



Proven Medical Grade Foot Controls



Every medical-grade foot control we manufacture is **built in our Medical White Room, which features ESD Safe Construction** for handling electronics, such as anti-static pads, grounded chairs, and grounding bracelets for technicians.

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LINEMASTER EXPERTISE

More than **90%** of the world's largest original equipment manufacturers turn to Linemaster for their medical grade foot controls.

Linemaster's mission is to provide a **superior foot switch at an affordable price without compromise**. This mission is met every single day.

Linemaster gives you a competitive edge. We are **the only foot control company in the world to hold FDA 510(k) Clearance** on a wireless foot switch. Whether you need a standard foot switch made at the highest quality or a custom foot switch engineered to meet your demanding specifications, Linemaster is the number one source for medical grade foot controls.

Highly engineered foot controls, FDA-cleared capabilities, innovative and flexible design: it is by no mistake that Linemaster is **the leading foot switch manufacturer in the world**. We reached this status by focusing solely on what we do best: Foot Controls.





LINEMASTER KNOWLEDGE

We have **proven success** working with the most rigorous medical specifications in the world.

We have partnered with an extensive group of satisfied medical clients from small start-ups to category leaders.

Our diverse background means that we have catered to a multitude of diverse medical grade foot switch applications.

If you can think of an application, Linemaster has probably already designed a foot switch solution for it.

Linemaster's track record speaks for itself: We have proven success working with the most rigorous medical specifications in the world. The most renowned medical device companies have turned to Linemaster again and again for the best medical foot controls available worldwide.

Linemaster's honed processes and quality systems are proven, resulting in the best and most reliable medical grade foot switches on the market today.

Linemaster's Quality Management Systems include:

- **FDA 510(k):** Linemaster is the only foot control company in the world to obtain FDA 510(k) Clearance on an infrared Wireless Foot Switch.
- **ISO 13485:2003:** This internationally recognized Quality Management Systems Standard was established for the design and manufacture of medical devices. Linemaster has demonstrated the ability to successfully implement a comprehensive management system for the design and manufacture of medical devices that meet the ISO Standard, FDA QSR, and regulatory requirements. The addition of the ISO 13485:2003 registration to the existing ISO 9001:2008 registration and FDA 510(k) clearance reflects Linemaster's commitment to continuous improvement with the quality process.
- **Linemaster Quality Policy:** We are committed to provide the highest standard quality products and services that will meet or exceed our Customers' requirements, comply with regulatory requirements, and to maintain and improve the effectiveness of the quality management system.

All Regulatory approvals

FDA 510(k) Clearance
 UL
 CE
 FCC
 RoHS
 REACH
 CSA
 TUV
 WEEE
 SEMKO





LINEMASTER PROCESS

We provide the best customer service and custom switches suitable for **ANY APPLICATION** in the industry.

