The Equine Therapy Company

Equinew™ LLC

User Manual

FES 310™
Functional Electrical Muscle Stimulator

WE HAVE EQUINE IN OUR NAME™

N8139 900th Street River Falls, WI 54022 715.222.8279 www.EquiNew.com

The Equine
Therapy
Company

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LLC

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GENERAL INSTRUCTIONS FOR USE

FES 310 is a microcontroller-based system with custom software that generates a unique therapeutic waveform. This instrument has been designed specifically for use with horses. Exacting specifications, through extensive research and clinical trials has produced a modality that is extremely well accepted by the horse.

FES 310 will provide a treatment that feels like a deep muscle massage to the horse. Almost all horses accept the sensation of the stimulus in a relaxed manner. However, care must be taken that the horse is introduced to the stimulus slowly and carefully to avoid startling the horse when the contractions begin.

The first few treatments on every horse should be done with care to determine the level of acceptance of each individual horse. Young horses, any horse that has not been handled much, horses with muscle disorders, or horses in pain, can be more hesitant to relax during the treatments.

The FES 310 system is most frequently used in the treatment of:

- Sore or injured muscles
- Muscle spasms
- Pulled or strained tendons and ligaments
- Loss in range of motion of joints
- Edemas
- Disuse atrophy
- Asymmetrical muscle development

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NOTICE

The unit is intended for use only with horses.

Federal law prohibits the use of this device for any other purpose than on horses.

Not intended for use on humans.

Opening the case voids the warranty.

Read the entire FES 310 Manual For Use before using the system.

The suggestions contained in this Manual For Use are based on general conditions and may not be directly applicable to your situation.
Each horse will respond differently and care must be used during treatments. A possibility of exciting a horse during treatment exists and caution must be used during the administration of treatments.

Please read the indications and contraindications before using the unit.
If you have any concerns on the appropriate use of this device, do not use it.

WARNINGS

Do not expose the system to extremes of cold or heat. Only the pads can be exposed to moisture. Protect the unit itself from wet conditions. Do not drop the unit. The electronics inside should be treated with care as any computer would be.

Do not use with or around any other electronic device.

Do not use if practitioner or horse is standing in very damp or wet areas, and never use when practitioner or horse is in standing water.

Treatment results in physical activity to the muscles being treated. During any physical activity there is a possibility of serious side effects, including but not exclusive of; tachycardia, hypertension, digestive upset, excitability, agitation, muscle, tendon and/or ligament spasms or damage and bone fractures.

If any concern exists about the overall health of the horse, do not use the system for treatment. Although electrical stimulation has been used extensively in human medicine, the long-term effects of chronic electrical stimulation are unknown.

DANGER

Explosion hazard is possible if used in the presence of explosives, flammable materials or flammable anesthetics.

INDICATIONS

Movement of constricted muscle, tendon tissue, and associated ligaments

Relief and management of acute or chronic pain, postoperative and posttraumatic pain

Reduce painful spasms and splintering of muscles as a result of injury

Induce muscle movement to increase level of blood and lymph circulation

Removal of edema

Reduce the pain-spasm-pain cycle

Reduce pathological cross fiber development during healing

Increase range of motion

Re-education of muscle

Strengthening of muscle after injury

Improve sagittal plane muscle symmetry

Reversal of muscle wasting (e.g. EPM rehabilitation)

May decrease healing time for bone fractures when used after acute phase of injury

Assist in readjustment of dislocations

Pre and post to chiropractic and acupuncture treatments

Healing of wounds

CONTRAINDICATIONS

Cannot Be Used Over: Cardiac Pacemakers, Electrical or Metal Implants, Carotid Sinus Nerves, Heart, Epiglottis, Mouth, Throat, or Brain
Stimulation may cause malfunction of pacemaker, increased intensity, cardiac arrhythmias, or spasms of the laryngeal and pharyngeal muscles

Do Not Use Over Boney Prominences
May produce a painful response due to the lack of muscle tissue

Acute Injury
Diagnostics must be performed before treatment, should not be used on acute surgical site

Active Bleeding
Hemorrhaging may increase with stimulation

Infections, Including Systemic or Skin Eruptions
Potential for spreading a localized infection because of increased blood flow

High Fever
A secondary problem may exist that needs treatment

High Blood Pressure
Therapy may increase blood pressure

Heart Problems or Disease
Therapy may increase stress on heart

High Heart Rate
Therapy may increase heart rate

Blood Clots or Varicose Veins
Therapy may dislodge clots due to increased circulation

Limited Range of Motion in Joint
Therapy may irritate structural problems that affect the normal range of motion

Dislocation
Strong muscle movement that could result in dislocation

Therapy may allow desirable readjustment if performed on adjacent sites

Abnormal Bone Formation
Therapy may irritate bone spurs, healed or healing fractures that are abnormally sensitive

Severe Muscle Spasticity
Unknown cause of severe spasticity needs to be determined

Severe Osteoporosis
Badly weakened bone may be damaged with muscle movement

Pregnancy
Therapy applied close to uterus may initiate contractions

Cancer
Therapy may break loose bits of cancer and increase spread throughout the body

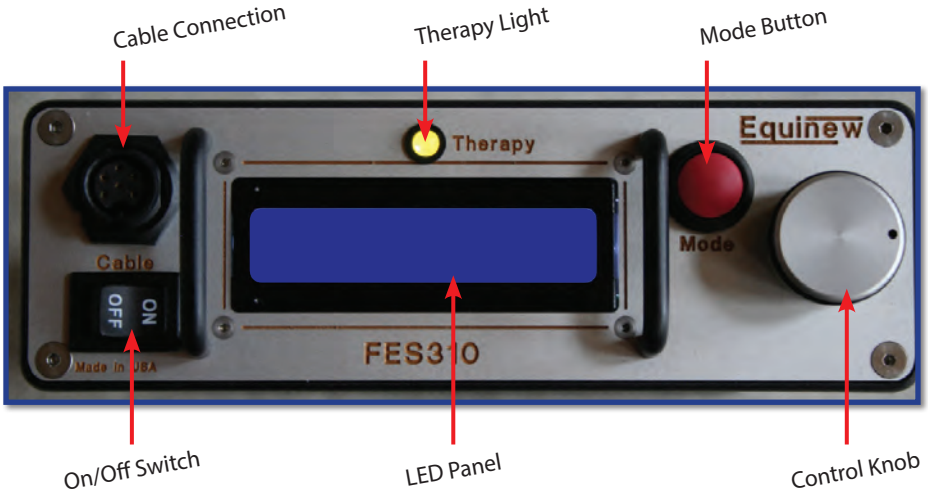
Lower Motor Neuron Damage, Including:
Polio, Amyotrophic lateral sclerosis (ALS), Peripheral nerve injuries (brachial plexus), Muscular dystrophies, due to unhealthy muscle tissue.

