



**BRAND**  
**HYDRAULICS Co.**

Made in the Heartland of America  
Serving the World

Engineering & Manufacturing Solutions

# Spreader Control

EC20100

## APPLICATION:

The EC20100 was designed for material spreading equipment and applications requiring a dual PWM output weatherproof control.



ISO 9001:2008 WITH DESIGN  
Certificate #02.002.1



402.344.4434 • [www.brand-hyd.com](http://www.brand-hyd.com)

# EC20100

Spreader Control

## FEATURES:

- Weather tight control package.
- Two Pulse Width Modulated outputs
- Protected against reverse polarity, short circuit, and over voltage conditions.
- Current controlled output, maintains output current regardless of supply voltage and coil resistance variations.
- Blast button is user adjustable anywhere from 0- 100% of Auger output.
- Waterproof altitude pressure and vapor release vent
- Independent ramp adjustments up and down, 0.1 -12 seconds.
- Minimum and Maximum current adjustments for fine tuning each outputs span.
- Wide voltage supply range 12-26 VDC, one control for 12 or 24VDC systems.



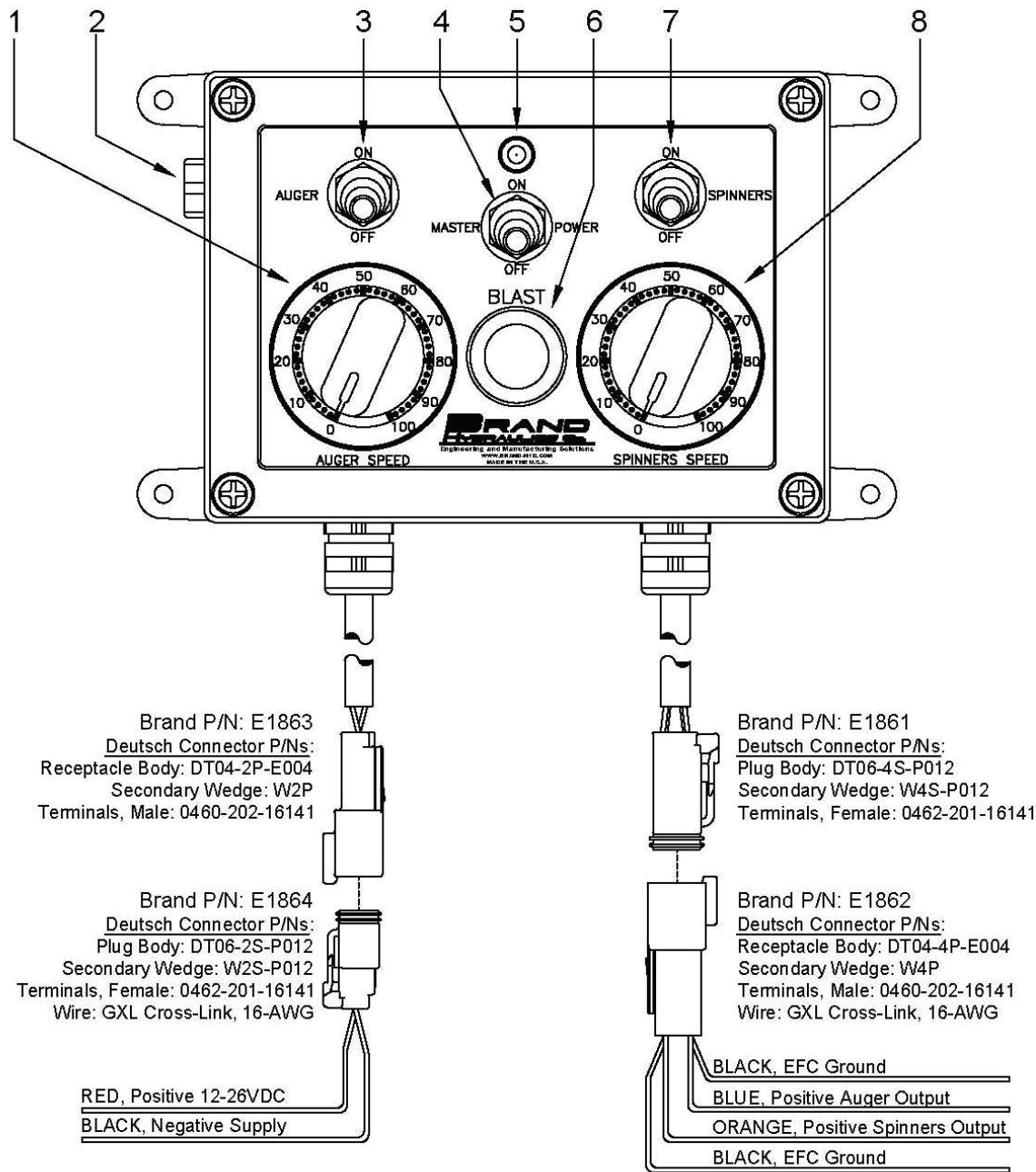
## DESCRIPTION:

