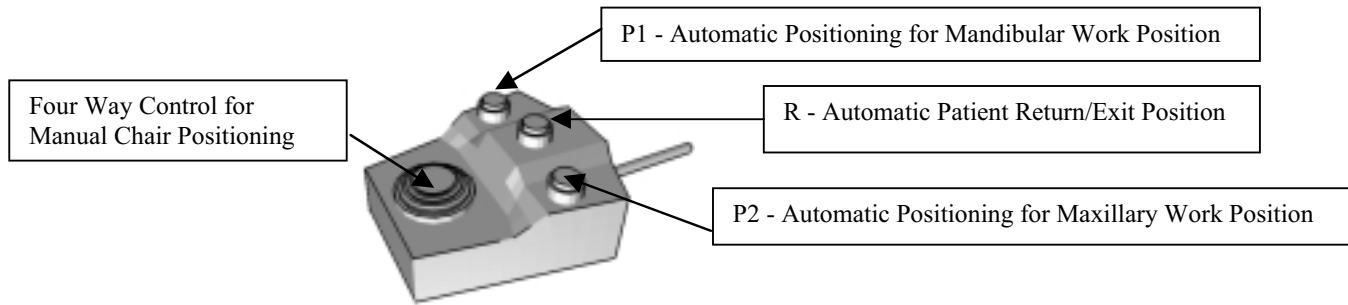
General Maintenance:

Every six months, lubricate both base motor and back motor's spiral screws with Lithium Grease.

Attention

The dental chair is equipped with thermal cutout switches located in both the chair back and chair base motors. When the chair is automatically operated up and down, non-stop, for an extended period of time, the motors may overheat causing the thermal cutout switches to automatically turn the motors off. This feature will not affect the normal up and down operations of the dental chair. If the thermal cutout switches are activated, turning the motors off ~ wait approximately five minutes. The chair motors will automatically reset and the chair can be reactivated by use of the foot-control.

MAJOR CHAIR COMPONENTS



HSP Integra 2001 Dental Chair - Foot Control

TO OPERATE THE FOOT CONTROL:

The chair is equipped with an electronic foot control that provides for all manual and automatic chair positions. It is located on the rear of the chair base and is secured to the base plate with a Velcro attachment. The foot control is designed to be located in any position the operator may prefer. To position the foot control to either side of the chair, pull the foot control Velcro attachment loose and place the foot control at any location, on the floor, as desired.

Manual Control: To manually position the chair, push the manual control in the direction of the arrows as indicated.

Automatic Positioning: Manually position the chair to the work position desired for both P-1 & P-2 programs and press down and hold

FOOT CONTROL REPLACEMENT GUIDE:

The foot control is designed as a quick connect module that utilizes a molex plug that plugs into the chair circuit board. It is recommended that in-field service consist of replacing the entire foot control rather than repairing.

To Remove:

1. Remove plastic service door on front of chair base.
2. Disconnect molex plug from chair circuit board.
3. Pull foot control cord out through chair base plate plastic cover.

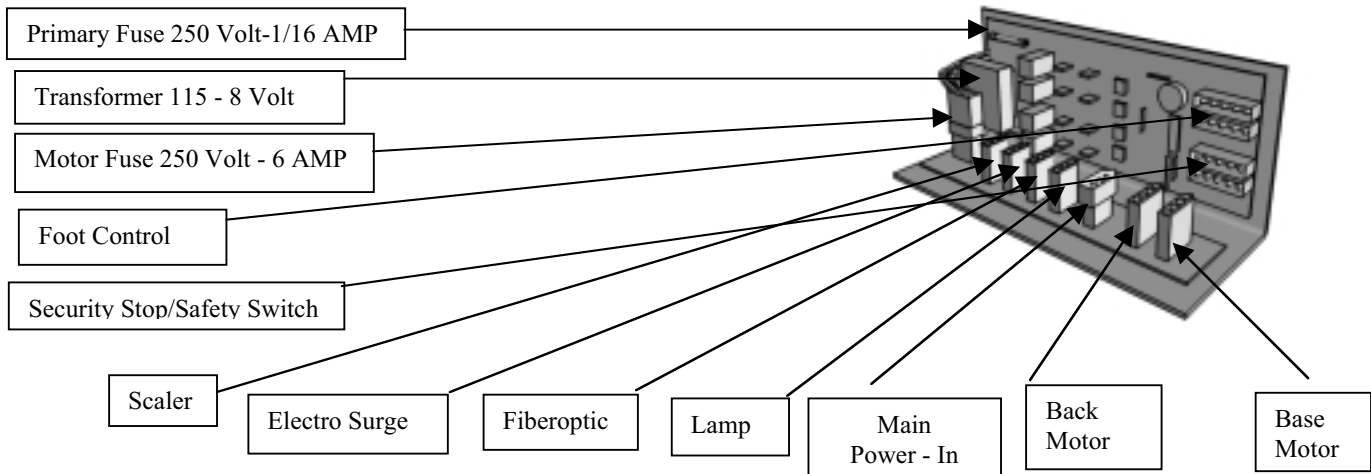
To Replace:

1. Push foot control cord back through chair base plastic cover.
2. Connect molex plug to chair circuit board.
3. Replace plastic service door on front of chair base.