Nerve Damage
With denervated muscle, muscles cannot feel normal sensations and can react abnormally

Possible abnormal response to stimulation of autonomic nerves

Seizures
Therapy may trigger cause of seizure

FRONT PANEL



Cable Connection
Where the connection plug for the cable is attached to the system

Therapy Light
When the **Therapy Light** is on, this indicates that the stimulus is active

Increase the voltage when the **Therapy Light** is on to obtain a smooth increase in contractions

Mode Button
Pressing the **RED Mode Button** changes from **Time Mode** to **Treatment Mode** so that the **Control Knob** can be used to set the required values

To STOP the therapy at any time, press the **RED Mode Button** or the **ON/OFF Switch**

ON/OFF Switch
Turns the power to the unit on and off

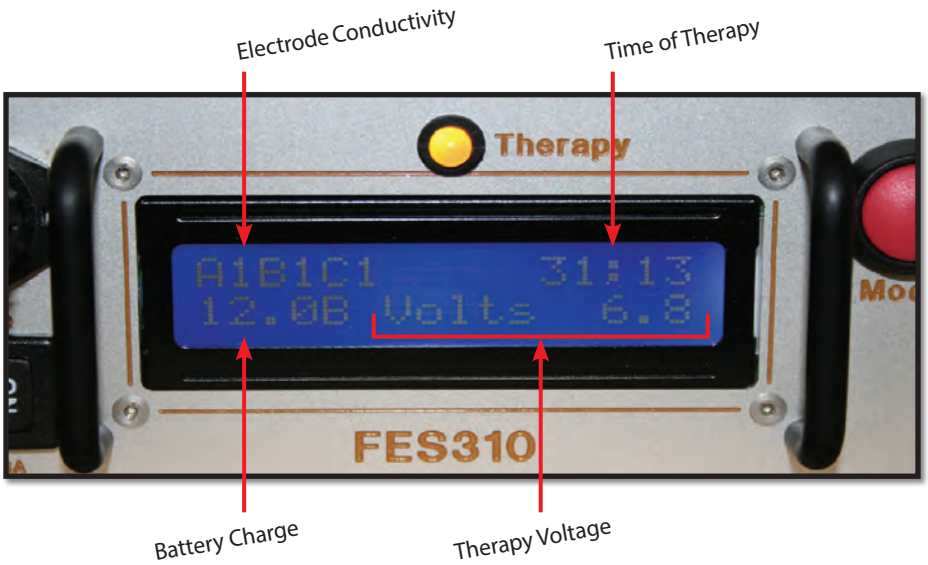
Can also be pressed to OFF to STOP the therapy

LCD Panel
Blue LCD Panel clearly displays the treatment variables

Control Knob
High-quality rotary knob with tactile dial control

Used to set the time for treatment and to change the intensity

LED DISPLAY



Top Row of Display Panel

Electrode Conductivity (Contact)
Displays contact values of each electrode pair

The 3 electrode pairs are designated as A, B, & C

Values should ideally be the same for equal electrode contact

Values should only vary by one number value

Time of Therapy
Countdown of treatment time

Bottom Row of Display Panel

Battery Charge
Voltage of the battery

Value will count down constantly displaying current battery charge

Therapy Voltage
Amplitude of the voltage during treatment

Increases at the rate of 0.2 volts with each click of the **Control Knob**

TIME OF THERAPY INFORMATION

On power up, system is in **Time Mode** with current charge of battery displayed. The **LED Panel** will display the word "MINUTES" on top line.

Use the **Control Knob** to set the time for the therapy

The maximum therapy time is 60 minutes. Time will count down in seconds.

Battery Charge Information

The current voltage of the battery will be displayed on the bottom line with a letter "B" behind the value to indicate battery voltage

When the voltage is ***under 11.7 volts*** the battery should be recharged to get the best possible service from your system

At least 8 hours of treatment time is available with a fully charged battery

Expected battery life is 1000 hours of use before replacement is needed

THERAPY VOLTAGE INFORMATION

Once time is set, press the **RED Mode Button** to enter the **Treatment Mode**, which will set the intensity of therapy. "Volts 0.0" will appear on the right side of the bottom line. Turn the **Control Knob** slowly to administer therapy, carefully observing the horse's reaction as the amplitude is increased.

THERAPY LIGHT INFORMATION

The **Therapy Light** glows when the therapy signal is being sent, indicating that the horse is feeling the treatment

At 5 volts, the **Therapy Light** LED changes from **GREEN** to **ORANGE**

At 10 volts or more, the **Therapy Light** LED changes from **GREEN** to **RED**

Intensity should be INCREASED when the Therapy Light is ON to obtain a smooth increase in stimulus

Electrode Conductivity (Contact) Information

The top left of the **LED Panel** indicates the level of the connection of the electrodes (conductivity)

The higher the conductivity number, the "faster" or "better" the conductivity

The letters A, B, & C designate the channels of the three pairs of electrodes

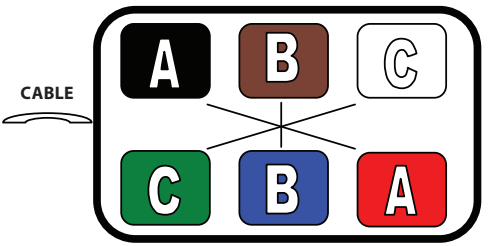
If conductivity of all electrodes is equal, all three numbers will be the same

As the voltage increases, the numbers of the conductivity will also increase

The ratio of the voltage and conductivity is an important indicator of the response of the muscle to the stimulus

It is advisable to have the conductivity values differ by only one number

Viewing from bottom of pad, the electrode pairs are illustrated below:



Therapy Guidelines

Turn the system ON

Use the rotary knob to set the TIME in minutes

Press the **RED Mode Button** to see display of volts

Use the Rotary Knob to set the AMPLITUDE of the voltage

To STOP the therapy, press the **RED Mode Button** or **ON/OFF Switch**

SIDE OF UNIT

Charging the Battery

The connection for the battery charger is on the bottom, right side of unit

DO NOT plug connector of battery charger into front panel on top of unit

It is advised to turn system off when charging the battery, but not necessary

Battery voltage may increase up to 14.7 volts during charging; this is normal. The voltage will decrease once charger is removed.

When the battery is fully charged, the LED panel will display 12.7 - 12.8 volts

If battery is not charged, the system can be plugged into a 110 - 240 volts outlet for use

Recharge battery when voltage is ***below 11.7 volts*** for best performance

The charger will charge a low battery usually between ½ hour - 2 hours

A fully discharged battery will take about 4 hours to completely recharge

Battery life is not shortened by frequent, short charges. Keep the battery as fully charged as possible.

To lengthen the life of the battery, CHARGE BATTERY EVERY DAY after use

The charger cannot overcharge the battery

The system and charger are surge protected

When the system is plugged into an outlet, it is NOT protected from catastrophic surges such as lightening strikes

The battery charger can be used with an adaptor for charging internationally up to 220 volts. A transformer must be used when charging over 220 volts.