The EC20100 is a compact, durable, and easy to operate control, built with high quality long life components that are designed for use in harsh environments. The EC20100 is a perfect compliment to the Brand EFC, LEFC, and SEFC flow controls. Other flow controls meeting the appropriate specifications may be used as well.

## SPECIFICATIONS:

Voltage Supply	12-26 VDC
Maximum Auger Output	2.0 Amps Continuous
Maximum Spinner Output	2.0 Amps Continuous
Output Type	PWM , Pulse Width Modulation, 0-100% Duty cycle
Frequency	107Hz +/- 5 Hertz
Minimum Load Resistance	Min. load = Voltage Supply ÷ 2 , Example: 6 Ohm minimum load for a system with a 12 VDC supply
Maximum Operating Current	4.076 Amps
Total Operating Current No Load	76 mA
Current Draw W/Power Switch Off	450 uA
Environmental Ratings	IP66 / NEMA 4
Operating Temperature	-40°C - 85°C (-40°F - 185°F)
Storage Temperature	-40°C - 85°C (-40°F - 185°F)
Weight, Fully Assembled	0.839 kg (1.850 lb.)

**CONTROL LAYOUT:**



Brand P/N: E1863  
 Deutsch Connector P/Ns:  
 Receptacle Body: DT04-2P-E004  
 Secondary Wedge: W2P  
 Terminals, Male: 0460-202-16141

Brand P/N: E1864  
 Deutsch Connector P/Ns:  
 Plug Body: DT06-2S-P012  
 Secondary Wedge: W2S-P012  
 Terminals, Female: 0462-201-16141  
 Wire: GXL Cross-Link, 16-AWG

RED, Positive 12-26VDC  
BLACK, Negative Supply

Brand P/N: E1861  
 Deutsch Connector P/Ns:  
 Plug Body: DT06-4S-P012  
 Secondary Wedge: W4S-P012  
 Terminals, Female: 0462-201-16141

Brand P/N: E1862  
 Deutsch Connector P/Ns:  
 Receptacle Body: DT04-4P-E004  
 Secondary Wedge: W4P  
 Terminals, Male: 0460-202-16141  
 Wire: GXL Cross-Link, 16-AWG

BLACK, EFC Ground  
BLUE, Positive Auger Output  
ORANGE, Positive Spinners Output  
BLACK, EFC Ground

**Functions**

1. Auger speed adjustment dial.
2. Waterproof altitude pressure and vapor release vent.
3. Auger output ON/OFF switch.
4. Master power ON/OFF switch.
5. Master power indicator.
6. Blast push button temporarily overrides the Auger speed adjustment dial. Blast output level is adjustable via an onboard trimmpot. Output comes from factory adjusted for 1 Amp.
7. Spinners output ON/OFF switch.
8. Spinners speed adjustment dial.

**E1863 Power Cable**

- Pin 1, Wire #one, Positive supply
- Pin 2, Wire #two, Negative supply

**E1864 Mating Power Cable**

- Pin 1, Red wire, Positive supply
- Pin 2, Black wire, Negative supply

**E1861 Output Cable**

- Pin 1, Wire #one, out A (Auger)
- Pin 2, Wire #two, out B (Spinners)
- Pin 3, Wire #three, Ground
- Pin 4, Wire green/yellow, Ground

