Hi Performance Electric Vehicle Systems

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WIRING SCHEMATICS

FOR SOFTWARE VERSIONS 5.00 TO 5.12

FOR CURTIS 1239 CONTROLLER

ON-ROAD VEHICLE CONVERSION FOR SINGLE AND DUAL MOTOR APPLICATIONS

REVISION: B
Date 4/11/14

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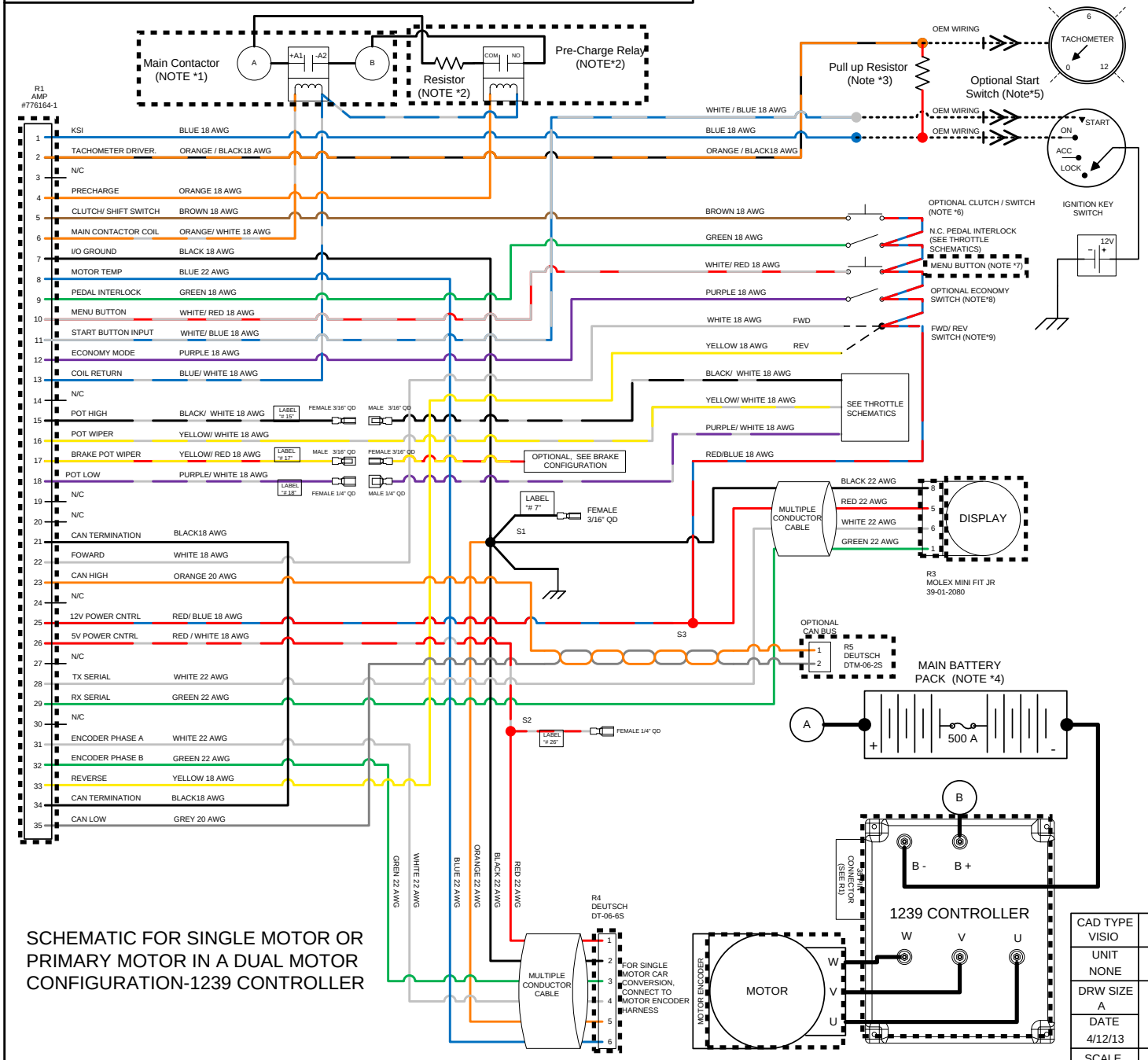

SCHEMATIC FOR SINGLE MOTOR OR PRIMARY MOTOR IN A DUAL MOTOR CONFIGURATION-1239 CONTROLLER

NOTES:

(*1) Use supplied Contactor.