DO NOT leave the system charging for long periods of time, especially with a 220 volt power source

PAD DESCRIPTIONS & SELF-STICK ELECTRODES

Two pads are included with the system: the BACK PAD and the LEG PAD

Contact the company if you would like custom pads or blankets

Back Pad

The back pad has a Cordura nylon cover with a removable nylon liner

Two nylon liners are included and can easily be changed between horses

Liners can be quickly washed, disinfected between uses, and will dry rapidly

Adjustment tabs are used for smoothing out wrinkles during pad placement

The electrodes are attached to Velcro strips on the inside of the pad

Round pieces of Velcro are attached to the colored wires and to the black carbon electrodes to stabalize the electrodes

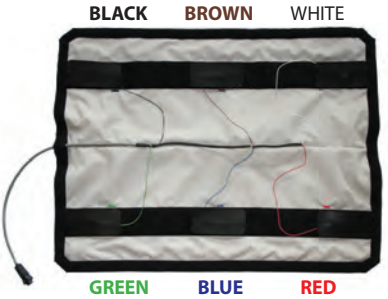
The electrode wires are color coded to specific positions on the pad, which are also color coded

It is important that the electrodes are placed on the pad in the below order:

Channel A RED and BLACK

Channel B BLUE and BROWN

Channel C GREEN and WHITE



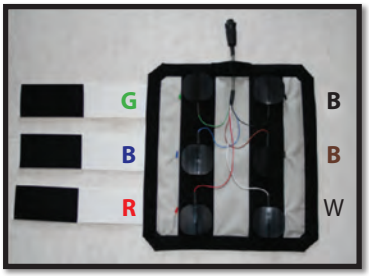
Spacing between the electrodes is typically as far apart as possible but can be modified. For example, for ponies the distance between electrodes will be closer.

The electrodes and the colored wires which connect to the electrodes (called the harness) can be completely removed for pad washing

Leg Pad

The leg pad is constructed similar to the back pad, including the removable nylon liner, electrode harness, and round Velcro pieces

Electrodes are positioned in the same manner for both the leg and back pad



The Neck Harness

The neck harness is located in a separate labeled package

It has longer lead wires than the back harness

Self-stick electrodes are used with the neck harness to keep the electrodes in place. However, the black carbon electrodes used in the back and leg pads can also be used if necessary.

Self-stick electrodes can be purchased from EquiNew.com

If the neck harness was not purchased, the back and neck harnesses are interchangeable

To use the back harness for a neck harness you will have to:

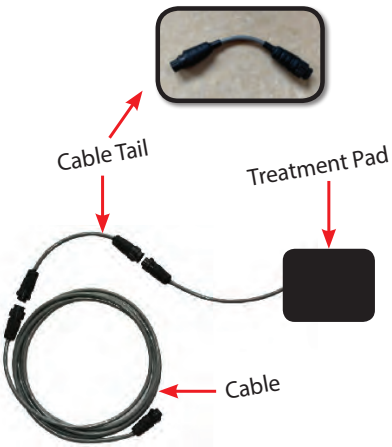
1. Remove the back harness from the back pad
2. Replace black rubber electrodes with self-stick electrodes

Cable

A 10 foot cable is used to connect the system to the pads or electrodes

A negative connector is at one end of the cable and a positive connector is at the other

The positive connector attaches to the **Front Panel** and the negative connector attaches to the pad



Cable Tail

A 4 inch cable is used to connect the **Cable** to the **Front Panel** as a quick release option

Self-Stick Electrodes

Self-stick electrodes can be ordered from EquiNew.com. Typical sizes are 2" square and 2"x4" rectangular (other sizes also available).

These electrodes are used for applications where pads are not appropriate

The electrodes can be reused if deemed appropriate by the practitioner

Six electrodes are used for these applications

Adhesive Electrode Tape

An adhesive tape is used to help keep the self-stick electrodes in place

The skin must be dry and free from silicone or oil based skin products for the tape to adhere

ACUPUNCTURE AND LONG-WIRE HARNESSES

*Both of these harnesses have the **same color of wire** for each channel*

Acupuncture Harness

The harness has 6-foot long wires with attachments for acupuncture needles

Two wires of the **same color** designate each of the 3 channels. The wire colors are **RED**, **BLUE**, and WHITE.

The signal is "dampened" so the voltage values are less than observed on the **Front Panel**

For example, a panel value of:

5 volts = 2.5 volts with the acupuncture harness

10 volts = 5.0 volts with the acupuncture harness

15 volts = 7.5 volts with the acupuncture harness

Channel A both **RED** wires

Channel B both **BLUE** wires

Channel C both WHITE wires

Long-Wire Harness
The long-wire harness has 6-foot long wires with attachments for self-stick electrodes

Two wires of the **same color** designate each of the 3 channels. The wire colors are **BLACK**, **BROWN**, and **GREEN**.

The use of six electrodes is recommended but fewer can be used.

If fewer electrodes are used, the correct wire pairs must be selected.

Channel A both **BLACK** wires
Channel B both **BROWN** wires
Channel C both **GREEN** wires

TREATING THE HORSE WITH THE FES 310

Where Should the Horse Stand During Therapy?

1. Horses should be in a comfortable and secure area with good footing
2. Tying securely is not advised, especially during the first few treatments
3. Excessive movement by the horse during therapy should be discouraged
4. The quieter the horse, the easier it is to determine a response to therapy
5. Horses can eat or drink during therapy. Keeping the head and neck at a neutral position about chest height will help keep electrodes in place.
6. If the horse defecates or urinates during top line treatments, turn down the intensity so a strong contraction does not occur during defecation or urination

Where Should the Practitioner Stand During Therapy?

1. The practitioner should be close to the **Control Knob** for quick and easy adjustments
2. A loud noise or sudden increase in activity could cause the horse to become startled, influencing the horse's response to the treatment
3. It is important to reduce any negative reactions to the therapy, especially in the early stages, so the therapy sensations are easily accepted
4. Almost every horse will become accustomed to the treatment after one or two sessions and will respond to the treatments in a relaxed manner

Where Should the Back Pad Be Placed?

1. The back pad can be placed at any point on the top line from behind the withers to the base of the tail
2. Use care when placing an electrode directly over a bony prominence. A voltage increase may produce an uncomfortable response
3. DO NOT place any electrodes near the carotid artery. Use care when placing an electrode close to the poll or on the face. DO NOT place an electrode in the ventral thoracic area close to the heart.
4. Contact the company concerning additional placement options

Where Should the Leg Pad Be Placed?