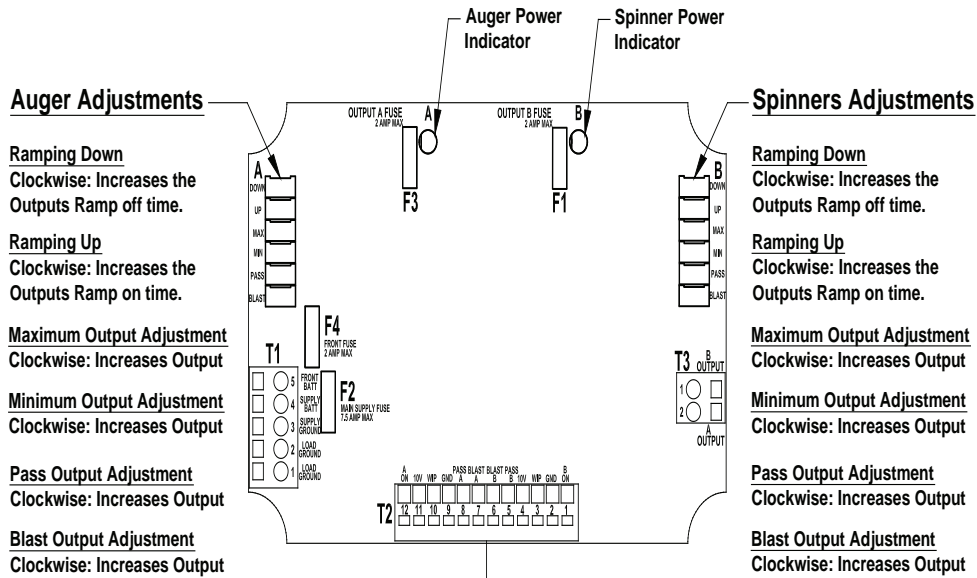
**E1862 Mating Output Cable**

- Pin 1, Blue wire, Auger Output
- Pin 2, Orange wire, Spinners Output
- Pin 3, Black wire, load Ground
- Pin 4, Black wire, load Ground



# EC20100 Spreader Control

## INTERNAL LAYOUT:



### Auger Adjustments

#### Ramping Down

Clockwise: Increases the Outputs Ramp off time.

#### Ramping Up

Clockwise: Increases the Outputs Ramp on time.

#### Maximum Output Adjustment

Clockwise: Increases Output

#### Minimum Output Adjustment

Clockwise: Increases Output

#### Pass Output Adjustment

Clockwise: Increases Output

#### Blast Output Adjustment

Clockwise: Increases Output

### Spinners Adjustments

#### Ramping Down

Clockwise: Increases the Outputs Ramp off time.

#### Ramping Up

Clockwise: Increases the Outputs Ramp on time.

#### Maximum Output Adjustment

Clockwise: Increases Output

#### Minimum Output Adjustment

Clockwise: Increases Output

#### Pass Output Adjustment

Clockwise: Increases Output

#### Blast Output Adjustment

Clockwise: Increases Output

### Factory Settings

#### Auger

- Ramping Down, set for minimum delay.
- Ramping Up, set for minimum delay.
- Maximum Output, Set for 1.00 Amp.
- Minimum Output, Set for 0.2 Amp.
- Pass Output, Set for minimum output.
- Blast Output, Set for 1.00 Amp.

#### Spinners

- Ramping Down, set for minimum delay.
- Ramping Up, set for minimum delay.
- Maximum Output, Set for 1.00 Amp.
- Minimum Output, Set for 0.2 Amp.
- Pass Output, Set for minimum output.
- Blast Output, Set for 1.00 Amp.

### Fuses

- F1. Spinners output fuse, 2A max, ATM-2.
- F2. Main fuse, 7.5A max, ATM-7-1/2.
- F3. Auger output fuse, 2A max, ATM-2.
- F4. Front lid power fuse, 2A max, ATM-2.

### Terminal Block Wiring

#### T1

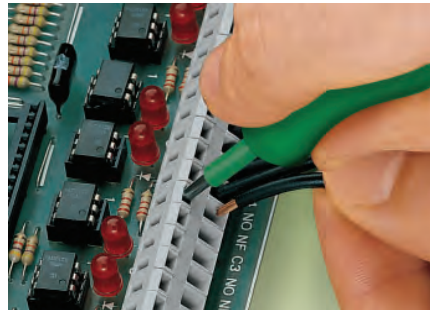
1. Ground for EFC Coil A
2. Ground for EFC Coil B
3. System Ground Input
4. Positive 12-26 VDC Input
5. Front Lid power.