DESIGN AND PRODUCTION

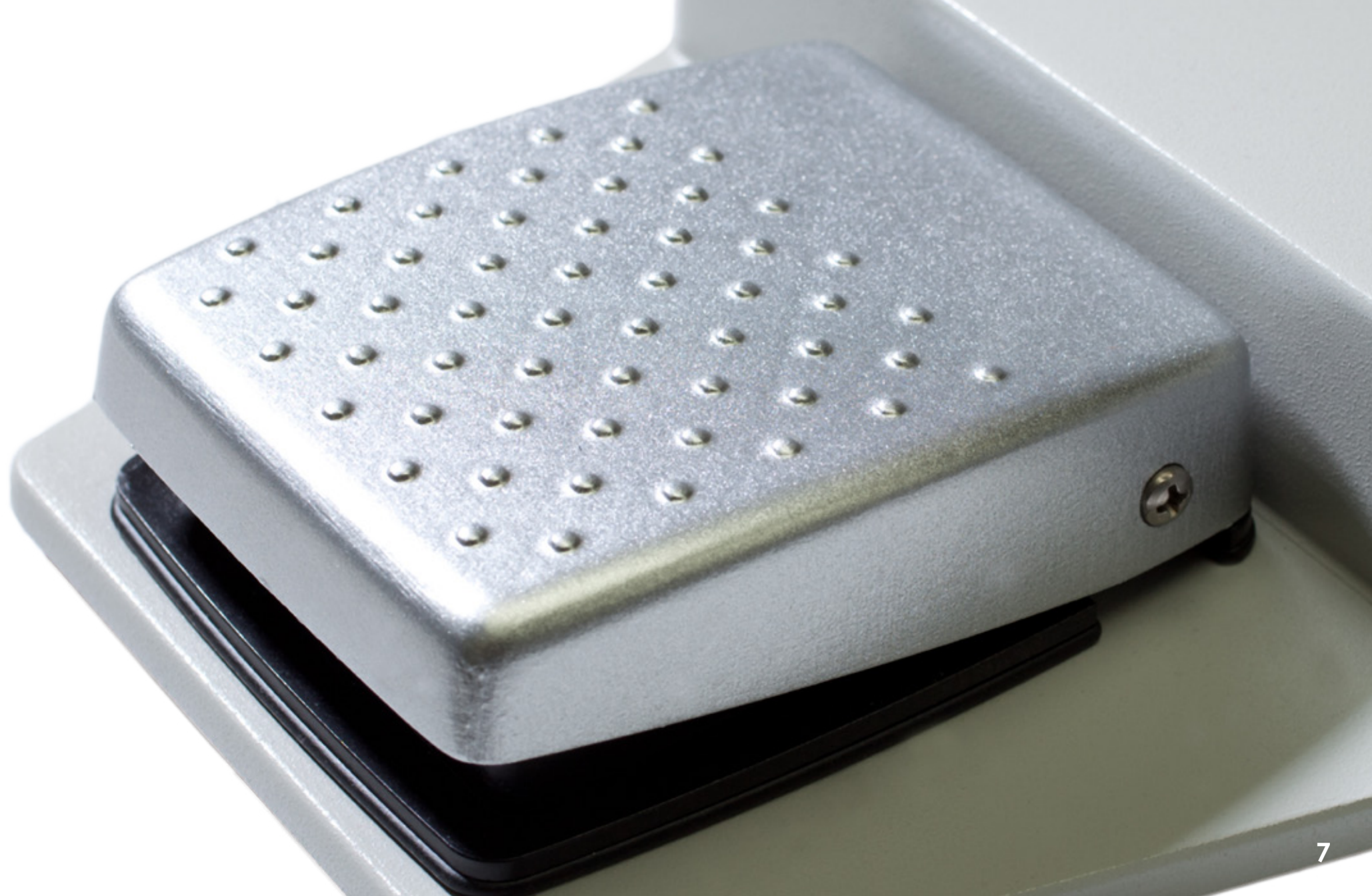
Linemaster's creative design team brings to our customers vast experience in medical foot controls and can devise an ideal solution specific to each individual application. They apply in-depth knowledge in safety regulations, technical specifications, and on-site functionality to the best technologies available.

And then we do something decidedly low-tech – we talk to you. At the foundation of every Linemaster Foot Control is the best customer service in the industry.

Through the entire process, Linemaster's creative design team keeps the bottom line top of mind. Our team ensures that there are minimal, if any, non-recurring engineering expenses, and tooling is provided at cost. In-house artwork capabilities and an on-site printed circuit board lab translates to outstanding flexibility and ingenuity, all within budget.

New technologies are at our fingertips – and the possible features of a new custom design are nearly limitless:

- Infrared and Radio Frequency Wireless
- Hall Effect Linear Devices
- Magnetically Immune Circuitry for MRI Suite applications
- Pneumatic
- Pneumatic Linear Actuators
- USB, RS232, and RS485
- Digital and Analog foot controls
- Custom cables, sizes, weight, functionality, handles, toe loops, paint, silk screen, base pads, dividers, electronics, LED's, and guards





DOCUMENTATION, TRACEABILITY, DESIGN VALIDATION

Linemaster's rapid prototyping capabilities mean that your custom foot control is in pilot stage quickly and efficiently. Design validation prototypes and production runs are put through Linemaster's extensive testing protocols. Linemaster utilizes

- Automated Testing Equipment
- A water-testing room to test IP68 foot controls,
- Hypot Test Equipment for ground impedance testing
- Drop Tests
- Pull Tests for testing cables and strain reliefs
- Flex Testing of cables
- Continuity, Shipping, Environmental, and Impact testing.