1. The leg pad can be placed on the lower leg below the knee or hock or on the upper forearm or gaskin
2. For FLEXOR TENDON and SUSPENSORY LIGAMENT therapy, place the leg pad so the the pad is on the back of the leg
3. For EXTENSOR TENDON therapy, place the leg pad so the center of the pad is on the front of the leg
4. For EDEMA therapy, center the pad directly over the swelling
5. To compliment the treatment of the lower legs, treat the associated muscles above the knee and hock as well as the spinal region to improve spinal symmetry
6. Always treat both legs even if only one leg is of concern. Treat the non-injured leg first to obtain the voltage and conductivity parameters.
8. DO NOT place any electrodes near the carotid artery. Use care when placing an electrode close to the poll or on the face. DO NOT place an electrode in the ventral thoracic area close to the heart.
9. Contact the company concerning additional placement options

How to Set up Treatment for Use of the Back Pad

Placing the Surcingle on the Horse

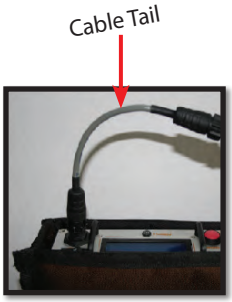
1. The surcingle is used to attach the FES 310 system to the horse
2. Place the surcingle in the normal position for a girth
3. On horses that are sensitive to pressure in the girth area, the surcingle can be placed further forward or further back from the normal position

4. For most applications, use the girth provided that has elastic on both ends
5. For use on very small horses, a shorter girth can be used
6. For extremely large horses, a girth extender can be used
7. Tighten the surcingle securely so that it will not slip during therapy
8. The rings on the surcingle are used to clip the system to the surcingle
9. The surcingle can be placed directly over the treatment pad when treating the thorax
10. The surcingle and girth can be easily wiped clean and disinfected for use between horses. The Velcro girth protector can be removed and cleaned separately.
11. The surcingle can be laundered in a front load washer. Air dry.

Connecting Back Pad to FES 310

1. With clean water and a sponge, or small towel, wet and clean the area to be treated. The surface of the skin must be wet, not just the hair coat.
2. Wet only the area that will be under the pad. If the area around the pad is also wet and tape is used to secure the pad, the tape will not stick.
3. Wet the nylon liner of the pad only where the electrodes are located so that water does not run off the pad onto the hair coat
4. DO NOT allow the cable connector ends to get wet
5. Place the pad on the wet surface of the horse's hair coat
6. Flip the edge of the pad up and place a liberal amount of conductive gel on the nylon liner where the electrodes are located. Do this on both sides of the pad.
7. As an option to keep the pad placed correctly, tear 12" strips of duct tape. Place one end of the tape on the pad where the electrodes are located, and the other end of the tape onto the hair coat of the horse. Tape down all 6 electrodes. Be aware that the pull of the tape against the hair may be uncomfortable for some horses.
8. It is important to keep the pad flat and smooth against the horse. To flatten any wrinkles in the pad, use the Velcro adjustment tabs on the top of the pad.
9. Attach the **Cable Tail** to the FES 310 system
10. Attach the **Cable** to the **Cable Tail**

11. There are two connectors on the **Cable**, one at the connection to the **Cable Tail**, and the second at the connection to the pad
12. All connection ends should be firmly seated to obtain a good connection. Check the connection if the signal is inconsistent during treatment.



Adjusting Time of Treatment for Back Pad

1. Turn the FES 310 system ON using the **ON/OFF Toggle Switch**

2. When the system is turned on, the top line will display "Minutes 0" and the bottom left line will display the battery charge in volts
3. When the battery is fully charged it will read about 12.6 volts
4. Turn the **Control Knob** to the right, or clockwise, to set the treatment time
5. A typical treatment time for Top Line is 35 minutes and for Legs & Neck is 20 minutes
6. If the horse is sensitive to the treatment, a slower, longer treatment time is suggested

Length of Time for Treatments

1. TOP LINE: 35 minutes
2. LEGS & NECK: 20 minutes each

Adjusting Intensity of Treatment for Back Pad

1. After setting the treatment time, push the **RED Mode Button** to change the display to the **Treatment Mode**. Use the **Control Knob** to slowly increase the voltage to begin treatment.
2. Initially, the voltage can typically be set to 2 volts, then slowly increase the voltage until one of the channels shows a conductivity value of "1"
3. Commonly, a minor surface contraction is felt under one or more of the electrodes when all 3 of the channels display "1" conductivity value
4. Each click of the **Control Knob** increases the intensity by 0.2 volts. This allows for a slow increase in intensity, which improves compliance.
5. Conductivity values should appear in the first 5-10 minutes
6. If conductivity values have not appeared by 5 volts, turn the voltage down and check the connections. One of the connectors may not be seated properly.
7. Each time the conductivity values increase, stop increasing the voltage for a minute or two, allowing the horse to accept the new sensation
8. The conductivity values should ideally be the same value for all 3 channels. However, the conductivity values typically do not appear simultaneously for all 3 channels.
9. All electrodes will not have the same contraction strength. Some may not contract at all.
10. Each time the strength of the contractions increases, or another electrode activates, wait a minute or two before increasing the voltage
11. As the intensity increases, place one hand on the pad, moving between each electrode to check the contact between the electrode and the skin
12. If the muscle contractions are difficult to see, placing a hand on top of the electrodes allows the contractions to be felt
13. PLEASE NOTE if one electrode has poor contact, the pressure of your hand could result in an increase in intensity that may surprise the horse

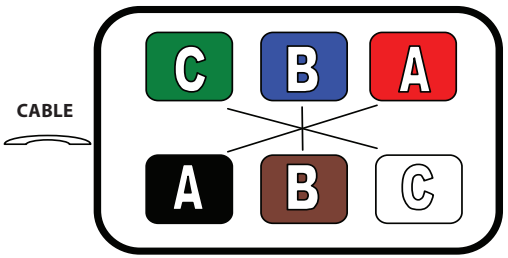
14. Rest a hand on the **Control Knob** so intensity can be smoothly adjusted
15. Ideally, all electrodes will have consistent and smooth contractions by the session's end
16. The higher the voltage, the deeper the contractions
17. Typically, for muscle therapy it is beneficial to obtain the deepest contractions possible
18. Functional movement is the goal of each treatment. However, when this functional movement occurs, it is individualized to each horse and each specific situation.

Adjusting the Voltage of the FES 310

1. Increase the voltage until one of the channels registers a level of "1"
2. The conductivity values should not vary by more than one value
3. When the intensity of the contractions increases, wait one or two minutes before increasing the intensity again
4. Increase the voltage until contractions occur under all electrodes
5. The higher the voltage, the deeper the therapy
6. For typical muscle rehabilitation, select an intensity that obtains the strongest contractions while maintaining acceptance by the horse
7. For early, acute rehabilitation, select the intensity necessary to obtain the degree of mobilization desired by the practitioner

Use of Conductivity Values for Back Pad

1. Once the voltage is increased to between 3 and 5 volts, the electrode Conductivity Value numbers should begin to display on the **LED Panel**
2. When viewed from the bottom of the pad, the letters A, B, & C designate the channels of the three pairs of electrodes as illustrated below:



3. When the practitioner stands on the left side of the horse facing the logo on the pad, the "A" electrodes will be closest to the horse's head and the "C" electrodes closest to the tail with the "B" electrodes in the center of the pad
4. The channels are set up in an astrik pattern
5. The color sequence of the wires of the harness: all the "dull" colors (**BLACK**, **BROWN**, WHITE) are on one side, and all "bright" colors (**GREEN**, **BLUE**, **RED**) are on the other side
6. If the contact of all the electrodes is equal, all three conductivity numbers (located after the channel designations of A, B, & C) will be the same as in the below picture:

7. As the voltage increases, the conductivity numbers should also increase
8. If one or more electrodes have a poor contact, or there is a muscle abdnormality, that conductivity number will differ from the other pairs
9. In the below illustration, the B & C electrode pairs have a better contact (5) than the A electrode pair (3). In addition, the difference between the conductivity values is more than one, which is not desirable.

