



# LORAD LPX SERIES

PORTABLE INDUSTRIAL X-RAY SYSTEMS

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### *Innovative Vision in Industrial Imaging*

Spellman is a leading supplier of portable X-Ray systems for non-destructive testing applications. Our portable, constant potential, Lorad LPX series (LPX160, LPX200, and LPX300) X-Ray units have set new standards for non-destructive testing imaging systems in the aerospace and defense industry and in industrial applications where it is critical to pinpoint the tiniest fault before it results in a catastrophic failure.

Available in either liquid, air cooled and hybrid versions, LPX series products produce variable outputs from 5 to 300kV, 0.1 to 10mA (900 watt max) resulting in unparalleled resolution imaging in a wide variety of materials. All LPX industrial X-ray systems operate on a 100% duty cycle for cost-efficient continuous operation.

Units in the LPX series are used in many different environments. The liquid cooled model is widely used because it can be certified as not being a source of ignition when used in a volatile fuel vapor atmosphere such as in the inspection of fuel cells. An air-cooled version is used for applications that are not in volatile liquid vapor type environments and where cooling air is available.

The LPX series X-Ray units are end-grounded to allow for easier and more flexible positioning of the tube head assembly. The end-grounded X-Ray tubes have a focal spot size of 1.5mm sq. The tube port is built with a low-absorption beryllium window that allows the radiographer to utilize the full spectrum of X-Ray energy. This configuration permits shorter exposure times with high output for high resolution imaging of materials as diverse as thin composites and honeycomb structure to various metals with differing thicknesses.



## AEROSPACE MANUFACTURING

The truly portable nature of the Lorad line makes scenarios like this not only possible, but quick and cost-effective. With its exclusive microprocessor-driven control, the LPX series units have memory to store and recall up to 250 exposure techniques.

- **Portable, repeatable, accurate**
- **100% duty cycle**
- **Unparalleled resolution imaging**
- **Liquid, air cooled and hybrid models**
- **5 to 300kV, 0.1 to 10mA (900 watt max)**
- **Constant potential output**
- **End grounded exposed anode**

### Standard Accessories:

- Operation and maintenance manual
- Tubehead carrying case
- Tubehead Cable- 100' with strain relief
- Extra key (1) for Control Unit Safety Lock
- Power cable - 25' with strain relief
- Coolant hose - twin, 50' with self-sealing terminations (water-cooled only)
- Cooling/Fan Cable

### Optional Accessories:

- Tripod-style Tubehead Stand - LPX160/200:  
Black anodized aluminum construction (35lbs.)
- Laser Pointer



### Lorad LPX Features

#### Constant Potential Output for the Best Discrimination

The LPX series X-Ray units have been engineered to produce the sharpest images in industrial X-Ray. The high radiation output of the LPX systems allow for lower kV per exposure and increased film contrast for superior radiographic imaging.

The unique design of the LPX series X-Ray units has unmatched repeatability by monitoring both the kV and the mA directly at the tubehead, and not at the high voltage power supply input like other systems.

#### Digital Microprocessor Control

LPX systems come standard with an exclusive microprocessor-driven control. In addition to automatic warm-up and self-diagnostic circuitry, the LPX series units, have memory to store and recall up to 250 exposure techniques and will retain the last set of exposure parameters present before powering down. With LPX series units kV is adjustable in 1kV increments and mA in 0.1 mA increments. Exposure duration can be set anywhere from 0 min 0 seconds to 99 min 59 seconds in 1 second increments; mAs is variable from 0 to 29995 mAs.



**Automatic Adaption to Input Line Voltage**

LPX series X-ray units are perfectly suited to today's demanding NDT inspection requirements. The LPX series are rugged, yet easy to transport and economical to maintain and can be powered by either line power or portable generator to permit all day inspection under extreme conditions.

All systems automatically adapt to standard input line voltage of 100-130 or 200-250Vac or they can be powered by a portable generator so they can be used virtually anywhere.

**End-Grounded Anode**

The LPX series X-Ray units are end grounded to allow for easier and more flexible positioning of the tubehead assembly.

The end grounded X-Ray tubes have a focal spot size of 1.5mm sq. The tube port is built with a low-absorption beryllium window that allows the radiographer to utilize the full spectrum of X-Ray energy. This configuration permits shorter exposure times with high output for high resolution imaging of materials, from thin composites and honeycomb structures to various metals with differing thicknesses.

**Exclusive Laser Pointer**

Only LPX X-Ray systems allow pinpoint image area targeting via Spellman's exclusive Laser Pointer laser sighting system. The Laser Pointer projects a highly visible reference laser beam from the tubehead to surfaces as far as 75 feet away from it to show precisely where the central X-Ray beam will be located.

Unique in industrial X-Ray, the Laser Pointer permits unmatched accuracy for greater efficiency and reduced set-up times.

**Model 1620 X-Ray Tubehead Stand**

The model 1620 X-Ray Tubehead Stand has been designed to set up quickly and provide rigid support for optimal image quality and flexible, three-axis positioning for the LPX160 and LPX200 industrial tubeheads.

