



## *EZ Spread™*

# Convertible Ground Speed System



# Operation Manual

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## Limited Warranty

### Cirus Controls, LLC.

#### **What and who is covered?**

This warranty covers all defects in materials or workmanship in your Cirus Controls system under normal use, maintenance and service. This warranty coverage applies only to the original owner and is not transferable.

#### **How long is the warranty period?**

This warranty coverage runs for a period of 1 year from the date of initial installation (or 13 months from date of shipment from Cirus Controls), whichever occurs first. Replacement parts are warranted for the remaining portion of the original warranty period or thirty (30) days from date of shipment from our factory (whichever is greater).

#### **How can you get service?**

Cirus Controls' obligation under this warranty is limited to repairing and/or replacing, at Cirus Controls' option, any part or parts that are determined, by Cirus Controls, to be defective. To be eligible for any claim under this warranty, the owner (or Cirus authorized dealer) must return any defective part(s) to the factory, within the applicable warranty period (as set out above).

#### **What will we do?**

Cirus Controls' may, at its option, elect to grant adjustments in the field through an authorized representative and may thereby elect to waive the requirement that parts be returned to Cirus Controls' factory. The repair or replacement of defective parts under this warranty will be made without charge to the owner except for transportation of the part to our authorized repair location.

#### **What is not covered under this warranty?**

Cirus Controls will not assume any expense or liability for repairs made outside our plant without our prior written consent. We are not responsible for damage to any associated equipment or product and will not be liable for loss of profit or other special damages.

The provisions of this warranty do not apply to any product or parts which have been subject to misuse, negligence or accident, or which have been repaired or altered outside of Cirus Controls' factory in any way (in the judgment of Cirus Controls) so as to affect adversely its performance or reliability. Neither does this warranty apply to normal maintenance service and parts or to normal deterioration due to wear and exposure.

This warranty is expressly in lieu of other warranties, expressed or implied, in fact or by law, including any implied warranty of merchantability of fitness for a particular purpose. The remedies of repair or replacement as set forth are the only remedies under this warranty, Cirus Controls' disclaims any obligations or liability for loss of time, inconvenience, commercial loss or direct consequential, special or incidental damages. This warranty is in lieu of any other obligation or liability of Cirus Controls' of any nature whatsoever by reason of the manufacture, sale, lease or use of such products and Cirus Controls neither assumes, nor authorizes anyone to assume for it, any other obligation or liability in connection with such products.

## Revision Log for this Manual

Rev	Release Date	Description
A	7-1-13	First release of manual
B	2/17/14	LED Key updated
C	3/27/14	Typo in configuration step j
D	4/4/14	added new setup features
F	3/16/15	added skip blast feature
G	10-5-15	added spinner boost to blast mode if set

## Package Contents

A complete *EZ Spread*<sup>TM</sup> control system contains the following items:

- 1) *EZ Spread*<sup>TM</sup> control unit;
- 2) This manual;
- 3) Power cable (MK-1003)
- 4) Remote Blast and Pass (pause) cable (TS 2004)
- 5) Hydraulic control cables (SF-1000). One each for Feed (A), Spinner (S), and Liquid (P).

If any of these items are missing, please contact your distributor for replacement parts.

## Functional Overview – Convertible Capability

*EZ Spread*<sup>TM</sup> are manual controllers for hydraulically powered spreading systems, offering independent output control for auger (feed rate), spinner (lane width) and liquid. The EZ Spread can be configured in three ways during set up: a) **Manual only** – no ground speed; b) **Ground speed triggered on/off**; c) **Ground speed oriented on/off**.

## High Current Electric Pre-Wet Systems

The pre-wet channel on *EZ Spread*<sup>TM</sup> is rated for a maximum current capacity of 6 amps. If you are using an electric pre-wet pump that is rated for higher source current levels, contact Cirrus Controls for the Electric Pre-Wet Driver accessory module.