Through it all, Linemaster's team is managing proper documentation. Project files containing emails, customer drawings, Linemaster preliminary drawings and any other correspondence are kept to track the entire life of the project. Top level components and finished product are traceable through barcode labeling, serial numbering, intelligent part numbers, and date coding – **everything you need for medical device approval from the FDA and other global market regulatory agencies.**



TRAINED AND CERTIFIED TECHNICIANS

Once your custom design is complete, you are in good hands, literally. Linemaster's trained and certified technicians are carefully selected to assemble and test our sophisticated medical-grade foot controls with state-of-the-art equipment. **Our soldering technicians are certified in accordance with IPC-A-620 standards.** We have a **LEAN Manufacturing** professional on site and our well-organized facility enables optimum workflow. Linemaster offers Vertically Integrated Human Resources, with hundreds of years of degreed and real-world engineering working for you.

Every medical-grade foot control we manufacture is built in our Medical White Room, which features ESD Safe Construction, such as Anti-static pads, grounded chairs, and grounding bracelets for technicians for handling electronics.

From custom design to finished product, Linemaster's promise of timely delivery of the highest possible quality product is met every day.

COUNT ON SUCCESS WITH LINEMASTER

Linemaster customers are usually life-long customers. Most of our major medical customers consider Linemaster a sole source supplier for foot controls for current and all new projects. Linemaster is a true business partner working for your long-term success. It is not uncommon for a customer's internal projects to be handed over to Linemaster to take it to completion. Our unparalleled focus on the goals and objectives of our customers has gained us a reputation second to none. **Our customers trust our ability to design a user interface that will compliment and enhance their final product.**

Linemaster knows what it takes to supply a product a customer can be proud of, on time and under budget.

Each of our 150 employees has on average 15 years of experience at Linemaster; many of our employees have been working with us for 25 years or more. **We have a true passion for creating technically elite and aesthetically sophisticated foot controls.** The innovation and creativity shown in our foot controls drive real excitement at Linemaster, and we will bring that passion to your project.



LINEMASTER SUPERIORITY

Linemaster switches are strong, stable, safe, moveable, washable, **and responsive to a softer touch.**

WHY A LINEMASTER MEDICAL-GRADE FOOT CONTROL IS BETTER

A Linemaster foot control is designed and manufactured with medical applications in mind. Engineered robustness is at the heart of every foot control, but we do not overlook aesthetics and ergonomics.

Stability does not come just from weight or immobility. Linemaster's products are specifically engineered to stay in place during use, yet they are light enough to respond to a softer touch and be easily repositioned to an optimal location for the user. Features like a toe loop holster can be incorporated into the design to allow the user to move the foot control with their foot thereby keeping hands free and sterile. **Linemaster merges the absolute best combination of fit, form, and function with aesthetically pleasing and complimentary industrial design on all of our medical grade foot controls.**

A Linemaster foot switch is not only a complimentary extension of the technology it controls, but also of the medical professional who operates it. The equipment connected to the foot control may be superior, but if the user interface (foot control) is not of equal or greater quality, the user experience will not be positive. **User interfaces must be of the highest quality and technology to make equipment perform at top levels. This is where Linemaster shines.**

A foot control is the “user interface” of its corresponding equipment.

SUBMERSIBILITY

Other manufacturers claim to make foot pedals that can be easily cleaned, but Linemaster produces foot control devices that are designed to be fully submersible all day/every day. Linemaster foot controls are made of the highest quality materials that can endure years of use without peeling, cracking, or wear. In some applications materials that also discourage bacterial growth have been introduced. No other foot switch is as easily cleaned and ready for use again than a Linemaster foot switch.

Linemaster does extensive testing on their waterproof foot controls; submerging them in 8 feet of water for a 24 hour period to assure that there is no water ingress. We have combined the best foot switch technologies and usability with the highest of medical industry standards for safety, reliability, and conformance.