#### T2

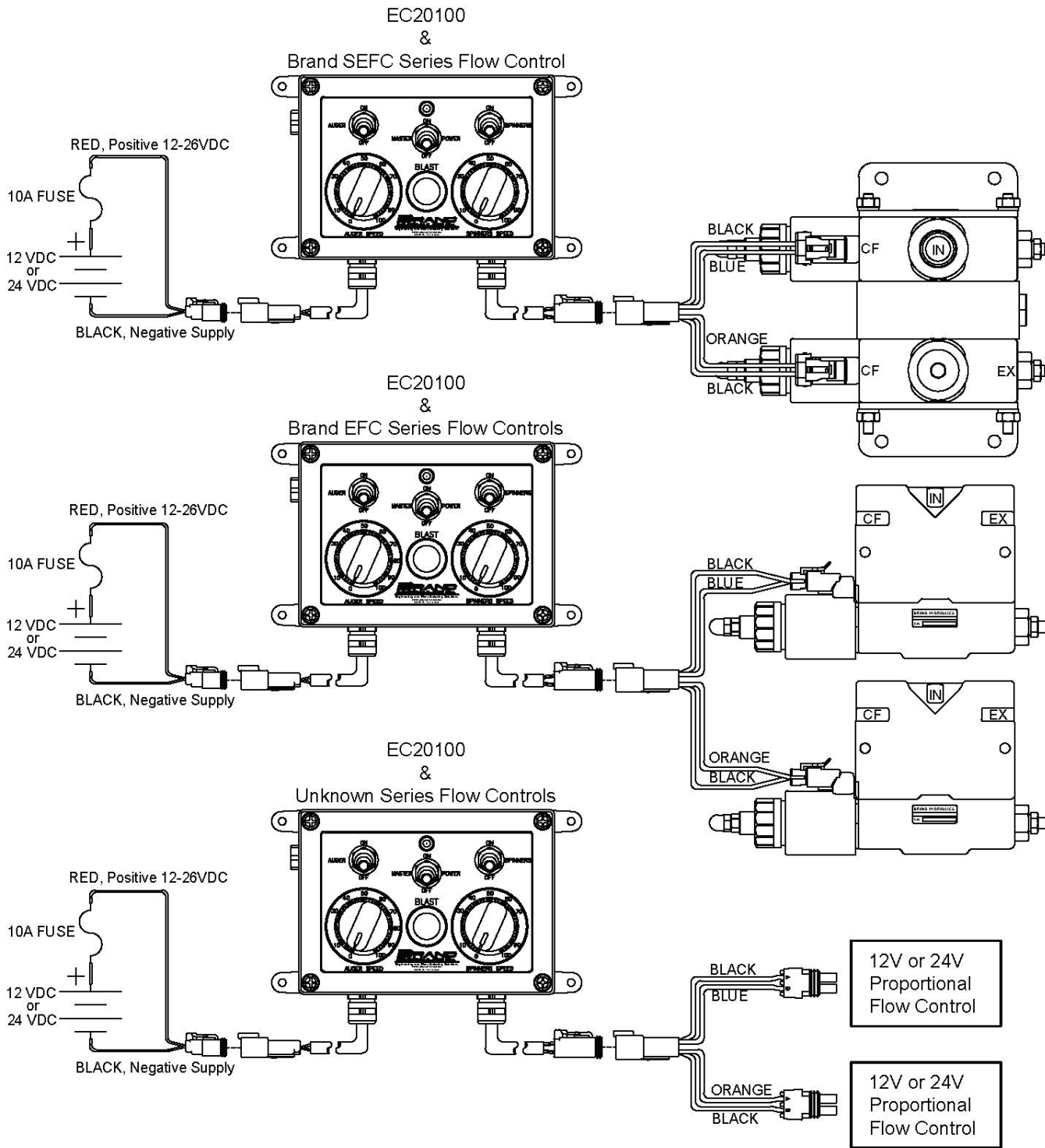
1. Spinner on/off input. Apply 12-26VDC to make Spinner output active.
2. Ground for Spinners potentiometer.
3. Spinners potentiometer wiper Input.
4. 10V Reference for Spinner potentiometer as well as Auger Blast switch power.
5. Spinners pass input. Active with a 12-26VDC input. Adjustable 0-2A.
6. Spinners Blast input. Active with a 12-26VDC input. Adjustable 0-2A.
7. Auger Blast input. Active with a 12-26VDC input. Adjustable 0-2A.
8. Auger pass input. Active with a 12-26VDC input. Adjustable 0-2A.
9. Ground for Auger potentiometer and power LED.
10. Auger potentiometer wiper Input.
11. 10V Reference for Auger potentiometer.
12. Auger on/off input. Apply 12-26V to make Auger output active.

