CORTEX EBC

INSTALLATION DIAGRAMS

Revision 5.1.7

Table of Contents

INTRODUCTION 4

INCLUDED PARTS 5

Complete Kit – Internal Display 5

Complete Kit – External Display 6

Base Kit – Internal Display 7

Base Kit – External Display 8

WIRING DIAGRAMS 9

General Wiring 9

Input Wiring Diagrams 10

External Boost Scramble Control Wiring 10

External Launch Control Wiring 11

Flex Fuel Sensor Wiring 17

Water/Methanol Flow Sensor Wiring 18

Water/Methanol Pressure Sensor Wiring 19

OUTPUT WIRING DIAGRAMS 20

General Diode Protected Relay Wiring 20

General Solenoid/Pump Driver Wiring 22

Nitrous Control Pack Wiring 24

Transbrake Bump Control Wiring 27

Water/Methanol Control Pack Wiring 30

Controller Boost Reference 34

Boost Control Solenoid – Ingersoll Rand - Single Turbo 35

3-Port BCS Internal Wastegate/Actuator Configuration 35

3-Port BCS External Wastegate Configuration 1 36

3-Port BCS External Wastegate Configuration 2 37

3-Port BCS External Wastegate Compressed Air Configuration 38

4-Port BCS External Wastegate Configuration 39

4-Port BCS As 3-Port BCS 40

Boost Control Solenoid – Ingersoll Rand - Twin Turbo 41

3-Port BCS Internal Wastegate/Actuator Configuration 41

3-Port BCS External Wastegate Configuration 1 42

3-Port BCS External Wastegate Configuration 2 43

3-Port BCS External Wastegate Compressed Air Configuration 44

4-Port BCS External Wastegate Configuration 45

4-Port BCS As 3-Port BCS 46
Boost Control Solenoid – MAC - Single Turbo 47
3-Port BCS Internal Wastegate/Actuator Configuration 47
3-Port BCS External Wastegate Configuration 1 48
3-Port BCS External Wastegate Configuration 2 49
3-Port BCS External Wastegate Compressed Air Configuration 50
4-Port BCS External Wastegate Configuration 51
Boost Control Solenoid - MAC – Twin Turbo 52
3-Port BCS Internal Wastegate/Actuator Configuration 52
3-Port BCS External Wastegate Configuration 1 53
3-Port BCS External Wastegate Configuration 2 54
3-Port BCS External Wastegate Compressed Air Configuration 55
4-Port BCS External Wastegate Configuration 56
Device Menu Flow Diagrams 57
Main Menu Flow Diagram 57
Display Gauge Parameter Flow Menu 58
Boost Control Profile Menu Flow Diagram 59
Programmable Output Mode Menu Flow Diagram 60
Display Brightness Menu Flow Diagram 61
Display Feature Menu Flow Diagram 62
Display Boost Units Menu Flow Diagram 63

INTRODUCTION

This document provides detailed diagrams related to installing your Cortex EBC device.

Complete documentation for the Cortex EBC is available in the Cortex Help Utility, which is incorporated into the Cortex Config PC software.

To access the Cortex EBC Help Utility, first install and launch the Cortex Config software on your PC. The Cortex Config software can be downloaded from:

https://sirhclabs.com/cortex-ebc-downloads

After launching the Cortex Config software, select ***Help → Launch Cortex EBC Help Utility…*** from the menu at the top of the Cortex Config Editor window.

INCLUDED PARTS

Complete Kit – Internal Display

 CORTEX EBC DEVICE		 3-PORT OR 4-PORT BCS	
 USB MINI-B CABLE	 CORTEX EBC WIRING HARNESS	 FUSE HOLDER AND 2 AMP FUSE	 ZIP TIES QTY 12
 3/16" SILICONE VACUUM HOSE 6 FEET	 1/8" SILICONE VACUUM HOSE 10 FEET	 3/16" HOSE BARB QTY 3	 3/16" TO 1/8" HOSE REDUCER QTY 1
 3/16" HOSE TEE QTY 2	 1/8" HOSE TEE QTY 1		

Complete Kit – External Display

CORTEX EBC DEVICE AND DISPLAY

3-PORT OR 4-PORT BCS

USB MINI-B CABLE

CORTEX EBC
WIRING HARNESS

8' DISPLAY
WIRING HARNESS

DISPLAY BOOSTER
(BLUE ONLY)

FUSE HOLDER AND
2 AMP FUSE

ZIP TIES
QTY 12

3/16" SILICONE
VACUUM HOSE
6 FEET

1/8" SILICONE
VACUUM HOSE
10 FEET

3/16" HOSE BARB
QTY 3

3/16" TO 1/8"
HOSE REDUCER
QTY 1

3/16" HOSE TEE
QTY 2

1/8" HOSE TEE
QTY 1

Base Kit – Internal Display

CORTEX EBC DEVICE

USB MINI-B CABLE

CORTEX EBC
WIRING HARNESS

FUSE HOLDER AND
2 AMP FUSE

BCS PIGTAIL

Base Kit – External Display

CORTEX EBC DEVICE AND DISPLAY

USB MINI-B CABLE

CORTEX EBC
WIRING HARNESS

8' DISPLAY
WIRING HARNESS

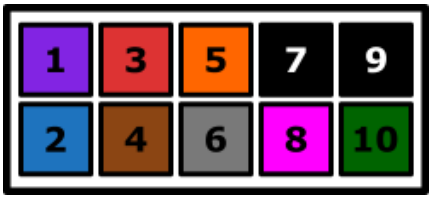
DISPLAY BOOSTER
(BLUE ONLY)

FUSE HOLDER AND
2 AMP FUSE

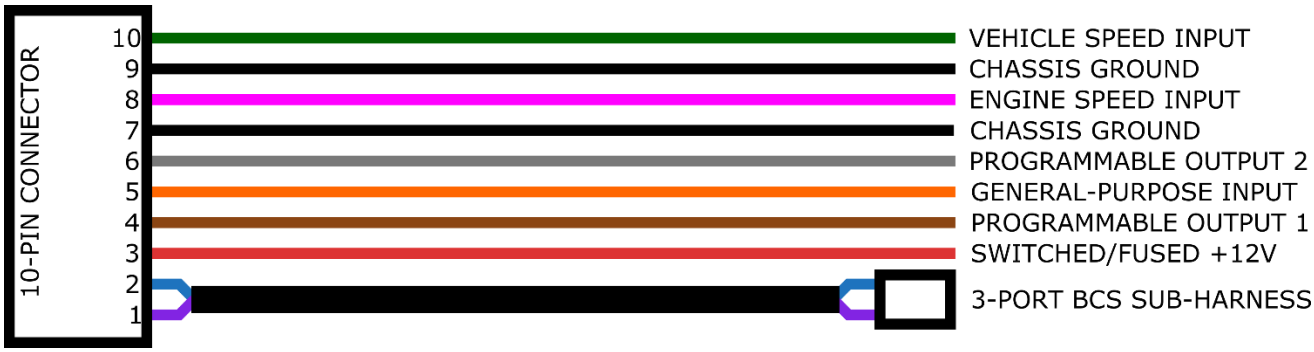
BCS PIGTAIL

WIRING DIAGRAMS

General Wiring



Wire Side of 10-Pin Wiring Harness Connector with Pins Labeled



Wiring Harness Diagram

PIN	COLOR	SIGNAL	TYPE	REQUIREMENTS
Pin 1	PURPLE	BCS Power	Supply	Plugs into BCS connector.
Pin 2	BLUE	BCS Drive	Switch to Ground	Plugs into BCS connector.
Pin 3	RED	Switched/Fused + 12V	Supply	Connect to **FUSED** +12V power source (fuse rating 5A or less).
Pin 4	BROWN	Output 1 Drive	Switch to Ground	Resistive load, ***200 mA max current***. Cover end and leave floating if unused.
Pin 5	ORANGE	General-Purpose Input	Analog or Digital Input	***Voltage Range: 0 V to +16 V***. Connect to chassis ground if unused.
Pin 6	GRAY	Output 2 Drive	Switch to Ground	Resistive load, ***200 mA max current***. Cover end and leave floating if unused.
Pin 7	BLACK	Chassis Ground	Ground	Connect directly to clean chassis ground (may not be present on older harnesses).
Pin 8	PINK	Engine Speed	Digital Input	Connect to frequency based engine speed signal, launch button, transbrake bump button, or scramble button. Connect to chassis ground if unused.
Pin 9	BLACK	Chassis Ground	Ground	Connect directly to clean chassis ground.
Pin 10	GREEN	Vehicle Speed	Digital Input	Connect to frequency based vehicle speed signal, launch button, transbrake bump button, or scramble button. Connect to chassis ground if unused.

Electrical Signal Descriptions

Input Wiring Diagrams

External Boost Scramble Control Wiring

Overview

Boost scramble settings are activated by pulling the associated input to ground when using an external control switch. A momentary push button, on/off push button, or toggle switch can be used for activation depending on your application requirements.

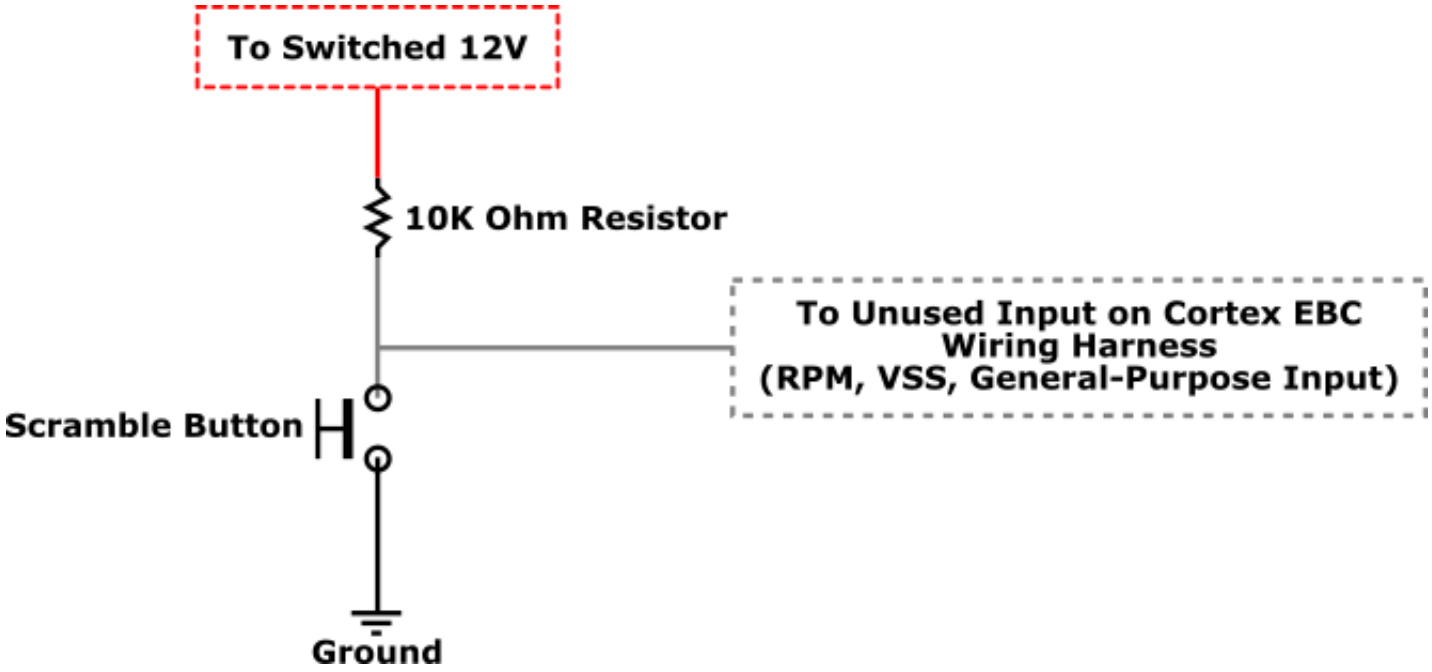
Compatible Cortex EBC Inputs

- RPM Input
- Speed Input
- General-Purpose Input

Required Components

- External 10K ohm resistor
- Momentary push button or toggle switch
- Additional wire, connectors, terminals, and other electrical components needed to complete installation.

Wiring Diagram



External Launch Control Wiring

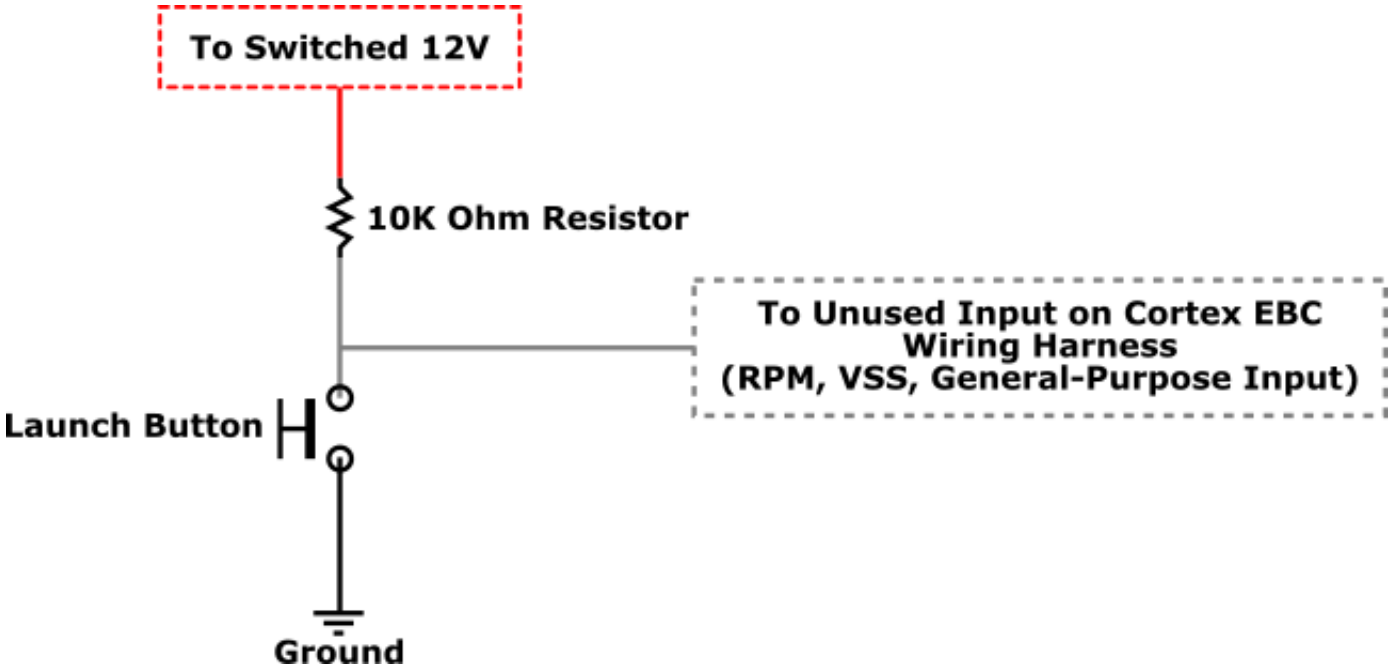
Compatible Cortex EBC Inputs

- RPM Input
- Speed Input
- General-Purpose Input

Required Components

- Additional electrical components required to complete installation. This may include resistors, diodes, and/or buttons depending on launch signal source.

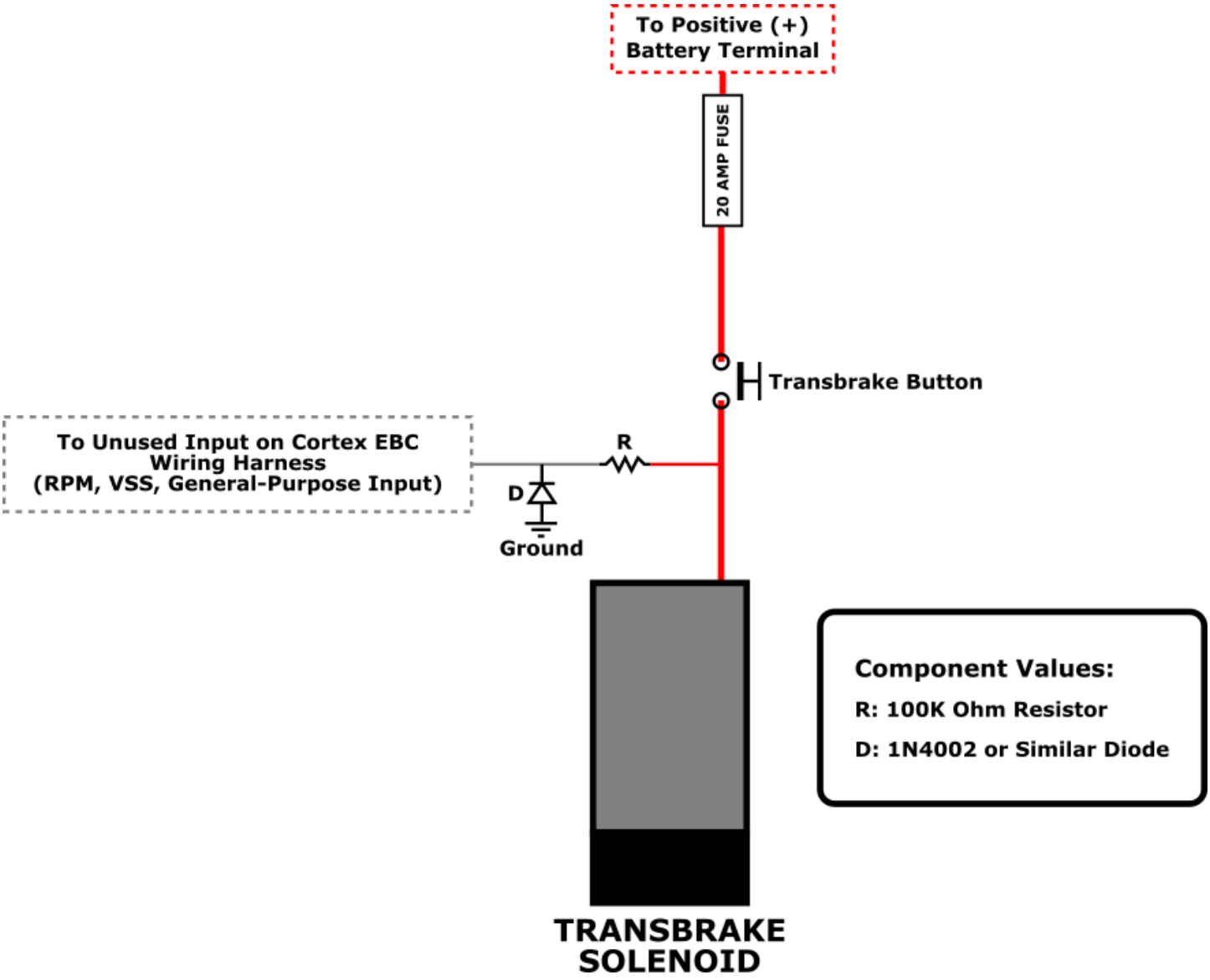
Wiring Diagram For Launch Control Activation With Simple Button



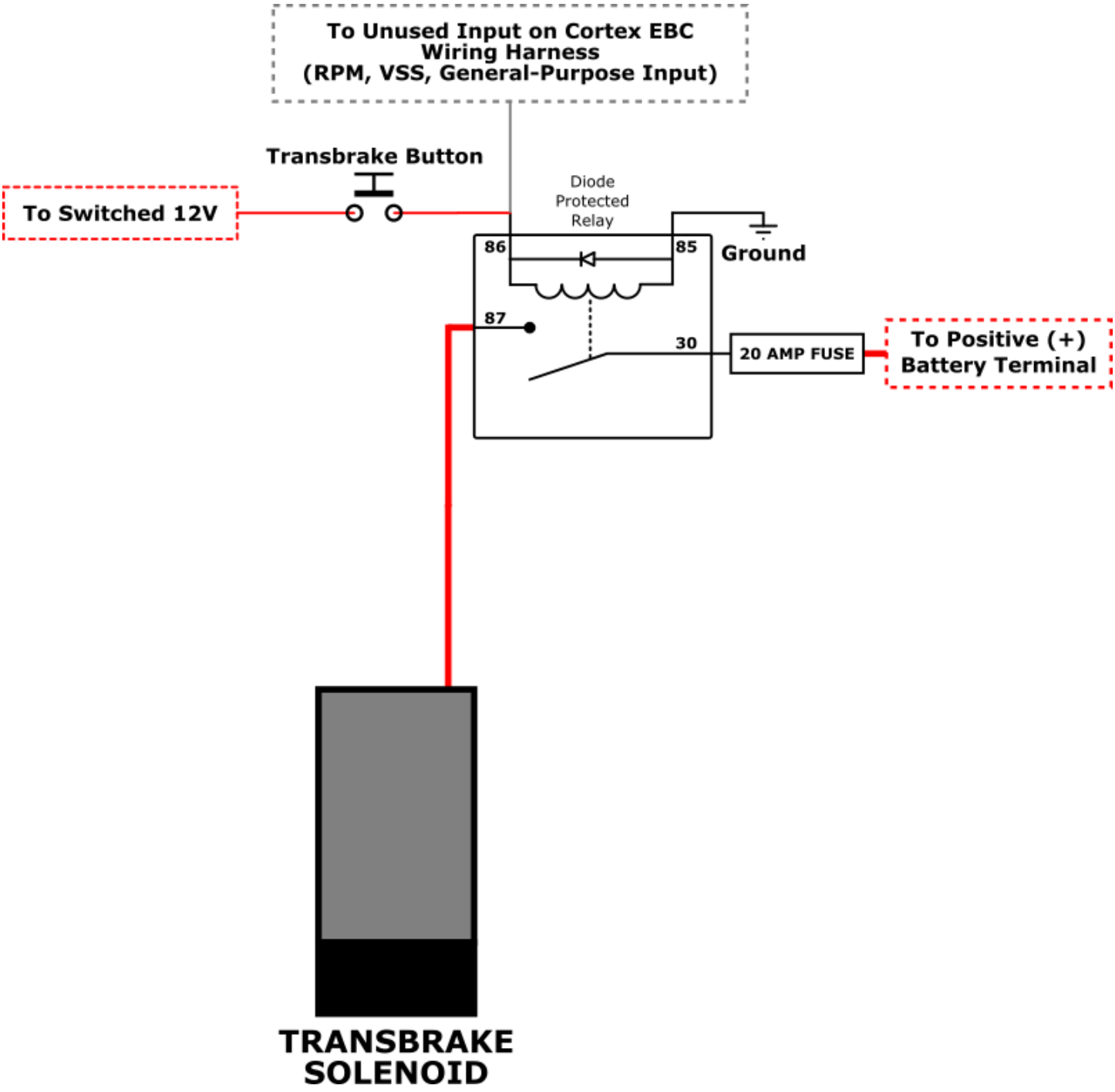
Wiring Diagrams For Launch Control Activation With Transbrake Button

In general, transbrake buttons **cannot** be connected directly to the inputs on the Cortex EBC unless the transbrake bump feature is being utilized in conjunction with a Solenoid/Pump Driver. If you do not plan to use the transbrake bump functionality a few additional components or a diode protected relay will be required to connect the transbrake button to the Cortex EBC. Wiring diagrams are provided below for most transbrake button configurations.

