

# ACAS

*BY DRAGDYNAMICS.COM*

## **INSTALLATION AND CONFIGURATION**



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*Drag Dynamics is not affiliated with Holley Corporation in any way – we just like using their products and developing complementary parts that work with Holley.*

*Drag Dynamics, LLC. 1214 Melody Mountain Rd. Cedar creek, MO.  
65627 417-527-4076 email: [support@dragdynamics.com](mailto:support@dragdynamics.com)*

## **Parts Included**

1 – ACAS Sensor Module

1 – 4' Wire Harness, DTP Connector assembled – Flying Leads

## **Operation:**

*For use with Holley Dominator, HP, Terminator X/XMAXX systems only. See “Requirements” section for minimum supported firmware versions.*

## **Chassis Angle:**

The ACAS channel 1 output shows Chassis Angle – also known as Pitch. This is the absolute angle of the chassis, unaffected by acceleration or roll (up to 30\* roll angle). It uses “fusion data” to give the most accurate position

## **Pitch Velocity**

New to drag racing, Pitch Velocity is the Chassis Angle RATE OF CHANGE – If your car is optimized for tracks where a wheelie is a potential problem, Pitch Velocity lets you see the problem long before the chassis angle is too high to do anything about it – potentially saving both a pass, and thousands of dollars of damages from hard landings. This is output on Channel 2.

## General Information and Use:

**Power Consumption:** The ACAS uses 5 volt power and sensor ground directly from your Holley ECU, just like any other 5v sensors. This unit consumes no more than .003 amps (30 milliamps) during use. 2 LEDs (Power, and CAN) indicate Processor activity and detection of the Holley CAN network.

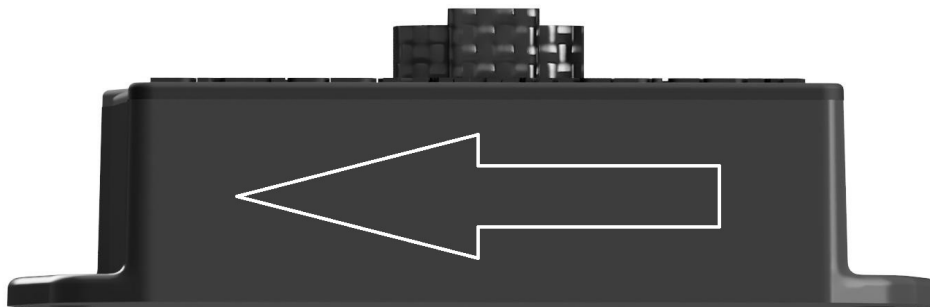
**Performance:** The ACAS samples chassis orientation and movement at 400khz, and generates CAN data packets at 100 samples per second, the fastest a Holley can receive and store CAN data. This results in a time of .008 seconds between sensor measurement and delivery to your ECU.

**Requirements:** The ACAS requires your Holley Dominator and HP ECU be running firmware Version 6 Build 220 or later. Holley Terminator X/XMAXX ECUs must be updated to Terminator X V2 build 70 or later.

**Environmental:** ACAS is designed to work consistently between temperatures of 45\* F and 160\* F. The unit is encased entirely in Epoxy with a fluid-proof Deutsch connector.

## Wiring and Installation

**Mounting:** Mount the ACAS module on a horizontal surface in your vehicle chassis. The arrow on the top of the module must point in the forward direction the car travels during racing. The unit can be mounted just about anywhere that's relatively flat and level, but best performance comes from mounting near the chassis pivot (rear axle) as low as possible. The ACAS will self-level each time power is applied, but the closer you have it mounted level in your chassis, the better. The mount can be rigid – unlike other inertia measurement systems, this one will filter high frequency noise from chassis vibrations. The unit can be mounted anywhere temperatures won't exceed 170\* F continuous. The unit operates reliably in temperatures as low as 45\* F continuous, and uses internal temperature compensation.