It's by no coincidence that nearly 90 percent of all US medical manufacturers use Linemaster foot controls for their medical applications.

- IP68 medical-grade foot controls
- Fully submersible
- Easy to clean

Waterproof Solutions





LINEMASTER
TECHNOLOGY

UNPARALLELED WIRELESS CAPABILITIES

Get wireless technology and limitless capability from the company that was first to market with a wireless foot switch that met the high demands of medical device manufacturers. Perhaps most importantly, Linemaster is the only foot control company in the world to obtain FDA 510(k) Clearance on an IR Wireless Foot Switch.

Linemaster's IR and RF wireless foot controls provide ease of use, mobility, and cleanliness while meeting the stringent safety and reliability requirements of medical equipment. Eliminate tripping risks, gain freedom of location, and eliminate potential cable damage. **Easier, safer, cleaner: Linemaster's wireless footswitches are specifically created for the needs of medical environments.**

IR Wireless

The IR Wireless foot control offers reliable reception by saturating a room with 360 degrees of high power, invisible, infrared light waves. Encrypted coding allows for multiple systems to be used in the same vicinity at the same time with no interruption or cross talk while utilizing a 50-foot transmission range. Linemaster IR Wireless foot switches are available in single, twin and triple variations offering up to (5) switch functions.

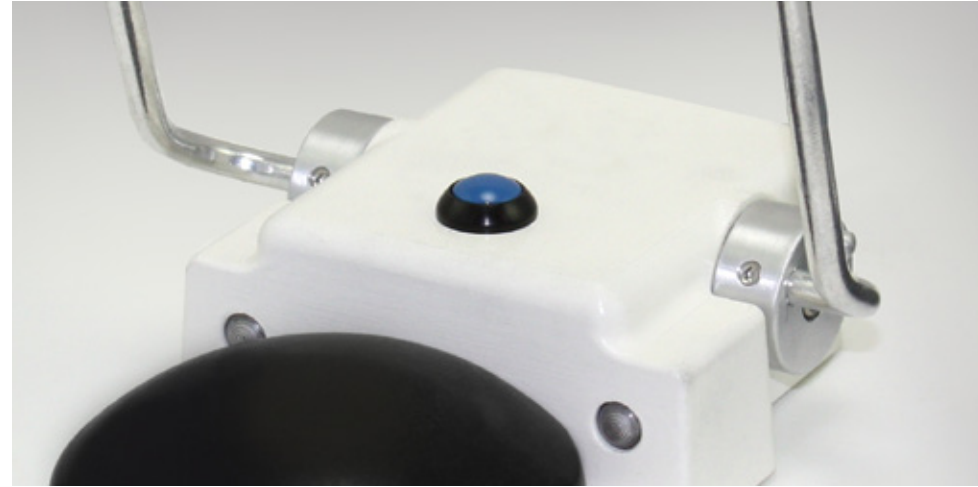
RF Wireless

Linemaster's standard RF Wireless foot controls are offered with up to (5) digital and (3) analog switch functions with additional switch functions available upon request. **Linemaster's RF Technology utilizes the well-established IEEE 802.15.4 Standard and operates in the worldwide ISM 2.4 GHz frequency band.** Our unique and robust proprietary communication scheme does not require the use of bi-directional link or acknowledgement, which greatly reduces the amount of air traffic and potential interference. **This proprietary design also offers a battery life that is second to none.** The transmitter meets the provisions of IP68 degree of protection making it the perfect interface for numerous medical devices.

Both of Linemaster's Wireless foot controls offer a unique "plug and go" system perfect for new applications or as a replacement for existing wired solutions. This system can be used in many different medical applications as the foot control meets the provisions of IP68 protection. Both types of Wireless technology are battery-powered and provide 400 hours at 50 percent duty cycle, which could translate to years of operating life depending on the application.