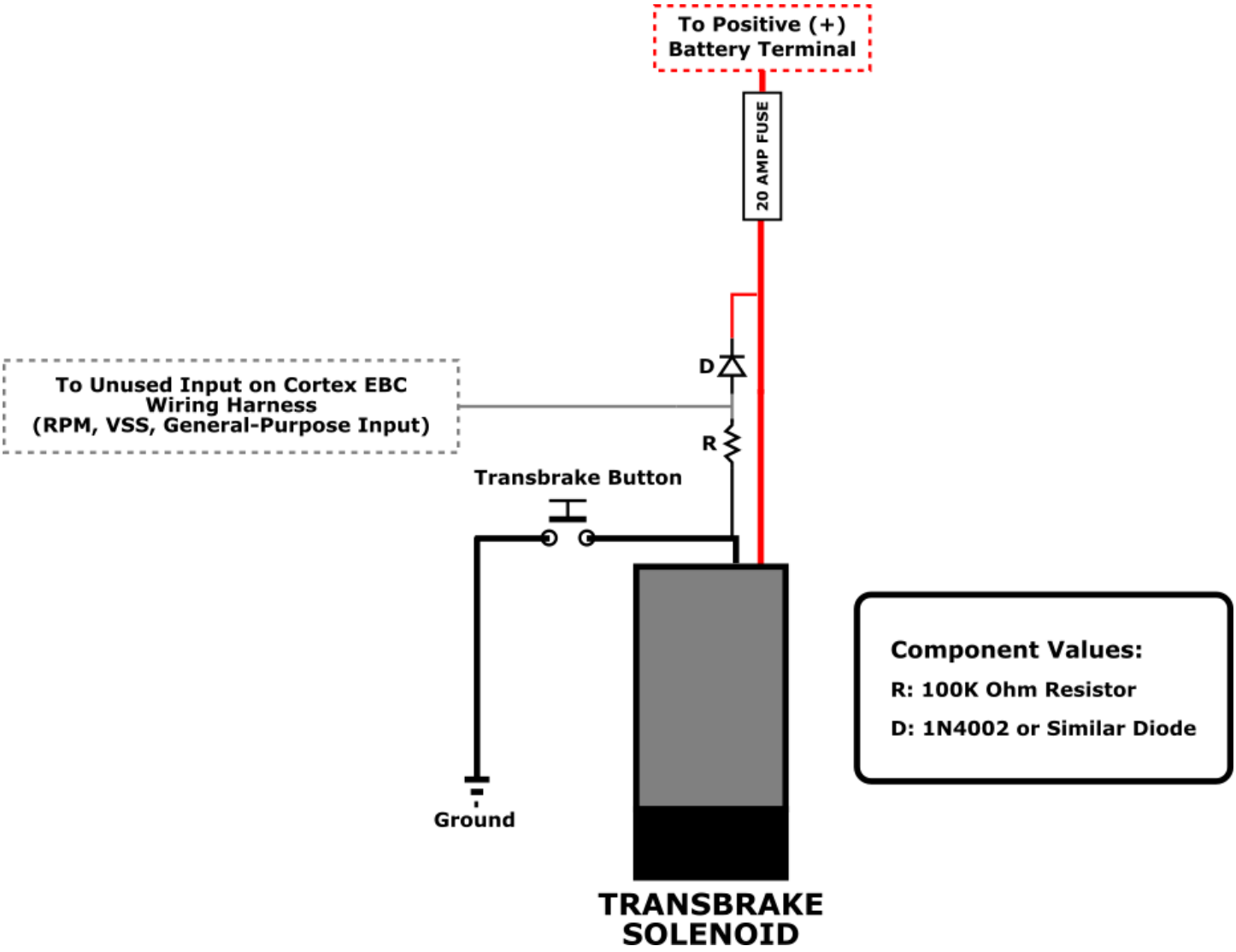
One Wire Transbrake Solenoid No Relay



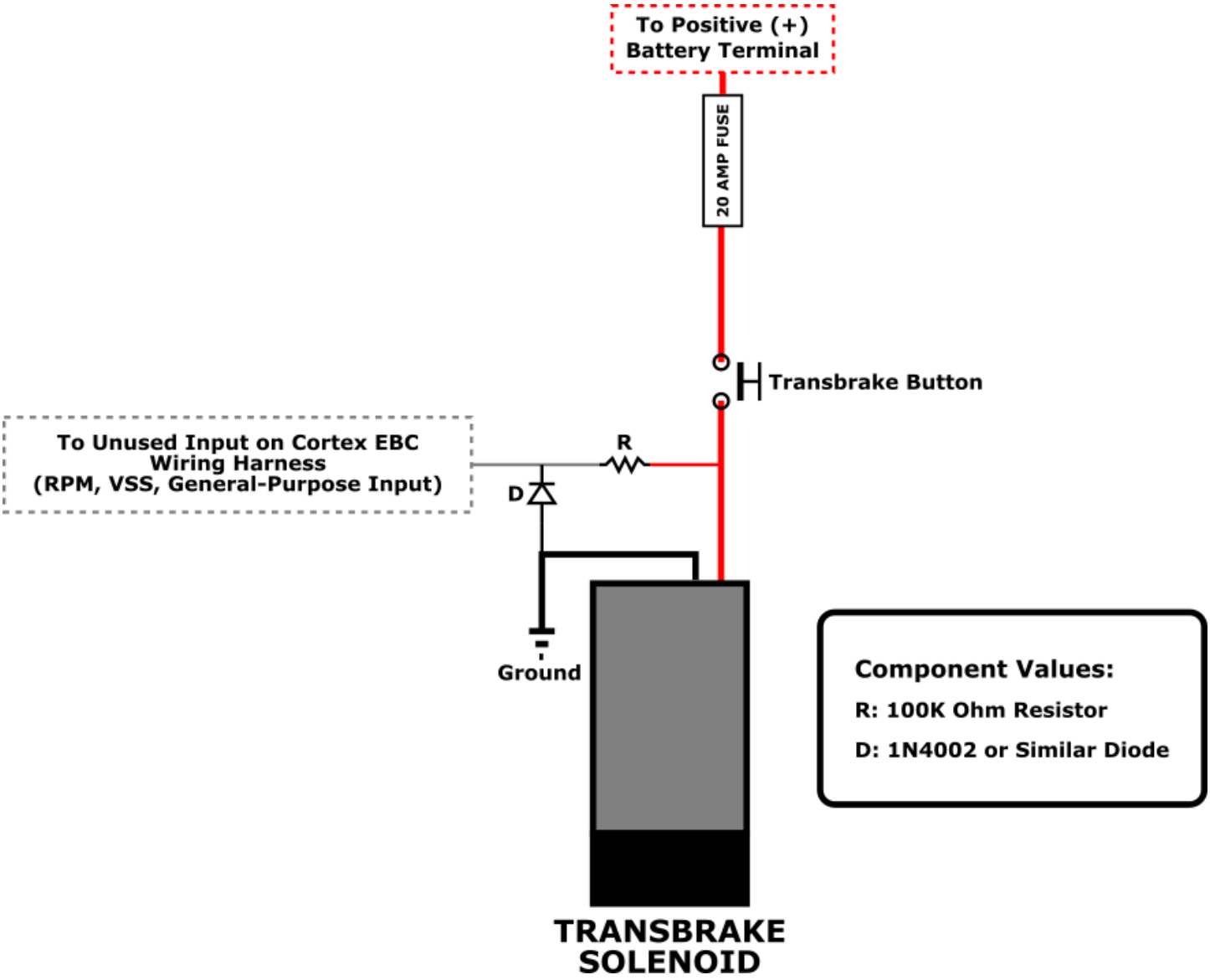
One Wire Transbrake Solenoid With Diode Protected Relay



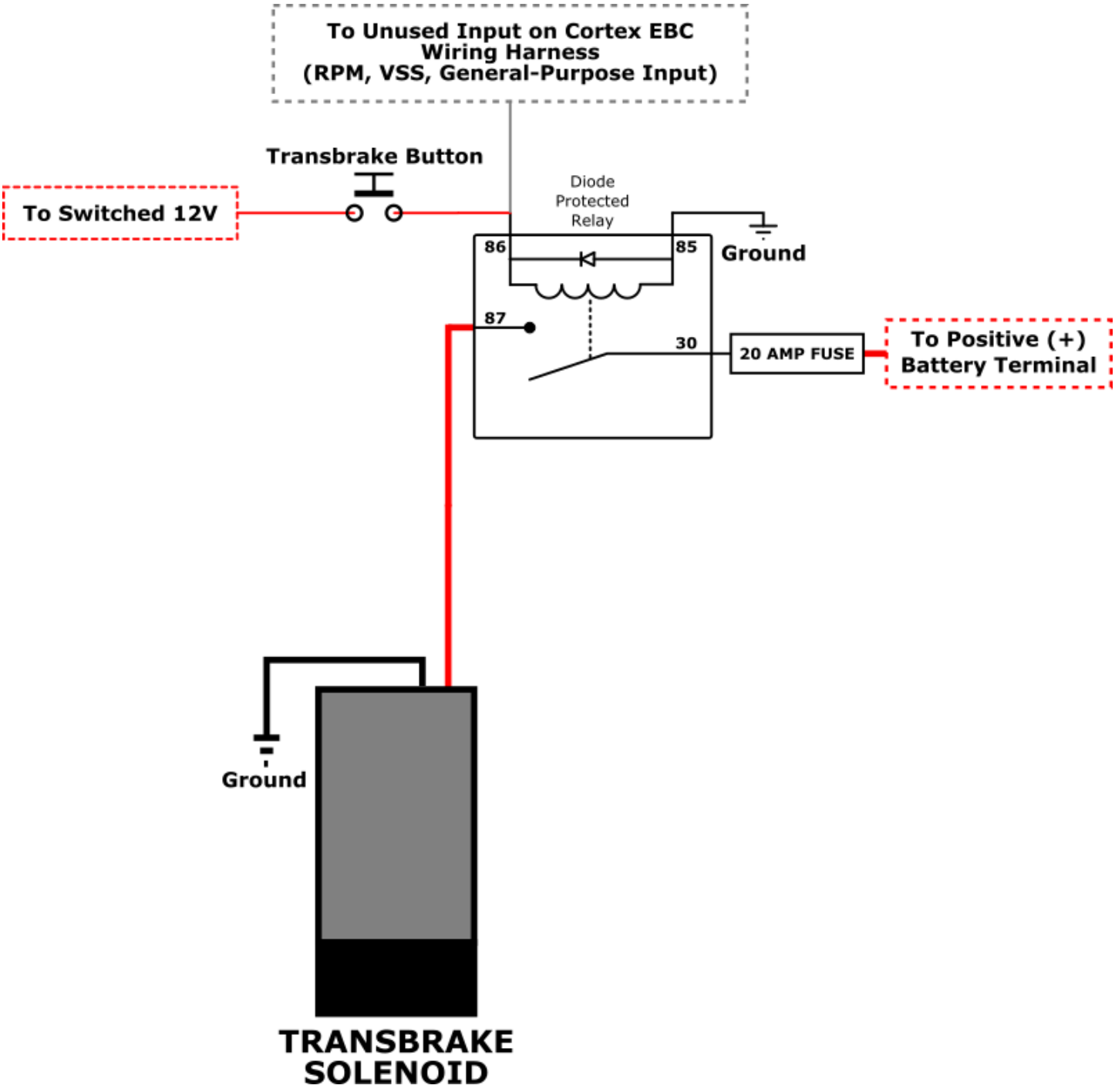
Two Wire Transbrake Solenoid No Relay – Low Side Switch



Two Wire Transbrake Solenoid No Relay – High Side Switch



Two Wire Transbrake Solenoid With Diode Protected Relay



Flex Fuel Sensor Wiring

Compatible Cortex EBC Inputs

- General-Purpose Input

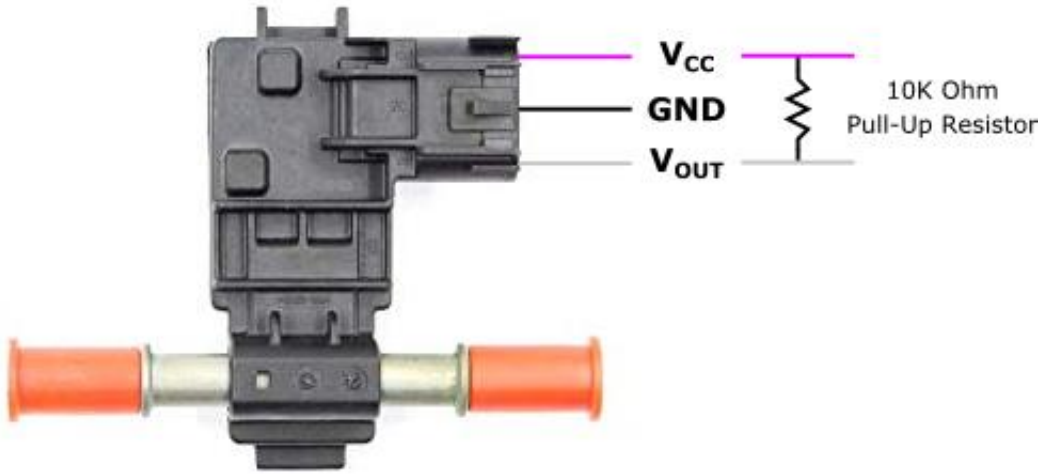
Required Components

- GM/Continental Flex Fuel Sensor
- 10K ohm pull-up resistor (if sensor is connected to Cortex EBC only)
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

Wiring Diagram

The output of your flex fuel sensor can be connected directly to the General-Purpose Input on the Cortex EBC wiring harness if your vehicle was equipped with a sensor from the factory, or if your sensor is currently wired to your ECU/ECM/PCM or another device.

If your flex fuel sensor will only be connected to the Cortex EBC then use following diagram when installing your sensor. For the Cortex EBC to be able to detect the output of the flex fuel sensor in this case it is necessary to connect a pull-up resistor between the sensor power and output wires.



V_{CC}	Connect to switched/fused +12V power and one lead of pull-up resistor.
GND	Connect to clean chassis ground.
V_{OUT}	Connect to General-Purpose Input on Cortex EBC wiring harness (orange wire) and the remaining lead of pull-up resistor.

Water/Methanol Flow Sensor Wiring

Compatible Cortex EBC Inputs

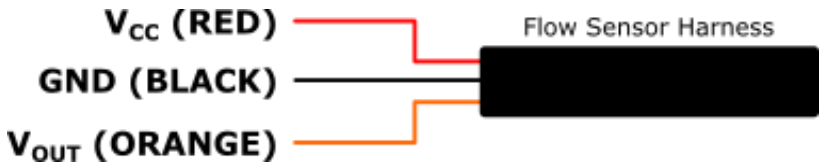
- General-Purpose Input

Required Components

- Frequency Based Water/Methanol Flow Sensor
- 10K-30K Ohm Pull-Up Resistor (if harness does not have built in pull-up)

Wiring Diagram

If you are using a SIRHC Labs Water/Methanol Flow Sensor with wiring harness use the following diagram when installing your sensor.



V_{CC}	Connect to switched/fused +12V power.
GND	Connect to clean chassis ground.
V_{OUT}	Connect to General-Purpose Input on Cortex EBC wiring harness (orange wire).

Water/Methanol Pressure Sensor Wiring

Compatible Cortex EBC Inputs

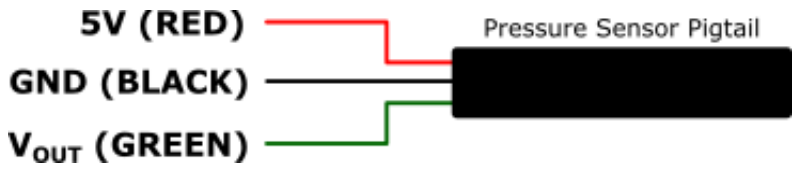
- General-Purpose Input

Required Components

- Analog Water/Methanol Pressure Sensor

SIRHC Labs Water/Methanol Pressure Sensor Only Wiring Diagram

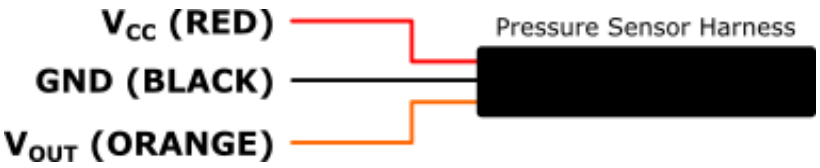
If you are using a SIRHC Labs Water/Methanol Pressure Sensor **without** regulated harness use the following diagram for installation.



V_{CC}	Connect to switched/fused **+5V** power.
GND	Connect to clean chassis ground.
V_{OUT}	Connect to General-Purpose Input on Cortex EBC wiring harness (orange wire).

SIRHC Labs Water/Methanol Pressure Sensor Only Wiring Diagram

If you are using a SIRHC Labs Water/Methanol Pressure Sensor **with** regulated harness use the following diagram for installation.



V_{CC}	Connect to switched/fused **+12V** power.
GND	Connect to clean chassis ground.
V_{OUT}	Connect to General-Purpose Input on Cortex EBC wiring harness (orange wire).

OUTPUT WIRING DIAGRAMS

General Diode Protected Relay Wiring

Compatibility

The Hella 933791091 Diode Protected Relay can be used to provide a basic on/off switch for a single device that draws up to 40 Amps or two devices that draw up to 20 Amps each. Possible applications include secondary fuel pumps, air to water intercooler pumps, intercooler sprayer pumps, non-progressable nitrous solenoids, and fans.

Max Current

- 40 Amps

Max PWM Frequency

- PWM control is not recommended

Required Components

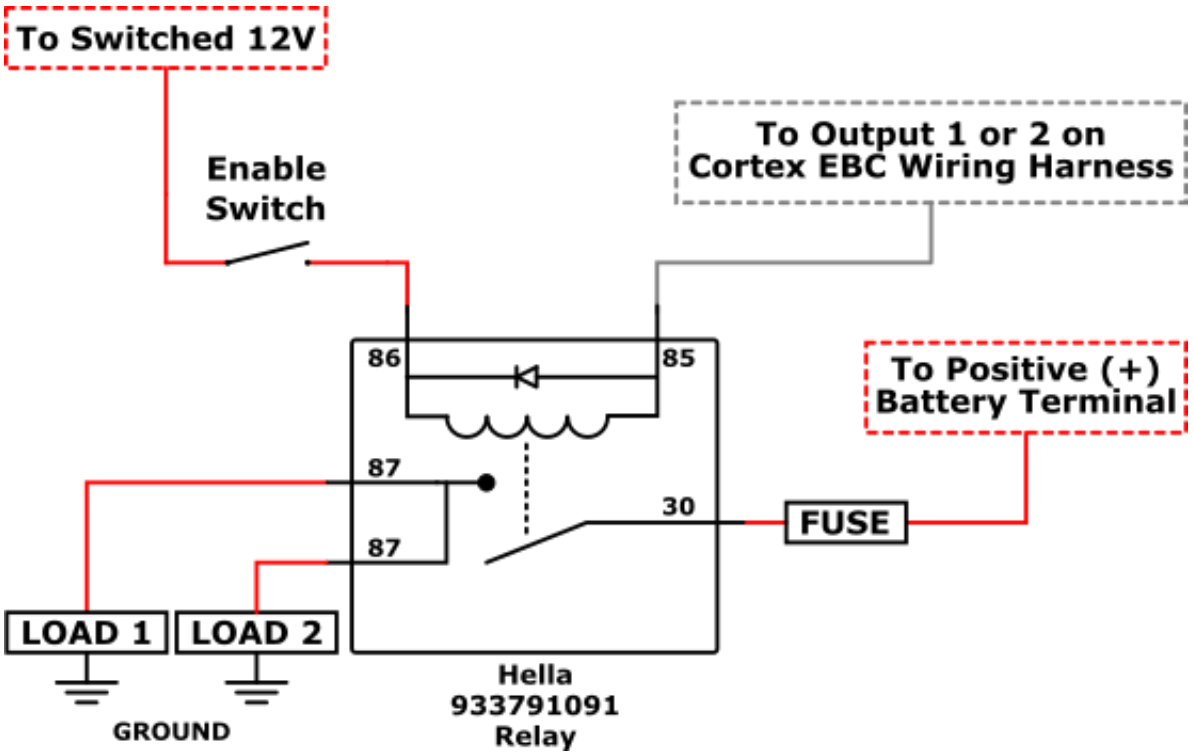
- Hella 933791091 Diode Protected Relay
    - If a relay with NO and NC terminals is required then the Hella 007494041 relay can be used alternatively.
- Appropriately sized inline fuse and fuse holder
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

Recommended Components

- Toggle switch

Wiring Diagram

The following diagram should be used for general Diode Protected Relay installations. An external toggle switch should be used in conjunction with the Diode Protected Relay to provide a way to easily remove power from the relay load(s) if necessary. Toggle switches can be easily sourced online or at any auto parts store.