#### T3

1. Positive output for EFC Coil B (Spinners).
2. Positive output for EFC Coil A (Auger).



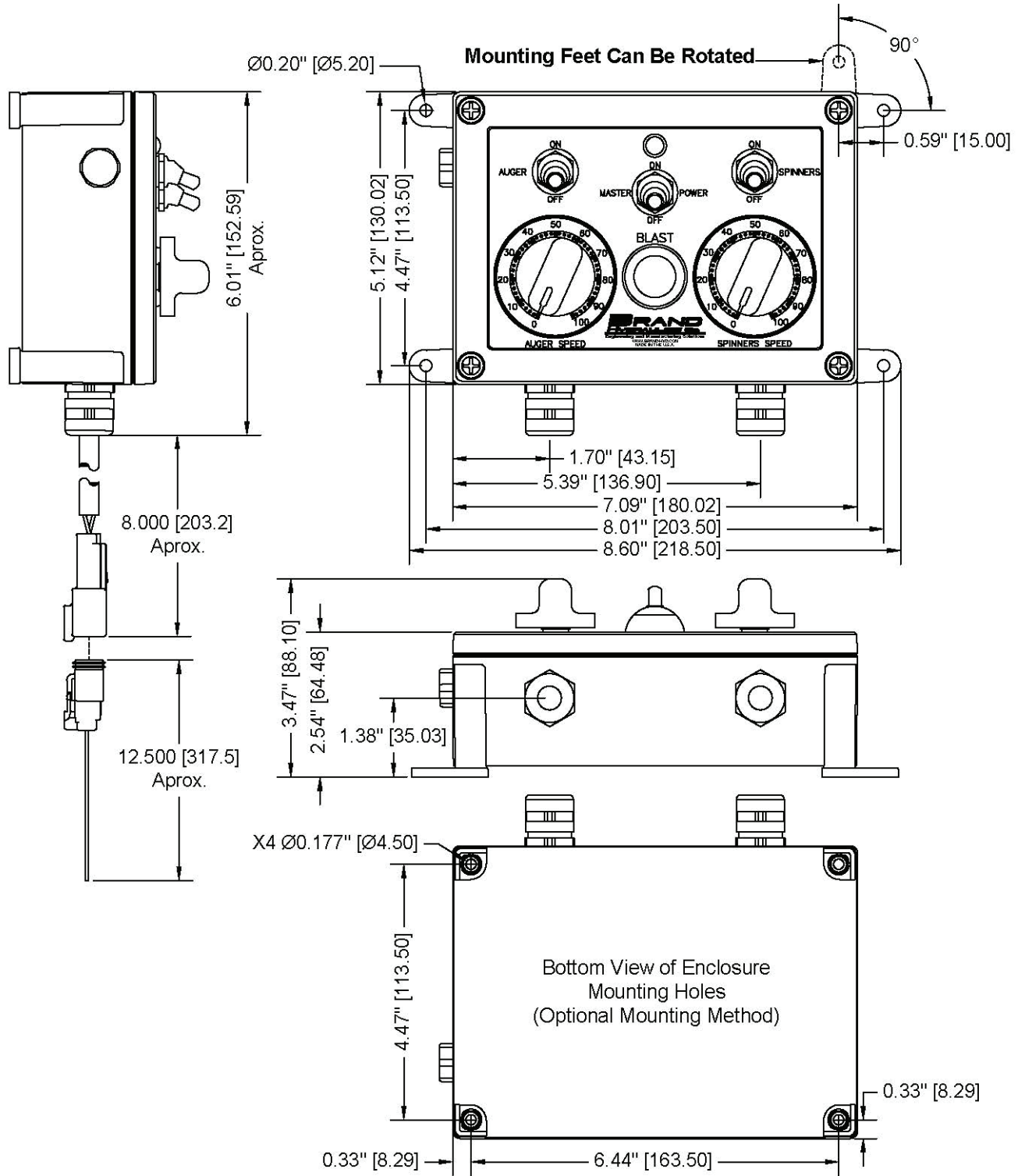
**TYPICAL SYSTEM CONFIGURATION:**



NOTE: Brand Hydraulics recommends a 10 amp fuse be placed within 18 inches of this controls power source. The fuse and power source are customer supplied parts.