ATTENTION: The foot control is equipped with a safety electrical cut-out mercury switch that will not allow the foot control to operate if turned on its side or bottom side up.

MAJOR CHAIR COMPONENTS

HSP Integra 2001 Dental Chair - Circuit Board



CIRCUIT BOARD:

The chair is equipped with an electronic solid state circuit board that provides for all manual and automatic chair positions. It is located on the front of the chair base and is secured to the chair base plate with two screws. The circuit board has a timed program for both the P-1 & P-2 automatic programs, on the foot control, that allows the chair operator to manually position the chair to desired working positions for the P-1 & P-2 working positions. Press and hold the P-1 or P-2 buttons, for three seconds, to set the automatic positioning programs. Each time the P-1 & P-2 buttons, on the foot control, are activated the chair will reposition to these pre-set positions.

CIRCUIT BOARD REPLACEMENT GUIDE:

The circuit board is designed as a quick connect module that utilizes a series of molex plugs for ease of installation and service. It is recommended that in-field service consist of replacing the entire circuit board rather than repairing.

To Remove:

1. Remove plastic service door on front of chair base.
2. Disconnect all molex plugs from chair circuit board.
3. Remove 2 screws holding circuit board to chair base.
4. Pull circuit board out through service door on chair base plastic cover.

To Replace:

1. Place new circuit board through service door on chair base plastic cover.
2. Replace 2 screws holding circuit board to chair base.
3. Reconnect all molex plugs to chair circuit board.
4. Replace plastic service door on front of chair base.



MAJOR CHAIR COMPONENT

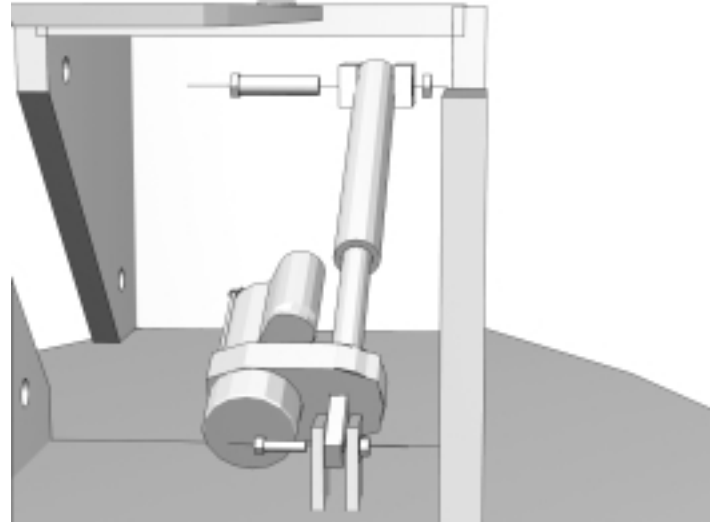
HSP Integra 2001 Dental Chair - Chair Base

CHAIR BASE MOTOR:

The chair base motor is equipped with a pre-set manual limit switch system which allows the screw shaft to run only a pre-determined number of revolutions, in either rotation before stopping. This controls the distance the screw tube can travel up and down the screw shaft. The base motor limit switches are set to travel 4 inches, in both directions, up and down.

MANUAL SWITCH LIMIT SETTINGS:

- The base down position has 1 inch of thread on the screw between the motor housing and the screw tube.
- The base up position has 5 inches of thread on the screw between the motor housing and the screw tube.
- The screw tube should be set in the chair up position with 5 inches of thread showing when mounting the motor into both mounting clevis in the chair base. (See drawing).
- The motor screw tube will then travel down 4 inches and shut off with the manual limit switch. When re-activating the motor, the motor screw tube will then travel up 4 inches to the chair base up position.
- The chair base full down position can be adjusted by turning the screw tube in or out. One full turn of the screw tube would represent approximately 1/4 inch adjustment in the position of the chair base. Turn in to lower base, turn out to raise base.



ATTENTION: A wooden block or a small screw type jack should be placed under the back end of the chair base to prevent the chair base from falling when removing the base motor. WARNING: It is of the utmost importance not to allow the chair base to fall, to prevent personal injury or damage to the chair. The motor is a powerful electrical mechanism, be careful!

BASE MOTOR REPLACEMENT GUIDE:

The chair base motor is designed as an easy to replace component assembly consisting of motor, screw and screw tube. It is recommended that in-field service consist of replacing the entire motor and screw tube assembly rather than repairing.

To Remove:

1. Use a wooden block or screw type jack to place under the back end of the chair base to properly secure and prevent the base from falling.
2. Remove front plastic cover housing of the chair base.
3. Unplug molex quick connect on base motor wire at chair circuit board.
4. Remove the bolt at the top end of the screw tube.
5. Remove bolt in the motor clevis.
6. Remove motor and screw tube assembly.

