



Creative Conners, Inc

SPOTLINE PRACTICAL™

REFERENCE MANUAL v1.0

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GETTING STARTED

Congratulations on your purchase of the **Spotline Practical** hoist from Creative Conners, Inc. The **Spotline Practical** is a fully-fledged hoist for practical, electrified effects. It includes all of the mechanics, motion controller, brakes, limits, and other electronics needed to meet the ANSI E-1.6-1 2012 industry hoisting standards. The **Spotline Practical** is ideal for all locations since it operates on standard 120V power.

This manual will guide you through

1. Unpacking
2. Installation and testing
3. Operational procedures
4. Troubleshooting

If you need any help along the way, you can get assistance from our support technicians through our website www.creativeconners.com, via e-mail support@creativeconners.com, or by phone (401) 289-2942 extension 2.

A word about safety

The **Spotline Practical** is a powerful machine designed with safety in mind. The 15lb payload can cause significant damage to people, scenery, and machinery if allowed to free-fall. The integrated ultimate and slack-line sensors mitigate these risks, but the following warnings should be heeded:

- Safe rigging practices should be used in the hanging of both the **Spotline Practical** hoist and its payload.
 - Attach the hoist to the batten using both couplers
 - Use a safety cable of at least 1/8" diameter aircraft cable to further secure the hoist to its hanging point.
- Do not exceed the 15lb payload rating of the hoist.

What's in the box

- **Spotline Practical** hoist
- **Spotline Practical** Quick Start Guide
- 2 x 10' Edison to powerCON TRUE1 power cables
- 1 x powerCON TRUE1 connector (for your electrified payload)

Required Tools

Making adjustments to the **Spotline Practical** will require a couple hand tools:

- 1/8" Hex (limit cover)

- 4” long, #1 Flat Head Screwdriver (rotary limit adjustment)

Features

The **Spotline Practical** is one of our fully-featured *Smart Machines*. It integrates the control interface of a typical Stagehand with a safety-oriented mechanical design for an all-in-one machine. Some of the safety features include:

- Emergency Stop circuit
- Dual brakes
- Forward and reverse limit switches
- Ultimate limit circuit to prevent overtravel of payload into the machine body
- Slack-line detection sensor
- Mounting point for safety cable
- Individual electrical breakers for both machine power and payload power.

General Features

- 2 x built-in Mega Slim Couplers for easy installation
- 35’ max travel
- Flat lifting line to reduce spinning
- Powered lifting line (110VAC 10A Max)
- 200W servo capable of lifting 15lb payload at 48”/sec
- 110VAC 60Hz 1-phase machine input power (powerCON TRUE1)
- 110VAC 10A (1200W) max payload input power (powerCON TRUE1)
- powerCON TRUE1 practical receptacle

INSTALLATION

The **Spotline Practical** mounts to any standard 1-1/2” schedule 40 pipe with the two Mega Slim Couplers on the top of the machine. In addition there is a lifting/safety eye. Once the hoist is clamped to the pipe connect an appropriate secondary safety (not a lighting safety) between the lifting eye and the structure above.