(*2) Use supplied Pre-Charge Resistor and Relay (Tyco Electronics Part # T9AP1D52-12). For Coil connection, connect to small terminals.

(*3) Tachometers that are designed to Work off of an ignition coil may not function in this application. Some Tachometers may need a pull up resistor of 4.7K Ω

(*4) A Battery Management System (BMS) is strongly recommended if Lithium Ion batteries are used. Possible source of BMS is Ewert Energy System's ORION BMS (www.orionbms.com)

(*5) Start switch option is required if Idle or Creep Torque are ENABLE. See Programming Instructions. Start switch CAN be used without using IDLE. See Programming Instructions.

(*6) Install the Optional Clutch/ Shift Switch so that it is ON when the clutch pedal is pressed. When the clutch pedal is pressed, the Regen setting is changed to the Shift Neutral Braking Parameter to prevent the motor from stalling while shifting gears. In a clutchless system, this allows you to set the coast down rate of the motor so that the gears align properly See Instructions on SHIFT-NEUTRAL BRAKING PARAMETERS.

(*7) Gives access to Drive System information. Required to access Programming and Diagnostic modes. See Programming Instructions.

(*8) Allows the use of ECONO Mode Parameters. See Programming Instructions.

(*9) Forward is CLOCKWISE motor rotation from Encoder end view. Depending on Transmission configuration, use either wire to obtain desired rotation. Use a FWD & REV Switch in direct drive applications.

CAD TYPE VISIO	APPLICABLE SOFTWARE	VERSION 5.00 TO 5.12	
UNIT NONE	DRAWING	1010-AUTO-CONVERSION-1239	
DRW SIZE A	TITTLE	1239 CONTROLLER ON-ROAD VEHICLE CONVERSION / PRIMARY DUAL MOTOR SCHEMATICS	
DATE 4/12/13			
SCALE 1:1	SHEET 1 OF 1	REVISION A	**HPEVS**