Pin 30	Connect to positive battery terminal using appropriately sized inline fuse.
Pin 85	Connect to Output 1 (brown) or Output 2 (gray) on Cortex EBC wiring harness.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pins 87	Connect to positive lead of load(s).

General Solenoid/Pump Driver Wiring

Compatibility

The Solenoid/Pump Driver has been specifically designed to drive high-speed progressable solenoids and water/methanol injection pumps. These drivers utilize a circuit which helps to de-energize solenoids as quickly as possible. This allows the solenoids to be driven at a higher PWM frequency but reduces the amount of current the drivers would be able to otherwise handle.

- Compatible with Aquatec and Shurflo water/methanol injection pumps used by virtually all manufacturers (Cooling Mist, Devils Own, Snow Performance, Alky Control, etc).
- Compatible with all high-speed progressable nitrous solenoids that draw 12A or less (such as NX Lightning).

Other high current devices such as fuel pumps should use a Hella Diode Protected Relay for basic on/off control, or a SIRHC Labs Hi-Amp PWM Driver for progressive control.

Max Current

- 12 Amps

Max PWM Frequency

- 100 Hz for solenoids drawing 4 amps or less.
- 30 Hz for solenoids drawing more than 4 amps and water/methanol pumps.

Required Components

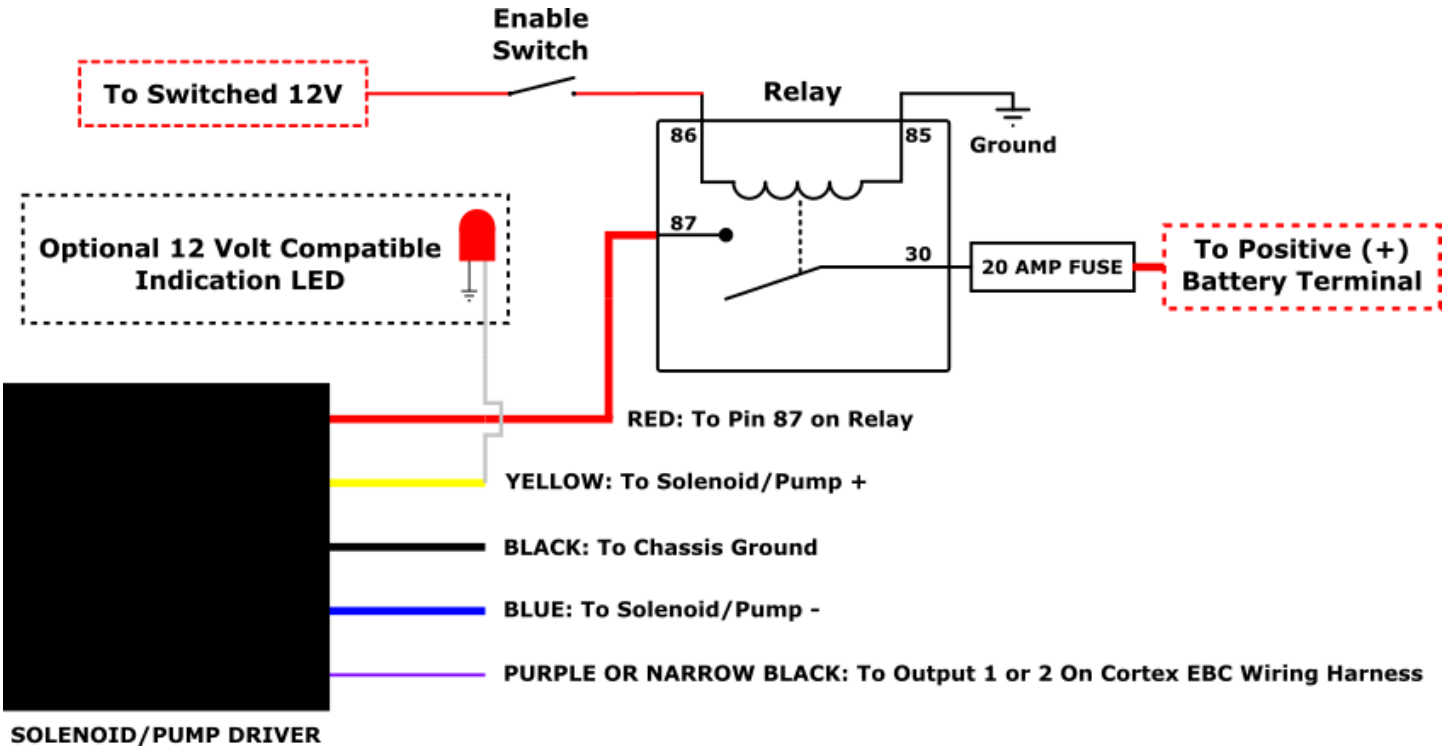
- Solenoid/Pump Driver
- 20 amp inline fuse and fuse holder
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

Recommended Components

- Standard automotive relay
- Toggle switch

Wiring Diagram

The following diagram should be used for general Solenoid/Pump Driver installations. A standard automotive relay and external toggle switch should be used in conjunction with the Solenoid/Pump Driver. These additional components ensure the driver cannot be activated unless the vehicle is powered, and also provide a way to easily remove power from the driver if necessary. Relays and toggle switches can be easily sourced online or at any auto parts store.



Relay

Pin 30	Connect to positive battery terminal with 20 amp inline fuse.
Pin 85	Connect to clean chassis ground.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pin 87	Connect to red wire on Solenoid/Pump Driver.

Driver

Yellow	Connect to positive lead of pump or either lead of solenoid.
Black	Connect to clean chassis ground.
Blue	Connect to negative lead of pump or remaining lead of solenoid.
Purple or Narrow Black	Connect to Output 1 (brown) or Output 2 (gray) on Cortex EBC wiring harness.

NOTE: For optimal performance the length of all wires should be kept as short as possible.

Nitrous Control Pack Wiring

Compatibility

The Nitrous Control Pack can be used with all high-speed progressable nitrous and fuel solenoids that draw 12A or less (such as NX Lightning).

Applications with non-progressable solenoids should use one or two Diode Protected Relays instead of the Nitrous Control Pack.

Max Current

- 12 Amps Per Driver

Max PWM Frequency

- 30 Hz

Required Components

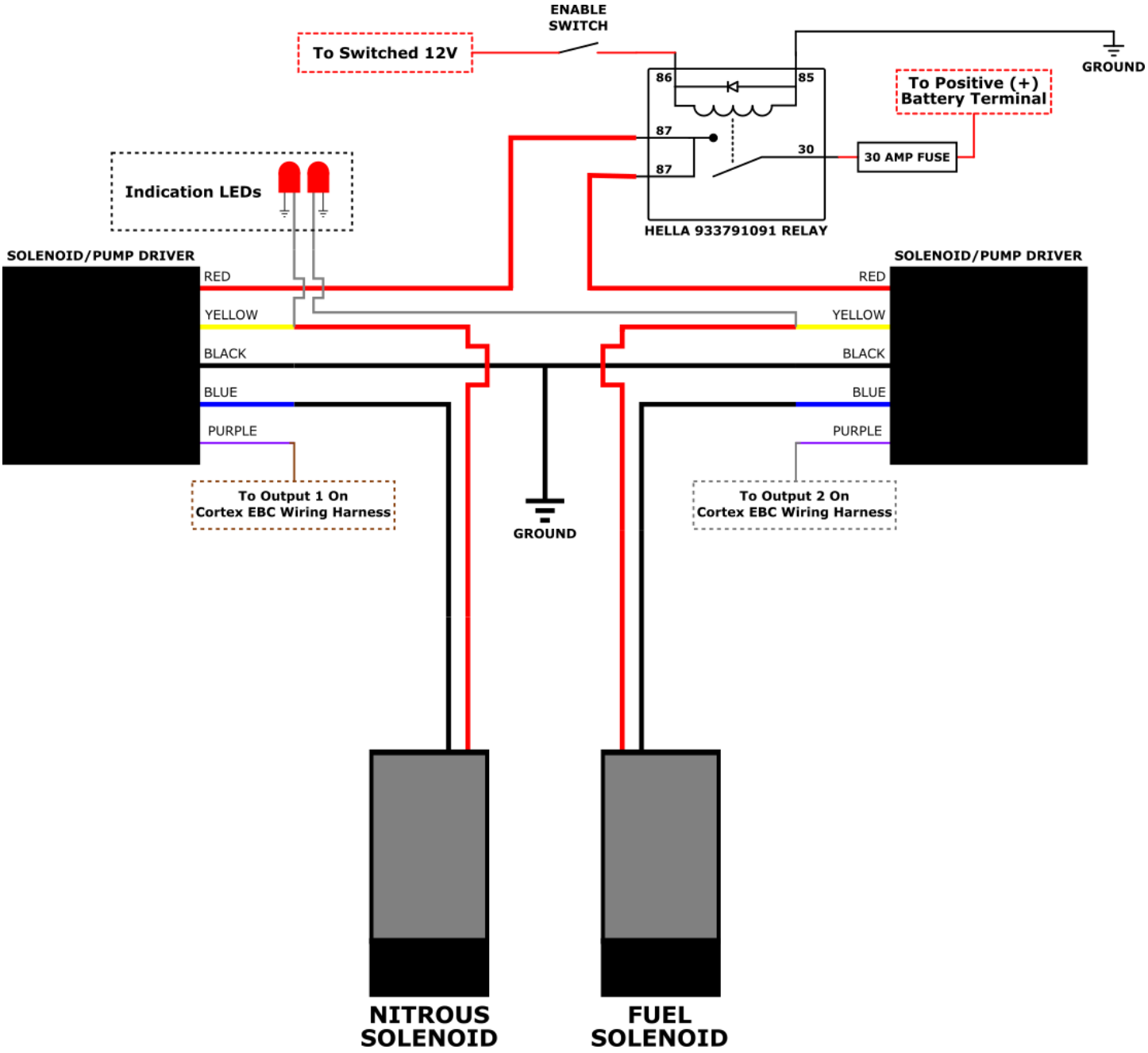
- Nitrous Control Pack
- 30 amp inline fuse and fuse holder
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

Recommended Components

- Toggle switch

Wiring Diagram

The following diagram should be used for Nitrous Control Pack installations. An external toggle switch should be used in conjunction with the Diode Protected Relay to provide a way to easily remove power the nitrous system if necessary. Toggle switches can be easily sourced online or at any auto parts store.



Diode Protected Relay

Pin 30	Connect to positive battery terminal with 30 amp inline fuse.
Pin 85	Connect to clean chassis ground.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pins 87	Connect to red wires on Solenoid/Pump Drivers.

Nitrous Solenoid Driver

Yellow	Connect to either lead of nitrous solenoid and positive lead of indication LED.
Black	Connect to clean chassis ground.
Blue	Connect to remaining lead of nitrous solenoid.
Purple or Narrow Black	Connect to Output 1 (brown) on Cortex EBC wiring harness.

Fuel Solenoid Driver

Yellow	Connect to either lead of fuel solenoid and positive lead of indication LED.
Black	Connect to clean chassis ground.
Blue	Connect to remaining lead of fuel solenoid.
Purple or Narrow Black	Connect to Output 2 (gray) on Cortex EBC wiring harness.

Transbrake Bump Control Wiring

Compatible Cortex EBC Inputs

- Top Button on Cortex EBC Display
- RPM Input
- Speed Input
- General-Purpose Input

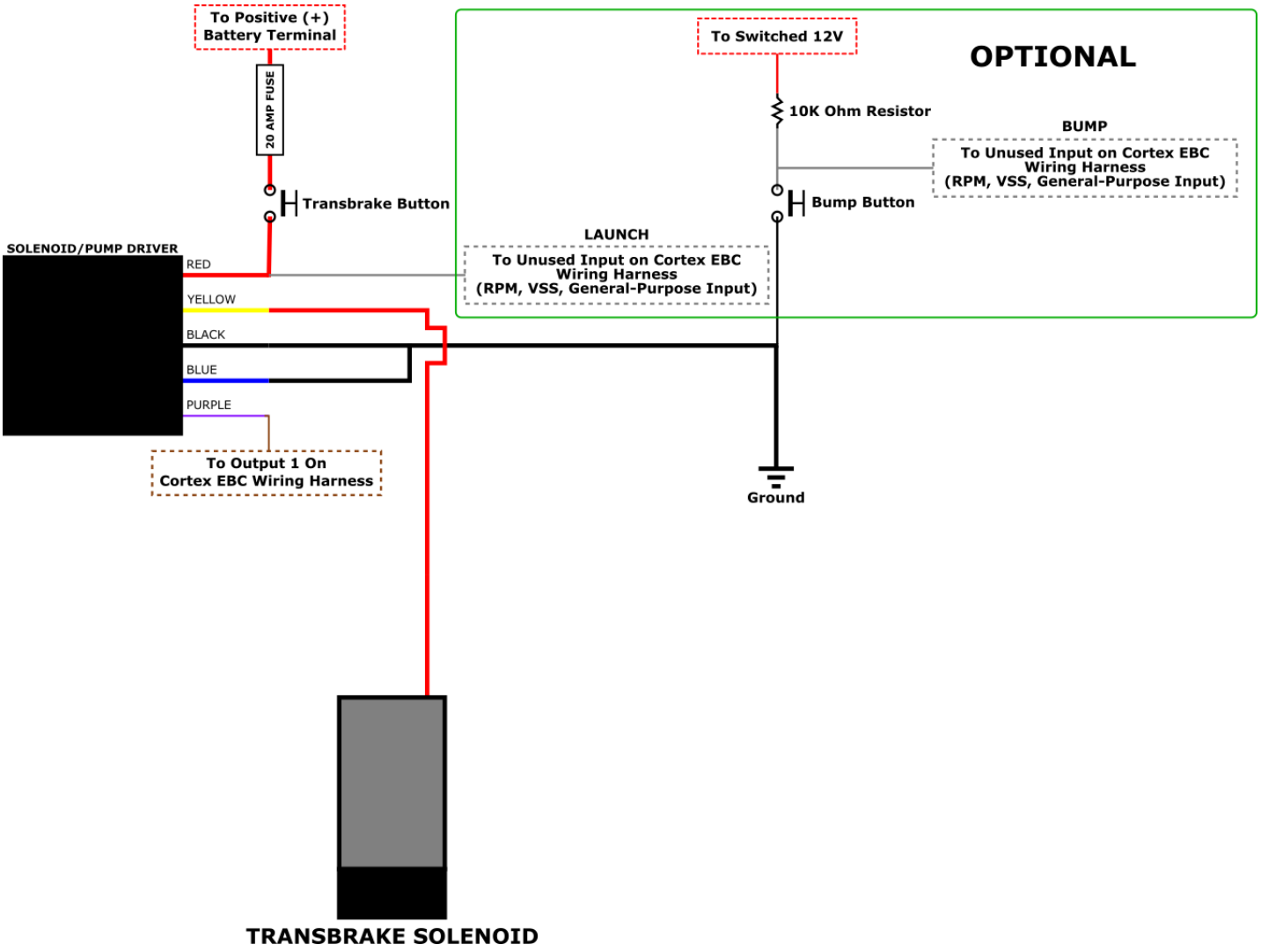
Compatible Cortex EBC Outputs

- Output 1 Only

Required Components

- Solenoid/Pump Driver
- Momentary push button rated to handle 20 amps
- 20 amp inline fuse and fuse holder
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

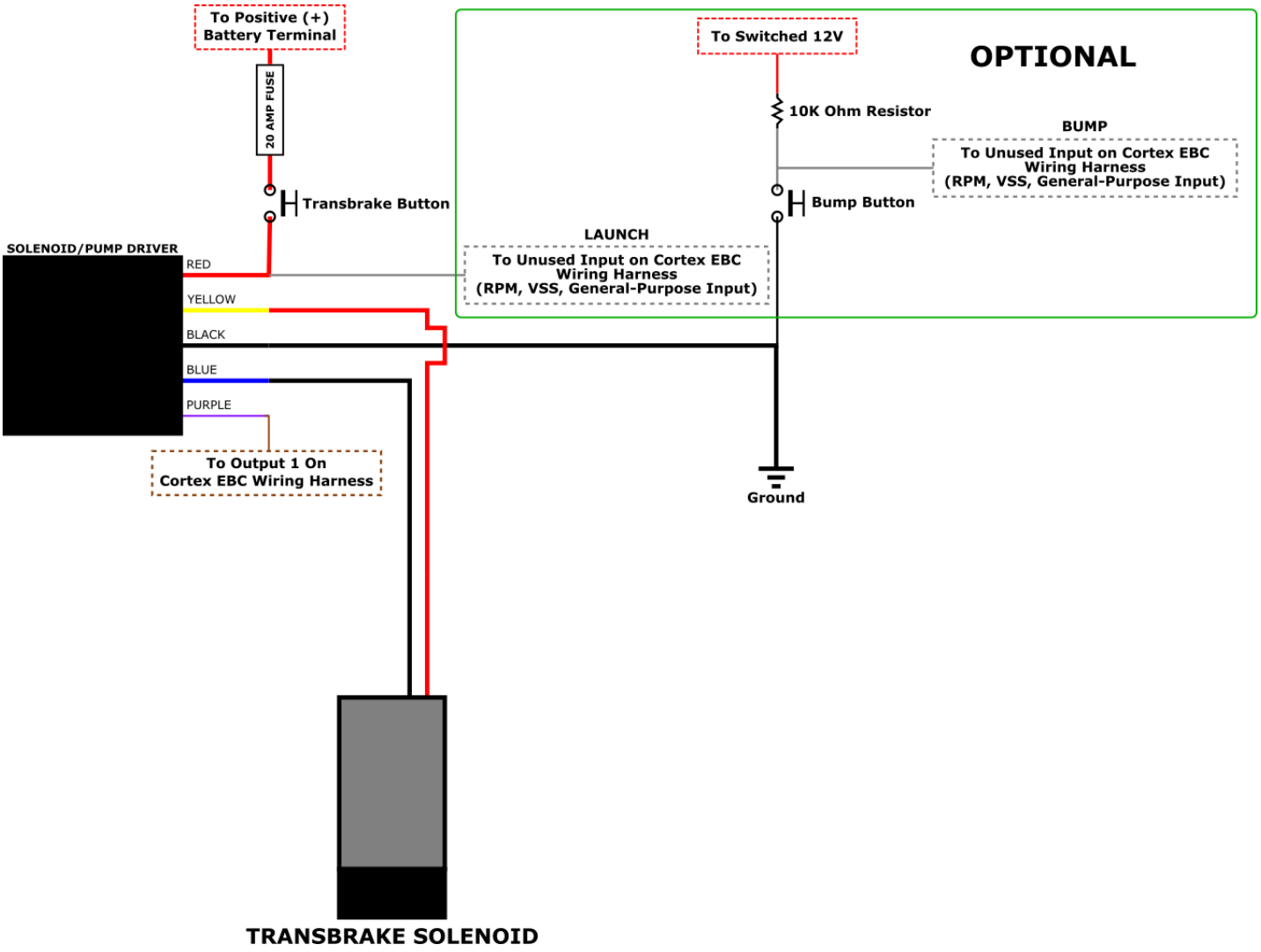
One Wire Transbrake Solenoid Wiring Diagram



Transbrake Solenoid Driver

Red	Connect to one terminal of transbrake button. Connect remaining button terminal to positive battery terminal with inline fuse.
Yellow	Connect to lead of transbrake solenoid.
Black	Connect to clean chassis ground.
Blue	Connect to clean chassis ground.
Purple or Narrow Black	Connect to Output 1 (brown) on Cortex EBC wiring harness.

