

**Spirit 3120 Ellipse Delivery System (Pelton & Crane) (Project #08-07) (04/09)**



The Pelton & Crane Spirit 3000 Delivery System is a series of dental units available in multiple options: the Ellipse Over-the-Patient Unit, the Post Mounted Over-the Patient Unit (PMU) and the Side/Wall Mounted configurations. The Ellipse and PMU units are available with or without a cuspidor. The Spirit 3120 Ellipse Dental Unit was evaluated in this project. This unit as configured for the evaluation included the Spirit Traditional Control Head, the Traditional Swivel Tray Assembly and the Assistant's Utilities. The dental unit was equipped with a chair mounted Pelton & Crane Light Fantastic® III dental light with a no-touch sensor allowing for on and off function with a wave of the hand (the dental light was not separately evaluated during this project). For this evaluation, the Traditional Control Head had a "standard touchpad" which controls the functions of the chair and operator light. A "deluxe touchpad" option is available with all the features of the standard touchpad, but adds the ability to directly control an optional integrated electric handpiece. The control head includes a total of six holders—five degree and 90 degree) handpiece holders are on the front of the head and two single position holders are on both sides of the control unit. The extra side holders provide positions for optional accessories (i.e., intraoral camera, scaler). Five holders (excluding the air/water syringe holder) are capable of air-actuated switching. Air coolant and handpiece water control valves are located on the underside of the control head. A handpiece flush control toggle switch is also located in this area. The control head is repositioned by activating a centrally located "squeeze release brake" with the ability to pivot 170°. The assistant's arm included the assistant's instrument holder with optional dental chair/light touchpad controls. This instrumentation holder had four bays accommodating an air/water syringe, and high- and low-volume evacuation lines. Evacuation lines and air/water syringe positions can be changed by repositioning the provided interchangeable inserts. An extra bay exists on the instrument holder for the addition of an extra evacuation line if desired. The manufacturer claims the Spirit 3000 Delivery System is designed to be a complete "integration solution" capable of adding premium accessories (i.e., electric handpiece, intraoral camera, curing light, scaler), and is compatible with possible future upgrades. The delivery units have a five-year warranty and can be ordered as either 115VAC 60HZ or 230VAC 50HZ.



**Manufacturer:**  
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**Suggested Retail Price\*:**  
 \$6,870.42 Spirit 3120 Ellipse Delivery System (chair-mounted dental unit)  
 \$1,095.42 Assistant's Instrumentation  
 \$299.00 Swivel Tray Assembly  
 \$2,495.00 Ellipse Mount Light Fantastic® III

**Government Price\*:**  
 \$4,122.25 Spirit 3120 Ellipse Delivery System (chair-mounted dental unit)  
 \$657.25 Assistant's Instrumentation  
 \$179.40 Swivel Tray Assembly  
 \$1,212.75 Ellipse Mount Light Fantastic® III

\* The above pricing is representative of the unit configuration used during this evaluation. Pricing will vary with different dental unit configurations and may vary depending on the number of units purchased.

**ADVANTAGES:**

- + Well-written, easy to use instructions/operator's manual
- + Straightforward assembly
- + Uncomplicated design of internal components should simplify maintenance/repair
- + Internal tubing is color-coded for ease of assembly and service
- + Solid construction
- + Designed for the integration of accessories (electric handpiece, intraoral camera, scaler, flat screen monitor) and future upgrades
- + Motion activated hands-free light (Light Fantastic® III – optional accessory)
- + Smooth surfaces and contours facilitating disinfection or barrier protection
- + Self-contained water system easy to use
- + Five-year limited warranty

**DISADVANTAGES:**

- Clinicians had difficulty using the dual position handpiece holders
- Three-way syringe and suction holder can be dislodged on assistant's instrumentation arm
- No visible master "on/off" indicator
- Air pressure gauge located under control head; poor ergonomic design for visualization
- Single valve for coolant air adjustment for all handpiece positions

**SUMMARY AND CONCLUSIONS:**

The Pelton & Crane Spirit 3120 Ellipse Delivery System (chair-mounted dental unit) met most laboratory testing parameters. While the unit has accessible adjustment valves for air pressure (power) and water to each handpiece position, only one external control valve for separate coolant air is available for all of the handpiece positions. Coolant air adjustment is usually combined with water flow adjustment to idealize the aerosolized water spray pattern and intensity. The master on/off switch and the handpiece air flow/pressure gauge are located on the rear under-side of the control head and not on the front panel, and there is no visible indicator to denote unit activation. The awkward position of the handpiece air pressure adjustment gauge under the control head makes viewing difficult. The handpiece holders are not adjustable.

The Spirit 3120 chair-mounted dental unit exhibited a definitive control head design departure from previous Pelton & Crane models. The unit is solidly constructed and is esthetic with smooth contours which are conducive to barrier protection. It is designed for the direct integration of accessories onto the unit (i.e., electric handpiece, intraoral camera, scaler) and for possible future upgrades. An optional chair-side mount for a flat screen computer monitor is available and monitor mounts are compatible with existing or new ceiling track lights.

Most adjustment knobs were easy to reach and user-friendly, however the dual handpiece holders with 90 and 45 degree slots abutting each other made it difficult for clinical evaluators to efficiently remove and replace handpieces during treatment. Eighty percent (8/10) of clinical evaluators disagreed with the statement that the location and movement of assistant instrumentation allowed for efficient, unrestricted access to the instrumentation and the patient. A plastic cover/housing surrounding the three-way air/water syringe and high-and low-volume evacuators was prone to dislodging with these devices when they were removed from the instrument holder. DECS contacted Pelton & Crane and a manufacturer representative states the instrument holders within the assistant's instrumentation have recently been redesigned/enlarged to reduce the occurrence of this problem. Although the chair-mounted Light Fantastic® III dental light was not specifically evaluated in this project, clinical users praised the light, especially the hands free motion-activated design feature.

Nine out of ten clinical evaluators stated that they would not buy this dental unit for their clinic. However, 40 percent of the evaluators rated the Pelton & Crane Spirit 3120 Ellipse Dental Unit as either "Outstanding" (1/10) or "Acceptable" (3/10). Four rated the unit as "Marginal" and two rated the unit as "Unacceptable". Since this project was completed along with an evaluation of the Pelton & Crane 1801 Dental Chair, ratings of the unit may have been influenced by the concurrent evaluation of the dental chair. The **Pelton & Crane Spirit 3120 Ellipse** chair-mounted dental unit is rated **Acceptable** for use in US Air Force dental facilities.