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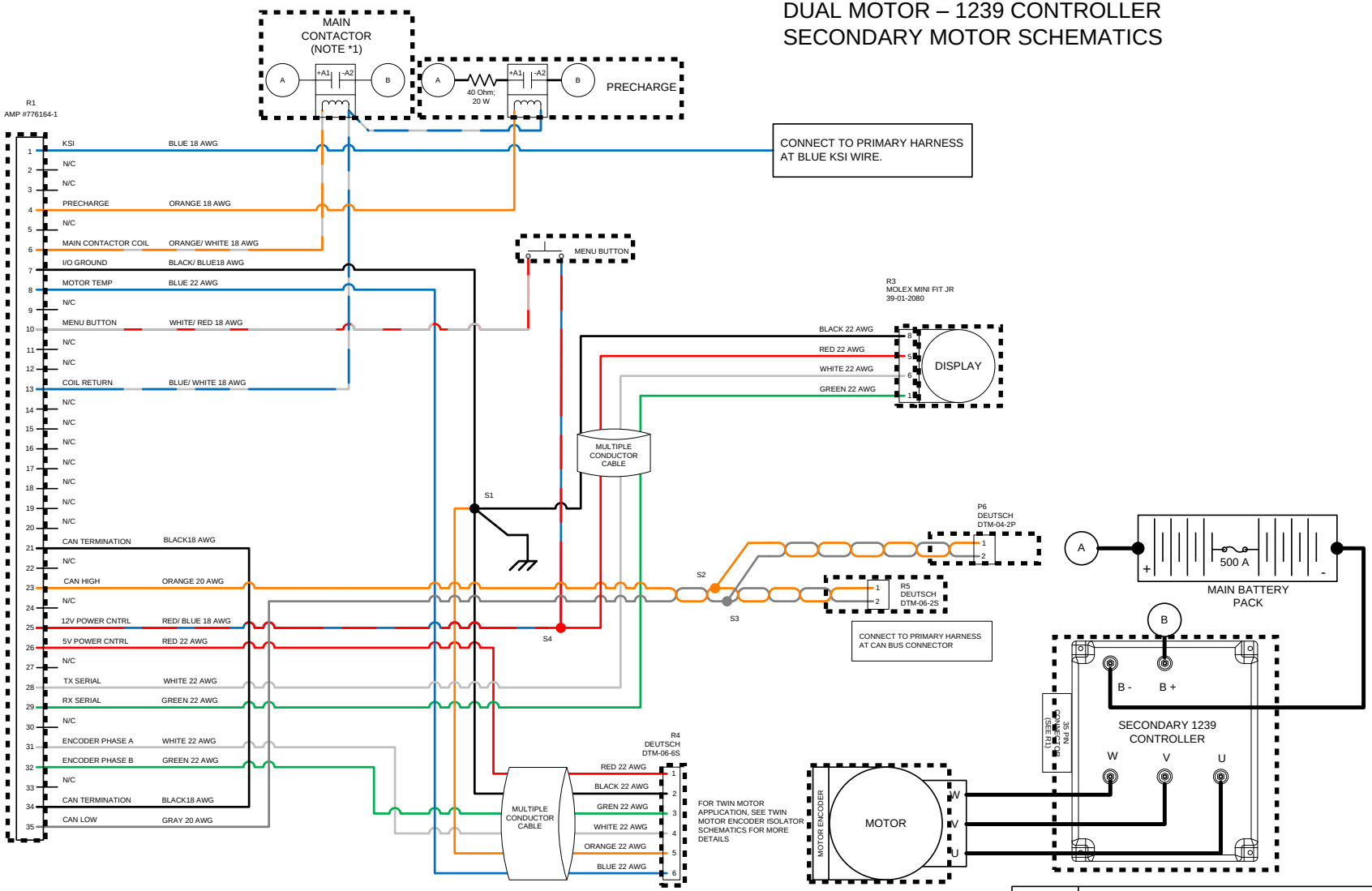
DUAL MOTOR – 1239 CONTROLLER SECONDARY MOTOR SCHEMATICS



NOTES:

(*1) USE SUPPLIED CONTACTOR

CAD TYPE VISIO	APPLICABLE SOFTWARE	VERSION 5.00 TO 5.12	
UNIT NONE	DRAWING	1010-AUTO-CONVERSION-1239-TWIN-MOTOR SECONDARY	
DRW SIZE A	TITTLE	1239 CONTROLLER SECONDARY DUAL MOTOR SCHEMATICS	
DATE 4/12/13			
SCALE 1:1	SHEET 1 OF 1	REVISION A	HPEVS

THROTTLE CONFIGURATION

Depending on the type of throttle used for the application, the different types of throttle configurations are listed in the table below. Electrical schematics are also included within the following pages.

THROTTLE CONFIGURATION	**TYPE**
ELECTRONIC without SWITCH	TYPE 1
2 WIRE with SWITCH 0-5k Ω	TYPE 2
3 WIRE with SWITCH 0-5k Ω	TYPE 3
CURTIS PB8 THROTTLE ASSEMBLY	TYPE 3