# EC20100 Spreader Control

## DIMENSIONAL DATA: inches & [millimeters]



**ADJUSTMENTS:**

Minimum output or zero setting	Clockwise rotation increases minimum output 0 - 1.1 Amps
Maximum output	Clockwise rotation increases maximum output 0.05 - 2 Amps Maximum output will be 50 mA greater than the minimum output
Ramping Down, or Fall Time	Clockwise rotation increases ramp time 0.1 - 12 Seconds,
Ramping Up, or Rise Time	Clockwise rotation increases ramp time 0.1 - 12 Seconds
Pass Output	Clockwise rotation increases pass output 0 - 2 Amps
Blast Output	Clockwise rotation increases blast output 0 - 2 Amps

**ADJUSTMENT PROCEDURE:**

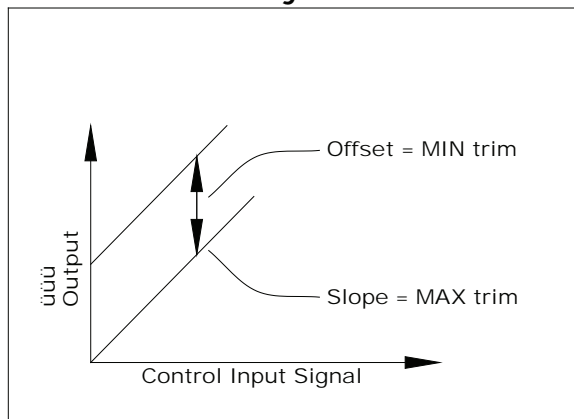
Adjustments are made by turning a trim pot screw. The trimmers are 25 turn, end to end devices. The trimmers have a built in slip clutches so over rotations do not damage them. It may be necessary to turn the adjustment screw several turns to observe a change in output. Start by adjusting the min output, and then adjust the max output to the desired level. The best way to fine tune adjustments is to observe the function response or speed. It is important to make adjustments in the following order.

1. Minimum output: Start by setting the master Potentiometer or input signal to zero. Turn the trimmer clockwise until the function begins to move. Now turn the trimmer back counter clockwise, one full rotation past the point of any visible movement.
2. Maximum output: Start by setting the master Potentiometer to the 100 position on the dial. Turn the trim pot counter clockwise to decrease function speed. Turn the trim pot clockwise to increase function speed. Function maximum speed will be limited to the max flow capabilities of your hydraulic system. Do not rotate the trim pot past the point of an observable increase in function speed.
3. Ramp up: This feature changes how quickly the valve can open. Clockwise turns increase the amount of delay. Counterclockwise turns decrease the amount of delay.
4. Ramp down: This Feature changes how quickly the valve can close. Clockwise turns increase the amount of delay. Counterclockwise turns decrease the amount of delay. Use discretion when making this adjustment, this will affect how quickly your function stops.

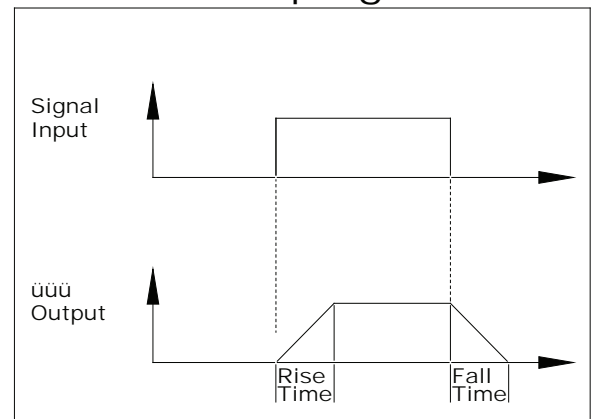
## ADJUSTMENT PROCEDURE:

5. Blast output: Push the Blast button to observe whether or not adjustment is necessary. Turn the trim pot counter clockwise to decrease function speed. Turn the trim pot clockwise to increase function speed. Blast output will be limited to the span set by the Min and Max trimmers. Do not rotate the trim pot past the point of desired function speed.