Removing Back Pad After Treatment

1. When treatment is complete, only the time set for treatment is displayed
2. Disconnect the cable from the pad and system and turn the system OFF
3. Wind up cable, attach connectors to each other, and clip to FES case
4. If tape was used, remove the tape by pulling it off from top to bottom and remove pad
5. Unclip the FES 310 system from the surcingle and remove the surcingle
6. Wipe the excess gel from the horse and pad with a dry towel
7. Remove the nylon liner from the pad to clean and disinfect

How to Set up Treatment for Use of the Leg Pad

Placing the Surcingle on the Horse

1. The surcingle is used to attach the FES 310 system to the horse
2. For additional information, see:
   How to Set up Treatment for Use of the Back Pad
   Placing the Surcingle on the Horse (pg. 16)

Connecting Leg Pad to FES 310

1. With clean water and a sponge or small towel, wet and clean the area to be treated. The surface of the skin must be wet, not just the hair coat.
2. Wet the nylon liner of the pad only where the electrodes are located to keep water from running off the pad and onto the hair coat
3. Do not allow the cable connector ends to get wet
4. Apply a liberal coating of conductive gel on nylon liner over electrodes
5. Place the pad on the wet surface of the horse's leg. Tighten the Velcro straps to fit the pad as snuggly as possible to the leg.
6. Attach the **Cable Tail** to the FES 310 system
7. Attach the **Cable** to the **Cable Tail**
8. Attach the **Cable** to the pad, making sure the connections are seated
9. If the horse lifts the leg constantly during treatment and the quick release will not stay attached, place a piece of tape over the connector to keep the connectors seated
10. Turn the FES 310 system ON

Adjusting Time Of Treatment For Leg Pad

1. Turn the FES 310 system ON using the **ON/OFF Toggle Switch**
2. When the system is turned on, the word "Minutes 0" will be displayed
3. Turn the **Control Knob** to the right, or clockwise, to set the treatment time
4. A typical treatment time is 20 minutes for EACH leg. It is advisable to treat both legs, even if the injury is only to one leg.
5. For additional information, see:
   ? How to Set up Treatment for Use of the Back Pad
   Adjusting Time of Treatment for Back Pad (pg. 18)

Adjusting Intensity of Treatment for Leg Pad

1. After setting the time for the treatment, push the **RED Mode Button** to change the display to the **Treatment Mode**. Use the **Control Knob** to slowly increase the voltage to begin treatment.
2. Initially, the voltage can be typically set to 2 volts, then slowly increase the voltage until one of the channels shows a conductivity value of "1"
3. It may be difficult to constantly feel the leg pad for contractions. Observe the leg to determine when contractions first occur.
4. Higher voltages will be used for the leg when compared to treatments on larger muscles of the top line
5. Most horses do not react negatively to the sensation of the leg therapy
6. Some horses may flex in the ankle or knee, or may lift their leg slowly or quickly when they initially feel the contractions. Ideally, joint flexion will occur smoothly and increase in range of motion as voltage increases.
7. As the intensity increases, the contractions will become more pronounced and more electrodes will become active
8. Each time contraction intensity increases, or another electrode becomes active, wait a minute or two before further increasing the intensity
9. Rest a hand on the **Control Knob** so intensity can be smoothly adjusted
10. Ideally, all electrodes will have consistent and smooth contractions by the session's end
11. The difference between the two legs in the conductivity values, related to the voltage, assists in determining the response to the treatment
12. For more information, see:
    ? How to Set up Treatment for Use of the Back Pad
    Adjusting Intensity of Treatment for Back Pad (pg. 19)

Use of Conductiviy Values for Leg Pad

1. For information, see:
   How to Set up Treatment for Use of the Back Pad
   Use of Conductivity Values for Back Pad (pg. 20)

Removing Leg Pad After Treatment

1. When treatment is finished, only the time and battery charge is displayed
2. Disconnect the cable from the leg pad and from the system, and turn the system OFF
3. Wind up cable, attach connectors to each other, and clip to FES case
4. Remove the pad
5. Unclip the FES 310 system from the surcingle and remove the surcingle
6. Wipe the excess gel from the horse and pad with a dry towel
7. Remove the nylon liner from the pad to clean and disinfect

How to Set up Treatment for Use of the Neck Harness

Placing the Surcingle on the Horse

1. The surcingle is used to attach the FES 310 system to the horse
2. For additional information, see:
   How to Set up Treatment for Use of the Back Pad
   Placing the Surcingle on the Horse (pg. 16)

Connecting Neck Harness to FES 310

1. Do not wet the area to be treated. The self-stick electrodes will not adhere to wet surfaces.
2. To secure the neck harness on the horse, place the Velcro tie that is located on the neck harness around the mane approximately at the middle of the neck
3. Organize the neck harness wires so that the WHITE, **BROWN**, and **BLACK** wires are on one side of the neck and the **GREEN**, **BLUE**, and **RED** wires are on the other side of the neck. The groups of wires are separated at the connector end.
4. Place the self-stick electrodes on the neck at the desired placement and tape them into place. Make sure the electrodes are placed symmetrically on each side of the neck.
5. See ***Placement Options for Neck Electrodes (pg. 25)*** for suggestions of placements

6. Attach each electrode to the appropriate harness wire. Make sure the correct pattern is used so the electrode pairs are the same as on the back harness
7. Lift up the electrodes and apply a line of conductive gel under the electrode. Lightly press the electrode back into place.
8. Attach the **Cable** to the neck harness and to the **Cable Tail**, making sure the connections are seated
9. Turn the FES 310 system ON

Placement Options for Neck Electrodes

A: Short length wires: **GREEN** & **BLACK**

Typically placed ventral at base of neck

B: Medium length wires: **BLUE** & **BROWN**

Typically placed dorsal at base of neck

C: Long length wires: **RED** & WHITE

Typically placed cranial

NOTE:

Wires: WHITE, **BROWN**, **BLACK** *are on the same side of the neck*

Wires: **RED**, **BLUE**, **GREEN** *are on the same side of the neck*

IMPORTANT: *<u>ALWAYS</u> keep the electrodes <u>AWAY</u> from the carotid artery*