Two Wire Transbrake Solenoid Wiring



Transbrake Solenoid Driver

Red	Connect to one terminal of transbrake button. Connect remaining button terminal to positive battery terminal with inline fuse.
Yellow	Connect to one lead of transbrake solenoid.
Black	Connect to clean chassis ground.
Blue	Connect to remaining lead of transbrake solenoid.
Purple or Narrow Black	Connect to Output 1 (brown) on Cortex EBC wiring harness.

Water/Methanol Control Pack Wiring

Pump Compatibility

The Water/Methanol Control Pack is compatible with Aquatec and Shurflo injection pumps used by virtually all manufacturers (Cooling Mist, Devils Own, Snow Performance, Alky Control, etc).

Solenoid Compatibility

The Water/Methanol Control Pack is compatible with all high-speed and anti-siphon WMI solenoids.

Possible Control Configurations

- PWM control of WMI pump only
- PWM control of WMI pump and on/off control of anti-siphon solenoid
- PWM control of high-speed solenoid and on/off control of WMI pump

Required Components

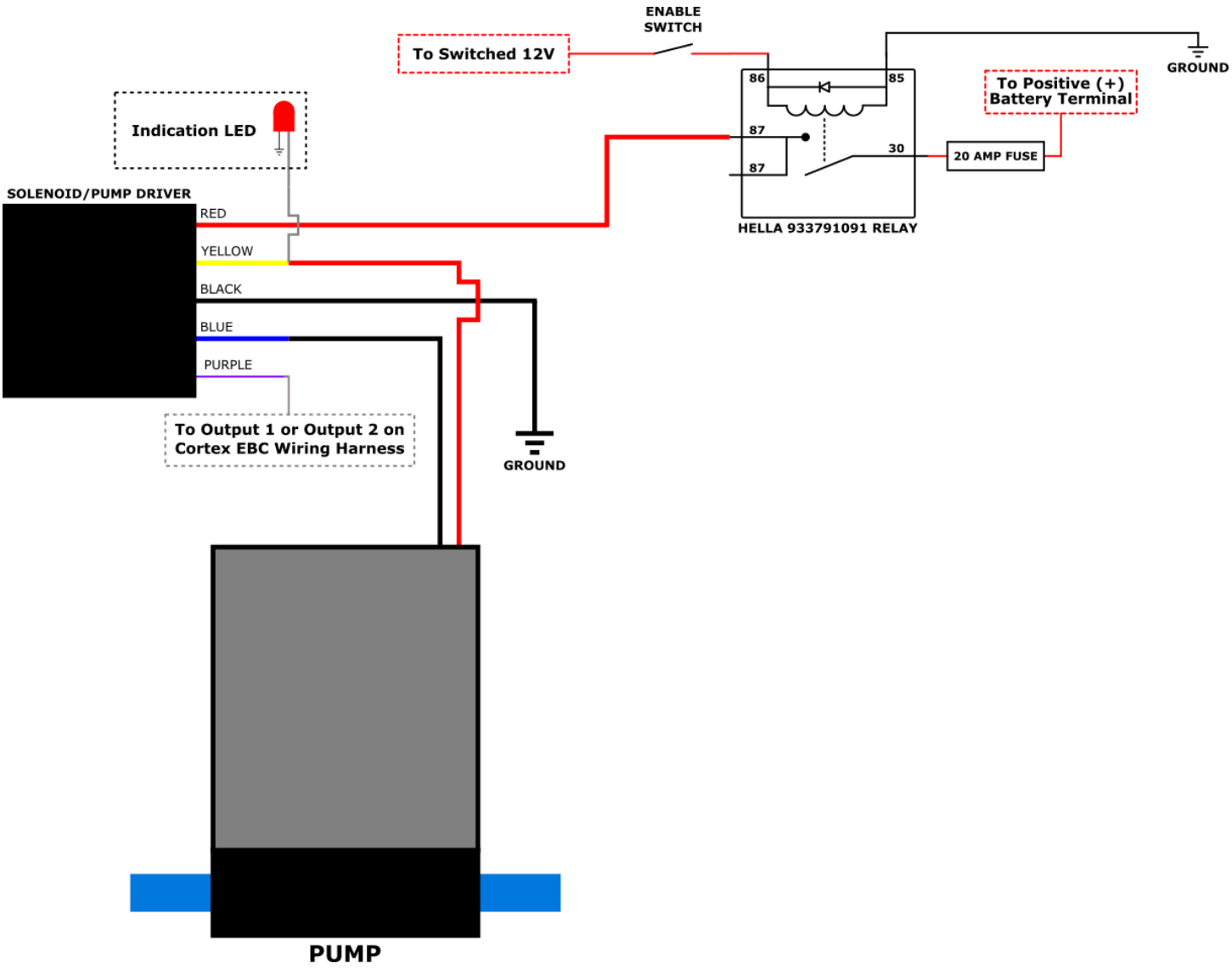
- Water/Methanol Control Pack
- 20 amp inline fuse and fuse holder
- Additional wire, connectors, terminals, and other electrical components needed to complete installation

Recommended Components

- Toggle switch

Wiring Diagram For Pump PWM + No Solenoid

The following diagram should be used for injection systems that do not use an anti-siphon or high-speed solenoid. An external toggle switch should be used in conjunction with the Diode Protected Relay to provide a way to easily remove power from the water/methanol system if necessary. Toggle switches can be easily sourced online or at any auto parts store.



Diode Protected Relay

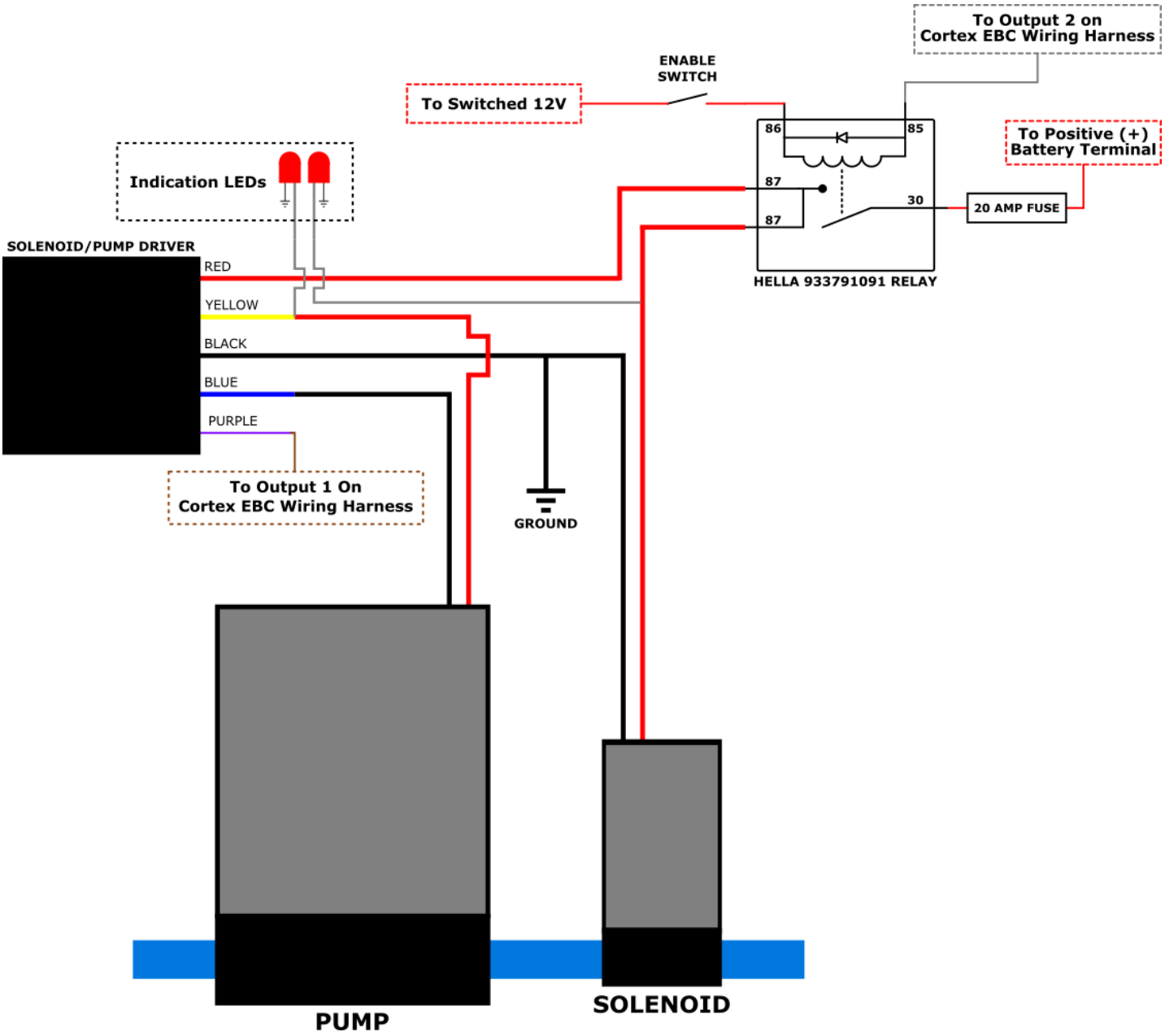
Pin 30	Connect to positive battery terminal with 20 amp inline fuse.
Pin 85	Connect to clean chassis ground.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pins 87	Connect to red wire on Solenoid/Pump Driver.

Solenoid Driver

Yellow	Connect to positive lead of injection pump.
Black	Connect to clean chassis ground.
Blue	Connect to negative lead of injection pump.
Purple or Narrow Black	Connect to Output 1 (brown) or Output 2 (gray) on Cortex EBC wiring harness.

Wiring Diagram For Pump PWM + Solenoid On/Off

The following diagram should be used for injection systems using an anti-siphon solenoid. An external toggle switch should be used in conjunction with the Diode Protected Relay to provide a way to easily remove power the water/methanol system if necessary. Toggle switches can be easily sourced online or at any auto parts store.



Diode Protected Relay

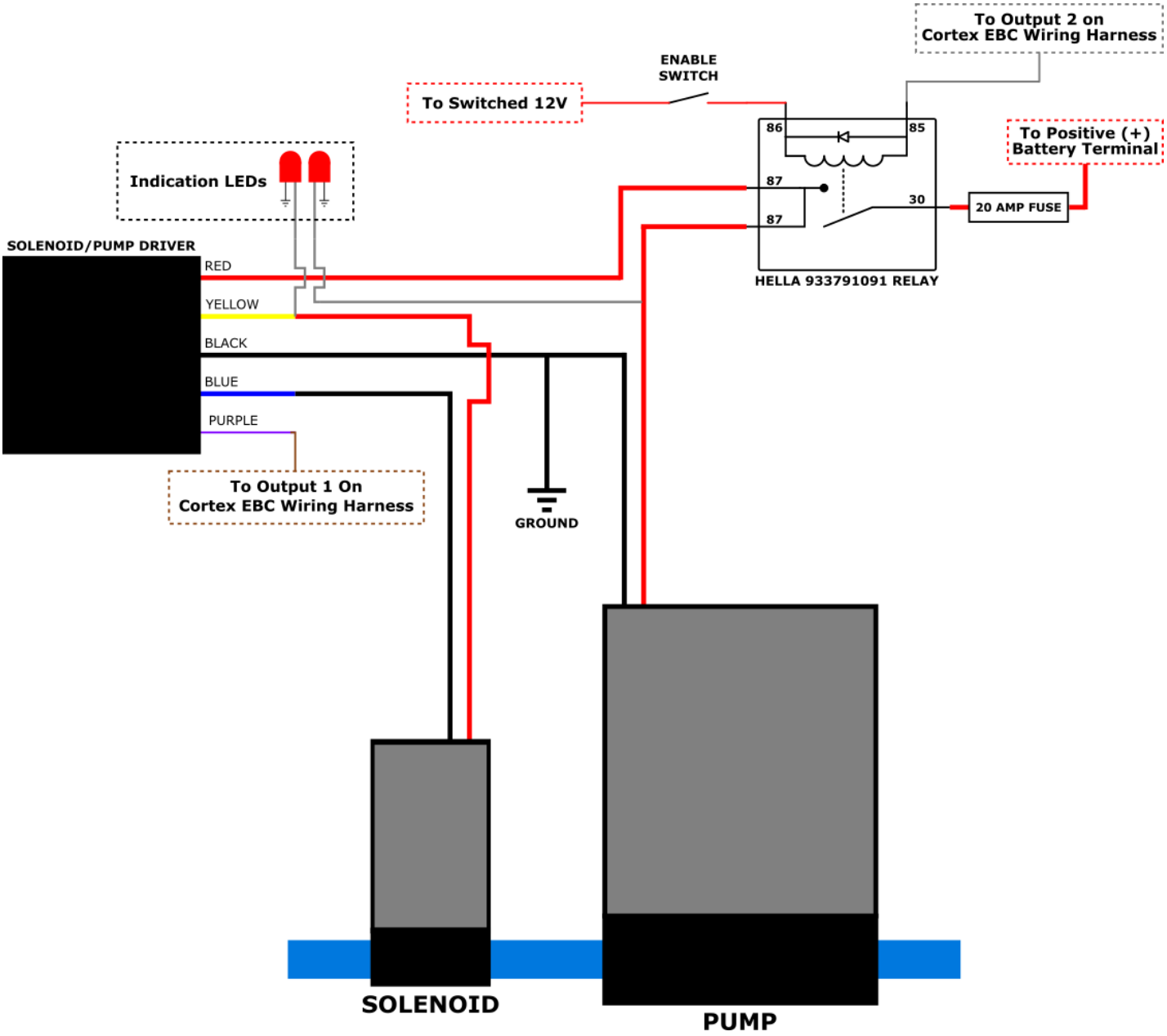
Pin 30	Connect to positive battery terminal with 20 amp inline fuse.
Pin 85	Connect to Output 2 (gray) on Cortex EBC wiring harness.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pins 87	Connect one 87 terminal to red wire on Solenoid/Pump Driver. Connect the other 87 terminal to one lead of anti-siphon solenoid. The remaining solenoid lead should be connected to chassis ground.

Solenoid Driver

Yellow	Connect to positive lead of injection pump.
Black	Connect to clean chassis ground.
Blue	Connect to negative lead of injection pump.
Purple or Narrow Black	Connect to Output 1 (brown) on Cortex EBC wiring harness.

Wiring Diagram For PWM Solenoid + Pump On/Off

The following diagram should be used for injection systems using a high-speed solenoid. An external toggle switch should be used in conjunction with the Diode Protected Relay to provide a way to easily remove power the water/methanol system if necessary. Toggle switches can be easily sourced online or at any auto parts store.



Diode Protected Relay

Pin 30	Connect to positive battery terminal with 20 amp inline fuse.
Pin 85	Connect to Output 2 (gray) on Cortex EBC wiring harness.
Pin 86	Connect to switched/fused +12V power with inline toggle switch.
Pins 87	Connect one 87 terminal to red wire on Solenoid/Pump Driver. Connect the other 87 terminal to positive lead of injection pump. The negative lead of the pump should be connected to chassis ground.

Solenoid Driver

Yellow	Connect to one lead of high-speed solenoid.
Black	Connect to clean chassis ground.
Blue	Connect to remaining lead of high-speed solenoid.
Purple or Narrow Black	Connect to Output 1 (brown) on Cortex EBC wiring harness.

Controller Boost Reference

To monitor and control boost pressure the Cortex EBC must be connected to an intake manifold pressure reference. The Cortex EBC pressure port should be connected to a vacuum source on the intake manifold that is located after the throttle plate in the throttle body.

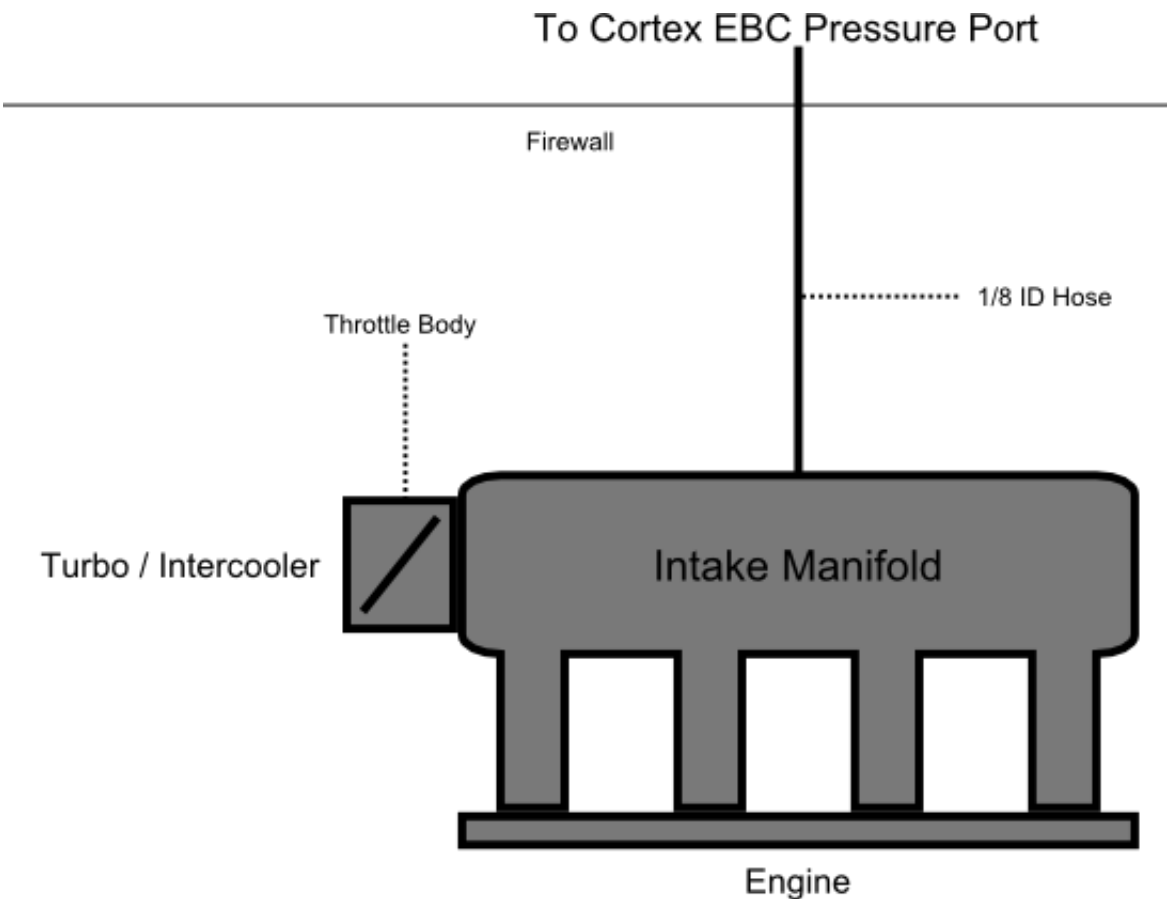
Required Parts

- 1/8" Silicone Vacuum Hose
- Zip Ties
- 1/8" Hose Tee (optional)
- 3/16" Hose Tee (optional)
- 3/16" to 1/8" Hose Reducer (optional)

Guidelines

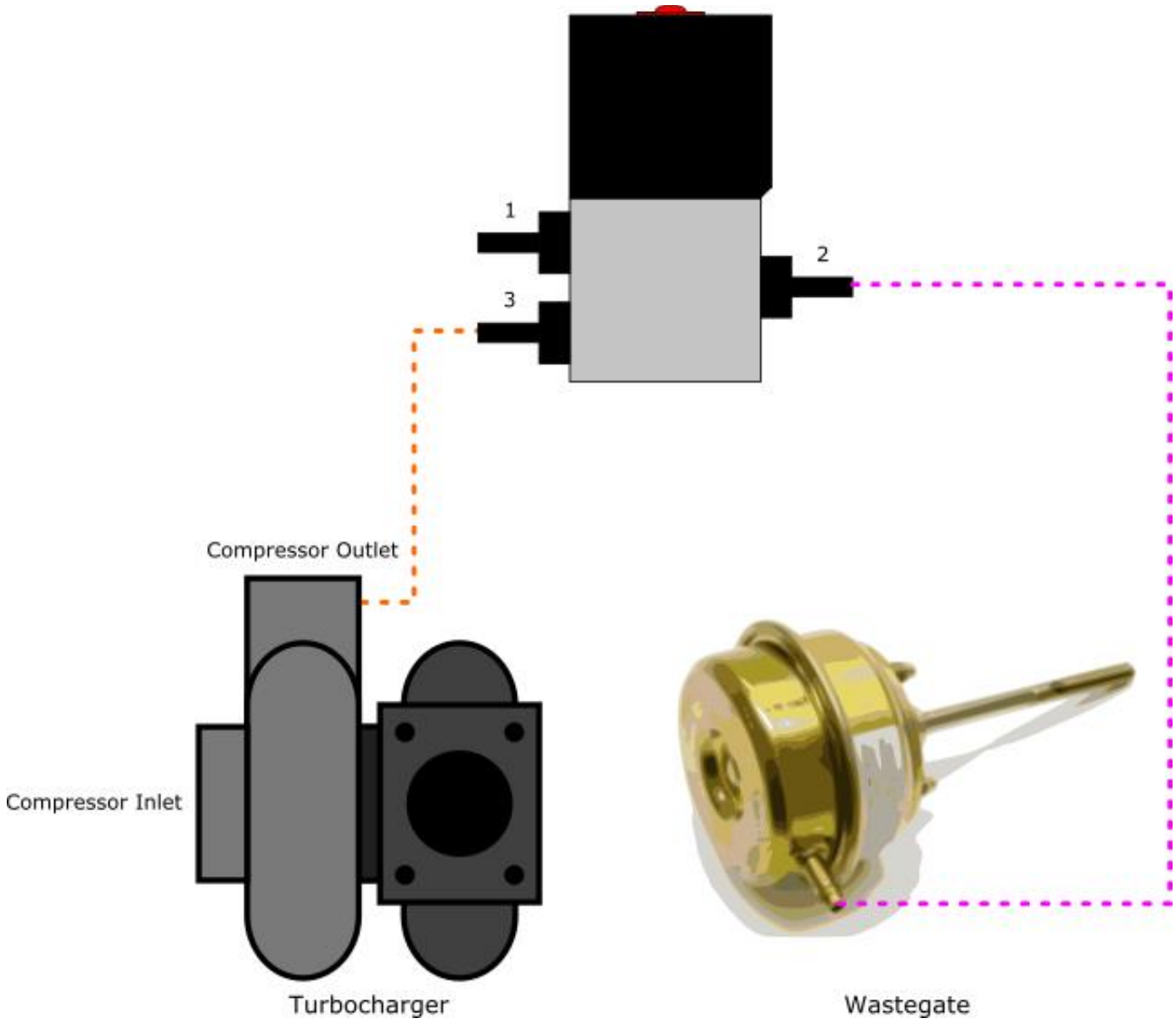
- Connect one end of the 1/8" ID Silicone Vacuum Hose to the pressure port on the back of the Cortex EBC device.
- Route the other end of the hose into the engine bay of the vehicle and connect it to a pressure source after the throttle-plate. Suitable sources include vacuum ports on the throttle-body, intake manifold, or fuel pressure regulator. A variety of hose fittings are supplied to assist in making a connection in the engine bay.
- Use the supplied zip ties to secure all hose connections.