## Wiring:

<b>Pin:</b>	<b>Color:</b>	<b>Function:</b>
1	Orange	+5v Power from Holley VREF +5v circuit. DO NOT CONNECT TO IGNITION POWER
2	Black	Ground – attach to Holley Sensor Ground circuit. DO NOT CONNECT TO CHASSIS OR BATTERY GROUND
3	Orange	CAN Bus Low. Connect to Holley CAN Low (also Orange)
4	Orange/Blk	CAN Bus High. Connect to Holley CAN High (Orange/Blk)

Pin 2  
Sensor Ground  
(must use Holley  
Sensor Ground)

Pin 3  
CAN Low  
(Attach to Holley  
CAN Low)



Pin 1  
+5v power  
MUST use Holley  
+5v power

Pin 4  
CAN High  
Attach to Holley  
CAN High

# Holley Software Configuration:

## Input Channels

Open a tune file you wish to configure for the ACAS, or download the current tune from your car's ECU.

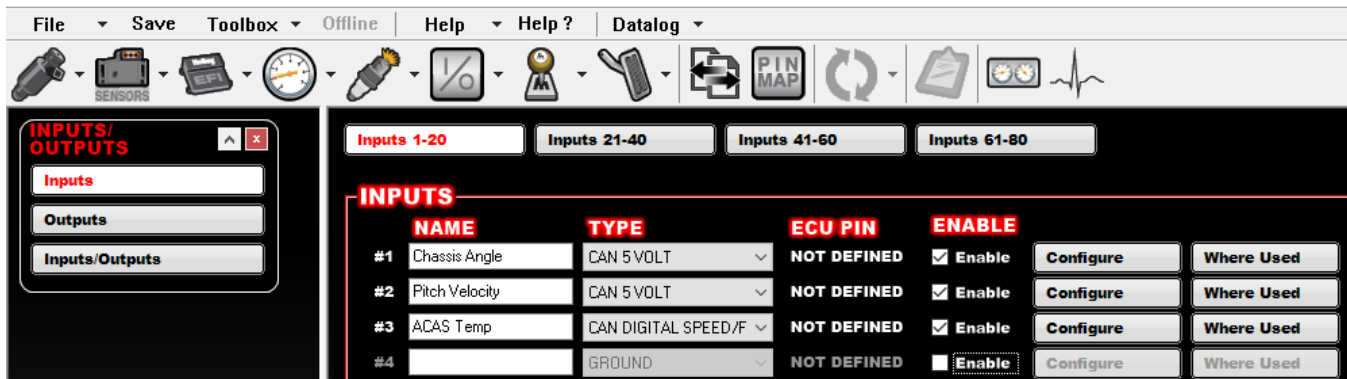


Figure 1: I/O Input Config

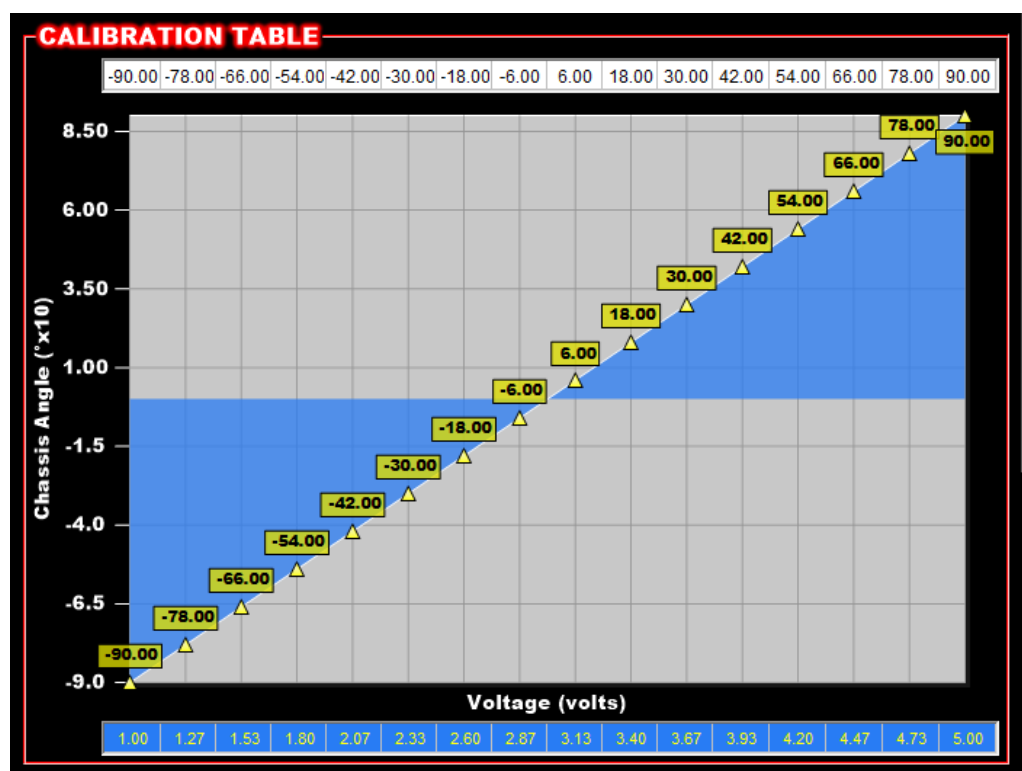
Open the I/O menu, select the Inputs menu option, and create four input channels input as shown in Figure 1: I/O Input Config. The first 2 channels (Chassis Angle, Pitch Velocity) are set up as type “CAN 5 VOLT”. The 3<sup>rd</sup> channel, ACAS Temperature, is configured as type CAN DIGITAL SPEED/FREQ. Be sure to check the “enable” box for each.

**If you do not see the I/O menu, add it by going to the Toolbox menu, then select “Add Individual Config”. Open the “IO” Folder, and select “Base Config – Blank IO” to add the IO option to your calibration.**



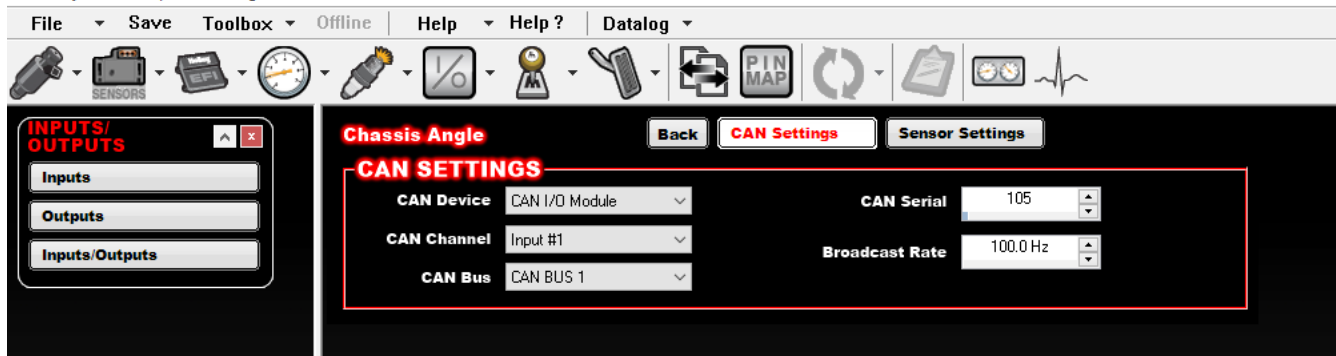
# Chassis Angle Channel Configuration

Click the “Configure” button for the Chassis Angle input you created above. Set up the options on this screen as seen in Figure 2. Set the Type to “Custom 5v” - make sure to set the voltage scale from 1.0v to 5.0v, and the calibration table from -90.000 to +90.00. Units should be set to the “degree” symbol.



## Chassis Angle (continued) CAN Settings

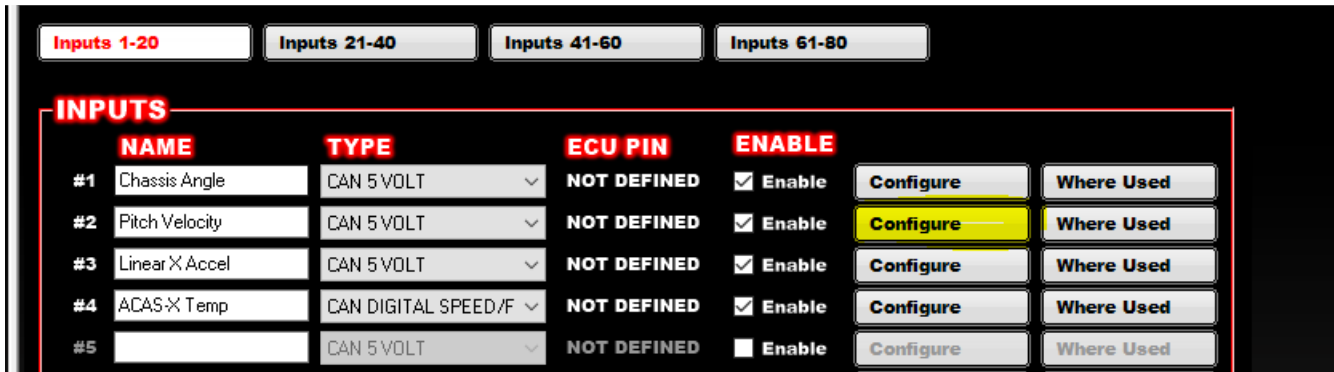
Click on the “CAN Settings” button to set up the Chassis Angle CAN input.



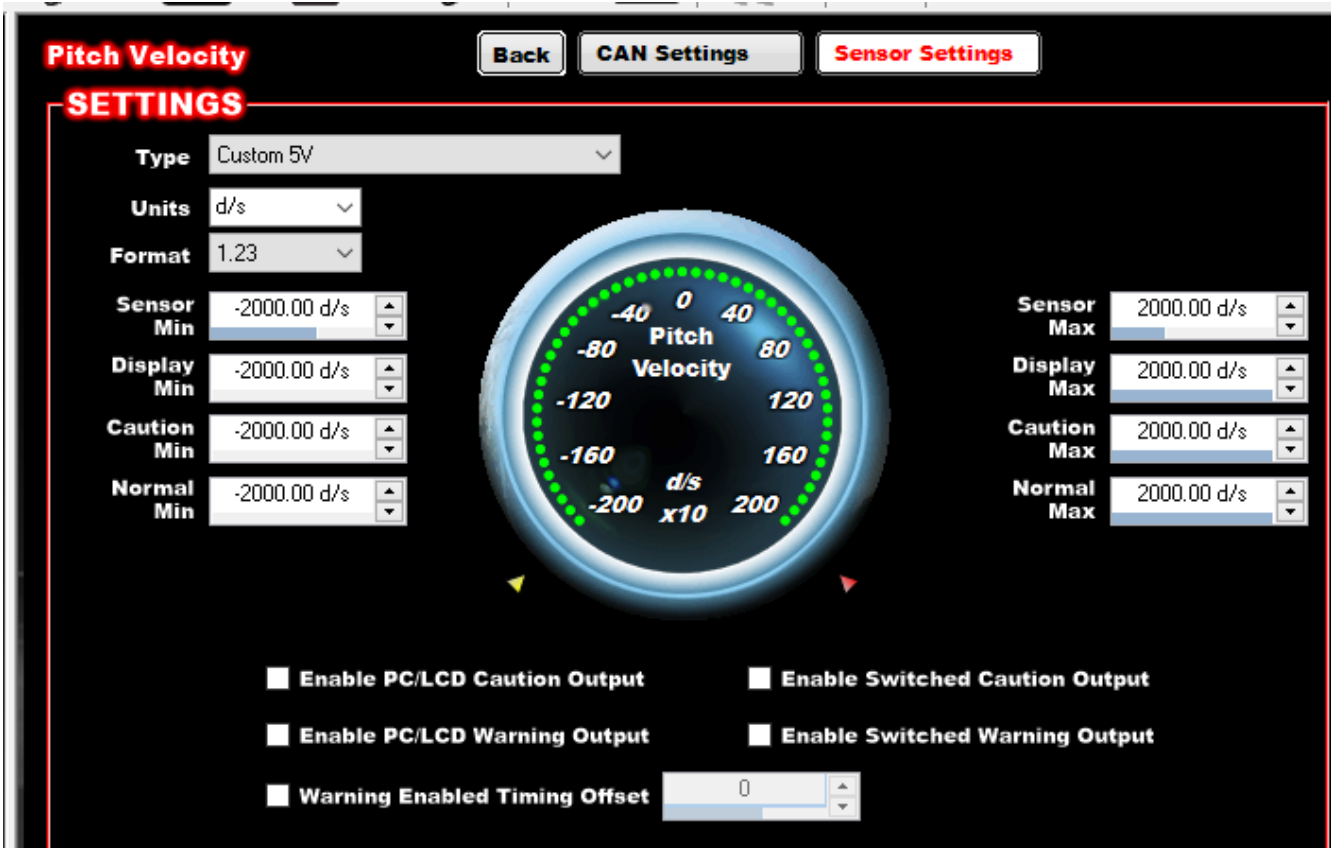
Set up your CAN settings exactly as shown above, EXCEPT you will enter the “CAN Serial” number that’s printed on the backside of your ACAS sensor. **This completes setup of the Chassis Angle Channel.**

# Pitch Velocity Channel Configuration

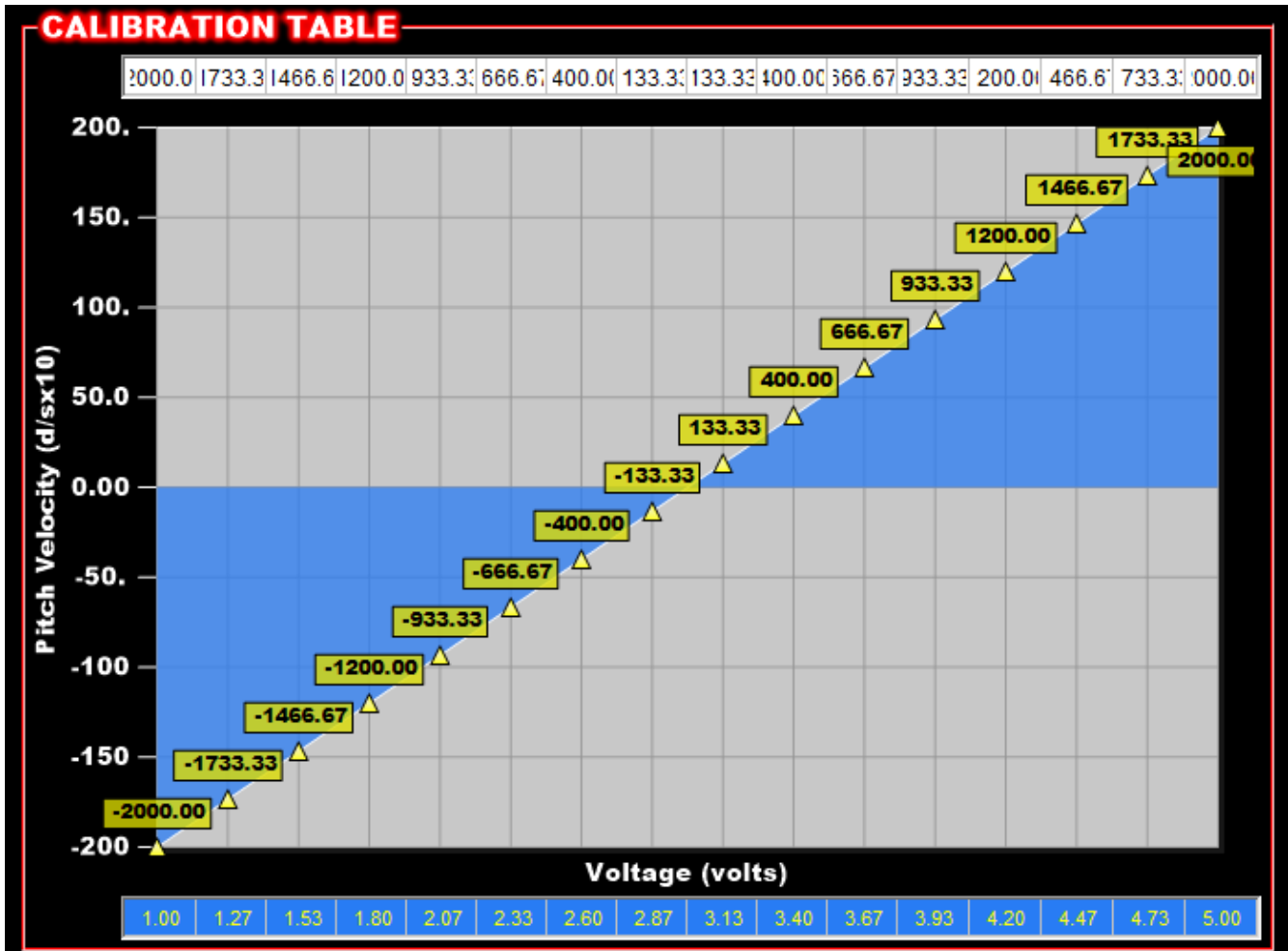
Back at your I/O menu, find the “Pitch Velocity” channel you created and click “Configure.”