1. Long Triangle

2. Short Triangle

3. Brachiocephalic

4. Rhomboid

Adjusting Time of Treatment for Neck Harness

1. When the system is turned on, the word "Minutes 0" will be displayed
2. Turn the **Control Knob** to the right, or clockwise, to set the treatment time
3. A typical treatment time is 20 minutes for the neck
4. For additional information see:
   ? How to Set up Treatment for Use of the Back Pad
   Adjusting Time of Treatment for Back Pad (pg. 18)

Adjusting Intensity of Treatment for Neck Harness

1. After setting the time for the treatment, push the **RED Mode Button** to change the display to the **Treatment Mode**. Use the **Control Knob** to slowly increase the voltage to begin treatment.
2. Initially, the voltage can be set to 2 volts, then slowly increase the voltage until you see or feel a contraction under one of the electrodes
3. Unlike back treatments, **contractions will typically be observed several volts before a channel shows a conductivity value of "1".** This is due to the calibration of the conductivity values, which are set for the larger muscles of the back, not specific to the neck muscles.
4. Observe both sides of the neck as the first contraction will typically be on only one side of the neck. Place a hand on the same electrodes on both sides of the neck to ensure a good connection and to feel the strength and symmetry of the contractions.
5. Similar voltages will be used for the neck when compared to treatments on the back, but the conductivity numbers will be lower. However, as treatments continue the voltage and conductivity numbers for the neck will become similar to the back treatment values.
6. Most horses do not react negatively to the sensation of the neck therapy. However, it is not unusual for the horses to twist their necks excessively during the first few treatments. As long as the horses accept the stimulus without becoming nervous, the treatment can continue.
7. As the intensity increases, the contractions will become more pronounced and more electrodes will become active
8. Each time the muscle contraction intensity increases, or another electrode becomes active, wait a minute or two before further increasing the voltage
9. Rest one hand on **Control Knob** so intensity can be smoothly adjusted
10. Ideally, all electrodes will have equal, consistent, and smooth contractions by the session's end

11. For more information, see:
    How to Set up Treatment For Use of the Back Pad
    Adjusting Intensity of Treatment for Back Pad (pg. 19)

Use of Conductiviy Values for Neck Harness

1. For information, see:
    How to Set up Treatment For Use of the Back Pad
    Use of Conductivity Values for Back Pad (pg. 20)

Removing Neck Harness After Treatment

1. When treatment is finished, only the time and battery charge is displayed
2. Disconnect the cable from the neck harness and from the system and turn the system OFF
3. Wind up cable, attach connectors to each other, and clip to FES case
4. Remove the neck harness from the mane. Remove the electrodes from the neck and place them on the outside of the plastic bag. Leave the electrodes to air dry; do not seal them back into the bag. This will help to keep the electrodes sticky and the top fabric dry so the tape will stick to the electrodes. The electrodes can be used on the same horse several times before being replaced. Use care if electrodes are used on different horses due to the possibility of disease transfer.
5. Unclip the FES 310 system from the surcingle and remove the surcingle
6. Wipe the excess gel from the horse with a dry towel

How to Set Up the Equipment for Therapy

1. Determine treatment site
2. Place surcingle on the horse
3. Prepare and secure treatment pad on the horse
4. Clip the FES 310 system to the surcingle
5. Connect cable to the system and pad
6. Set time and then slowly increase voltage

What Are Approximate Volts Used for Therapy?

1. Horses can vary greatly in their response to the intensity of the voltage
2. Adjust the intensity of the voltage gradually, always watching the reaction of the horse and the level of contraction so the desired intensity is obtained
3. For the first few treatments do not go above the following voltages:
   TOPLINE TREATMENTS: 10 volts

   LOWER LEG TREATMENTS: 15 volts

   NECK TREATMENTS: 7 volts
4. Ranges that can be seen on a minority of horses include:
   TOP LINE AND NECK TREATMENTS

   First minor contractions between 3 and 10 volts

   LOWER LEG TREATMENTS

   First minor contractions between 7 and 25 volts
5. The following are general guidelines for intensities:

Intensities for Top Line & Neck Treatments

The horse will feel warmth under the electrodes
Between an intensity of 2 and 4 volts

The horse will feel minor contractions
Between an intensity of 4 and 6 volts

The horse will feel distinct contractions
Between an intensity of 5 and 10 volts

Intensities for Lower Leg Treatments

The horse will feel warmth under the electrodes
Between an intensity of 5 and 7 volts

The horse will feel minor contractions
Between an intensity of 7 and 15 volts

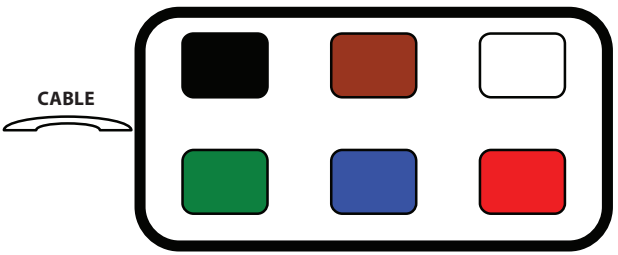
The horse will feel distinct contractions
Between an intensity of 10 and 20 volts

How Should Pads Be Cleaned?

1. The pads are designed so they can be easily laundered
2. Remove the nylon liner to expose the electrodes
3. Grasp the Velcro on the electrodes where they are connected to the pad and PULL ONLY ON THE VELCRO, not on the electrodes
4. Remove the electrodes carefully from the Velcro strip on the pad. The electrodes can be ripped if excessive force is used.
5. Do not pull on the wires to remove the electrodes
6. Remove the Velcro tab at the top of the pad that secures the cable
7. Velcro the liner onto the pad. Once the harness is removed, both the liner and pad top can be laundered and disinfected.
8. To clean the electrodes and cable, wipe with a damp cloth

How to Reattach Electrodes After Cleaning

1. The correct position of the electrodes in the pad is extremely important
2. Each electrode must be positioned on the pad in a specific order
3. The wires of the electrodes are color coded to match the colors stitched on the inside of the pad



4. Secure the electrodes onto the Velcro strip on the inside of the pad
5. There are two round Velcro pieces used on each end of the electrode to secure the electrodes straight onto the Velcro strip
6. The electrodes can be spaced evenly on the Velcro strip or custom spaced to suit individual pad placements. The widest placement is the most comfortale for most horses.
7. Attach the Velcro tab around the cable end at the top of the pad
8. Replace the nylon cover over the electrodes and wires

LIMITED MANUFACTURER'S WARRANTY
FES 310

EquiNew is proud to produce only high-quality products with exceptional customer service. If you experience any difficulties with the performance of your product, please do not hesitate to contact the company and we will make every effort to promptly resolve your concerns.