## Operating Controls:

**Power On/Off:** turns “on” power to the complete system (“on” when red bar is visible on the switch).

**Blast and Pause Switches:** these switches allow the operator to turn “on” the “blast or pause” function.

- ✚ Pressing blast turns blast “on”
- ✚ When configured as “on/off,” pressing blast will turn blast off.
- ✚ When configured as “timed blast,” pressing blast adds one time increment. “Pressing Pause” turns blast off.
- ✚ “Pressing Pause,” stops the output of all three channels. Press again to return to normal operation.

**Note: Controller defaults (at power up) with “pause” function on and pause indicator light lit.**

**Gnd. Speed On/ Off:** when turned on, the “Feed” and the “Liquid” are normally linked to the motion of the truck. (Spreading occurs when Feed &/or Liquid LED’s are set above zero and the truck moves).

**Note:** Proper operation requires the speedometer cable to be hooked up and the “Gnd Speed” switch to be in the “on” position. If the speedometer sensor or cable is not functioning, and the “Gnd Speed” switch is on, the controller receives no signal and the spreader will not output material.

When Gnd Speed switch is in the off position, the ground speed linkage is disabled and the feed, spinner and liquid. controls operate without regard for motion of the truck. In the event of a ground speed sensing failure, turning off the “Gnd Speed switch” allows the EZ Spread to be operated manually until the sensor problem is corrected.

**Ground Speed Setup:** *EZ Spread*<sup>TM</sup> controllers include “setup optional” ground speed interaction on the feed and liquid output channels. (The spinner channel is not ground speed oriented). No calibration is

necessary for the ground speed orientation function. Set up personnel can choose to configure the controller as: a) Manual (no ground speed); b) Ground Speed Triggered on/off: controller actuates when ground speed switch is “on” and truck is in motion; c) Ground Speed Oriented on/off: controller orients with truck speed when ground speed switch is “on” and truck is in motion; See setup steps for details.

**Feed Rate (Auger) Control:** is a 10 setting scale adjusted with arrow buttons.

**Caution: auger can operate any time the LED’S are non-zero.**

**Lane Width (Spinner) Control:** is a 10 setting scale adjusted with arrow buttons.

**Caution: the spinner can operate any time the LED’s are non-zero.**

**Liquid Control:** is a 10 setting scale adjusted with arrow buttons.

**Caution: the Liquid function can operate any time the LED’S is non-zero.**

**10 Amp Fuse:** a single 10a fuse protects the circuitry and is located in the rear of the unit.

## LED Key



Pause LED On, Spreading stopped



Blast LED On, Blast spreading 10 seconds



Pause LED On (spreading paused)  
Feed LED=2, Spin= 4; Liq=6



Pause LED on (spreading paused)  
Feed LED=10, Spin= 4; Liq=0



GND LED On constant, spread normal  
Ground speed oriented.



If top feed, spin, or aux led is flashing, an open  
Or shorted hydraulic circuit is detected.

## Pre-Delivery System Setup Checklist

	Description	Completed By/Date
Step 1	Install System and connect cables	
Step 2	Trim hydraulics for all functions	
Step 3	Test the EZ Spread and Outputs	

## Pre-Delivery

### Step 1

To install and run either *EZ Spread™* system, the following steps must be completed.

- 1) Mount the control unit in the truck cab;
- 2) Connect hydraulic control cables, power, remote blast/pass (pause) and any other optional cables;
- 3) Power up the unit, and check functionality of outputs;
- 4) Set the trims;

### Installing the control unit

The control unit of the *EZ Spread™* can be mounted in the flip arm (seat or pedestal mount) or in a stand alone configuration.

### Guard Against RF Interference

Even properly guarded sources of radio frequency (rf) noise can “leak” and interfere with in-cab electronics. Take care when installing radios and radio antenna cable to keep at least 24” spacing between them and any cabling for the *EZ Spread™*.