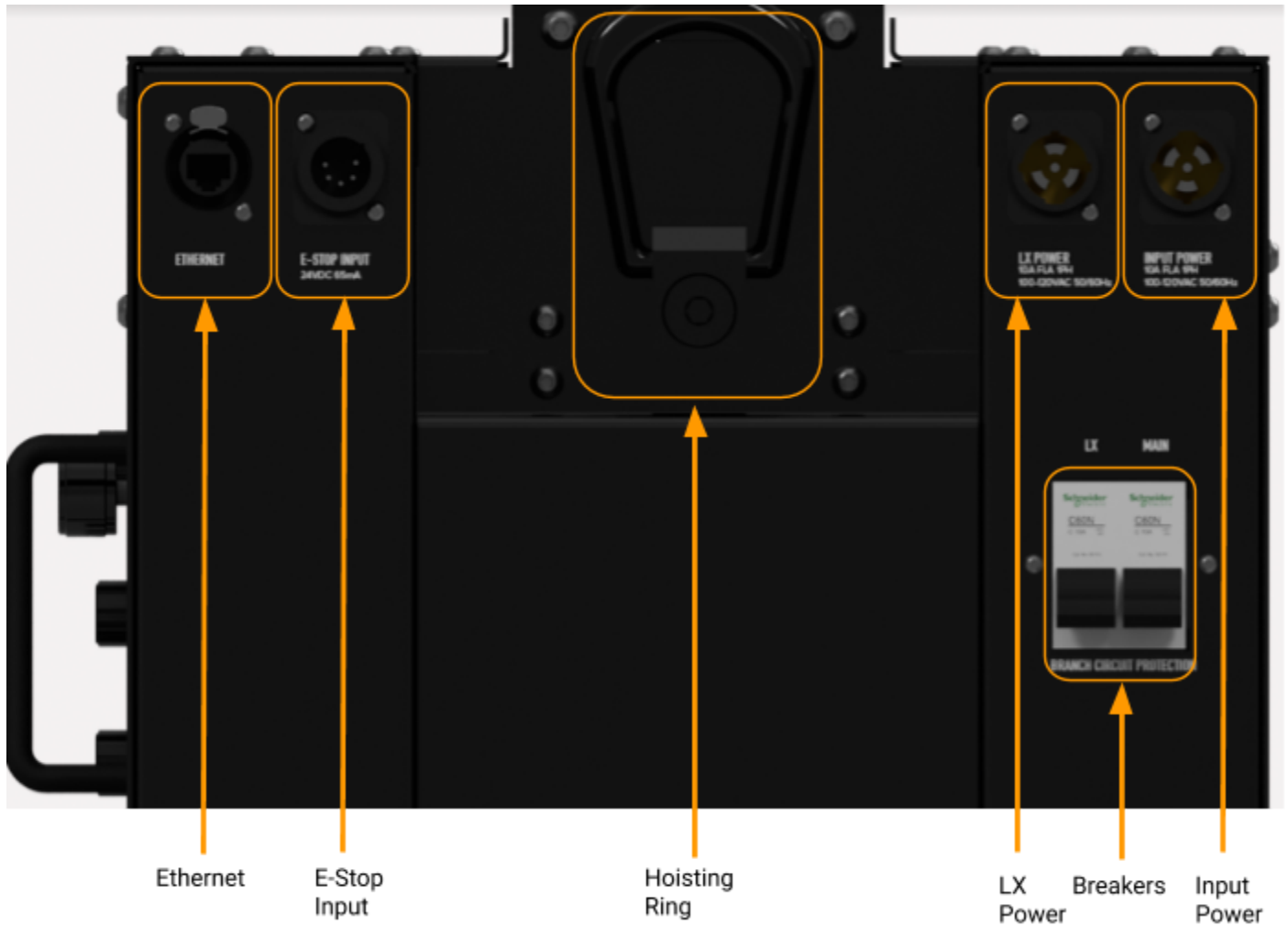
The **Spotline Practical** weighs 75 pounds, has a working load limit of 15 pounds and a minimum load of 5lbs. If your lighting practical weighs more than 15 pounds you will need to use 2 **Spotline Practicals** connected with a spreader bar or the full-size **Spotline** hoist. If your practical weighs less than 5 pounds you will need to add ballast.

POWERING UP

The **Spotline Practical** is a smart machine, meaning the **Stagehand** controller is on board. You need to provide three connections to make the hoist run, and a fourth to provide power to your lighting

fixture. Prior to making any power connections ensure the two breakers on the front of the **Practical** are in the off position.

1. Ethernet - Ethercon or standard RJ45 CAT5 Cable
2. E-Stop Input - 5 pin XLR-M
3. Hoisting/Safety Eye
4. LX Power - Powercon True 1 (10A max)
5. Input Power - Powercon True 1 (10A)
6. Input power Breakers



Input Power

The **Spotline Practical** requires 120VAC, 10A input power. As an added feature there is local branch circuit protection built into the machine. The circuit breaker is a great way to know for certain that

the machine will not move when servicing, and is also a convenient method to reboot the internal electronics if required.

The power inlet of the **Spotline Practical** is a Neutrik powerCON TRUE1 Appliance Inlet (NAC3MPX). The mating connection on the included power cord is a NAC3FX-W connector. The powerCON TRUE1 is rated for breaking capacity, meaning it is safe to disconnect under load. The TRUE1 connectors are not compatible with standard “Blue” powerCON connectors. See below for wiring details inside the connector.

TERMINAL	WIRE COLOR
L - Line	Black
N - Neutral	White
G - Ground	Green

Detailed wiring instructions can be found in the Specifications section.\

LX Power

The **Spotline Practical** passes 120VAC, 10A power to the outlet at the end of its lifting line. As an added feature there is local branch circuit protection built into the machine. The circuit breaker is a great way to know for certain that the payload is not energized during loading/unloading.