A. The warranty provided by EquiNew, LLC ("Company") under this Agreement applies to the first retail purchaser only, beginning on the date of purchase, and includes the following terms:

i) 1-year warranty of the FES310 system ("Equipment") to include all repairs due to general defects in materials and workmanship, including all materials and components used in the Equipment's construction;

ii) The company will repair or replace your Equipment free of charge in the event of a breakdown due to defective parts or software during the warranty period;

iii) The Company reserves the right to replace the Equipment with Equipment of the same or similar make and specifications in lieu of repairing the defective Equipment;

iv) Purchaser must notify EquiNew, LLC of any defects and obtain Return Authorization before shipping the Equipment to the company for resolution of the problem;

v) Any repairs will be performed by the Company at the Company's address;

vi) Return shipping costs will be paid in full by the Company for any Equipment returned that is under warranty;

vii) This warranty may not be transferred to a second or subsequent owner;

viii) Any oral statements made by sales personnel or other employees of EquiNew, LLC do not constitute warranties and should not be relied upon by the purchaser and are not part of the contract of sale. No other warranties are given beyond those set forth herein.

B. The warranty provided by EquiNew, LLC under this Agreement does not apply to or include:

i) Damage caused by failure to provide a suitable environment for the Equipment, including but not limited to the failure to provide a temperature above freezing and below 100 degrees;

ii) Damage caused by use of the Equipment for other than the purpose for which it was designed;

iii) Damage arising from failure to follow the Company's instructions;

iv) Damage caused by fire, heat, explosion, water, lightning, frost or other inclement weather conditions; electrical surges or brownouts; neglect or misuse; theft; or attempted theft;

v) Damage due to alterations, which shall include but not be limited to any deviation from the Equipment's physical, mechanical or electrical design; opening the case voids all warranties;

vi) Cleaning or routine servicing;
vii) Cosmetic damage such as damage to the paint work or dents or scratches to the Equipment;
viii) Damage due to rust, corrosion or water;
ix) Any guarantee whatsoever that a particular piece of Equipment will achieve a certain level of performance;
x) Costs arising from the Purchaser being unable to use the Equipment, damages caused by equipment failure, travel expenses, or loss of time or income due to equipment failure;

Due to a continuing program of product development and improvement, EquiNew, LLC reserves the right to change Equipment specifications, features and prices without notice.

LIMITATION OF LIABILITY

EquiNew's entire limitation of liability and the Purchaser's exclusive remedy shall be as follows:

In all situations when the Equipment has been returned to the Company due to performance or non-performance of the Equipment furnished under this Agreement, the Purchaser's remedy is limited to the adjustment or repair of the equipment, or replacement of its parts, or at the option of EquiNew, LLC, replacement of the equipment. In the event Equipment is returned within 30 days of purchase, EquiNew, LLC shall promptly refund to the Purchaser the total Purchase Price of the Equipment.

IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, INDEMNITY, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE SHALL THE COMPANY'S LIABILITY TO PURCHASER OR ANY END USER OR THEIR INSURERS FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES, INCLUDING, BUT NOT LIMITED TO LOSS OF PROFIT OR REVENUES, LOSS OF USE OF THE EQUIPMENT OR ANY ASSOCIATED EQUIPMENT, DAMAGE ASSOCIATED WITH USE OF THE EQUIPMENT, OR OTHER ITEMS PURCHASED FROM THE COMPANY, SERVICES OR CLAIMS OF PURCHASER'S CUSTOMERS FOR SUCH DAMAGE, EXCEED THE COST PAID FOR THE EQUIPMENT WHICH GIVES RISE TO THE CLAIM.

In no event will EquiNew, LLC be liable to Purchaser for any incidental, consequential or special damages such as, but not limited to; damage to or loss of other property including animals, claims of customers of the Purchaser, any lost profits, cost of purchased or replacement goods, failure to warn and/or instruct others about the Equipment, or lack of usability of the Equipment, lost savings or other incidental or consequential damages arising out of the use or inability to use the equipment by the Purchaser or a customer of the Purchaser; even if EquiNew, LLC has been advised by the Purchaser of the possibility of such damages, or any claim by a customer of the Purchaser.

EquiNew does not endorse, represent or warrant the accuracy or reliability of any of the information, content, advertisements or other materials contained on, distributed through, or linked, downloaded or accessed from our service.

EquiNew does not endorse, represent or warrant the quality of any products, information or other materials displayed, purchased, or obtained as a result of or in connection with the service, and we do not endorse, represent or warrant the service, security or practices of any of the vendors whose products or services are included on the service, other than as provided in the previously stated warranties. Any reliance upon any information, content, advertisements, materials, products, services or vendors included on or found through the service shall be at the user's sole risk.

GENERAL DISCLAIMER

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE APPEARING IN THIS AGREEMENT AND THERE ARE NO IMPLIED WARRANTIES, EITHER OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH EITHER THE PURCHASE OF THE EQUIPMENT OR ANY EXERCISE OF THE OPTION TO LEASE HEREUNDER.

In the event of the lease or purchase of the Equipment by Purchaser to a third party, Purchaser agrees to notify such party that he/she is limited to the Manufacturer's Limited Warranty, as its sole and exclusive warranty for the Equipment. In that event, Purchaser agrees to hold Company harmless for any claims by such third party, which exceed the scope of Manufacturer's Limited Warranty.

The warranty provided herein is in lieu of all other express warranties, whether written, oral, implied or statutory and may not be modified by anyone. No statutory warranty of merchantability or fitness for a particular purpose shall apply. The preceding paragraphs set forth the exclusive remedies for claims based on defect in, or failure of, products, whether the claim is in contract, indemnity, warranty, tort, negligence, strict liability or otherwise and however instituted. **To the extent allowed by law, any implied warranties, including any implied warranties of merchantability or fitness for a particular purpose are limited as set forth in this written warranty.** Correction of non-conformities, in the manner and for the periods of time as set forth above, shall constitute fulfillment of all liabilities of EquiNew, LLC to the purchaser whether based on contract, negligence or otherwise.

Some states do not allow limitations on how long an implied warranty lasts or the exclusions or limitations of incidental or consequential damages, so the above limitation or exclusions may not apply to you. This warranty gives you specific legal rights; you may have other legal rights, which vary from state to state.

Warranty Contact Information:

EquiNew, LLC
N8139 900th St
River Falls, WI 54022
715 222-8279

APPENDIX 1
EC DECLARATION OF CONFORMITY

Equinew, LLC confirms that the FES310 functional electrical muscle stimulator, as specified in this operating manual complies with the EMC Directive 2004/108/EC and has been tested and classified to CISPR 11:2003 Class A.

Equinew, LLC confirms that the FES310 functional electrical muscle stimulator, as specified in this operating manual complies with the Low Voltage Directive 2006/95/EC.

Product Serial numbers from SN 1024 onwards comply with the RoHS Directive 2002/95/EC. These products do not contain Lead (Pb) (apart from traces in aluminium parts that are below the allowable maximum), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr), Polybrominated Biphenyl (PBB) or Polybrominated Diphenyl Ether (PBDE), with the exception of lead contained in the battery.