### Connecting the cabling - Back panel of EZ Spread



- 1) Connect the SF-1000 hydraulic cables to the labeled ports (Hyd A = Feed, Hyd S = Spinner, Hyd P = Liquid) or connect TS-2018 to the Hyd Out.
- 2) Connect the TS-2004E speedo cable to the truck to access the speedometer signal. If equipped with a Cirrus Controls plow control, connect remote blast/pass (pause) cable to the Plow control remote blast/pass (pause) cable (MK-1004E-optional).
- 3) Finally, connect the MK-1003 power cable to the PWR/GND port. Check to make sure that the power switch is off before connecting the power leads and then connect power and ground to the cable. **The**

power cable is normally connected to a +12 volt ignition hot source or it can be connected to the battery, as the unit is fused, or to a power circuit capable of delivering a minimum of 10 amps.

## Step 2 – Configure and trim hydraulic channels and “blast”

<b>WARNING</b>		<p>Potential for injury due to unexpected startup or movement of mechanical equipment.</p> <p>Unexpected startup or movement of mechanical equipment may cause injury to eyes and extremities.</p> <p>During initial startup and testing, the spreader components may start without warning. Stay clear of the auger, spinner, and liquid nozzles until initial power up and programming are complete.</p>
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All three hydraulic channels can be trimmed using the controls on the front of the switch panel. **During configuration, the “Ground Speed” function is disabled, so the auger will move while the truck is standing still.** An “ideally trimmed” system will just begin to move at an operating setting of 1 and will reach its maximum speed at a setting of 10. Note that the setting on the LED used during “set up trimming of a function” (below) will not correlate to the settings used during normal operation.

**Note: Changes to configuration are saved when you reach the last step and the blast and pass (pause) LED’s alternately flash. If you terminate your configuration prior to reaching the last step, any and all changes are lost and the controller returns to default settings or to settings saved previously.**

**To enter the configuration mode:** Hold blast switch (left), turn on power, wait for two seconds till blast and pass (pause) LED’s flash, and release Blast. The flashing LED’s show values being set.

a) **Set “Control Frequency” to match the frequency of the coil installed in the truck**

**Indication:** Both blast and pass (pause) LED’s flash slow (2x sec)

**Action:** Set Frequency using Feed buttons.

(0 = 40, 1 = 60, 2 = 80, 3 = 100, 4 = 120, 5 = 140, 6 = 160, 7=180, 8=220 etc.)

**See Attachment C for frequency by coil manufacturer. Default is set at 120Hz.**

**Accept:** Press **pass (pause)** to confirm chosen value (press **blast** to use previous setting).

b) **Set “Feed Rate” (Auger/Conveyor) Minimum trim level:**

**Indication:** Blast LED will flash slowly (2x sec).

**Action:** Set auger minimum trim using Feed arrows. Press up arrow until auger just begins to move.

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting)

c) **Set “Feed Rate” (Auger/conveyor) Maximum trim level:**

**Indication:** Blast LED will flash quickly (8x sec).

**Action:** Set auger maximum trim using Feed arrows. Press up arrow until auger speed reaches its maximum. When higher up setting does not change the auger speed, you have reached the maximum speed.

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

d) **Set “Lane Width” (Spinner) Minimum trim level:**

**Indication:** Pass (pause) LED will flash slowly.

**Action:** **Start Auger Moving normally using Feed buttons**

Set spinner minimum trim using spinner arrows. Press up arrow until spinner moves at “normal rotation speed”.



**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**e) Set “Lane Width” (Spinner) Maximum trim level:**

**Indication:** Pass (pause) LED will flash quickly.

**Action:** **Start Auger Moving as before**

Set spinner maximum trim using spinner arrows. Press up arrow until spinner speed reaches its maximum.