The LX power inlet of the **Spotline Practical** is a Neutrik powerCON TRUE1 Appliance Inlet (NAC3MPX). The mating connection on the included power cord is a NAC3FX-W connector. The powerCON TRUE1 is rated for breaking capacity meaning it is safe to disconnect under load. The TRUE1 connectors are not compatible with standard “Blue” powerCON connectors. See below for wiring details inside the connector.

TERMINAL	WIRE COLOR
L - Line	Black
N - Neutral	White
G - Ground	Green

Detailed wiring instructions can be found in the Specifications section.

E-Stop

The **Showstopper** is Creative Conners, Inc’s emergency stop safety controller. Each **Stagehand** and smart machine requires a direct connection to a **Showstopper 3 Base** or **Showstopper 3 Hub**. These

connections are made with a Neutrik 5-pin XLR cable. There's no tech wizardry here, any 5-pin XLR cable (DMX) will work as long as the polarity is correct. See below for connection details.

PIN	CONNECTION
1	COM
2	N.C.
3	N.C.
4	N.C.
5	+24VDC

Ethernet

Although the **Spotline Practical** can be manually jogged from the onboard **Stagehand** controller, the real power is realized when connected through the network to **Spikemark** software. As with all **Stagehands** or Smart Machines, each controller must be connected to the network with an Ethernet (CAT5/CAT6) cable back to a network switch. The **Spotline Practical** has a Neutrik etherCON receptacle which accepts the rugged etherCON connector or a standard RJ45.

OPERATION

Machine Setup

Once the control and electrical connections are made it's time to free the lifting line from inside the **Spotline Practical**. From the exit well on the bottom of the machine, release the bell housing from the velcro ties and let the cable hang down.

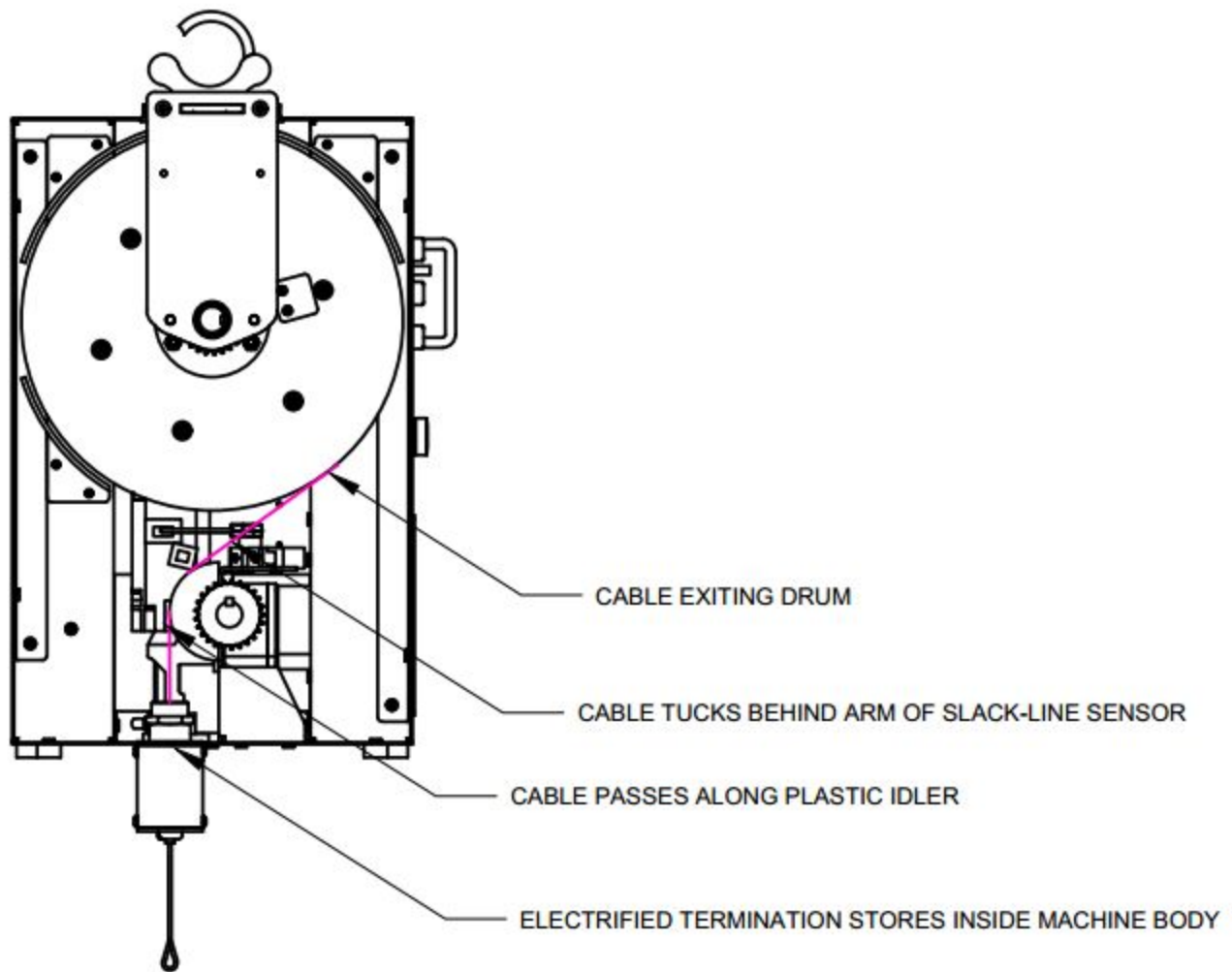
Look up into the machine, you will first see lifting line riding along the white plastic idler before heading into the drum. Ensure the lifting line is not twisted, and is relatively taught as it transitions from the drum to the idler to the exit of the machine.