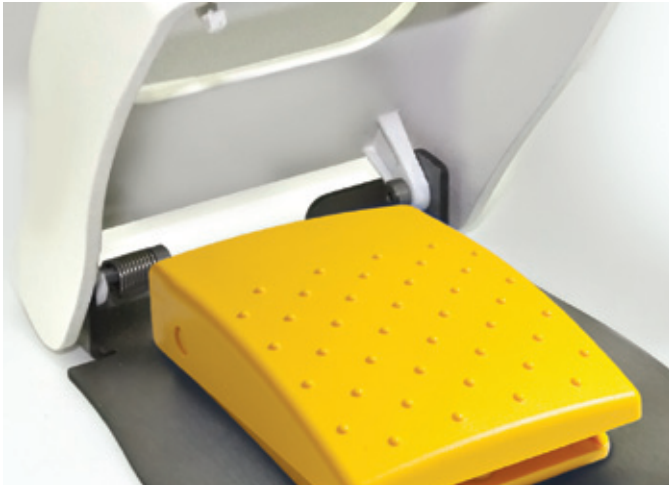


LINEMASTER PRODUCTS



Linemaster's wide range of medical foot controls includes USB, RS232, RS485, Custom Communication Protocols, Linear Hall Effect, Electric, Air Powered, Variable Speed Control, and Wireless IR and RF Systems for a large variety of medical applications.

Linemaster is the leader in the foot switch industry.



LINEMASTER
**WIRED FOOT
CONTROLS**



Our wired foot controls can be designed with single, twin, triple, and multi-function variations. Functions include electric, pneumatic, air-impulse, linear, USB, and hall effect. All options are available in custom models designed to meet your specific needs.

design considerations

Cable Considerations taken into account at Linemaster

- Wire Gauge
- Length of cable
- Size appropriate to fit the switch end and plug end
- Cable jacket material
- Cable memory
- Retractable cables

Strain Relief Options

- Bell mouth Connectors
- Clearflo tubing
- Heatshrink tubing
- Pigtail strain relief
- Molded on strain relief grommets
- Strain relief guards

Handle considerations

- Attached to the foot switch assembly for ease of picking up and prolonging the cable life.

Foot Guards

- Multiple options for covering the foot pedal and protecting the user's foot.

Push Buttons

- Operates as a function, smaller version of an actual pedal.

LED Lighting

- Installation of LED lights for ease of visibility in dimly lit areas

Foot switch covers

- Clam shell designs
- Rubber boots
- Protective plastic bags

Features and Benefits

- Reliable signal (*not affected by wireless signals*)
- Power source (*The foot switch is powered by the equipment it is attached to*)
- Price is lower than Wireless typically
- No latency (*equipment responds instantly when pedal is pressed*)
- Easy to clean because of the waterproof foot pedal (*transmitter*)

Cable Testing

- Cable life testing/flex testing
- "Pick up-drop" testing
- Strain relief pull testing
- Gourney testing



LINEMASTER
**WIRELESS FOOT
CONTROLS**



No one offers more possibilities for wireless foot controls than Linemaster. Our single, twin, triple, and multi-function variations can be customized designed and manufactured to your exacting specifications.

design considerations

Different Wireless Technologies offered

- Infrared
- Radio Frequency

Digital and Linear Pedal Options

- On/Off
- Hall Effect
- Optical
- Pneumatic

Transmitter (Foot Switch)

- IP68 degree of protection, waterproof switch, can be fully submerged in water for cleaning etc.
- Foot pedal runs on 3 "AA" Alkaline batteries that last over 400 hrs @ 50% duty cycle

Receivers

- AC Powered, must be plugged into the wall
- DC Powered via OEM Interface or Power Plug
- Battery Powered, receiver will run on 4 "C" Cells
- Internal (Built into User console)
Customer can build the receiver and miniature flat antenna board into their equipment so that there is no external receiver.