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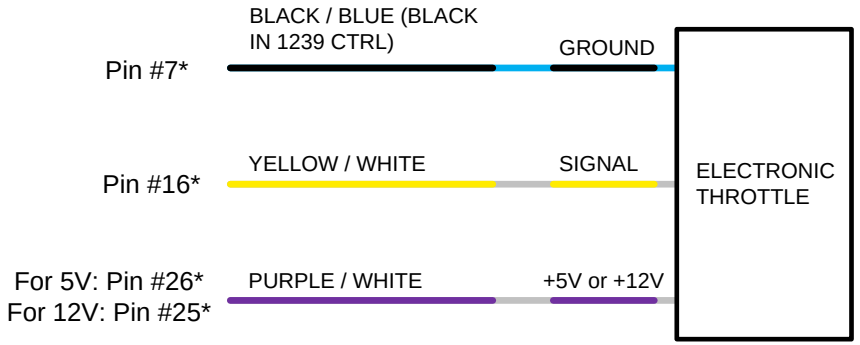
A	INITIAL RELEASE	1/22/2013

TYPE 1 ELECTRONIC THROTTLE**



* Typical connection, verify correct voltage and connection in throttle documents or instructions.
Not all Electronic Throttles supported

** When an electronic throttle is used, the GREEN wire from the pedal interlock does not need to be connected.

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-THROTTLE-001		
DRW SIZE A	TITTLE ELECTRONIC THROTTLE		
DATE 1/22/13			
SUPPLIER PART			
SCALE NONE	SHEET 4 OF 4	REVISION B	**HPEVS**

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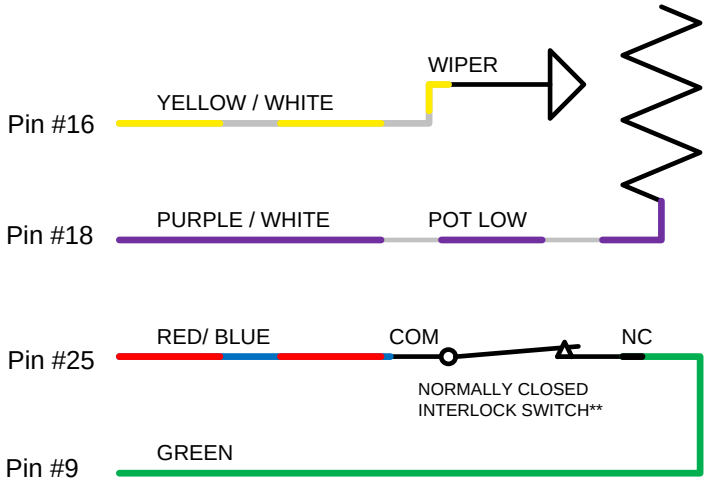

2 WIRE TYPE 2 THROTTLE

** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-THROTTLE-001	
DESIGN	DETAIL	TITTLE 2 WIRE TYPE 2 THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 1 OF 3	HPEVS

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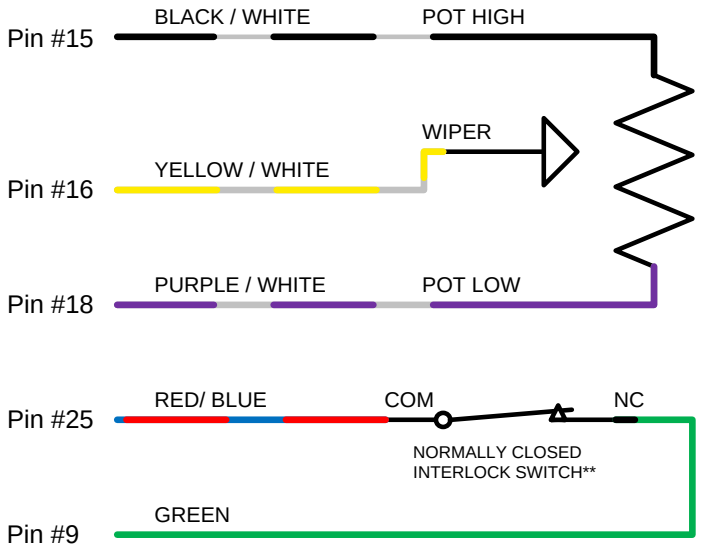