Between the drum and the idler, the lifting line must tuck in front of the slack-line sensor arm, such that the smooth metal rod is exerting gentle pressure against the lifting line. In the event this arm has slipped in transit, the machine will not function, and the **Stagehand** display will read "Ultimate Limit".

The following steps will reorient the inner components and clear this limit. This process is best accomplished by (2) technicians.

1. Apply gentle tension to the lifting line.
2. Use the ULT limit override button to jog the machine until at least 12" of lifting line is free.

3. Place the machine in E-Stop, or remove power using the (2) onboard breakers.
4. Snake a hand into the machine.
5. Bring a small amount of lifting line back into the body of the machine, and tuck the resulting bulge of slack in front of the smooth metal rod arm of the slack-line sensor.
6. Release the slack from the machine, clear all hands, and resume applying gentle tension to the lifting line.
7. Power the machine on and confirm the ultimate limit is cleared.



Your lighting practical should be connected to the wire rope thimble under the bell housing, not hanging from the powerCON connector. Once rigged securely connect the power connect your practical's power to its dimmer using the provided powerCON TRUE1 connector.

IMPORTANT NOTE:

The minimum lifting weight is 5lb. If the prop or practical fixture weighs less than that, operation will potentially be hampered by spurious ULT Limit Faults, especially during quick, down movements.

The maximum lifting weight is 15lb. Although the 200W servo motor has a greater peak load, the maximum working load is limited to 15lbs. Overloading the Spotline Practical will cause drive faults.

Manual Operation

Manually jogging the **Spotline Practical** is the same as jogging from any **Stagehand**. Press and hold FWD or REV and spin the jog wheel CW to increase speed or CCW to reduce speed. The **Stagehand** display will change to show jog direction, speed percentage and encoder counts while jogging.

Limit Override

The **Spotline Practical** has initial and ultimate limit circuits. The FWD and REV (initial) limits are set with the two pole rotary limit switch while the ULT limit is triggered by engaging the roller arm limit switch or when the slack line switch is engaged. When the machine engages an initial limit, motion is prohibited in that direction. When the machine engages an ultimate limit, all motion is prohibited until the condition is cleared. Most of the time this is the exact behavior you want: engaging a limit means something has gone awry. Time to stop, evaluate what happened, and make a correction.

However, sometimes, especially during load-in or shop testing, the limit is merely improperly set and it would be convenient to temporarily override the limit switch. The limit override buttons on the face of the **Spotline Practical** allow you to do just that. Press and hold the corresponding button and you can drive beyond an engaged limit using manual jogging procedures. Use extreme caution when utilizing the override buttons! It is simple to push the ULT override and jog the machine - it is much more complex (and time consuming) to have to disassemble the machine to untangle the lifting line.

The limit overrides are a convenience feature that should only be employed temporarily. Don't do anything dangerously negligent like tape the override buttons down, or wedge a paperclip in the buttons in order to permanently disable the limit signals.