Diagrams



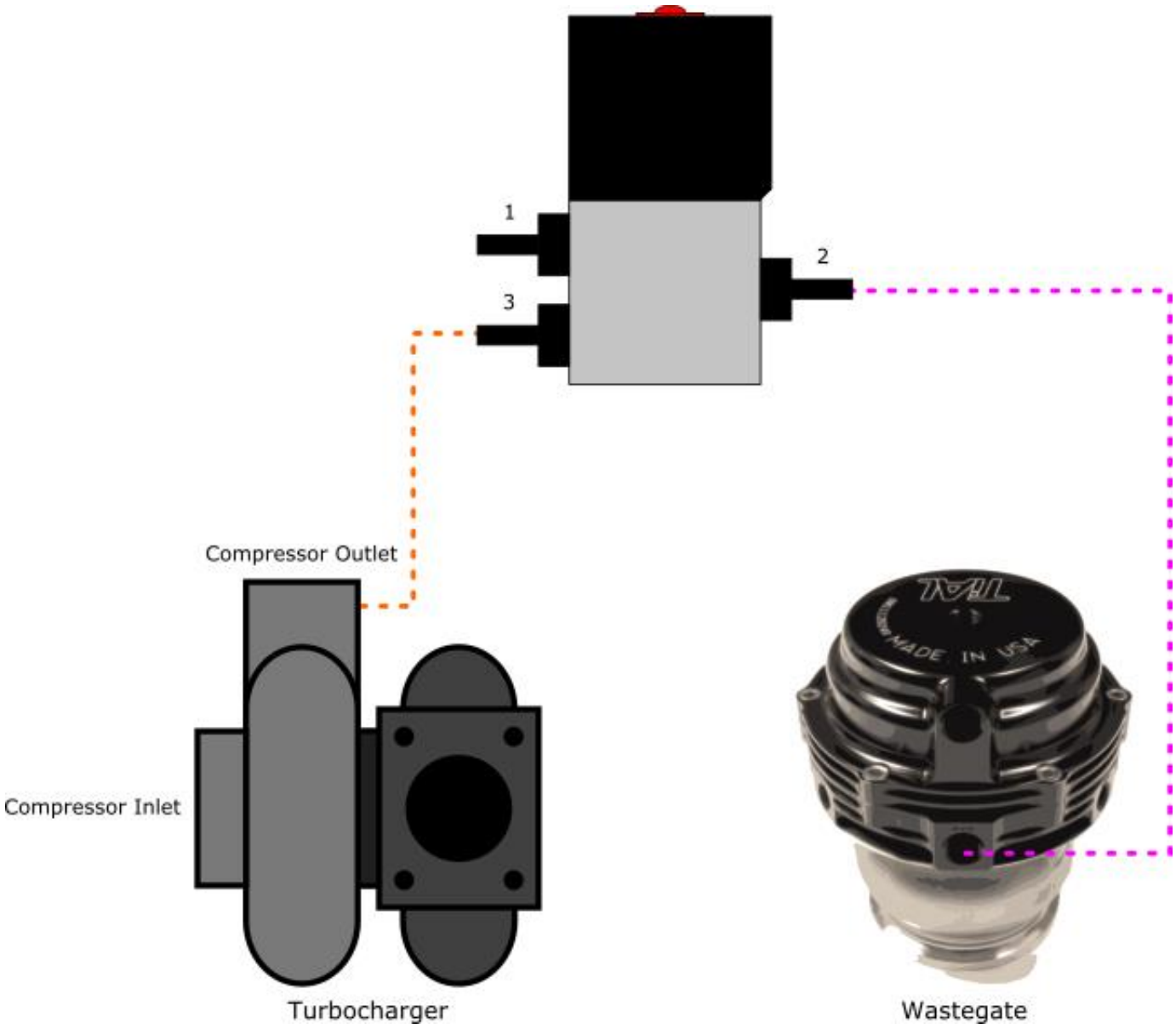
Boost Control Solenoid – Ingersoll Rand - Single Turbo

3-Port BCS Internal Wastegate/Actuator Configuration



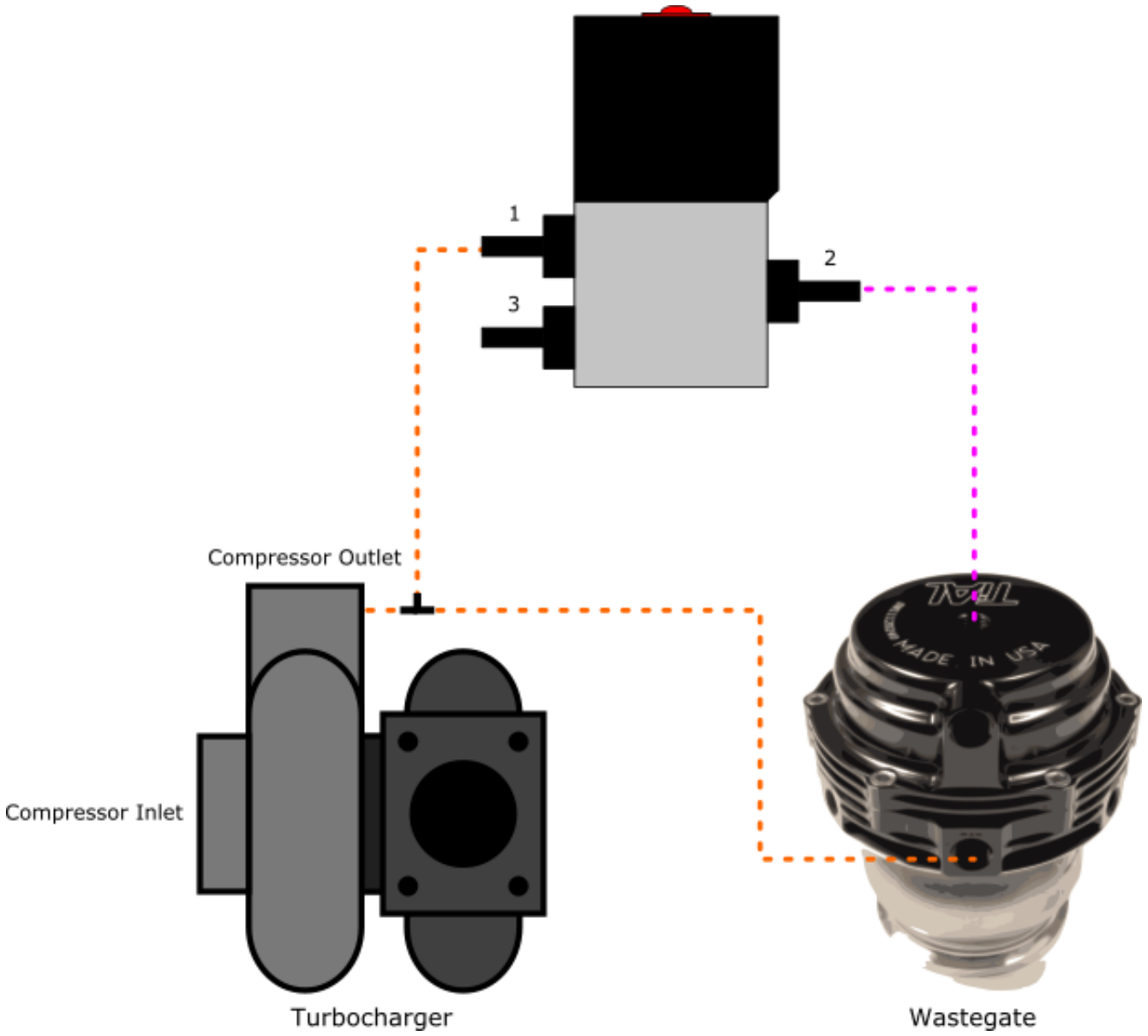
BCS Port 1	Leave open or connect to pre-turbocharger intake tract.
BCS Port 2	Connect to wastegate actuator pressure port.
BCS Port 3	Connect to compressor outlet on turbocharger.

3-Port BCS External Wastegate Configuration 1



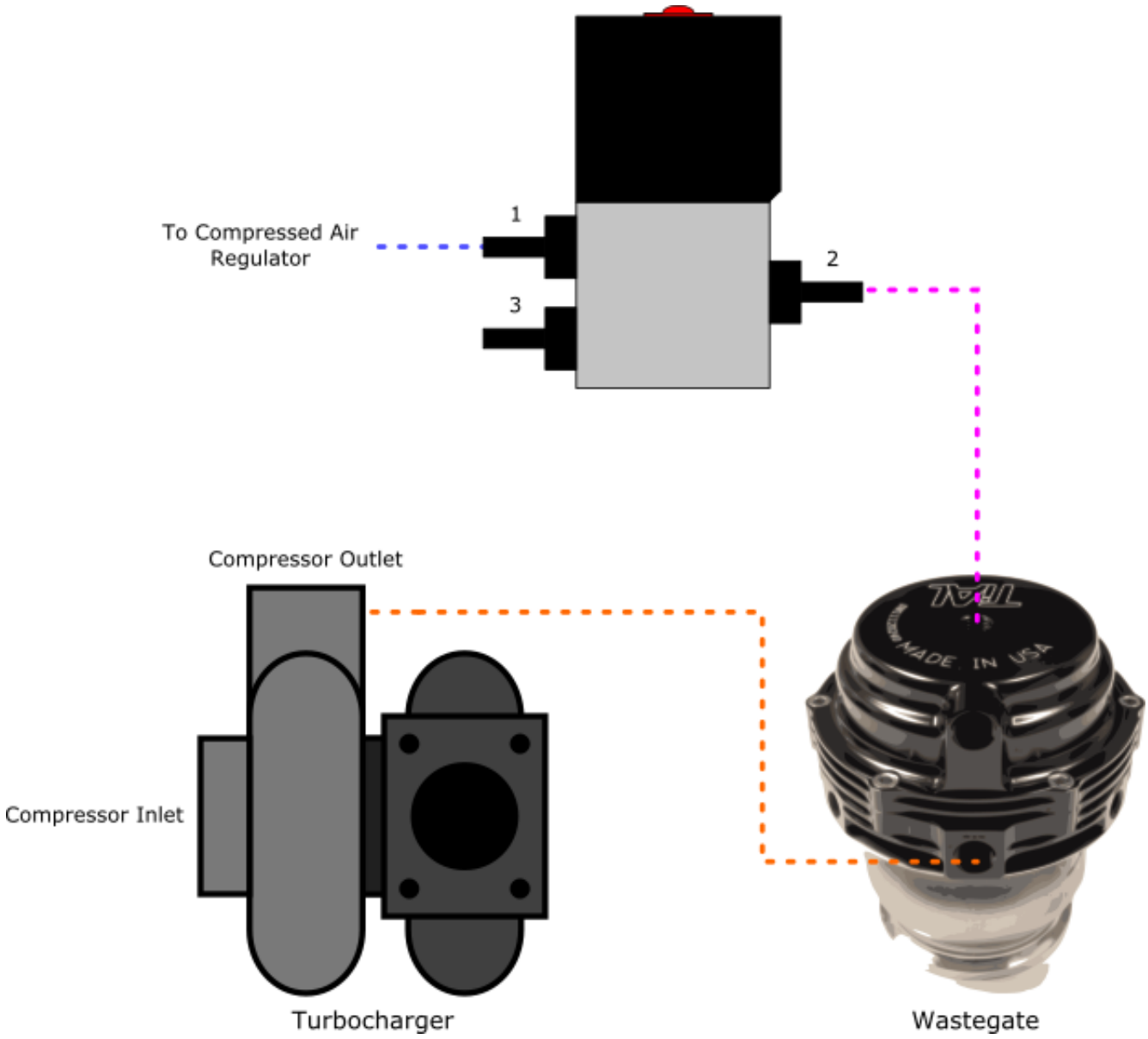
BCS Port 1	Leave open or connect to pre-turbocharger intake tract.
BCS Port 2	Connect BCS Port 2 to lower port on external wastegate. Leave top wastegate port open to atmosphere.
BCS Port 3	Connect to compressor outlet on turbocharger.

3-Port BCS External Wastegate Configuration 2



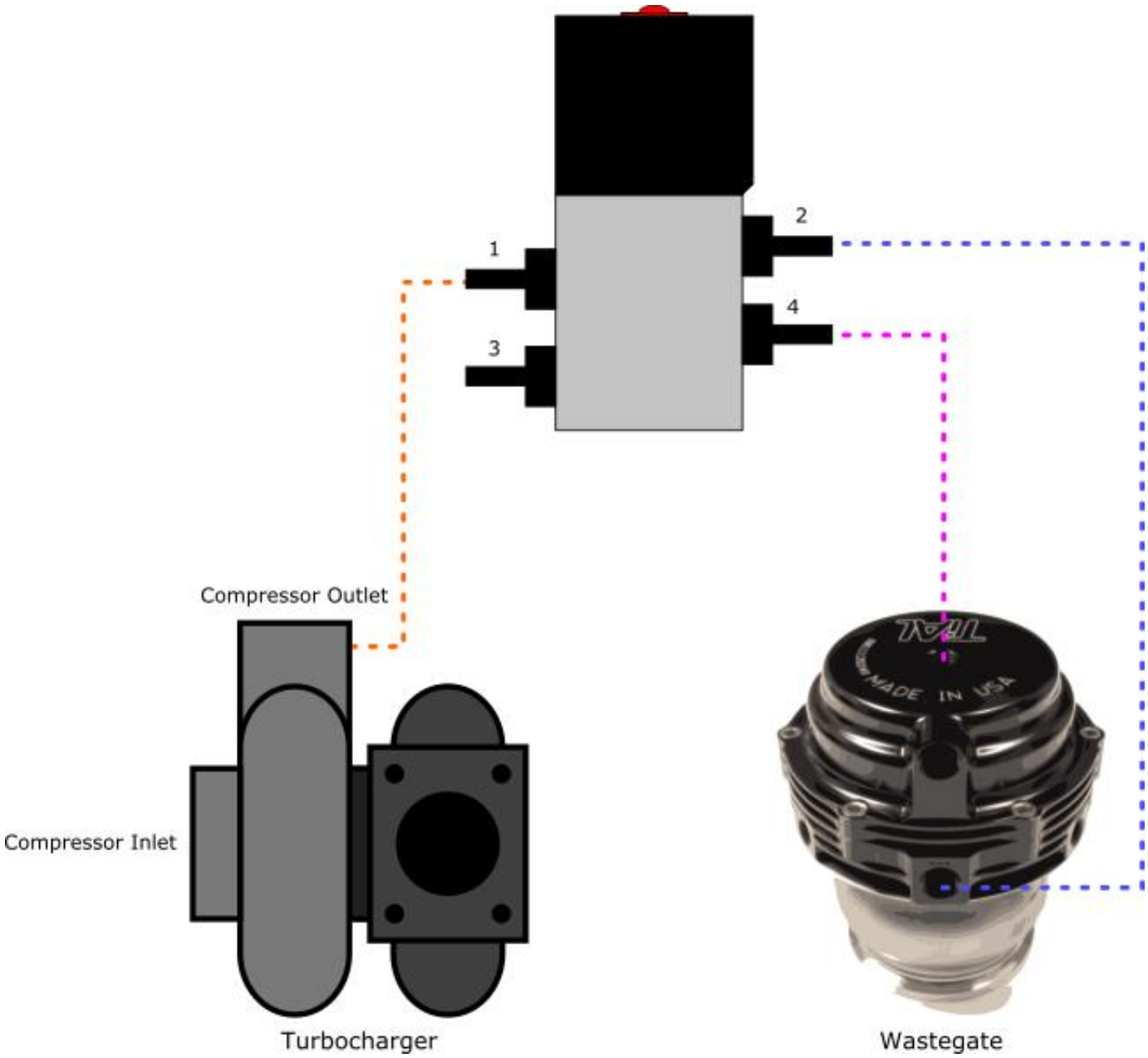
BCS Port 1	Connect to compressor outlet on turbocharger **AND** lower port of external wastegate using hose tee fitting.
BCS Port 2	Connect to top port of external wastegate.
BCS Port 3	Leave open.

3-Port BCS External Wastegate Compressed Air Configuration



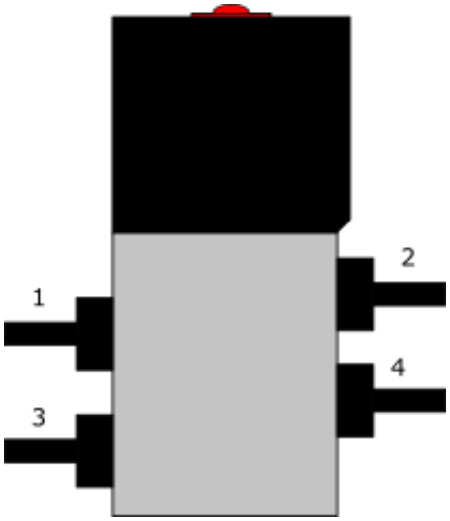
BCS Port 1	Connect to compressed air regulator.
BCS Port 2	Connect BCS Port 2 to top port of external wastegate. Connect compressor outlet on turbocharger to lower port of external wastegate.
BCS Port 3	Leave open.

4-Port BCS External Wastegate Configuration



BCS Port 1	Connect to compressor outlet on turbocharger.
BCS Port 2	Connect to lower port of external wastegate.
BCS Port 3	Leave open.
BCS Port 4	Connect to top port of external wastegate.

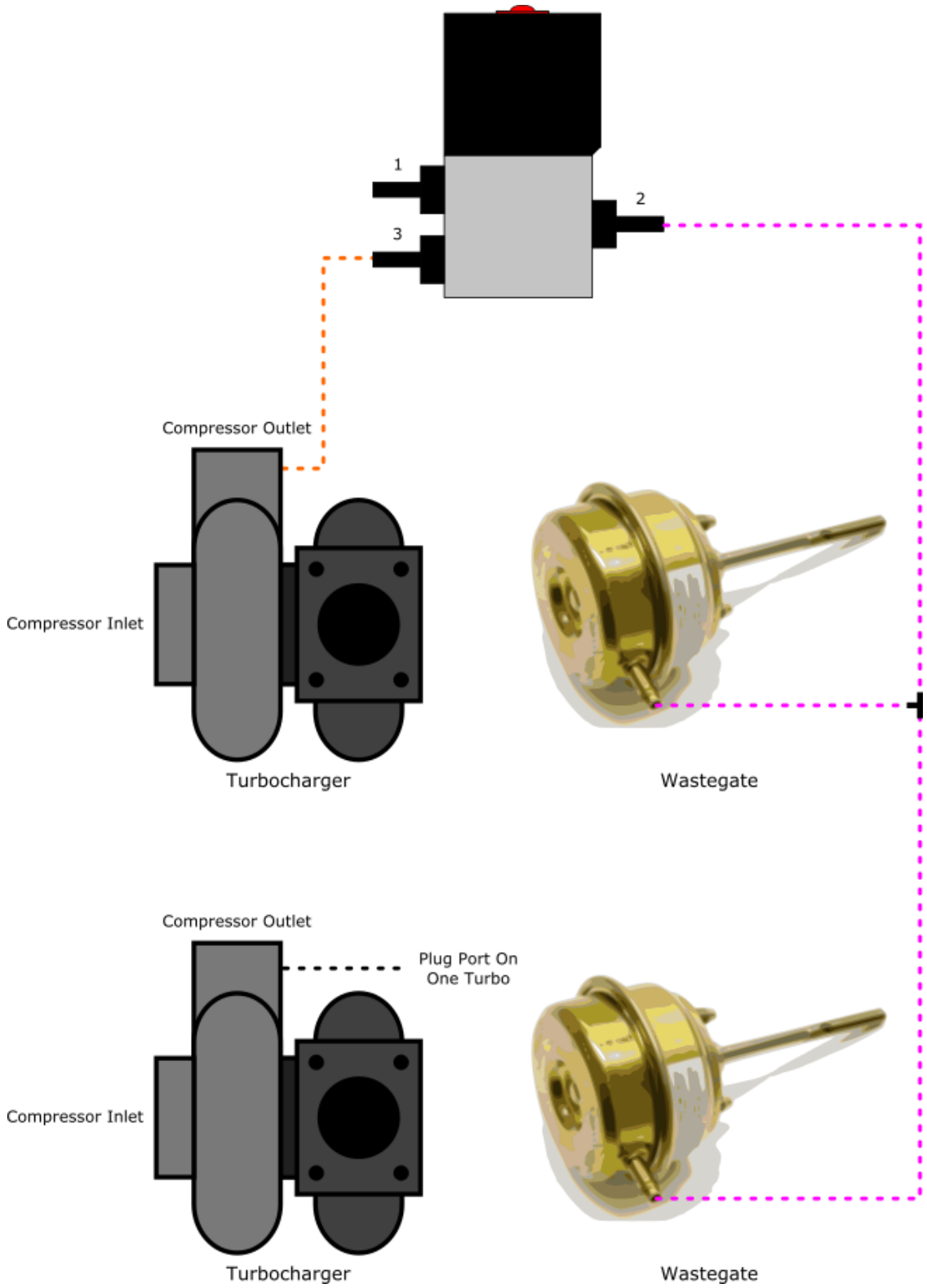
4-Port BCS As 3-Port BCS



BCS Port 1	Follow 3-Port BCS diagram for Port 1.
BCS Port 2	Plug.
BCS Port 3	Follow 3-Port BCS diagram for Port 3.
BCS Port 4	Follow 3-Port BCS diagram for **Port 2**.