To Replace:

1. Replace new motor and screw tube assembly.
2. Replace bolt in motor clevis.
3. Set proper adjustment of the screw tube left on the screw. (See adjustment setting above & below).
4. Replace bolt in top end of motor screw tube.
5. Plug molex quick connect on base motor wire into the chair circuit board.
6. Replace plastic cover housing of the chair base.
7. Remove wooden block or screw type jack used to secure the chair base in the up position.

HOW TO SET THE MOTOR SCREW TUBE ADJUSTMENTS:

1. Operate the motor so that the screw shaft rotates counter-clockwise (down), viewed from the end of the screw tube, until it automatically stops. Take care so that the end of the screw tube does not jam into the hub of the motor gear case.
2. With the motor now stopped, turn the screw tube on the screw shaft, taking care that the screw shaft does not also turn, until there is a 1-inch clearance between the end of the screw tube and the motor gear case.
3. Firmly hold the screw tube so that it cannot rotate, operate the motor in a clockwise rotation (up) for a few seconds to extend the screw tube on the screw shaft. Still holding the screw tube, reverse the motor (down) until it automatically stops, check for the 1-inch clearance between the end of the screw tube and motor gear case.
4. Still holding the screw tube, run the motor up to extend the screw tube on the screw shaft until it automatically stops.
5. Align the mounting hole, in the screw tube to the holes in the mounting clevis at the rear of the chair base, and replace the bolt.

MAJOR CHAIR COMPONENTS

HSP Integra 2001 Dental Chair - Chair Back Motor

CHAIR BACK MOTOR:

The chair back motor is equipped with a pre-set manual limit switch system which allows the screw shaft to run only a pre-determined number of revolutions, in either rotation before stopping. This controls the distance the drive block can travel up and down the screw shaft. The back motor limit switches are set to travel 8 inches, in both directions, back and forward.

MANUAL SWITCH SETTINGS:

- The chair back down position has 4 inches of thread on the screw between the motor housing and the drive block.
- The drive block should be set in the chair up position with 4 inches of thread on the screw between the motor housing and the drive block.
- The drive block should be set in the chair up position with 4 inches of thread showing when mounting the motor into both mounting clevis in the chair back. (see drawing)
- The motor drive block will then travel down 8 inches and shut off with the manual limit switch. When re-activating the motor, the motor drive block will then travel up 8 inches to the chair back up position.
- The chair back full down position can be adjusted by turning the drive block in or out. One full turn of the drive block would represent approximately 1/4 inch adjustment in the position of the chair back. Turn in to lower back, turn out to raise back.



ATTENTION: A wooden block or a small screw type jack should be placed under the back end of the chair base to prevent the chair back from falling when removing the back motor. WARNING: It is of the utmost importance not to allow the chair back to fall, to prevent personal injury or damage to the chair. The motor is a powerful electrical mechanism, be careful!

CHAIR BACK MOTOR REPLACEMENT GUIDE:

The chair back motor is designed as an easy to replace component assembly consisting of motor and screw. It is recommended that in-field service consist of replacing the entire motor assembly rather than repairing. The drive block will be reused with motor replacement.

To Remove:

1. Use a wooden block or a screw type jack under the back end of the chair base to properly secure and prevent the base from falling.
2. Remove front plastic cover housing of the chair base.
3. Unplug moxex quick connect on back motor wire at chair circuit board.
4. Remove the 2 bolts at the center of the drive block.
5. Remove bolt in the motor clevis.
6. Remove motor and drive block assembly, remove drive block, and re-install on new motor screw.

To Replace:

1. Replace new back motor and drive block assembly.
2. Replace bolt in motor clevis.
3. Set proper adjustment of the drive block on the screw. (See adjustment setting above & below).
4. Replace 2 bolts in center of the drive block.
5. Plug moxex quick connect on back motor wire into the chair circuit board.
6. Replace plastic cover housing of the chair base.
7. Remove screw type jack used to secure the chair base in the up position.

HOW TO SET THE MOTOR SCREW TUBE ADJUSTMENTS:

1. Operate the motor so that the screw shaft rotates counter-clockwise (forward), viewed from the end of the drive block, until it automatically stops. Take care so that the end of the drive block does not jam into the hub of the motor gear case/
2. With the motor now stopped, turn the drive block on the screw shaft, taking care that the screw shaft does not also turn, until there is 4-inch clearance between the end of the drive block and the motor gear case.
3. Firmly hold the drive block so that it cannot rotate, operate the motor in clockwise rotation (back) for a few seconds to extend the drive block on the screw shaft. Still holding the drive block, reverse the motor (forward) until it automatically stops, check for the 4-inch clearance between the end of the drive block and the motor gear case.
4. Still holding the drive block, run the motor up to extend the drive block on the screw shaft until it automatically stops.
5. Align the mounting hole in the drive block to the slots in the upper and lower tracks at the bottom side of the chair seat and replace the 2 bolts in the drive block.