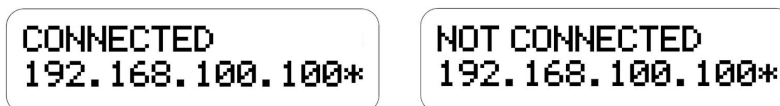
Understanding the Stagehand Display

If you are familiar with other Creative Conners controllers, you'll notice that the **Spotline Practical** motion controller is identical to our standard **Stagehands**.

Motion Controller

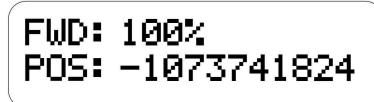
The two-line alphanumeric display on the **Spotline Practical** motion controller uses OLED technology to make it easy to read backstage without a distracting backlight. It also has excellent viewing angles, making it easier for you and other operators to see status information at a glance. The controller is primarily used through our **Spikemark** software, but it is handy to have some bits of information displayed on the **Stagehand** faceplate for those times that you are working onstage near the machinery and not sitting in front of a computer running **Spikemark**. Also during shop setup, load-in, and strike you may not have **Spikemark** running and need to manually operate the **Spotline Practical**. The following list explains the information that you can glean from the controller display.

Network Connectivity



When sitting idle, the **Stagehand** will display its IP address on the bottom line and whether the **Stagehand** is actively connected to **Spikemark**. Connected means that the **Stagehand** has an active connection with a **Spikemark** computer, Disconnected means that the **Stagehand** is not actively communicating with **Spikemark**.

Encoder Position



If you press either the forward or reverse jog button, the **Stagehand** will display the direction it is traveling and current speed as a percentage of full power on the top line. On the bottom line it will display the position in raw encoder counts. Inside **Spikemark** the position data will be shown in scaled units, such as feet or inches, but on the **Stagehand** the raw encoder counts are displayed, since the **Stagehand** isn't aware of **Spikemark's** Position Scale. The position information is helpful when testing equipment in the shop prior to load-in.

Limits

```
FWD LIMIT  
POS: -1073741824
```

```
REV LIMIT  
POS: -1073741824
```

When a Forward, Reverse, or Ultimate Limit is struck the top line of the display will flash an appropriate fault message in rotation with any other fault messages. If you strike a directional limit switch, either forward or reverse, you will have to run the motor in the opposite direction to clear the fault message. If you strike an ultimate limit you will have to physically clear the limit switch before the fault message will clear.

Drive Fault

```
DRIVE FAULT  
192.168.100.100
```

The internal servo drive has many fault conditions that can cause it to interrupt power to the motor and cease motion. Mechanical overload, encoder signal loss, over-speed, and under-voltage are just a few of the common faults that will render a **Stagehand** unresponsive. All of these faults register a common “Drive Fault” message on the status display and in **Spikemark**.

To clear a drive fault, correct the cause of the fault and then either power cycle the **Spotline Practical** or use the drive reset feature in **Spikemark**.

Spikemark resets the drive by strobing Aux 2 (one of the available outputs on the **Stagehand** card). If you are unable to remotely reset the drive, navigate to the *Advanced* section of the *Stagehand Properties* and confirm Strobe Aux 2 is selected under *Drive Reset Method*.

Brake Fault

```
BRAKE FAULT  
192.168.100.100
```

The **Spotline Practical** will only display Brake Fault when there has been an internal error detected. If this error persists after a power cycle, contact Creative Conners for assistance.

Emergency Stop

EMERGENCY STOP
192.168.100.100

When the Emergency Stop circuit is activated, or unplugged, the Emergency Stop fault message will be added to the flashing fault messages. Any motion that was occurring when the Emergency Stop was detected will be stopped. To clear the fault, release the Emergency Stop button on the **Showstopper**. Once the fault is cleared, any motion that you wish to execute will have to be restarted. If you were jogging, you will need to release the jog button and start again. If you were running a cue through **Spikemark**, that cue will need to be re-loaded and run again. A **Stagehand** will never restart automatically after an Emergency Stop fault is cleared, since such behavior could pose a serious safety risk.