3 WIRE TYPE 3 THROTTLE

** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-THROTTLE-001	
DESIGN	DETAIL	TITTLE 3 WIRE TYPE 3 THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 2 OF 3	HPEVS

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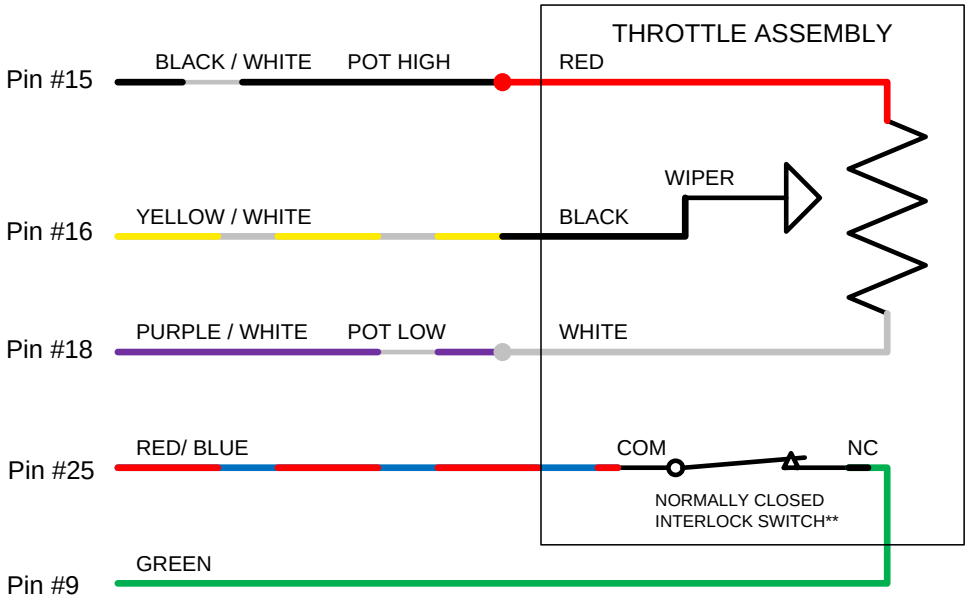


CURTIS PB8 THROTTLE ASSEMBLY

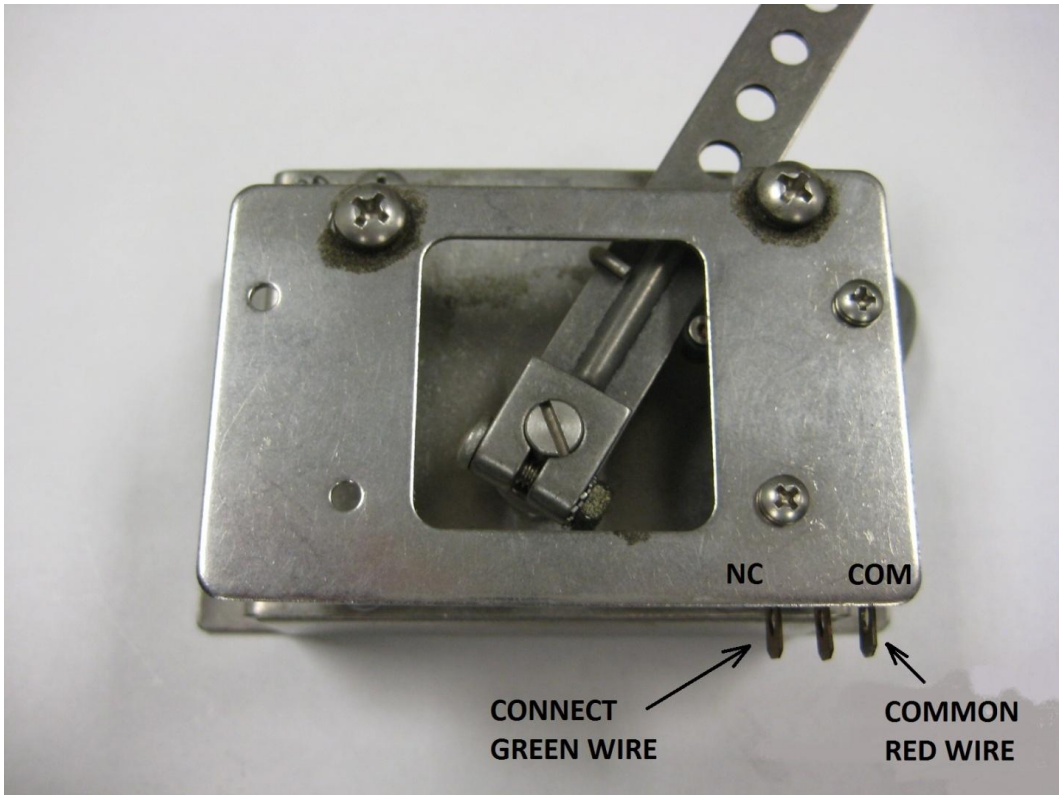
** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-THROTTLE-001		
DRW SIZE A	TITTLE CURTIS PB8 THROTTLE ASSEMBLY		
DATE 1/22/13			
SUPPLIER PART			
SCALE NONE	SHEET 3 OF 4	REVISION A	HPEVS