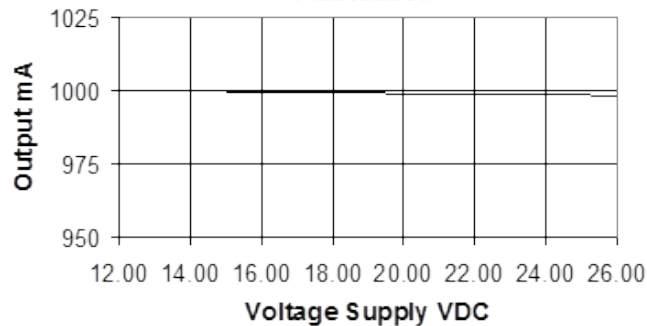
### MIN/MAX Adjustments



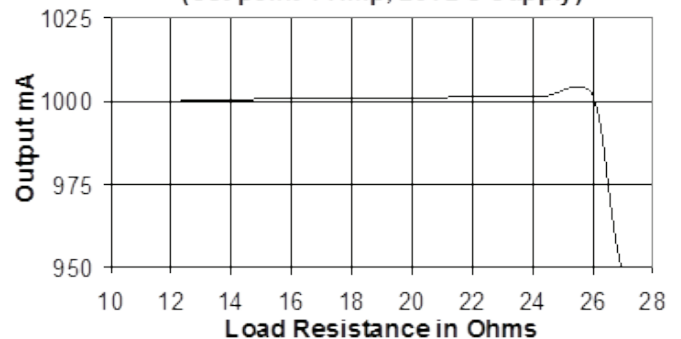
### Ramping



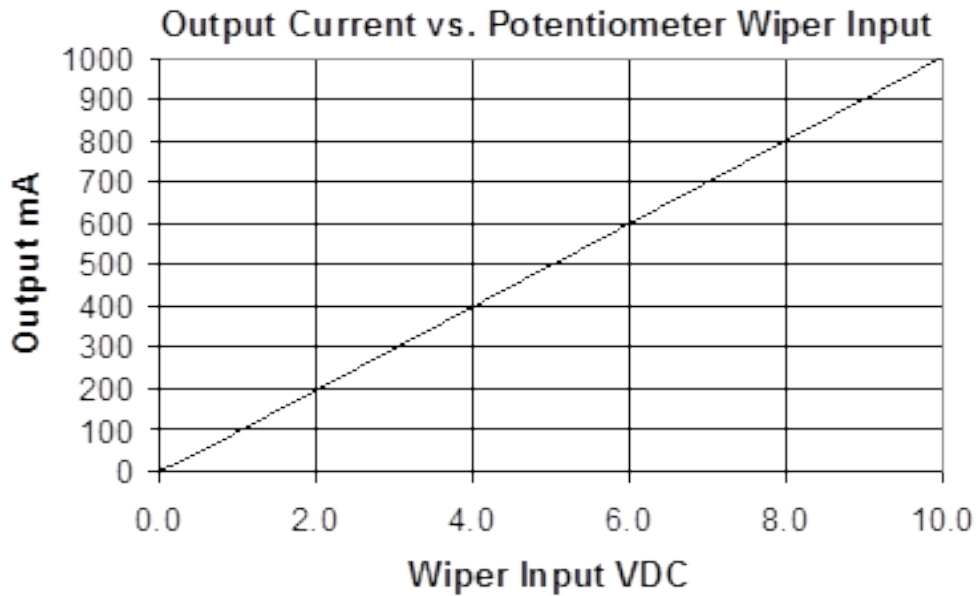
Output Current vs. Voltage Supply Fluctuation



Output Regulation vs. Load Resistance (Set point 1 Amp, 26VDC Supply)







NOTE: Unless stated otherwise the above readings were taken at 25°C, with control connected to a 14.6V supply, and the output was set for 1 amp. Both Auger and Spinner outputs share these curve characteristics.

It is the purchaser's responsibility to determine the suitability of any Brand Hydraulics product for an intended application, and to insure that it is installed in accordance with all federal, state, local, private safety, health regulations, and codes and standards. Due to the unlimited variety of machines, vehicles, and equipment on which our products can be used, it is impossible for Brand Hydraulics to offer expert advice on the suitability of a product for a specific application. We believe that it is our customer's responsibility to undertake the appropriate testing and evaluation to prevent injury to the end user.

*All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise*