HANG TIGHT PSC

PSC 2.1

Instructions - Rev 2.2

Electronic Power Steering Controller

Introduction

First and foremost - thank you for purchasing the PSC! It's been tested in the harshest conditions, and we're extremely grateful for your trust in the product. We're confident the PSC will make your steering system reliable, predictable and more enjoyable to drive.

Please ensure you read through these instructions thoroughly. Incorrect installation can damage both the controller and the pump.

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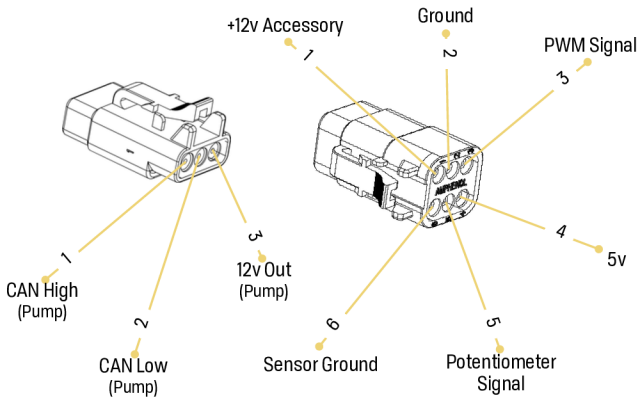
1.0 - Connections

The PSC has 2 connectors, a 6 pin and a 3 pin. Both are Amphenol ATM and compatible with Deutsch DTM. Each PSC comes with mating connectors and terminals, but additional units can be purchased on the Hang Tight website.

Hang Tight offers premade harnesses to make install easy, but if you wish to do your own wiring, please refer to the chart below for pinout data.



Warning:

DO NOT connect any other CAN devices to the PSC's CAN bus. It is designed to be connected to only the EPAS unit and other devices could send conflicting messages which will cause errors and the PSC will stop sending messages.

Positions are labelled on the connectors themselves. Please double check you have the correct terminals in the correct pins, or you could cause irreversible damage to the PSC or the pump. Use a 5 amp fuse between the PSC Controller and your ignition source

If you are making your own harness, please ensure you have the correct crimping tools for your terminal. Improper crimps can create issues and even cause the PSC to not function correctly.

6 Pin Connector	
Position	**Function**
1	Uninterrupted Ignition 12v
2	Ground
3	PWM Signal
4	Potentiometer 5v Reference
5	5v Potentiometer Signal
6	Potentiometer Signal Ground

3 Pin Connector to Pump	
Position	**Function**
1	CAN High
2	CAN Low
3	Pump Turn On Signal

3 Pin Connector to Potentiometer	
Position	**Function**
1	Potentiometer 5v Reference
2	5v Potentiometer Signal
3	Potentiometer Signal Ground

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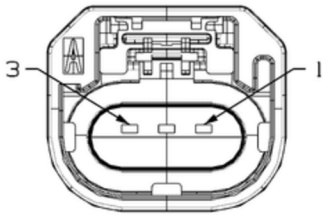
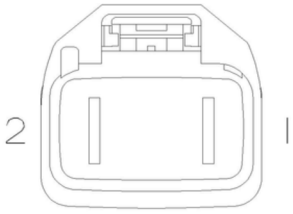
Every electric hydraulic power steering pump requires 80 amp fusing. You can achieve this with an 80 amp maxi fuse, or an 80 amp circuit breaker. Be cautious when purchasing circuit breakers. Not all of them are made the same, and there have been reports of some circuit breakers not being capable of their reported amperage and tripping at unpredictable times.

1.11 - Connections - Dodge EPAS Pinout

The terminal positions are stamped on the housing, but they can be difficult to see. They are located opposite side of the lock on the wire side. Facing the wire side of the connector, lock up, the terminal position 1 is the leftmost position.



EPAS Can Bus



EPAS Power/Ground

Dodge Connector (3 Way)	
Position	**Function**
1	CAN High
2	12v In (Accessory)
3	CAN Low

Dodge Connector (2 Way)	
Position	**Function**
1	Power (8awg)
2	Ground (8awg)

1.12 - Connections - Mazda EPAS Pinout

The terminal positions are stamped on the housing, but they can be difficult to see. They are located opposite side of the lock on the wire side. Facing the wire side of the connector, lock up, the terminal position 1 is the leftmost position.

Mazda Connector (6 Way)	
Position	**Function**
4	12v In (from PSC)
5	CAN High
6	CAN Low

Mazda Connector (2 Way)	
Position	**Function**
1	Ground (8awg)
2	Power (8awg)

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1.13 - Connections - Volvo EPAS Pinout

The terminal positions are stamped on the housing, but they can be difficult to see. They are located opposite side of the lock on the wire side. Facing the wire side of the connector, lock up, the terminal position 1 is the leftmost position.

Volvo Connector (3 Way)	
Position	**Function**
1	12v In (from PSC)
2	CAN Low
3	CAN High

Volvo Connector (2 Way)	
Position	**Function**
1	Power (8awg)
2	Ground (8awg)

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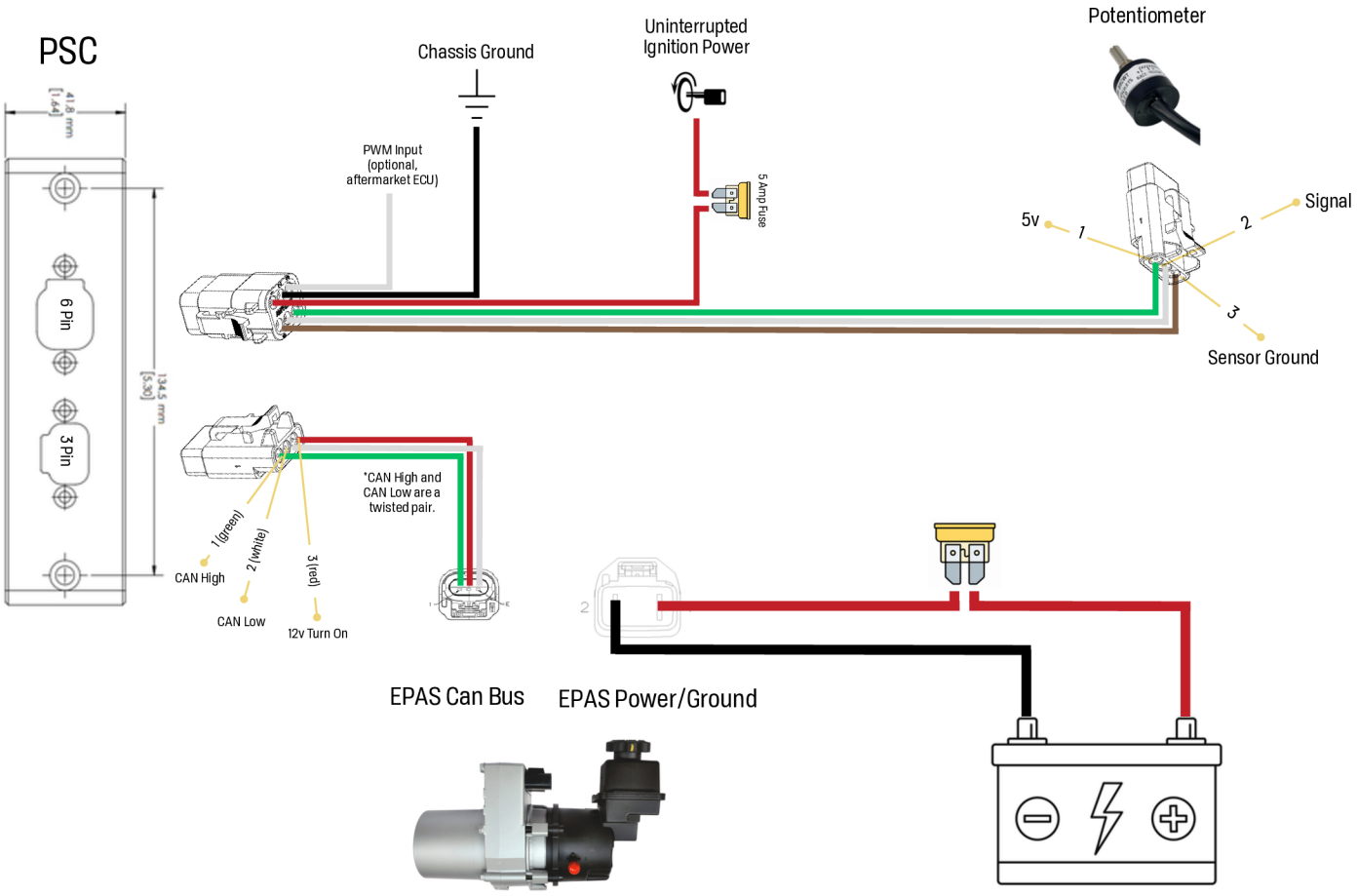
1.2 - Building your own wiring harness

Below are wiring diagrams to help you make your own harness if you're using a Dodge, Mazda or Volvo EPAS pump. It's imperative that you hook it up correctly. Not doing so could damage the PSC. **It's imperative that you use an 80 amp circuit breaker or maxi-fuse on the EPAS unit.**

Dodge Pump



Dodge Connector (2 Way)	
Position	**Function**
1	Power (8awg)
2	Ground (8awg)

Dodge Connector (3 Way)	
Position	**Function**
1	CAN High
2	12v In (Accessory)
3	CAN Low

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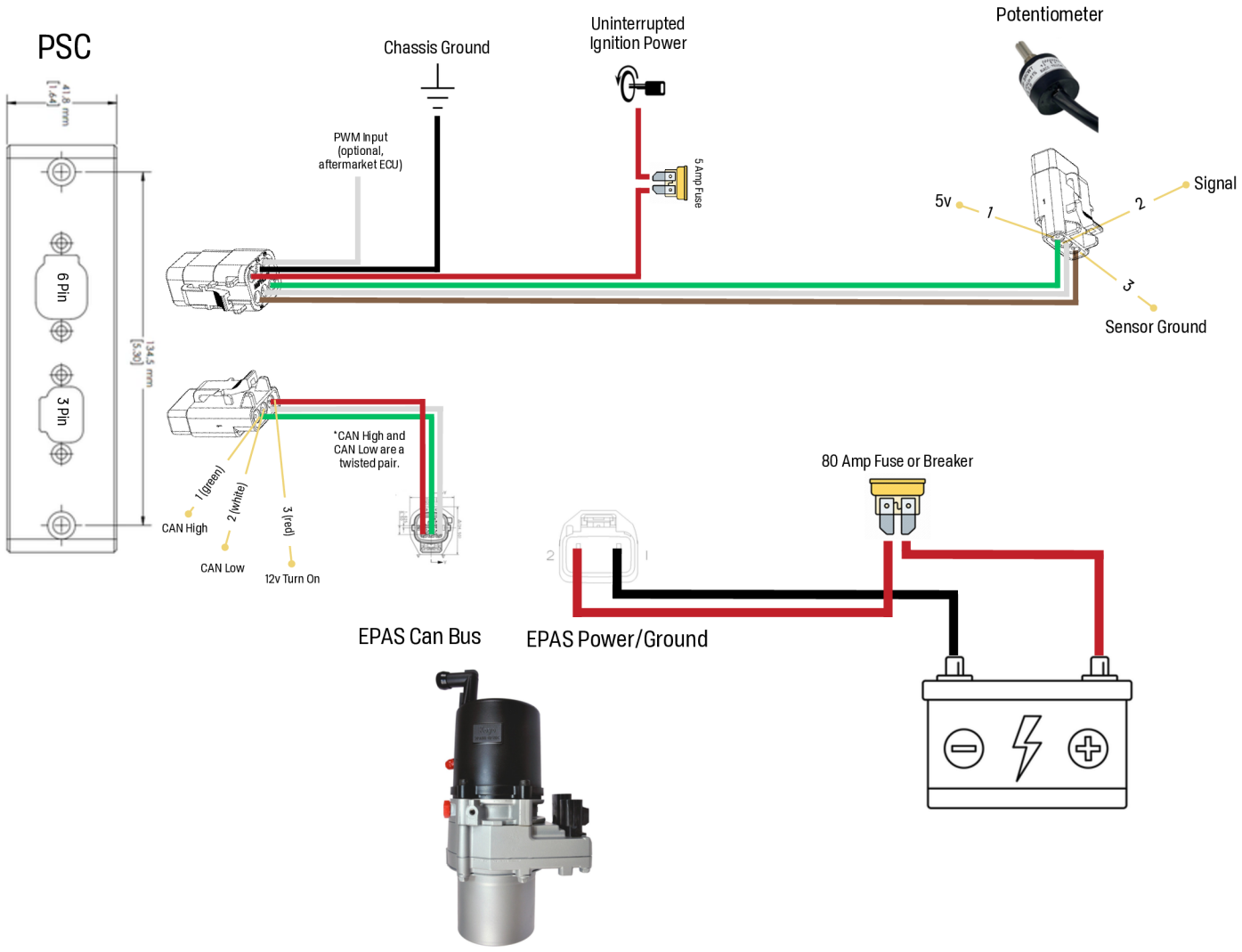
Mazda Pump



Mazda Connector (2 Way)	
Position	**Function**
1	Ground (8awg)
2	Power (8awg)

Mazda Connector (6 Way)	
Position	**Function**
4	12v In (from PSC)
5	CAN High
6	CAN Low

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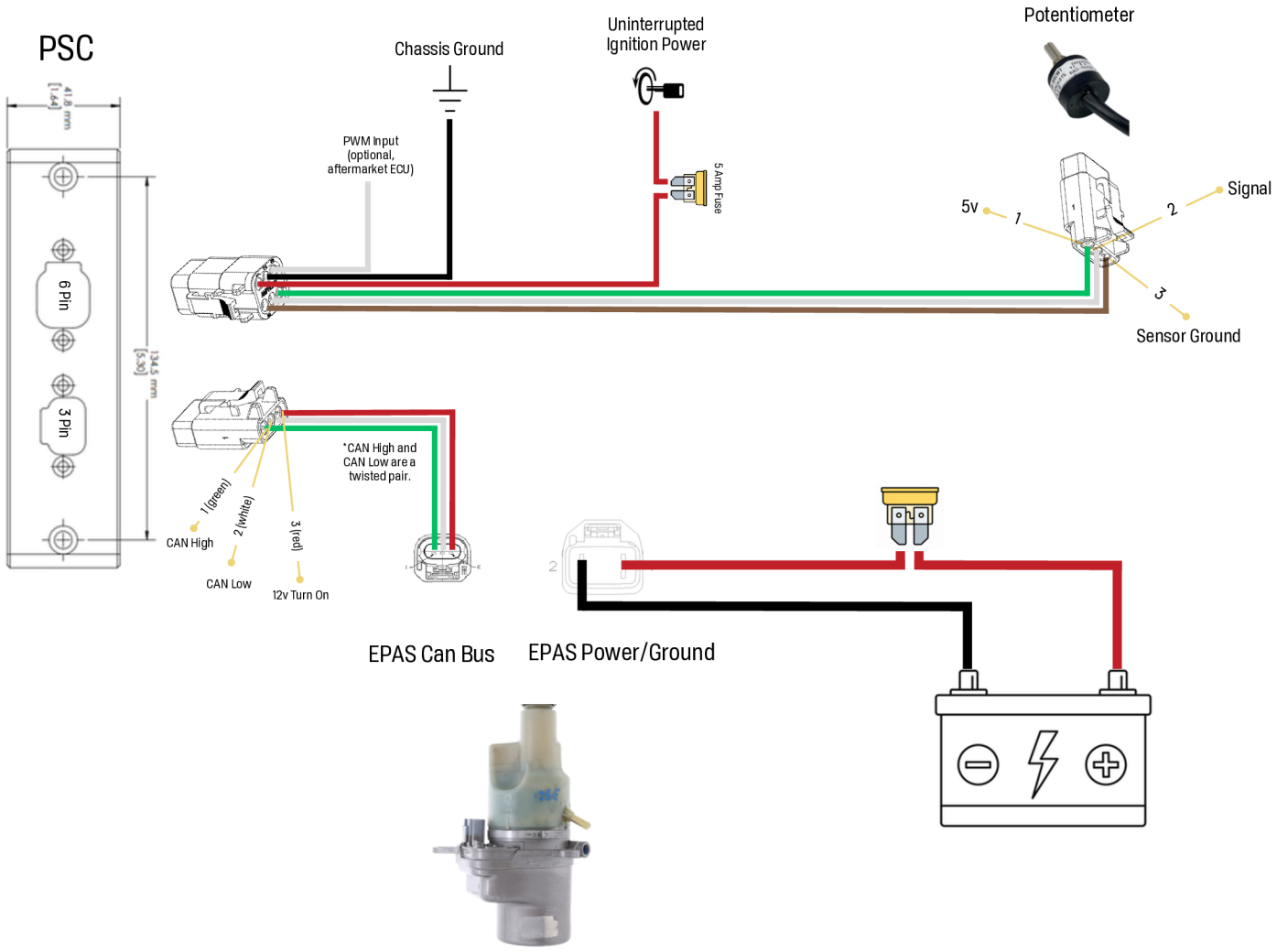
Volvo Pump



Volvo Connector (2 Way)	
Position	**Function**
1	Power (8awg)
2	Ground (8awg)

Volvo Connector (3 Way)	
Position	**Function**
1	12v In (from PSC)
2	CAN Low
3	CAN High

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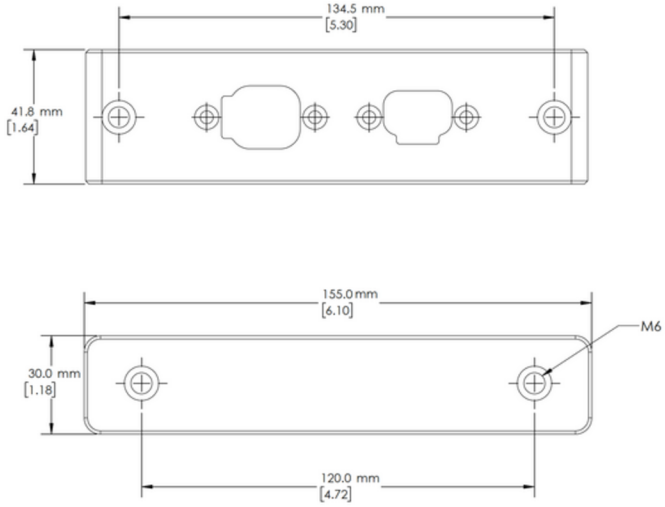
2.0 - Mounting Instructions

Included with every PSC is 2 M6 bolts, 2 nuts, 2 washers and 2 rivnuts (¼-20 hardware may also be used if that is preferred).

See the dimensions at the end of this guide for mounting hole locations. The PSC may be mounted face up, or on its side from either the top or bottom.

The 3D printed cases are rated for 150C* temperatures, keep distance from heat sources if you're installing the PSC in an engine bay. The PSC is fully potted and sealed to IP68 rating, resulting in a water resistant product.



3.0 - Setup

With the PSC, you have two options to control the amount of assist the pump provides your steering system. The simpler option is controlling assist with a potentiometer.

The PSC is looking for a 0-5V signal, so either a trim pot, rotary or linear potentiometer or even resistors in a MUX configuration could be used to control it. Potentiometers should be 0-1000 ohms, and are available for purchase from Hang Tight.

If you have a PWM output capable ECU or controller, you can control assist through your ECU. The PSC's PWM input is low side (to ground) input and accepts a frequency of 60hz. 5% DC will give 0% EPAS assist and 95% DC will give 100% EPAS assist. **Do not send 12v to the PWM input.**

PWM input will override a potentiometer/analog input at any time. If the PWM signal disappears, the PSC keeps the last known PWM signal until it receives another PWM signal, or powers off. When it powers off and no PWM signal then its back to analog input.

Once you've decided how you're controlling the PSC, plug it in, key on and it powers up. **It's that easy.**

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4.0 - Operation

We'd have more to put here... but the operation is extremely simple. The PSC is a plug-and-play unit and doesn't require any programming or setup.

Now that the PSC is wired and mounted, and you've installed your EPAS unit, simply key on and the PSC will power up the pump. Check for leaks and test the potentiometer input (if used), and test the steering system with a few turns with the car on the ground. The PSC automatically detects which EPAS unit it is connected to and starts controlling it. Adjust the assist level with either a potentiometer or the PWM input.

The PSC includes a status LED located between the connectors that provides detail into it's current state. If you're having issues with the pump not firing up, refer to the table on the right.

Warning:

** The pump two pin connector needs to be connected to power and ground before the PSC is turned on.*

*** Do not power cycle the PSC too quickly. It requires 1-2 seconds to reset the unit.*

**** Always ensure you're turning the pump on with the pump turn on wire from the PSC*

Troubleshooting

Green Status LED	
Green LED	Status good; will flash a sequence based on which pump is connected then stay solid.

Red Status LED	
Slow Blink	No pump detected
Fast Blink	CAN Bus Issue. Either controller shorted or unrecognized pump type.
2 Blink Sequence	Damage to 5v power supply
3 Blink Sequence	PWM input failure