Equinew, LLC confirms that collection and recycling processes are in place to comply with the WEEE Directive 2002/96/EC, as amended by 2003/108/EC, and the Battery Directive 2006/66/EC.

William R. Eubank, MS
Director of Engineering
Equinew, LLC
November, 2008

APPENDIX 2
FEDERAL DECLARATION

Equinew, LLC confirms that the FES310 functional electrical muscle stimulator as specified in this operating manual, does not cause radio interference with other equipment and complies with Federal guidelines on Radio Interference and is tested to CISPR 11:2003 and is classified Class A.

APPENDIX 3
DISPOSAL INFORMATION

All Equinew products contain small traces of Lead (Pb) and so should not be disposed of in landfill sites. If you have Equinew products that you wish to dispose of and you are not sure how to do it in a manner that is safe for the environment, return the equipment direct to Equinew, LLC or to your nearest Equinew dealer, who will arrange correct disposal/recycling of the equipment. This is a legal requirement in the European Union (EU) after July 2006 under the Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. Additional, the battery in the FES310 product contains lead and should not be disposed of. If you have a battery from this product that you wish to dispose of and you are not sure how to do it in a manner that is safe for the environment, return the equipment direct to Equinew, LLC or to your nearest Equinew dealer, who will arrange correct disposal/recycling of the battery.

APPENDIX 4
NOT FOR HUMAN USE WARNING

EQUINEW IS A VETERINARY DEVICE
NTENDED FOR USE ON ANIMALS ONLY
DO NOT USE ON HUMANS

APPENDIX 5
LABELLING REQUIREMENTS

CE

This product complies with 2004/108/EC, 2006/66/EC, 2006/95/EC, 2002/95/EC, & 2002/96/EC as amended by 2003/108/EC.

APPENDIX 6
SPECIFICATIONS

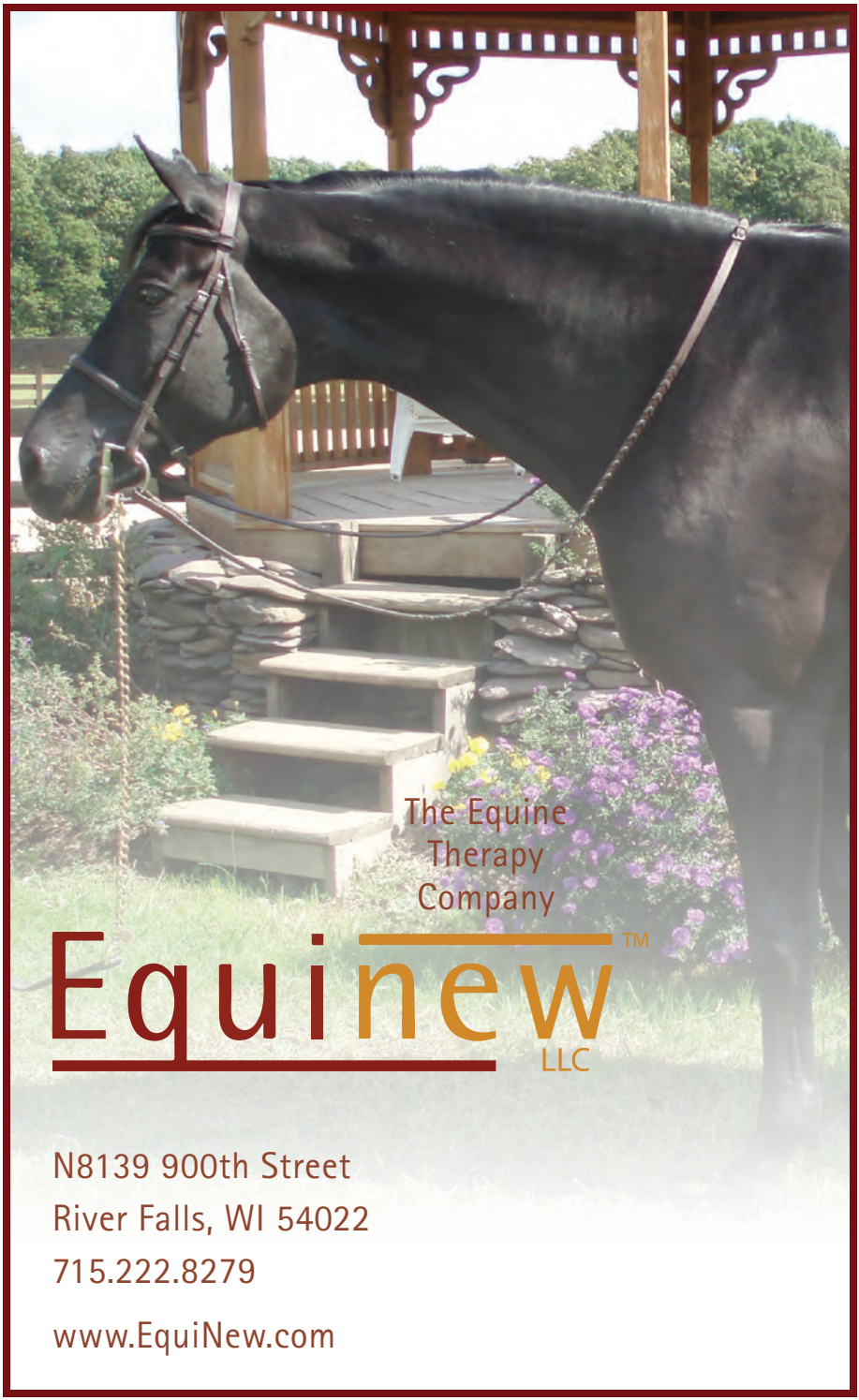
BATTERY CHARGER

Manufacturer	PowerStream
Type	PST-3P10-12V (3PA1015)
Approvals	CE, UL, & RoHS compliant
Class	2
Input Voltage	90-264Vac
Output Voltage	14.75V max
Rating	14W

NOTE: Changing the battery charger to a different type could compromise the safety and cause a battery charging or electrical safety hazard. Only use the above supplied battery charger.

FES 310
TECHNICAL SPECIFICATIONS

Dimensions	Height 9 inches Width 6.5 inches Depth 2.1 inches
Weight	4 pounds without carrying case
Power	12v 1.2Ah SLA battery
Battery Charger	1 amp, use only with 12-volt battery 50-60 Hz Energy conserving switching regulator Can be used to power system with 100-240 volts Surge protected
Display	16x2 blue backlit LCD with white characters
Case	Extruded aluminum
Max Therapy Time	60 minutes
Max Amplitude	49.6 volts
Control	Digital controller with a 16-bit microcontroller
Waveform	Balanced biphasic, 0 net charge



N8139 900th Street
River Falls, WI 54022
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www.EquiNew.com