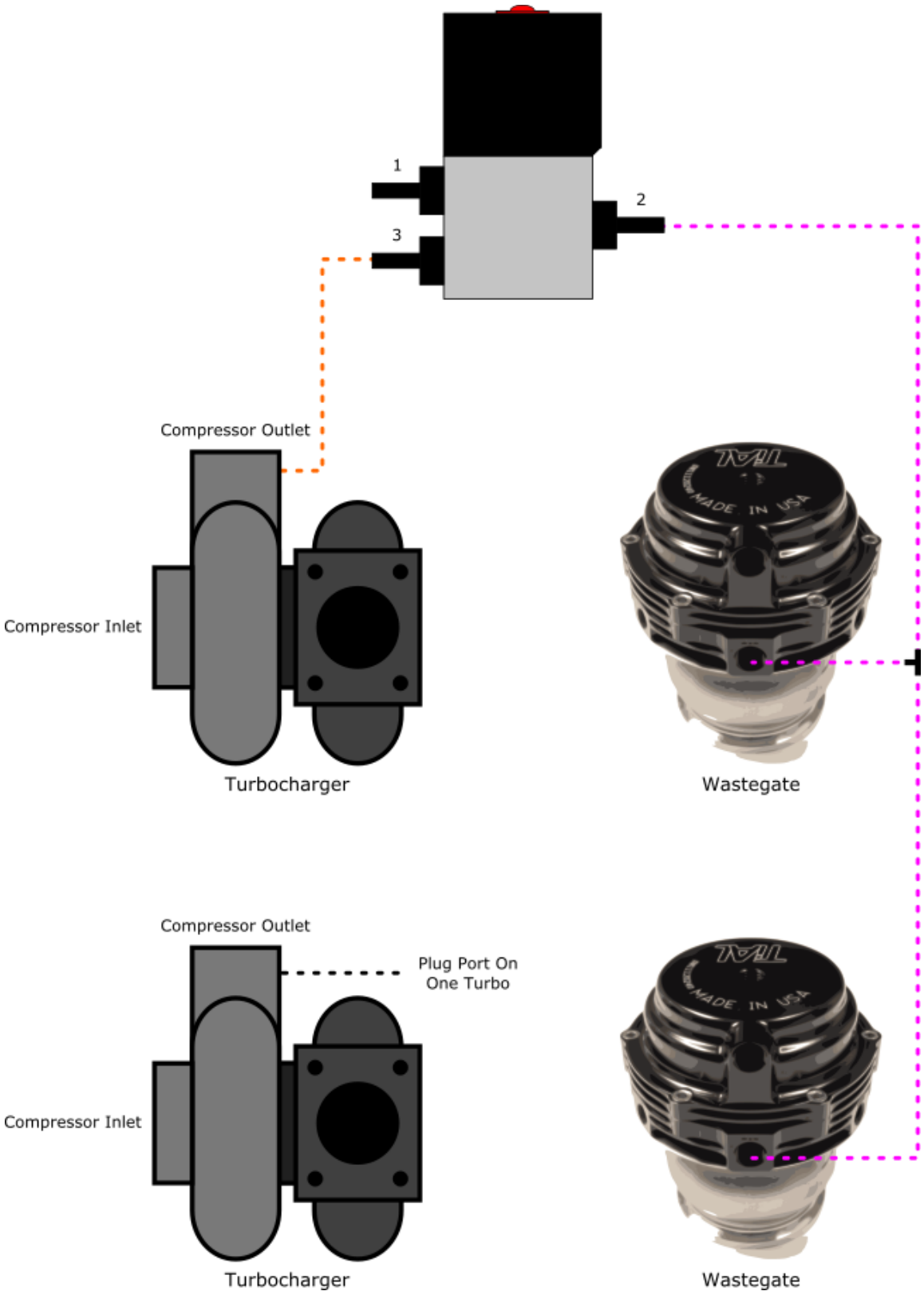
Boost Control Solenoid – Ingersoll Rand - Twin Turbo

3-Port BCS Internal Wastegate/Actuator Configuration



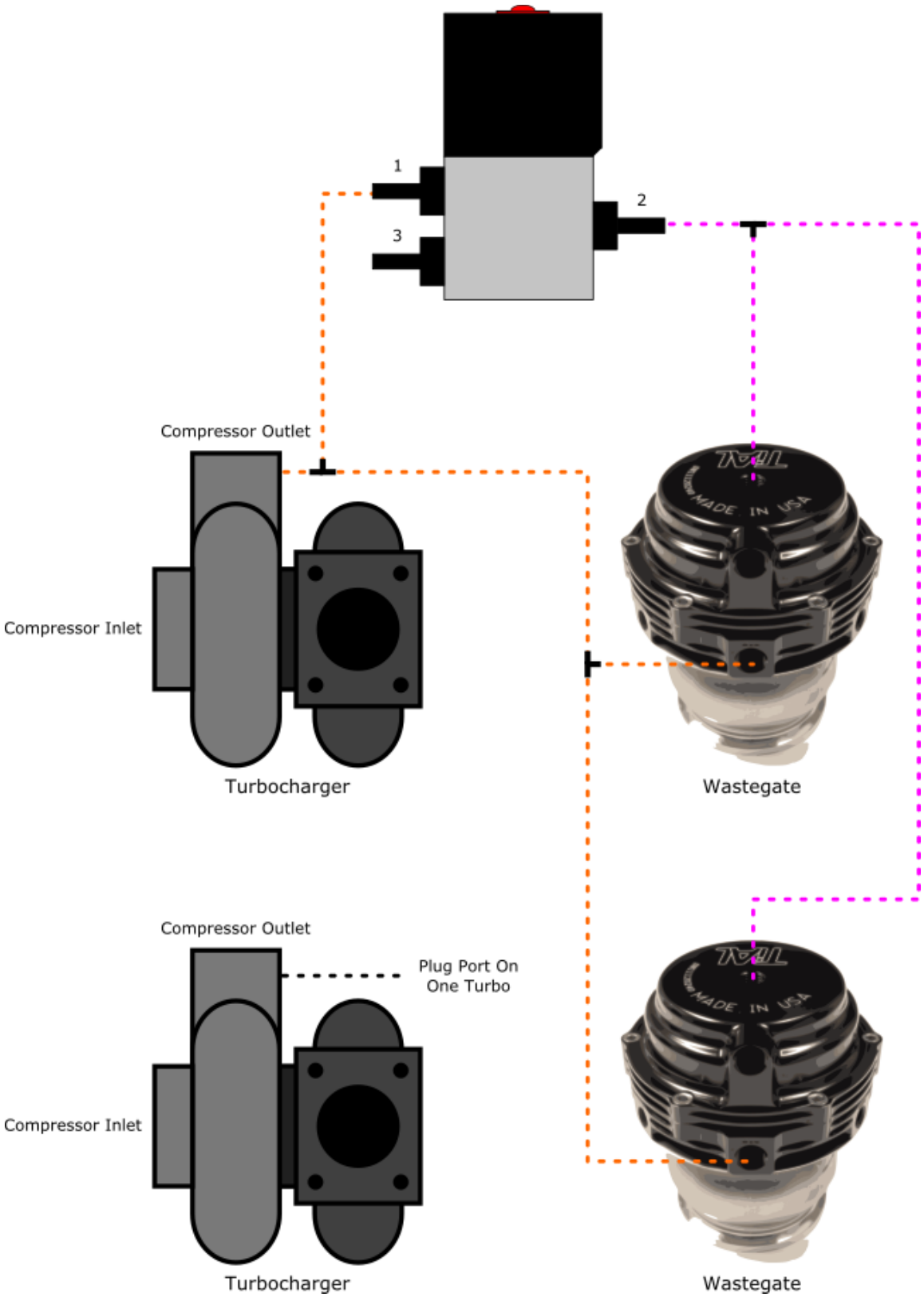
BCS Port 1	Leave open.
BCS Port 2	Connect to wastegate actuator pressure ports using hose tee fitting.
BCS Port 3	Connect BCS Port 3 to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.

3-Port BCS External Wastegate Configuration 1



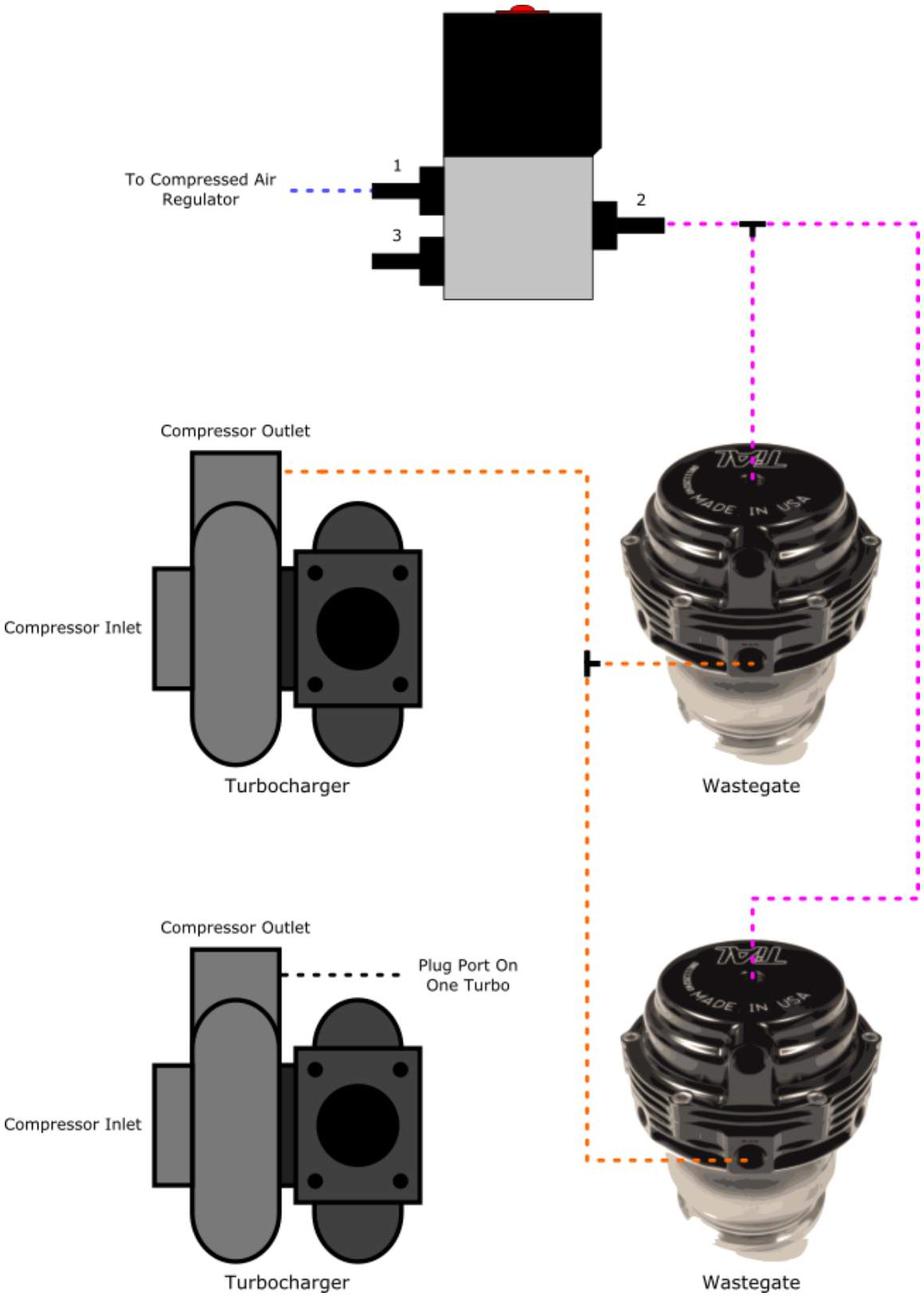
BCS Port 1	Leave open.
BCS Port 2	Connect BCS Port 2 to lower port on external wastegates using hose tee fitting. Leave upper wastegate ports open to atmosphere.
BCS Port 3	Connect BCS Port 3 to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.

3-Port BCS External Wastegate Configuration 2



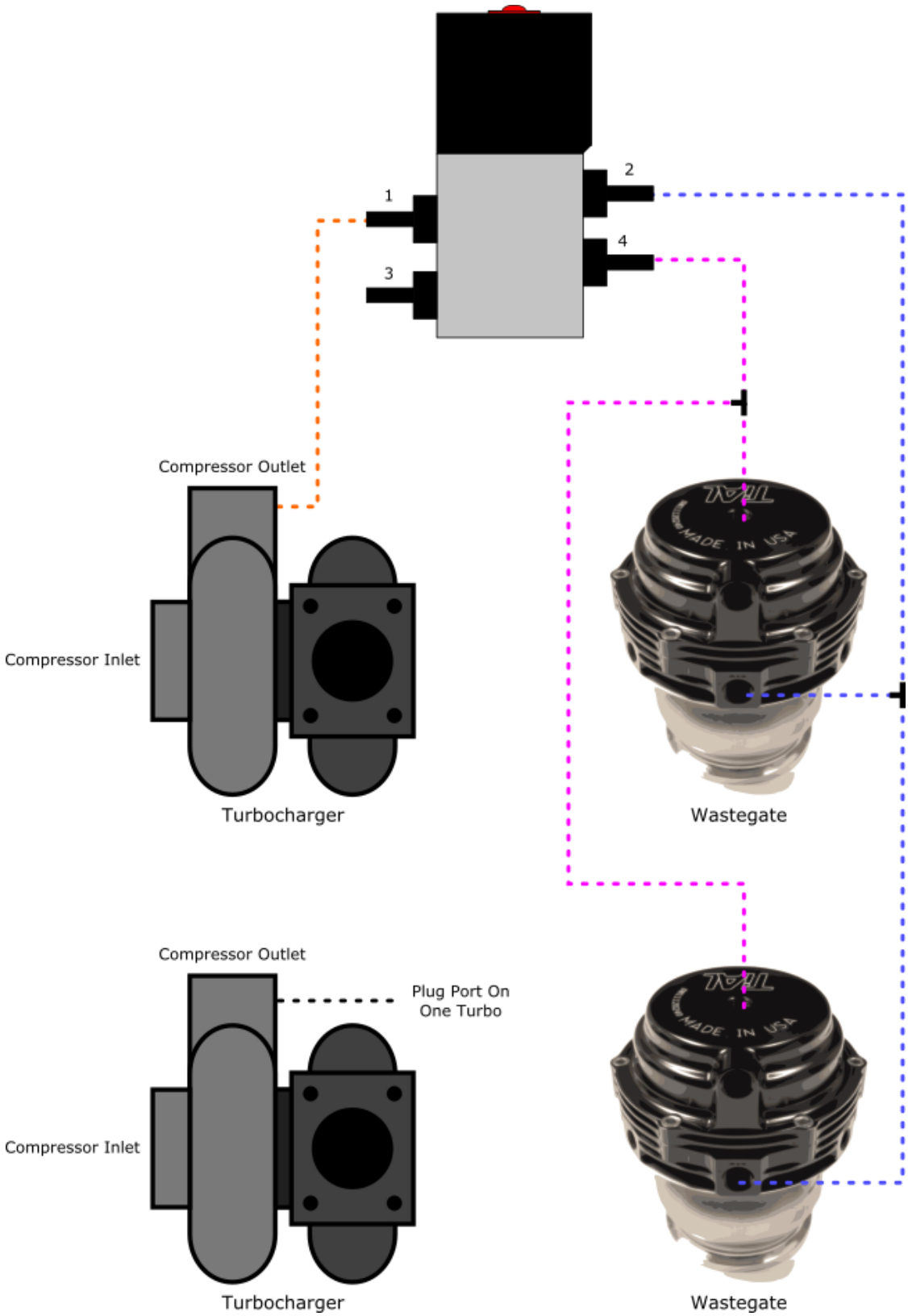
BCS Port 1	Connect BCS Port 1 to compressor outlet on one turbocharger AND lower port of external wastegates using two hose tee fittings. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port 2	Connect to top port of external wastegates using hose tee fitting.
BCS Port 3	Leave open.

3-Port BCS External Wastegate Compressed Air Configuration



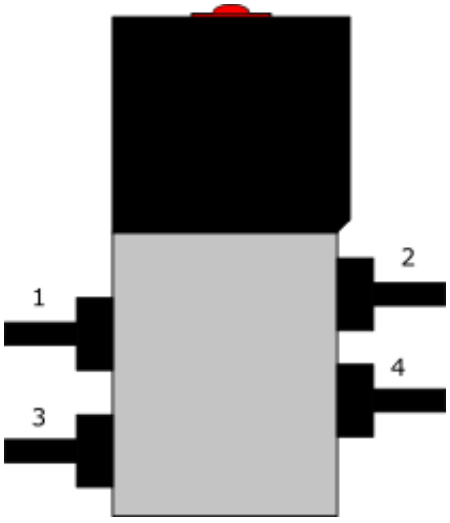
BCS Port 1	Connect to compressed air regulator.
BCS Port 2	Connect BCS Port 2 to top port of external wastegates using hose tee fitting. Connect compressor outlet on one turbocharger to lower port of external wastegates using hose tee fitting. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port 3	Leave open.

4-Port BCS External Wastegate Configuration



BCS Port 1	Connect BCS Port 1 to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port 2	Connect to lower port of external wastegates using hose tee fitting.
BCS Port 3	Leave open.
BCS Port 4	Connect to top port of external wastegates using hose tee fitting.