Brake Testing

The **Spotline Practical** controls two safety brakes for use in hoisting applications. However, since the **Spotline Practical** cannot confirm that both brakes are functioning mechanically and that neither has jammed in a released state (very rare, but possible), nightly pre-show check should include a brake test. If the **Spotline Practical** is not readily accessible for a daily check, the brake test can be accomplished at Load In, then once every 1-2 weeks through the run of the show. The **Spotline Practical** has convenient buttons on the faceplate to assist you with testing the brakes. To test that your brakes are operating correctly in a hoisting application, read through the following steps in their entirety and then perform each action as follows:

- Clear the stage below the suspended scenery
- Press the Brake Test button
- While holding the Enable button, press the Load Brake button. This will manually release the load brake. The motor brake should still be engaged and will hold the load. If the suspended scenery slips down, release the Load Brake button immediately. Since the motor brake did not hold the load as expected, that brake has failed. **DO NOT OPERATE THE MACHINE UNTIL THE MOTOR BRAKE IS REPAIRED OR REPLACED. FAILURE TO REMOVE THE MACHINE FROM SERVICE COULD RESULT IN DAMAGE, INJURY, OR DEATH.**
- Provided the motor brake passed the functional test, release the load brake button.
- While holding the Enable button, press the Motor Brake button. This will manually release the motor brake. The load brake should still be engaged and will hold the load. If the suspended scenery slips down, release the Motor Brake button immediately. Since the load brake did not hold the load as expected, that brake has failed. **DO NOT OPERATE THE MACHINE UNTIL THE LOAD BRAKE IS REPAIRED OR REPLACED. FAILURE TO REMOVE THE MACHINE FROM SERVICE COULD RESULT IN DAMAGE, INJURY, OR DEATH.**

- Release the Motor Brake button

IMPORTANT NOTE

The Load Brake button is used to test the holding capabilities of the MOTOR brake. The Motor Brake button is used to test the holding capabilities of the LOAD brake.

IP Address

Once the **Spotline Practical** is physically connected to the network you will need to set the IP address in order to communicate with **Spikemark**. This is accomplished the same way as any other **Stagehand** controller.



SET IP: OK CANCEL
192.168.100.100

- Click the jog wheel, the SET IP screen will be displayed
- Scroll to the octet you want to change and click the wheel
- Turn the wheel to increase or decrease the number until you reach your desired value. Click the jog wheel to set the value.
- Repeat the process for all octets that need to be adjusted.
- Once complete use the jog wheel to highlight 'OK' and click the wheel

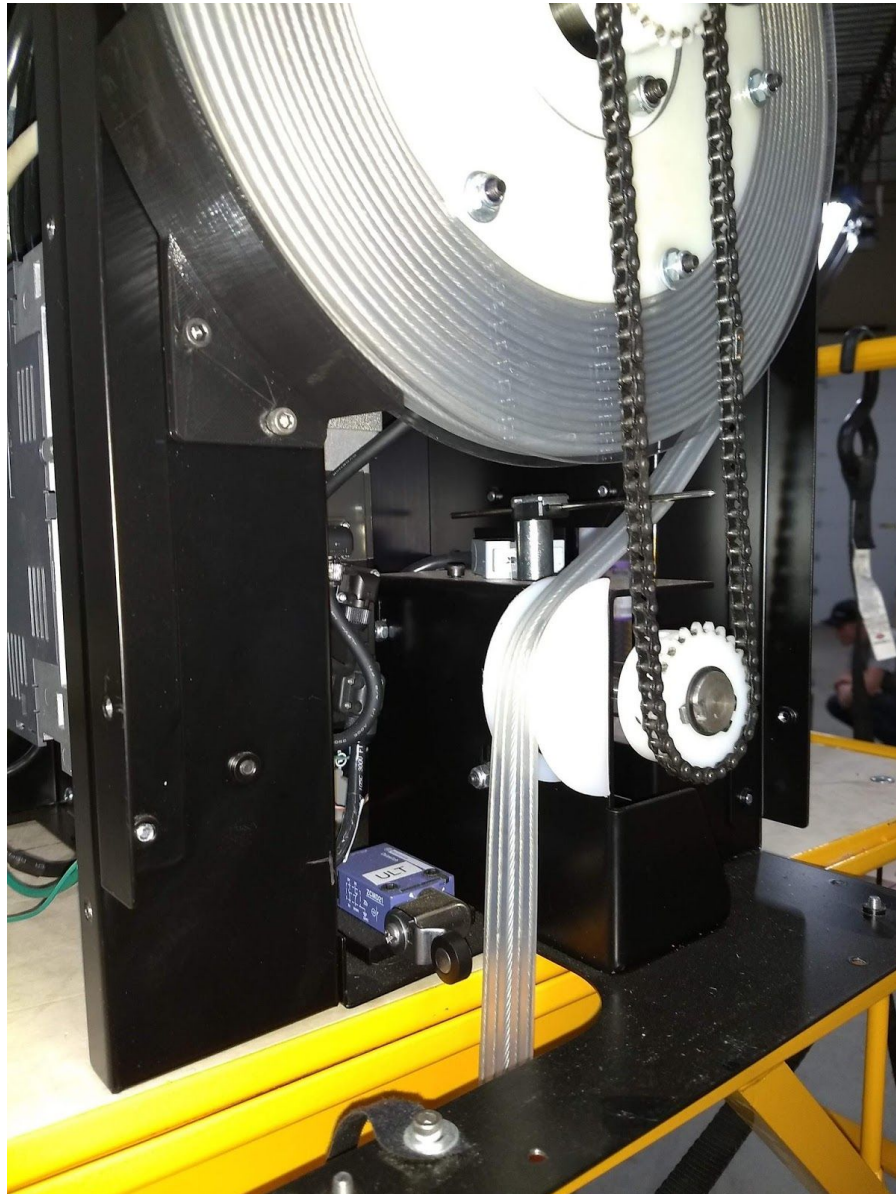
Subnet Mask

In addition to the IP address, each **Stagehand** controller also has the ability to set the subnet mask. The default subnet mask is 255.255.255.0. If you find yourself in a position where you need to adjust the subnet mask, please take a step back from the edge and ask yourself if it is really necessary. If the answer is yes, click and hold the scroll wheel to reveal the SET SUBNET screen. Follow the same procedures used to set the IP address to adjust the subnet mask.

Slackline Detection

The **Spotline Practical** has a minimum loading requirement of 5lbs. When the **Spotline Practical** is lifting less than 5lbs, the lifting line will have the tendency to become slack. To combat this problem, the **Spotline Practical** is integrated with an ultimate limit that detects when the lifting line has gone slack. This is to prevent the lifting line from unspooling and getting caught inside the enclosure. When the slack line detection trips, you will usually need to re-add tension and add more weight to your lifting line. In some rare occasions, if the ultimate limit override was used to move through the slackline detection, the limit could slip behind the lifting line and keep you in a constant ultimate limit

state. To fix this problem, you will need to shut down the machine and manually reset the slackline limit. This can be done either through the lift line exit, or by opening the machine.



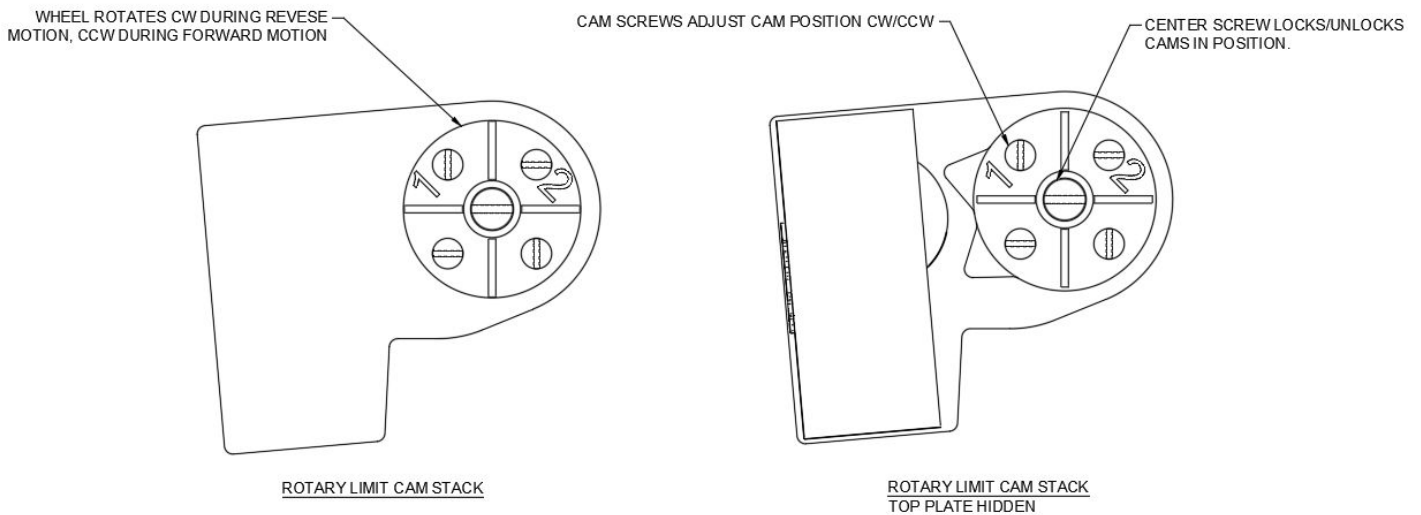
Setting the Limits

In addition to the slack line detection which triggers the ULT limit, there is an interior collision limit which will trigger an ULT limit fault when an obstruction is detected inside the machine (e.g. the payload is about to be sucked into the body of the machine) as well as FWD and REV rotary limits. The ULT limits are not adjustable, but the FWD and REV limits are user-adjustable.

The FWD and REV primary limits are set individually via the rotary limit switch located below the **Stagehand** card on the face of the enclosure. Remove the (4) socket-head cap screws from the

cover plate, then remove the dust cover with a #1 Phillips screwdriver. You should now see the top of the limit cam stack. To adjust the limits:

- Loosen the center screw.
- Turn the appropriate cam screw to adjust the limit.
- Tighten the center locking screw once set.
- Test motion by jogging into and tripping the limit.
- Reinstall the 2 covers.



IMPORTANT NOTE

When the **Spotline Practical** is moving in REV the limit stack is rotating **Clockwise**. The limit stack rotates **Counter Clockwise** when moving FWD.

TROUBLESHOOTING

Below is a list of the most common issues encountered with the **Spotline Practical**.

Issue	Solution
Machine is running, but line doesn't move	Confirm the lifting line is not fouled internally. Not enough tension on the lifting line. Ensure the lifting line's path is clear, the cable is wrapped snugly on the drum, and there is at least a 5 pound load on the lifting line

Fault messages: ULT LIMIT	Ensure there is tension on the lift line Check that the bell housing is not retracted inside of the hoist Confirm that the slack line limit switch is tucked in front of the lifting line.
Fault messages: FWD or REV LIMIT	Set limit switches outside you normal operating range
Fault messages: DRIVE FAULT	Reset drive from Spikemark or by power cycling the Spotline Practical
Fault messages: BRAKE FAULT	Reset drive from Spikemark or by power cycling the Spotline Practical
Fault messages: EMERGENCY STOP	Confirm the Showstopper cable is connected Confirm the e-stop is released Check polarity on the Showstopper cable
Spotline Practical is powered on but the display is showing DISCONNECTED	Confirm Network cable is connected Confirm Spikemark is running Confirm matching IP addresses on machine and in Spikemark
Spotline Practical is connected and powered on but will not connect in Spikemark	Confirm matching IP addresses on machine and in Spikemark Confirm Stagehand is not displaying SET IP
Unit will not power on	Confirm left breaker labeled “Main Power” is in the ON position (UP) Confirm main power is connected to a live outlet
LX Power not working	Confirm left breaker labeled “LX POWER” is in the ON position (UP)

Technical Support

Despite our best efforts and intentions to provide reliable equipment and clear instructions, there may come a time that you need more direct, personal help. We are happy to do that too. Please get in touch in whatever way is most convenient:

Email

support@creativeconnors.com

Email can be really convenient for tech support - even if you have a time-critical issue. If you are having trouble with a specific cue in a show, please email us your show file and log file from **Spikemark** with a description of the issue. We respond within 24 hours, but usually it's just a matter of minutes.

Phone

401-289-2942

We're open weekdays 8:30am – 5:00pm EST. If you call outside of normal business hours (like during tech, or pre-show check, or intermission), please leave a message on the support voicemail. We monitor it off-hours and then draw straws to figure out which support tech calls you back and who gets to eat dinner.

Fax

401-289-0259

Honestly, I don't think anyone uses the fax for tech support, but you are free to be the first. It may take us a while to find the fax machine, so you may encounter an increased response time with this method of communication.

SPECIFICATIONS

Maintenance Schedule

Like any machine, the **Spotline Practical** requires maintenance to stay operating to the fullest capacity.

Daily

- Perform a brake test, if possible.
- Run the machine in a cue to confirm operation.

Weekly

- Perform a brake test.

Semi-Annually

- Inspect entire lifting line for kinks, nicks, or damage.
- Confirm all limits function

- Check limit chain lubrication

Physical Specifications

Description	Value
Lifting Capacity	15lb
Minimum Payload	5lb
Wire Rope Size	3/32in
Max Travel	35ft
Max Speed	48in/s
Machine Weight	75lb
Overall Dimensions	21in H x 14.75in W x 20.75in D

Electrical Specifications

Description	Value
Input Voltage	120VAC 50/60Hz
Max Input Current	10A
Brake Voltage	24VDC
LX Pass-thru Voltage	120VAC Max
Max LX Current	10A

Drawings

See attached.