The stand incorporates two-segment telescoping legs, a handwheel-driven variable height adjustment and a gearhead which provides lockable handwheel control of the tubehead tilt and horizontal rotation.

The tubehead cradle is cushioned for secure mounting and vibration damping, yet allows easy, quick tubehead mounting and interchangeability. The cradle accommodates both the 160kV and 200kV tubeheads. A bubble-type indicator is included for quick and easy leveling of the tubehead.



*The LPX200 tubehead is end grounded to allow for easier positioning. The beryllium window allows the user to utilize the full spectrum of available X-ray energy*

**LPX200 Control Unit**



- **Automatic warm-up in five operator selectable modes**
- **Units of exposure in time or mAs**
- **Precise kV and mA indication**
- **Alphanumeric display of operating status**
- **Self-diagnostic circuitry**
- **Accurate setting for exact repeatability**
- **Displays are readable in direct sunlight**
- **Store/Recall of 250 exposure techniques**

# SPECIFICATIONS

**LPX160**  
**LPX200**  
**LPX300**

## **Input Line Requirements:**

Automatically adapts to input line voltage  
100-130Vac, 50/60Hz, 20 Amperes maximum

200-250Vac, 50/60Hz, 10 Amperes maximum

May also be portable-generator powered

## **Anode Cooling:**

Liquid coolant solution closed loop between X-Ray tube anode and cooling unit, or fan-forced air cooling (LPX300 Liquid Cooled only)

## **Duty Cycle:**

100% - liquid or air cooled

## **Effective Focal Spot:**

0.060 in. sq. (1.5mm. sq.)

## **Ambient Temp:**

100% duty cycle @ 120°F (49°C)

## **Storage Temp:**

-30°F to 160°F (-35°C to 71°C)

## **Safety Devices:**

- Tubehead Pressure Relief Valve
- Tubehead Thermal Cut-Out
- Tubehead Pressure Gauge
- Tubehead Low Pressure Cut-Out @ 25psi (1.72 Bar)
- Coolant Flow Sensor (liquid cooled only)
- Control Unit Safety Keyswitch
- Microcomputer-based Self Diagnostics
- Continuous Exposure Parameter Display

## **Radiation Leakage :**

Less than 0.8 Roentgens per hour at 1 meter from the X-Ray tube target. 2.0 for the LPX300 and all Air Cooled units

## **X-Ray Control Unit:**

Digital microcomputer based

## **Dimensions:**

2.7" H x 10.5" W x 17.5" D  
(68.6mm x 266.7mm x 444.5mm)

## **Weight:**

34lbs. (12.68kg) approx.

## **Liquid Cooling Unit:**

## **Dimensions:**

12.7" H x 15.5" W x 15.7" D  
(322.6mm x 393.7mm x 398.8mm)

## **Weight:**

54lbs. (15.4kg) approx.

## **LPX160:**

### **X-Ray Output:**

5 to 160kV, 0.1 to 5.0mA

Constant potential, end-grounded anode, air or liquid cooled versions available

### **X-Ray Tube Window:**

Beryllium .8mm (Directional), Nickel .6mm (Panoramic)

### **Radiation Coverage:**

40° (360° Panoramic tube available)

### **Radiation Output:**

14R/min at 50cm filtered with .5 inches (12.7mm) aluminum at 160kV, 5mA

### **Dimensions:**

7.25" Diam. x 28.5" L (184.2mm x 723.9mm) WC  
7.25" Diam. x 30.5" L (184.2mm x 774.7mm) AC

### **Weight:**

29lbs. (13.15kg) WC     33lbs. (14.97kg) AC

## **LPX200:**

### **X-Ray Output:**

10 to 200kV, 0.1 to 10.0mA (900 watts max)

Constant potential, end-grounded anode, air or liquid cooled versions available

### **X-Ray Tube Window:**

Beryllium 1.0mm

### **Radiation Coverage:**

40° x 60° (360° Panoramic tube available)

### **Radiation Output:**

21R/min at 50cm filtered with .5 inches (12.7mm) aluminum at 200kV, 4.5mA

### **Dimensions:**

8.38" Diam. x 26.5" L (212.9mm x 673.1mm) WC  
8.38" Diam. x 30.0" L (212.9mm x 762mm) AC

### **Weight:**

37lbs. (16.78kg) WC     41lbs. (18.6kg) AC

## **LPX300:**

### **X-Ray Output:**

10 to 300kV, 0.1 to 10.0mA (900 watts max)

Constant potential, end-grounded anode, air or liquid cooled versions available

### **X-Ray Tube Window:**

Beryllium 1.0mm

### **Radiation Coverage:**

40° x 60°

### **Radiation Output:**

30R/min at 50cm filtered with .5 inches (12.7mm) aluminum at 300kV, 3.0mA

### **Dimensions:**

12.00" Diam. x 43.00" L (304.8mm x 1092.2mm) WC

### **Weight:**

98lbs. (44.5kg) WC

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