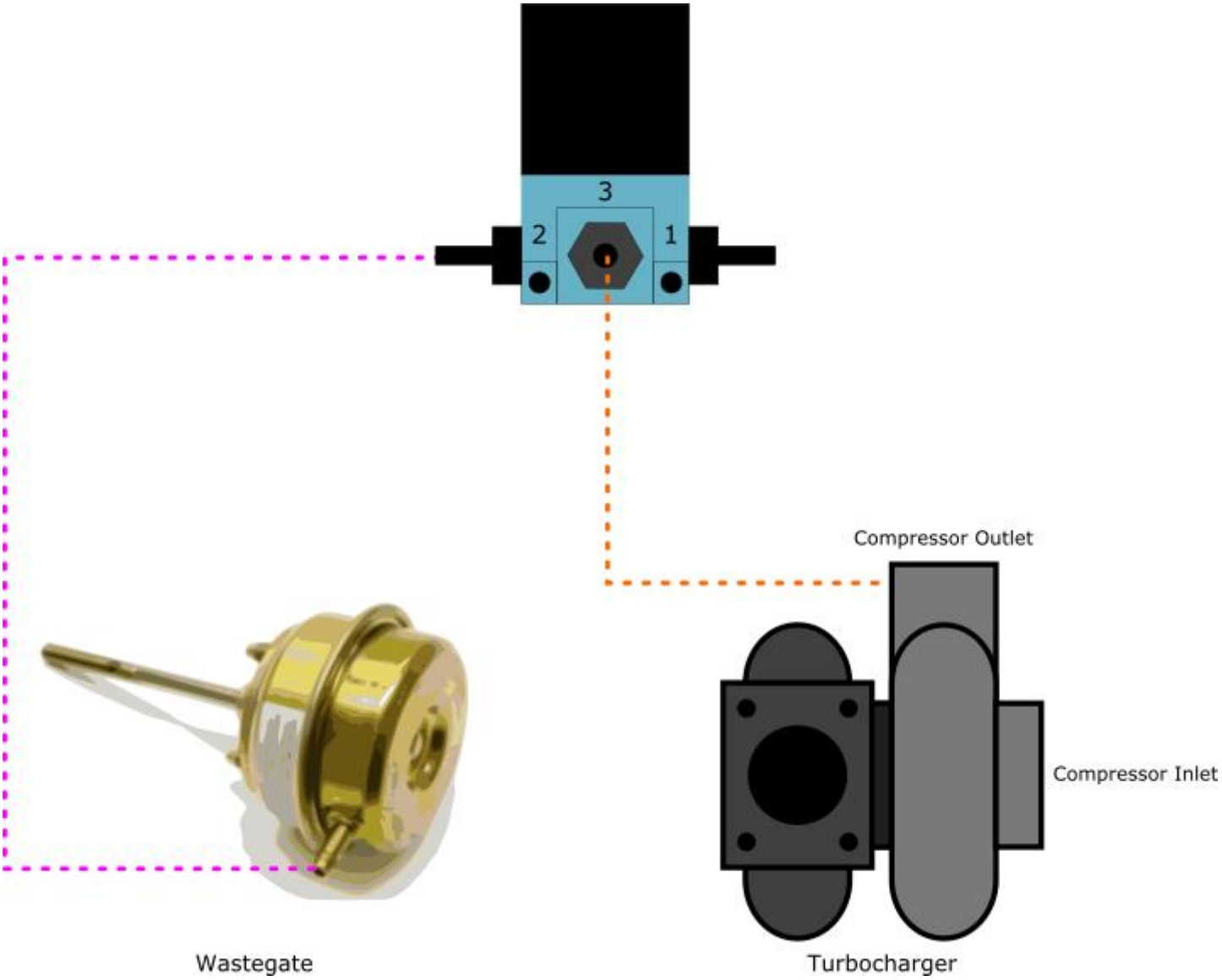
4-Port BCS As 3-Port BCS



BCS Port 1	Follow 3-Port BCS diagram for Port 1
BCS Port 2	Plug.
BCS Port 3	Follow 3-Port BCS diagram for Port 3.
BCS Port 4	Follow 3-Port BCS diagram for **Port 2**.

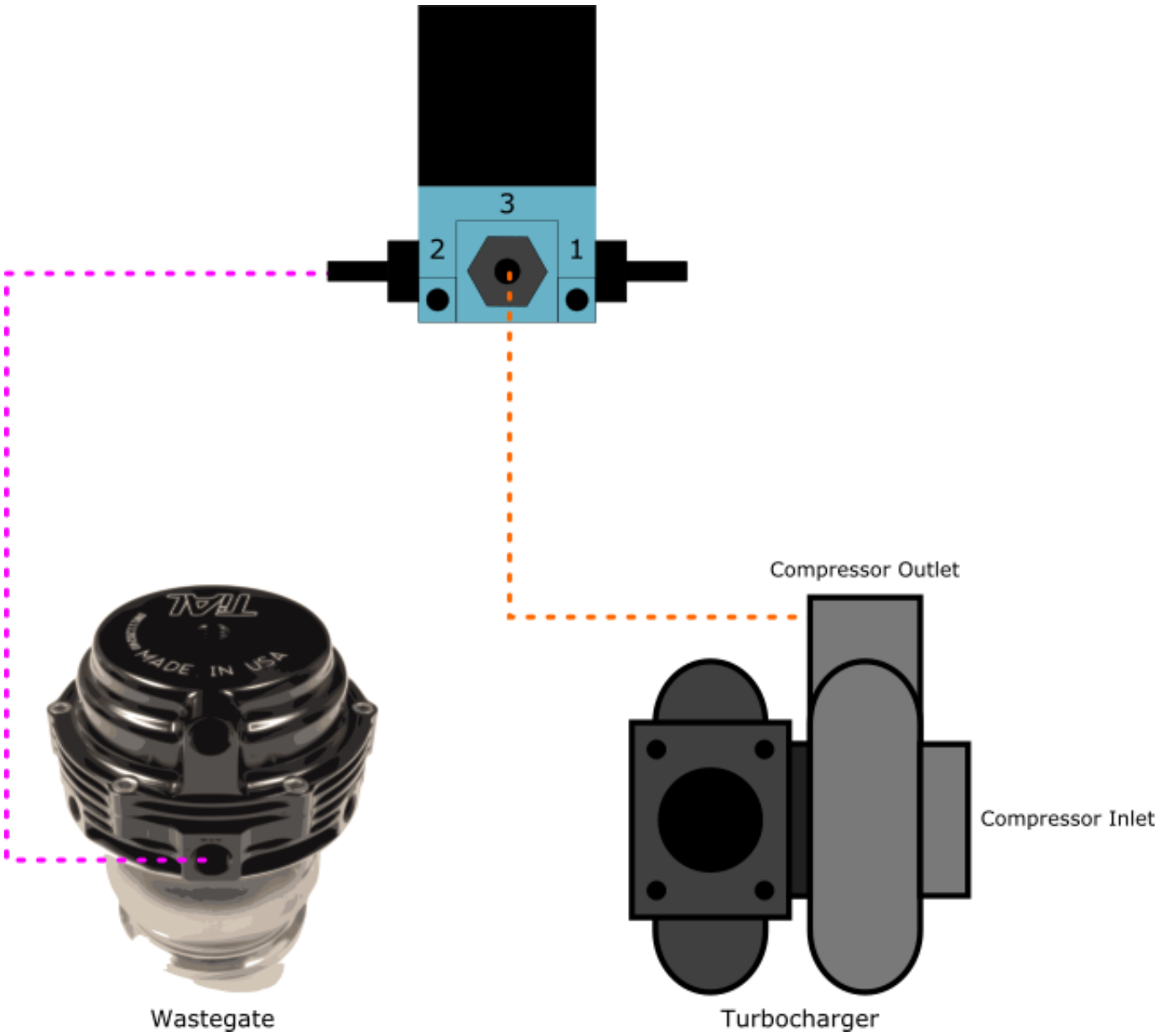
Boost Control Solenoid – MAC - Single Turbo

3-Port BCS Internal Wastegate/Actuator Configuration



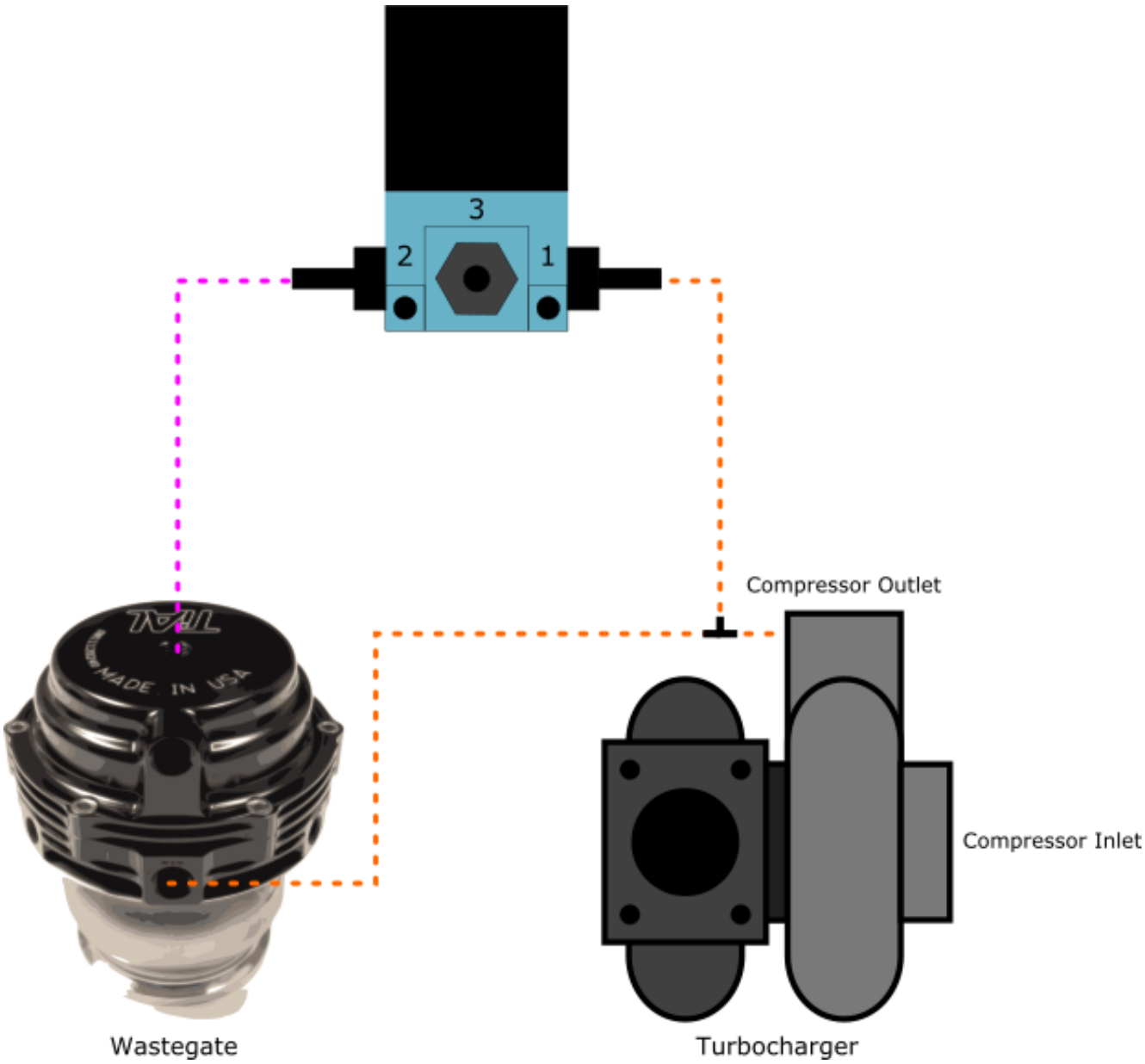
BCS Port 1	Leave open or connect to pre-turbocharger intake tract.
BCS Port 2	Connect to wastegate actuator pressure port.
BCS Port 3	Connect to compressor outlet on turbocharger.

3-Port BCS External Wastegate Configuration 1



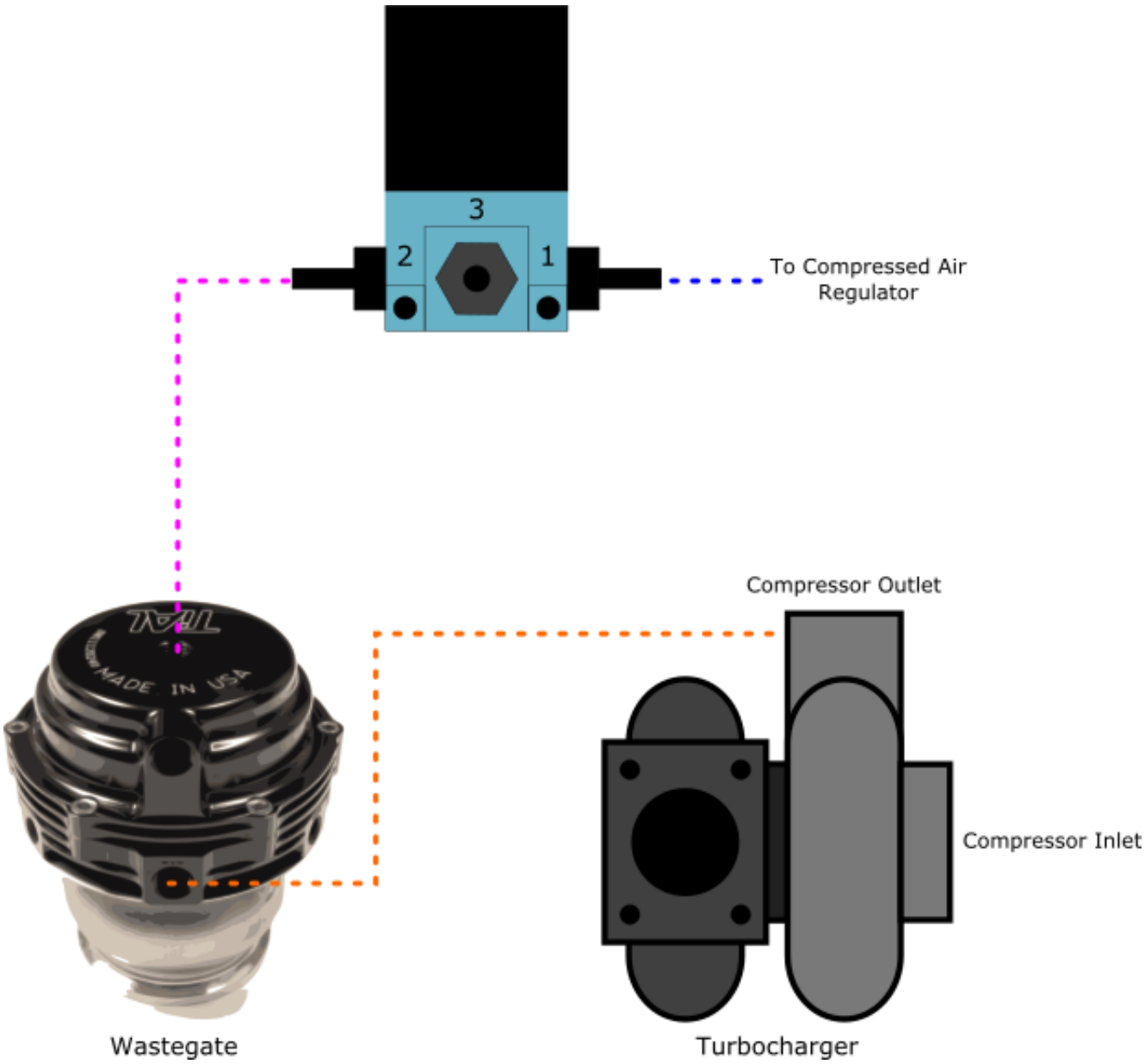
BCS Port 1	Leave open or connect to pre-turbocharger intake tract.
BCS Port 2	Connect BCS Port 2 to lower port on external wastegate. Leave top wastegate port open to atmosphere.
BCS Port 3	Connect to compressor outlet on turbocharger.

3-Port BCS External Wastegate Configuration 2



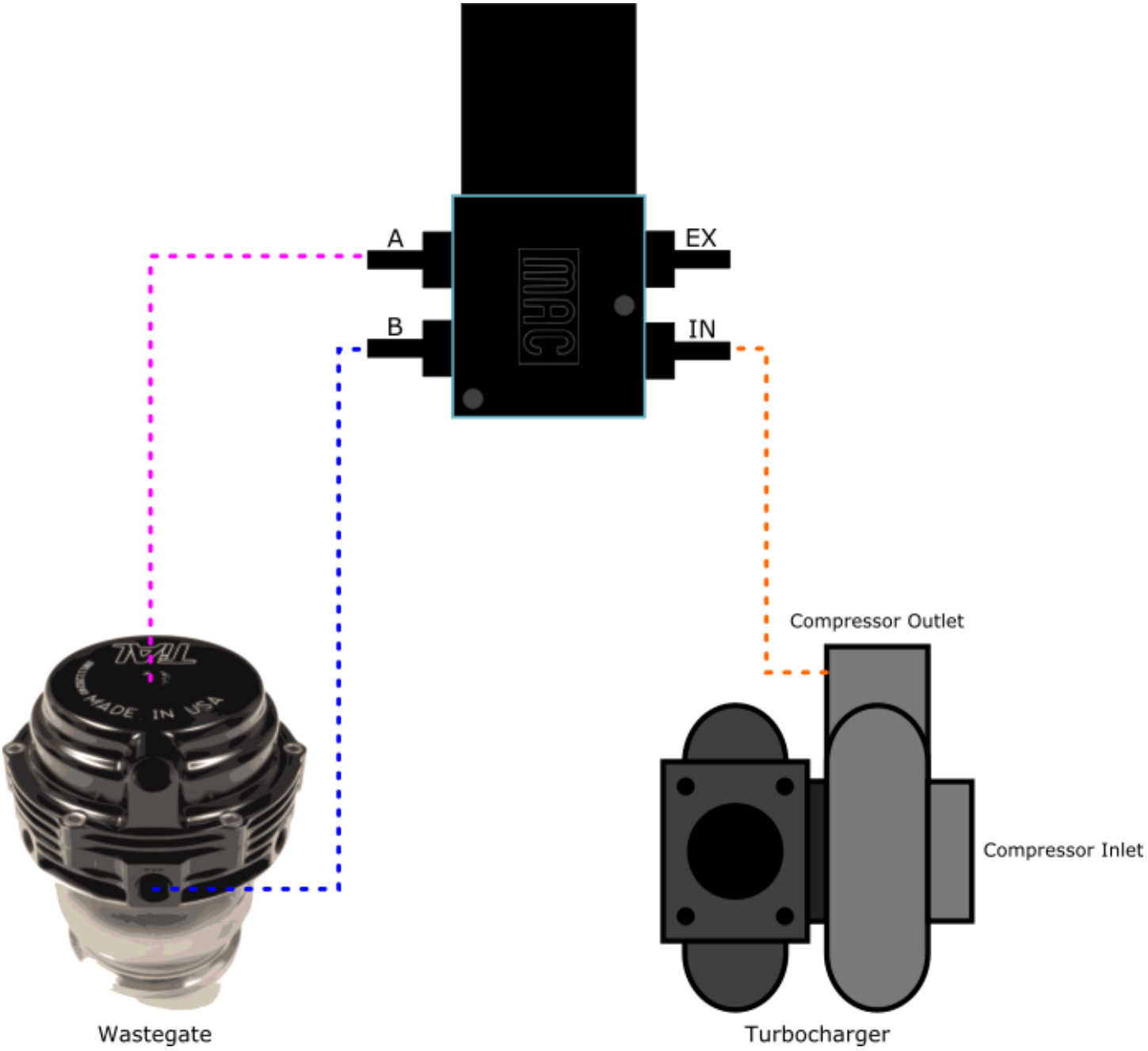
BCS Port 1	Connect to compressor outlet on turbocharger **AND** lower port of external wastegate using hose tee fitting.
BCS Port 2	Connect to top port of external wastegate.
BCS Port 3	Leave open.

3-Port BCS External Wastegate Compressed Air Configuration



BCS Port 1	Connect to compressed air regulator.
BCS Port 2	Connect BCS Port 2 to top port of external wastegate. Connect compressor outlet on turbocharger to lower port of external wastegate.
BCS Port 3	Leave open.

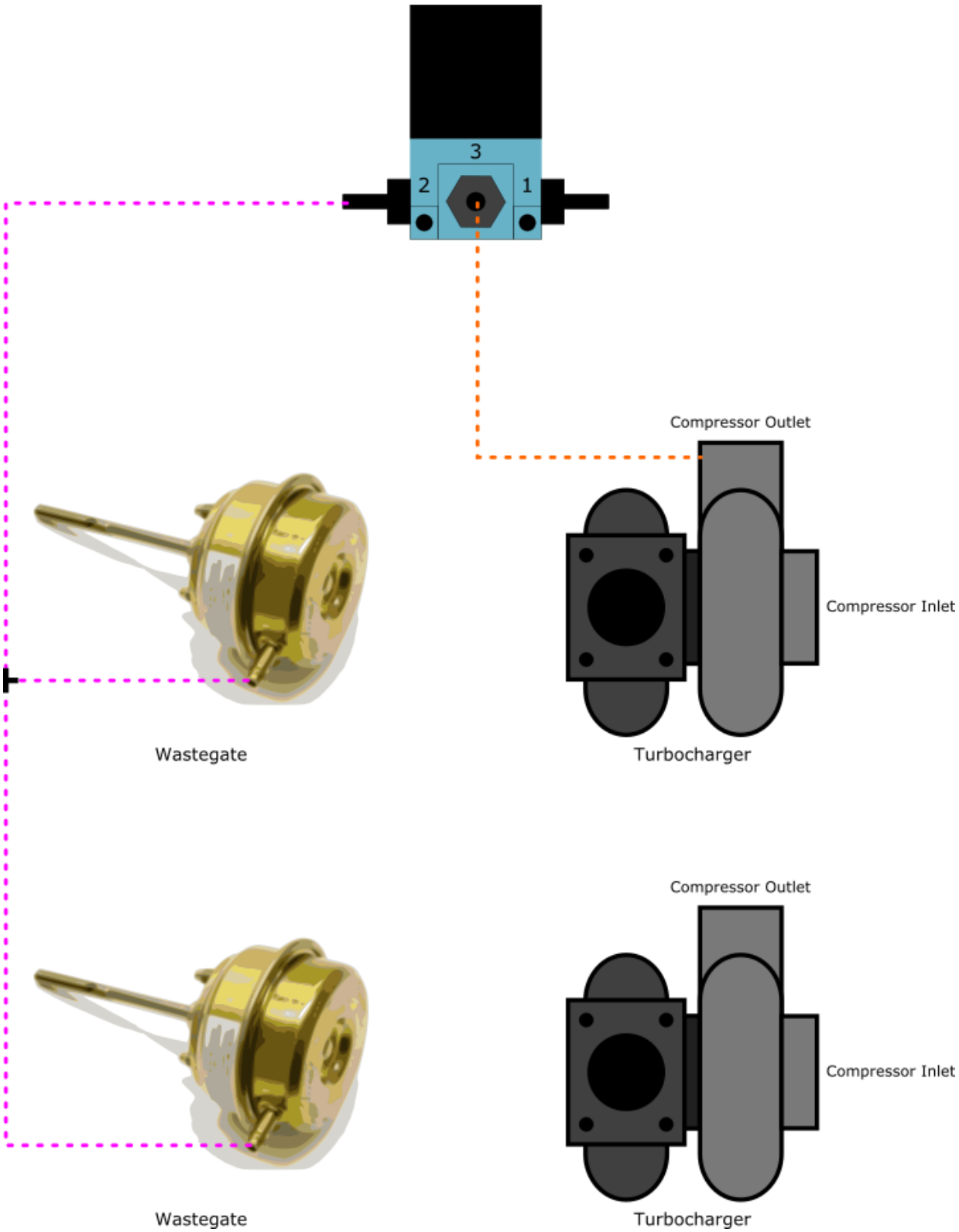
4-Port BCS External Wastegate Configuration



BCS Port IN	Connect to compressor outlet on turbocharger.
BCS Port B	Connect to lower port of external wastegate.
BCS Port EX	Leave open.
BCS Port A	Connect to top port of external wastegate.