- External (Standard option)
Typical selection where the receiver and built-in antenna would sit next to or on top of the equipment and a pigtail cable would attach it to the equipment.
- IPX1 degree of protection

Features and Benefits

- Very convenient to move around without a cable
- Great Range of 50 plus feet for both Infrared and Radio Frequency models
- Long battery life, low power consumption for both technologies
- No tripping hazard that exists with wired pedals
- Easy to clean because of the waterproof foot pedal (*transmitter*)
- FDA 510(k) Clearance on the Infrared version
- Special encrypted codes are programmed by Linemaster to assure that there will not be any cross-talk between pedals or with any other piece of equipment in medical field
- Fully tested and designed to withstand outside interference

Testing

- Range testing
- EMI shielding
- Signal security



LINEMASTER APPLICATIONS



Linemaster foot controls are in **use in dozens of medical applications.**

LINEMASTER FOOT CONTROLS AT WORK IN THE MEDICAL WORLD

Linemaster holds approximately 90 percent of the medical OEM foot control business in the US market. You will find Linemaster Foot Controls being used in conjunction with the following medical equipment:

- Electrosurgical Generators
- Biopsy Systems
- Bone Saws
- CT Scanners
- Dental Chairs
- Medical Lasers
- Endoscopy
- Fluoroscopes
- Liposuction
- Laparoscopic Surgery
- Medical Cameras
- Medical Tables
- MRI Systems
- Surgical Navigation Systems
- Ophthalmic Surgery
- Surgical Shavers
- Lighting Controls
- Surgical Visualization & Image Management Systems
- Surgical Microscopes
- Ultrasonic Diagnostic Systems
- X-Ray Equipment (C-Arm).



LINEMASTER HISTORY



Corporate Headquarters 29 Plaine Hill Road, POB 238
Woodstock, CT 06281-0238 USA

LINEMASTER: THE BEST AND THE FIRST IN FOOT CONTROLS

For six decades the name Linemaster has been synonymous with the highest standards of performance in providing Foot Control solutions for Medical Device Manufacturers worldwide. Our international reputation for excellence has evolved through ongoing research and development, innovative design, customer service, and a commitment to precision and quality that is unparalleled in the industry.

Linemaster's history is rooted in innovation, and today is no exception. From the introduction of the world's first footswitch in the mid 1930's to the

custom built series of wireless foot controls of today, Linemaster continues to exceed customer expectations over and over again in every aspect of reliability, functionality, and design.

Linemaster's first foot control was created in 1937, by Albert Simonds, who needed to operate his lens grinding machinery while keeping his hands free at all times. Consequently, he invented the foot switch and thus the Linemaster story begins. Demand for his unique product grew and, by 1952, Linemaster was officially established as a privately owned and operated manufacturing facility in the state of Connecticut. Today, Linemaster's 45,000 square-foot facility in Woodstock, Connecticut, produces more than a million foot switches each year.

Linemaster recognizes that medical device manufacturers not only want equipment that works flawlessly, they also want products that look great and perform to the highest standards. Linemaster's products are renowned for their reliability and performance throughout the medical device industry. Our range of foot controls is extensive, providing solutions for a myriad of medical applications.

In 2009, Linemaster's opened the doors to its second facility, in nearby Plainfield, Connecticut, which contains a warehouse, cable technician department, and other various business functions. Linemaster's second facility occupies 15,000 square feet and much needed space for a fast growing company.

Linemaster: setting the standards for foot controls since **1937**.

Linemaster recognized a need for a facility that could lend itself to the handling and assembly of sophisticated medical foot controls. What materialized was an Electronics White Room, located in the main facility, which is a state-of-the-art manufacturing location designed specifically for the assembly of medical-grade foot switches. The Electronics White Room is equipped with the appropriate tools and work stations to ensure that everything is grounded inside the room. The White Room contains Anti-static Tiles, wrist bands, heel straps, along with grounded chairs, work benches, and material carts. Anti-static test stations are located in the room for reassurance that the operator is grounded prior to handling any electronics. Intense high quality white lighting and ergonomically designed work stations give the operators an ideal working environment, as well as the tools necessary to build hi-tech foot controls. An elite class of Linemaster employees has been selected to work in the Electronics White Room to handle the sophisticated foot controls the medical device manufacturers require.



Innovation you can count on.



LINEMASTER SWITCH CORPORATION

29 Plaine Hill Road, POB 238
Woodstock, CT 06281-0238 USA

Business Hours

7:00am to 4:30pm Monday - Friday
(Eastern Standard Time-EST)

Telephone (860) 974-1000

Fax: (860) 974-0691
(800) 974-3668 (Toll Free US Only)

www.linemaster.com