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**f) Set “Aux” Minimum trim level:**

**Indication:** GND Speed LED will flash slowly.

**Note:** **For 2 channel spreader (auger/spinner only), set min=0 here;**

**Action:** Set Liquid min trim using Liquid arrows. Press up arrow until Liquid just begins to move.

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**g) Set “Aux” Maximum trim level:**

**Indication:** GND Speed LED will flash quickly.

**Note:** **For 2 channel spreader (auger/spinner only), set max=0 here;**

**Action:** Set Liquid max trim using Liquid arrows. Press up arrows until Liquid speed reaches its maximum.

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**h) Set Blast timer (or on/off):**

**Indication:** Blast and Pass (Pause) flash quickly.

**Action:** Set blast using Feed arrows (each mark = 2 sec, **0=on/off**, 2 = 4 sec, 4 = 8 sec, 8=16 sec, etc.)

**Note: to configure Blast as “on/off” set arrows at zero during this step.**

**Accept:** Press **pass (pause)** to confirm chosen value (press **blast** to use previous setting).

**i) Set “Ground Speed Mode”**

**Indication:** GND Speed LED will flash slowly.

**Action:** Set ground speed mode using Feed arrows (**0=manual only** - Gnd Speed switch disabled; **5 = Ground Speed Triggered** (on/off with switch); **10 = Ground speed oriented** (on/off with switch).

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**j) Set “Spinner linked to Auger”**

**Indication:** Blast, pause, and GND Speed LED will flash slowly.

**Action:** Sets spinner to min trim when auger is running using Feed arrows (**0= not linked ; 1= linked**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**k) Set “Liquid linked to Auger”**

**Indication:** Blast, pause, and GND Speed LED will flash fast.

**Action:** Sets liquid to min trim when auger is running using Feed arrows (**0= not linked ; 1= linked**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**l) Set “Led brightness”**

**Indication:** Blast and GND Speed LED will flash slowly.

**Action:** Sets Led brightness using Feed arrows (**0= dim as possible; 10 = bright as possible**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**m) Set “unseat percentage”**

**Indication:** Blast and pause LED will flash fast.

**Action:** Sets unseat percentage used when going from stopped to moving using Feed arrows (**0= 0% ; 1= 10%; 2 = 20%; 3 = 30%; etc.**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).



n) **Set “Skip blast mode”**

**Indication:** Blast LED will flash slowly.

**Action:** Skip blast allows the spreader to be placed in blast mode directly out of pause mode, and when the blast event is done the spreader goes directly back to pause. Set with feed arrows (**0= off ; 1= on**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

o) **Set “Spinner boost in blast mode”**

**Indication:** Pause LED will flash slowly.

**Action:** Spinner boost in blast mode will set the spinner to max trim during the same period of time that the auger speed is increased. Set with feed arrows (**0 = off ; 1 = on**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

**The follow 5 steps will only appear if a HCM is connected to the EZ one before the setup is started.**

p) **Set “12 or 24 volts system”**

**Indication:** Top Liquid LED will flash fast.

**Action:** tells the HCM that it is connected to 12 or 24 volts. (**0 = 12 volts, 1= 24 volts**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

q) **Set “24 volt system with 12 volt motor”**

**Indication:** 2<sup>nd</sup> from top liquid LED will flash fast.

**Action:** tells HCM that it is running a 12V motor on a 24V system. (**0= normal, 1=24 volt system with 12 volt motor**)

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

r) **Set “Auger motor current limit”**

**Indication:** Middle liquid LED will flash fast.

**Action:** Sets max current the motor can see before shutting down and displaying current level on auger output level led's. (**0= NOT SET ; 1= 10 amps; 2 = 20 amps; 3 = 30 amps: etc.**). **Check your motor rating before setting this to get the right level.**

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

s) **Set “Spinner motor current limit”**

**Indication:** 2<sup>nd</sup> from bottom liquid LED will flash fast.

**Action:** Sets max current the motor can see before shutting down and displaying current level on spinner output level led's. (**0= NOT SET ; 1= 5 amps; 2 = 10 amps; 3 = 15 amps: etc.**). **Check your motor rating before setting this to get the right level.**

**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

t) **Set “Liquid motor current limit”**

**Indication:** Bottom liquid LED will flash fast.

**Action:** Sets max current the motor can see before shutting down and displaying current level on liquid output level led's. (**0= NOT SET ; 1= 5 amps; 2 = 10 amps; 3 = 15 amps: etc.**). **Check your motor rating before setting this to get the right level.**