PEDAL INTERLOCK CONNECTION

The pedal interlock connection is required for both 2 and 3 wire throttle pot assemblies. The Green wire is connected to the Normally Closed tab. The red/blue wire is connected to the common tab. See picture below.

NOTE: when the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.



BRAKE INPUT CONFIGURATION

Depending of the type of brake input used for the application, the different types of brake input configuration are listed below table. Electrical schematics are also included in the following pages.

BRAKE INPUT CONFIGURATION	**TYPE**
PRESSURE TRANSDUCER/ ELECTRONIC 0-5V INPUT	TYPE 1
2 WIRE 0-5k Ω	TYPE 2

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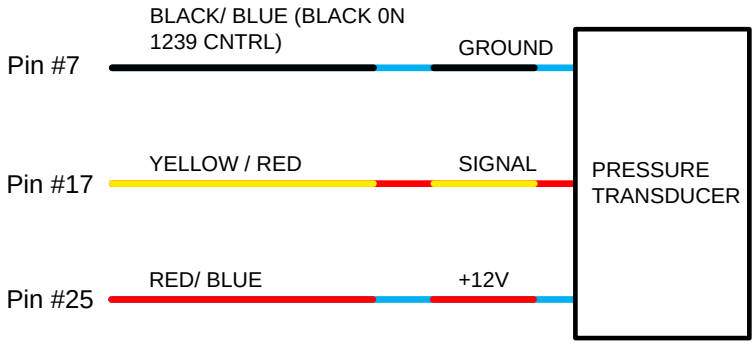

TYPE 1 PRESSURE TRANSDUCER

** Typical Pressure Transducer Ratings
- 8-30 Volt Input
- 1-5 Volt Output
- 2500 PSI

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE	
DESIGN	DETAIL	TITTLE PRESSURE TRANSDUCER	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 2 OF 2	HPEVS

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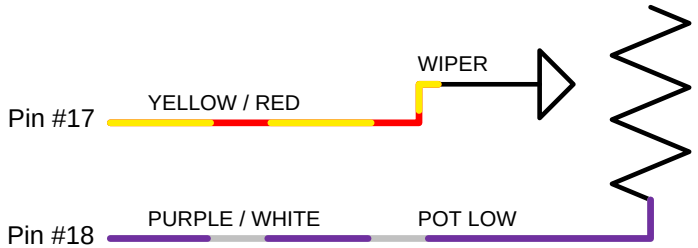

TYPE 2
2 WIRE BRAKE POT

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE	
DESIGN	DETAIL	TITTLE 2 WIRE BRAKE POT	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 1 OF 2	HPEVS