Set your Pitch Velocity Sensor settings as follows: Type= Custom 5v, units = deg/sec, format = 1.23.



Set your Pitch Velocity Calibration Table as follows: Degrees per second (Top) row = 2000 to 2000, Voltage (bottom) row 1.00v to 5.00v. **Make sure you use 1.00 to 5.00v and -2000 to 2000 deg/sec.**



Now go to CAN SETTINGS and configure as follows, **EXCEPT YOU WILL BE USING THE CAN SERIAL NUMBER PRINTED ON THE BOTTOM OF YOUR ACAS SENSOR.**

**Pitch Velocity**      **Back**      **CAN Settings**      **Sensor Settings**

**CAN SETTINGS**

<b>CAN Device</b>	CAN I/O Module	<b>CAN Serial</b>	105
<b>CAN Channel</b>	Input #2	<b>Broadcast Rate</b>	100.0 Hz
<b>CAN Bus</b>	CAN BUS 1		

**This completes setup of the Pitch Velocity Channel.**

## OPTIONAL: ACAS Temperature Channel

If you wish to capture the temperature of your ACAS onboard sensors, configure that input as follows. Remember to use YOUR CAN SERIAL ID NUMBER, not the one in the pictures.

**ACAS-X Temp**    Back    CAN Settings    **Sensor Settings**

**SETTINGS**

Type: Frequency  
Units: \*  
Format: 1

Sensor Min: 10°  
Display Min: 10°  
Caution Min: 10°  
Normal Min: 10°  
Offset: 0.00°

Sensor Max: 250°  
Display Max: 250°  
Caution Max: 250°  
Normal Max: 250°

Enable PC/LCD Caution Output     Enable Switched Caution Output  
 Enable PC/LCD Warning Output     Enable Switched Warning Output

Pulses to Average: 1

**ACAS-X Temp**    Back    **CAN Settings**    Sensor Settings

**CAN SETTINGS**

CAN Device: CAN I/O Module    CAN Serial: 105  
CAN Channel: Input #3    Broadcast Rate: 5.0 Hz  
CAN Bus: CAN BUS 1

**This completes setup of the ACAS Temperature Sensor Channel.**

# Dragdynamics.com Product Warranty

## Limited 3-Year Warranty

*Congratulations on your purchase of an ACAS! We stand behind the quality of our products and are pleased to offer you a limited warranty against manufacturer defects and problems. Please read the following terms carefully.*

**Warranty Coverage:** Drag Dynamics, LLC ("the Company") warrants that your ACAS (the "Product") is free from defects in materials and workmanship for a period of three (3) years from the date of purchase, provided that the Product is used under normal conditions and for its intended purpose.

**Scope of Warranty:** This warranty covers any defects or malfunctions arising from the manufacturing process or materials used in the Product. The Company will, at its discretion, repair or replace the defective Product or parts, or provide a refund, within the warranty period.

**Original Purchaser Coverage:** This warranty is applicable only to the original purchaser of the Product and is non-transferable. To be eligible for warranty service, the original proof of purchase must be presented.

**Exclusions:** This warranty does not cover damage resulting from:

- Accidents, misuse, or abuse
- Unauthorized modifications or repairs
- Acts of nature, such as lightning, floods, earthquakes, etc.
- Normal wear and tear

**Obtaining Warranty Service:** If you believe your Product is defective and covered by this warranty, please email [support@dragdynamics.com](mailto:support@dragdynamics.com) for instructions on how to proceed with the warranty claim. The Company reserves the right to require proof of purchase and may ask for the defective Product to be returned for inspection.

**Limitation of Liability:** To the extent permitted by law, the Company's liability under this warranty is limited to the repair, replacement, or refund of the Product, and shall not exceed the purchase price paid for the Product.

**No Other Warranties:** This warranty is the sole and exclusive warranty for the Product, and no other warranties, express or implied, are made, including any warranty of merchantability or fitness for a particular purpose.

**Effective Date:** This warranty is effective as of the date of purchase and is valid for three (3) years.

Thank you for choosing Drag Dynamics, LLC. We appreciate your trust in our products.