**Accept:** Press **pause** to confirm chosen value (press **blast** to use previous setting).

u) **Configuration is complete**

**Indication:** Blast and Pause will flash in an alternate sequence (left, right etc).

**Accept:** Cycle power to start spreader in normal mode.

### Step 3 - Testing the signal outputs

<b>WARNING</b>		<p><b>Potential for injury due to unexpected startup or movement of mechanical equipment.</b></p> <p><b>Unexpected startup or movement of mechanical equipment may cause injury to eyes and extremities.</b></p> <p><b>During initial startup and testing, the spreader components may start without warning. Stay clear of the auger, spinner, and liquid nozzles until initial power up and programming are complete.</b></p>
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- 1) Turn on the system with the truck running.
- 2) Turn “off” the ground speed trigger switch and set the Feed to any “non-zero” setting. The auger will engage and the LED on the valve junction box will light.
- 3) Turn “on” the “Gnd Speed” switch, the auger will stop running and the VJB LED will turn off.
- 4) Drive truck slowly forward. Verify that auger starts turning when truck runs above 2 mph. If not, adjust speedo reference trim pot (back panel) until auger responds to truck motion.
- 5) Final trimming of auger motion can be accomplished after ground speed signal is validated.
- 6) To adjust one or more trim settings, hold blast, turn on power, wait for two seconds, then release blast. The spreader will now enter configuration mode as before. When entering the configuration mode, the spreader retains the settings made in step 2. You can change only the settings you wish to change, by pressing blast to retain old settings. To accept new settings, press “pass (pause)” after making adjustments.

### Trouble Shooting Guide

Complaint	Cause (s)	Correction (s)
<b>Set Up Issues</b>		
Power Isn't On	a) Master Power Off; b) Fuse is blown; c) Bad Power or Ground connection;	a) Turn on power; b) Replace Fuse c) Verify power/ground connections.
EZ Spread cuts out or acts strange;	Low power supply voltage from truck battery/alternator;	Minimum truck voltage must be > 12.0 volts;
TOP Feed rate LED is blinking TOP spin rate LED is blinking TOP liquid rate LED is blinking	Open or short in the cabling to the hydraulic valve. 3 <sup>rd</sup> Channel enabled, not in use.	Turn on one channel at a time to isolate which cable is bad and replace. Disable 3 <sup>rd</sup> channel in set up.

Auger or Spinner Doesn't Move (truck is stationary)	a) PTO not engaged; b) Hydraulics not functioning;  c) Electrical connection failure;  d) EZ Spread power off; e) "Pass (Pause)" is engaged and LED lit	a) Engage PTO; b) Verify Hydraulics: actuate plow or hoist; manually operate using manual over-ride on valve;  c) Check LED at coil connection and at valve junction box; Repair cable connections; d) Check wiring connections; e) Select "pass (pause)" switch to begin spreading;
Auger doesn't move when truck starts;	a) Ground speed trigger not on; b) Ground Speed signal not received by controller due to reference error;	a) Turn on ground speed trigger; b) Adjust Speedo reference trim pot on rear of controller until signal is functioning normally.
Spinner slows down or stops	Minimum trim for spinner too low; Hydraulic pressure in spinner circuit is below pressure compensator;	a) Re-trim spinner to a higher minimum trim level. b) Increase pressure in spinner circuit. Use a spool with a lower flow rating.

### **Appendix A – Spare Parts List**

<u>Part #</u>	<u>Description</u>
MK 1003	12V power cable;
TS 2004	Speedometer signal and remote blast and pass (pause) cable;
SF 1000	Hydraulic cable; used for Hyd A, B and C outputs;
000203	10amp 32v fuse.

### **Appendix B – Typical Frequency Settings by Valve Mfg**

Brand Valve (prewet systems)	100 Hz
Husco – Section Valves –	100 Hz
Hydra Force (Cirrus manifold)	220 Hz
Parker -	60 Hz
Rexroth (MP18)	180 Hz
Sauer Dan Foss - PVG32	80 Hz