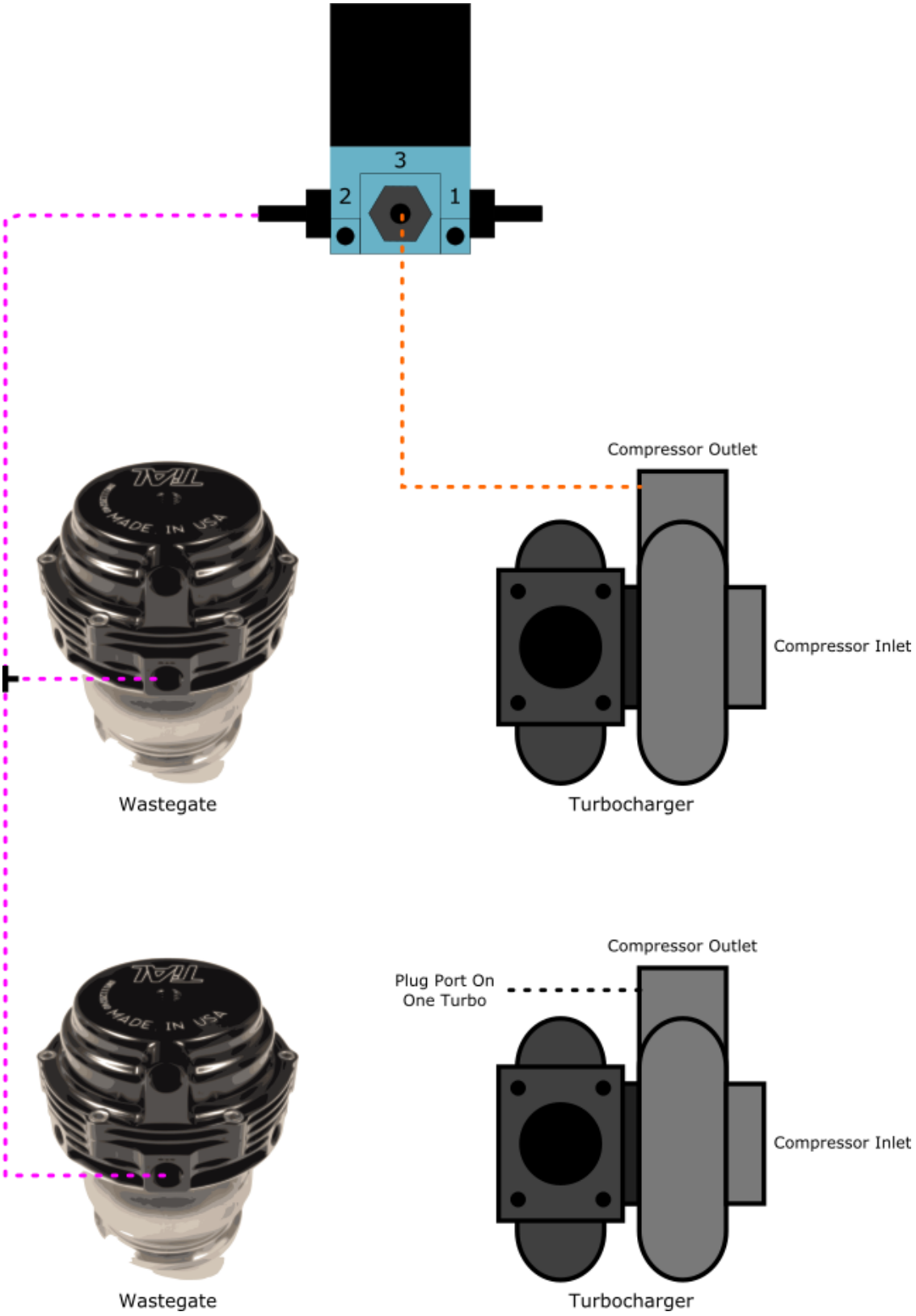
Boost Control Solenoid - MAC – Twin Turbo

3-Port BCS Internal Wastegate/Actuator Configuration



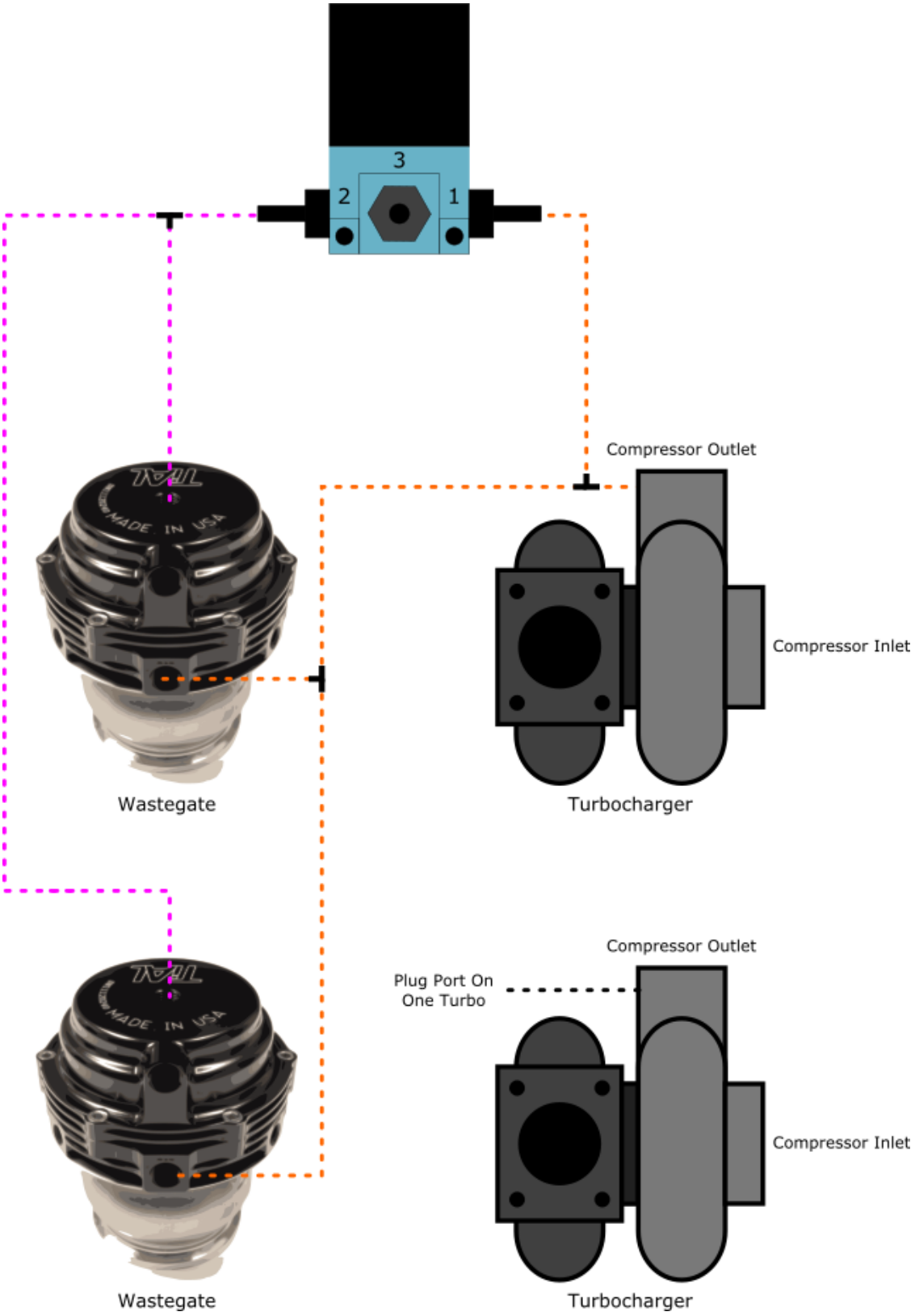
BCS Port 1	Leave open.
BCS Port 2	Connect to wastegate actuator pressure ports using hose tee fitting.
BCS Port 3	Connect BCS Port 3 to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.

3-Port BCS External Wastegate Configuration 1



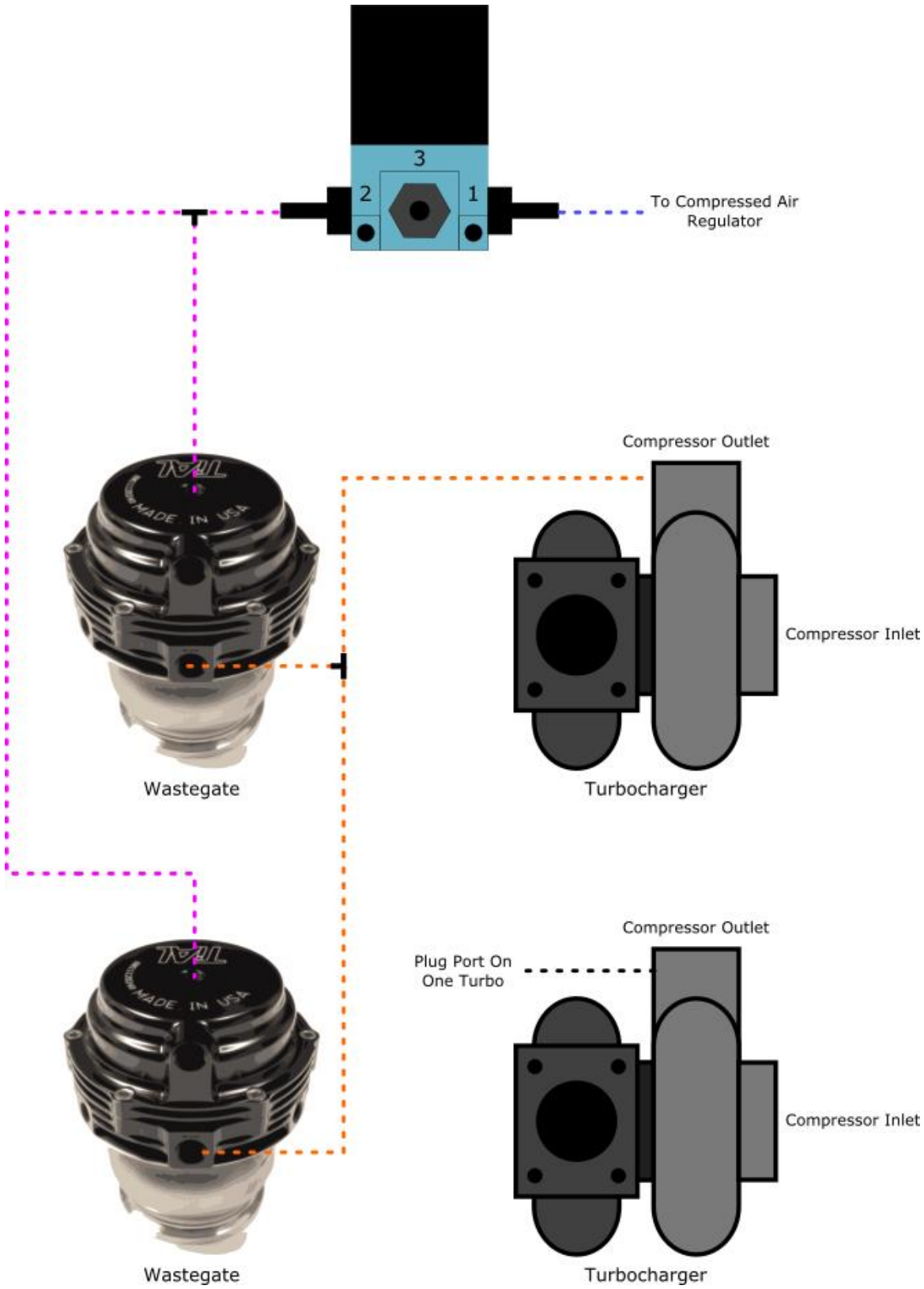
BCS Port 1	Leave open.
BCS Port 2	Connect BCS Port 2 to lower port on external wastegates using hose tee fitting. Leave upper wastegate ports open to atmosphere.
BCS Port 3	Connect BCS Port 3 to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.

3-Port BCS External Wastegate Configuration 2



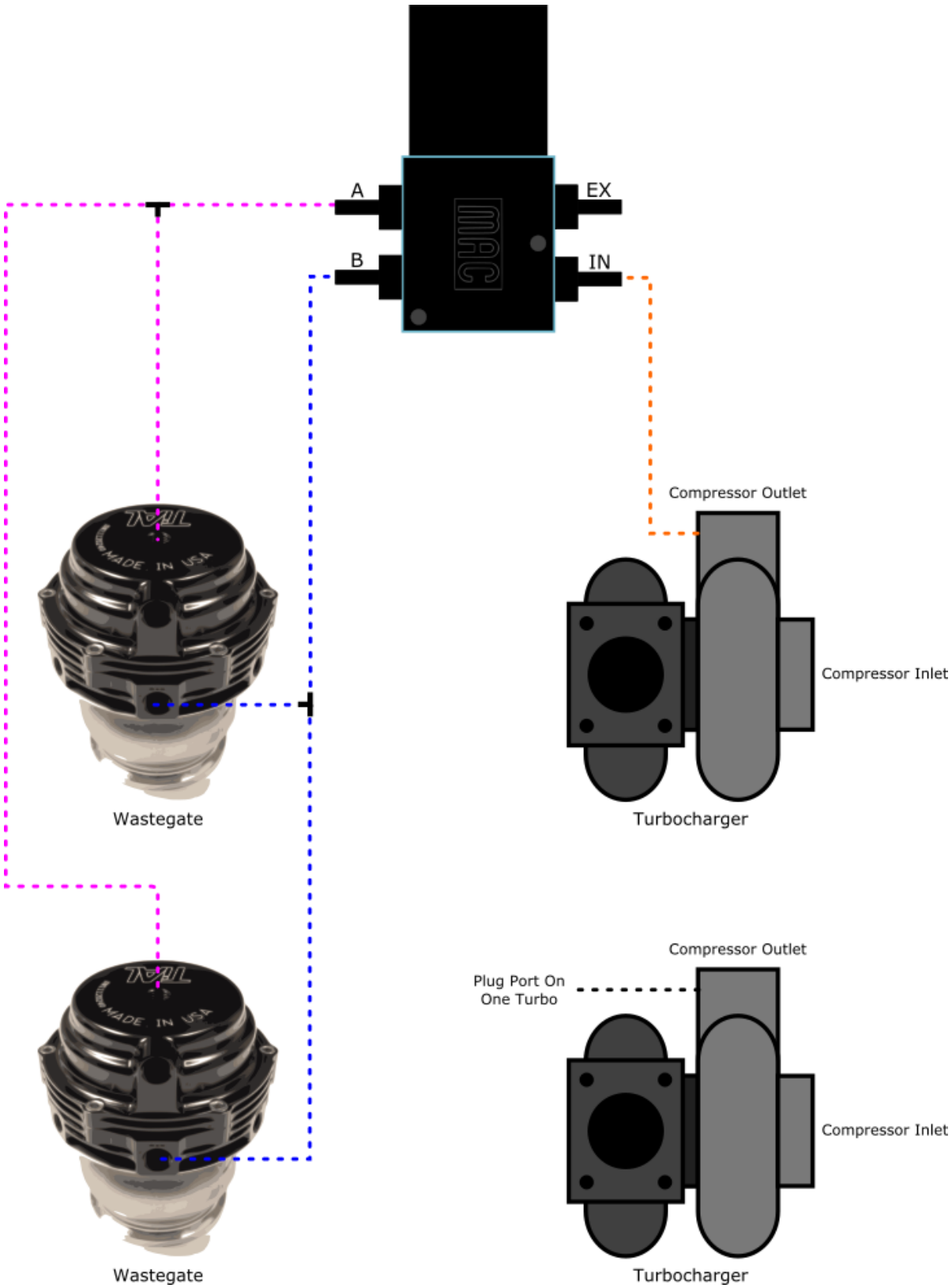
BCS Port 1	Connect BCS Port 1 to compressor outlet on one turbocharger AND lower port of external wastegates using two hose tee fittings. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port 2	Connect to top port of external wastegates using hose tee fitting.
BCS Port 3	Leave open.

3-Port BCS External Wastegate Compressed Air Configuration



BCS Port 1	Connect to compressed air regulator.
BCS Port 2	Connect BCS Port 2 to top port of external wastegates using hose tee fitting. Connect compressor outlet on one turbocharger to lower port of external wastegates using hose tee fitting. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port 3	Leave open.

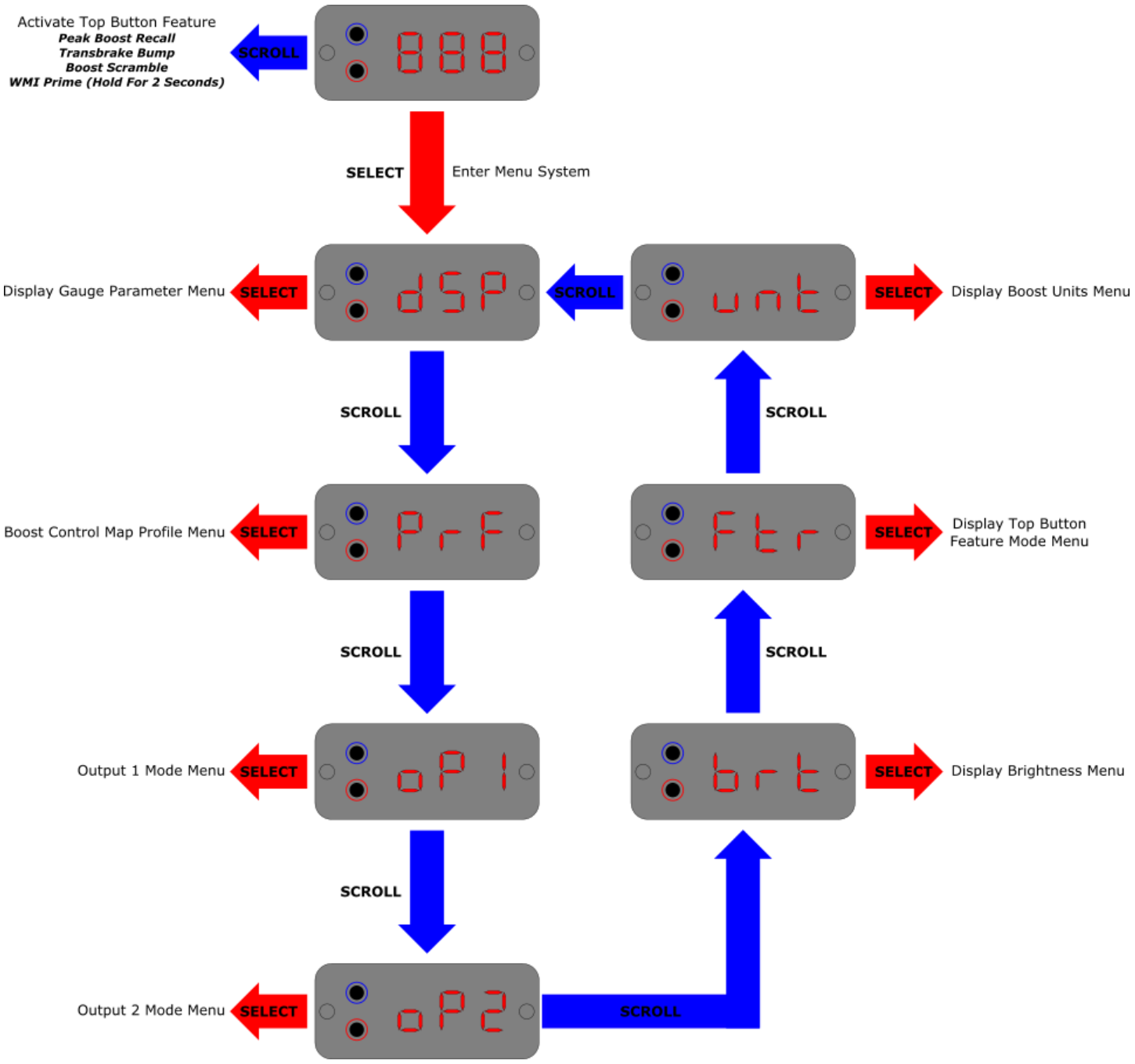
4-Port BCS External Wastegate Configuration



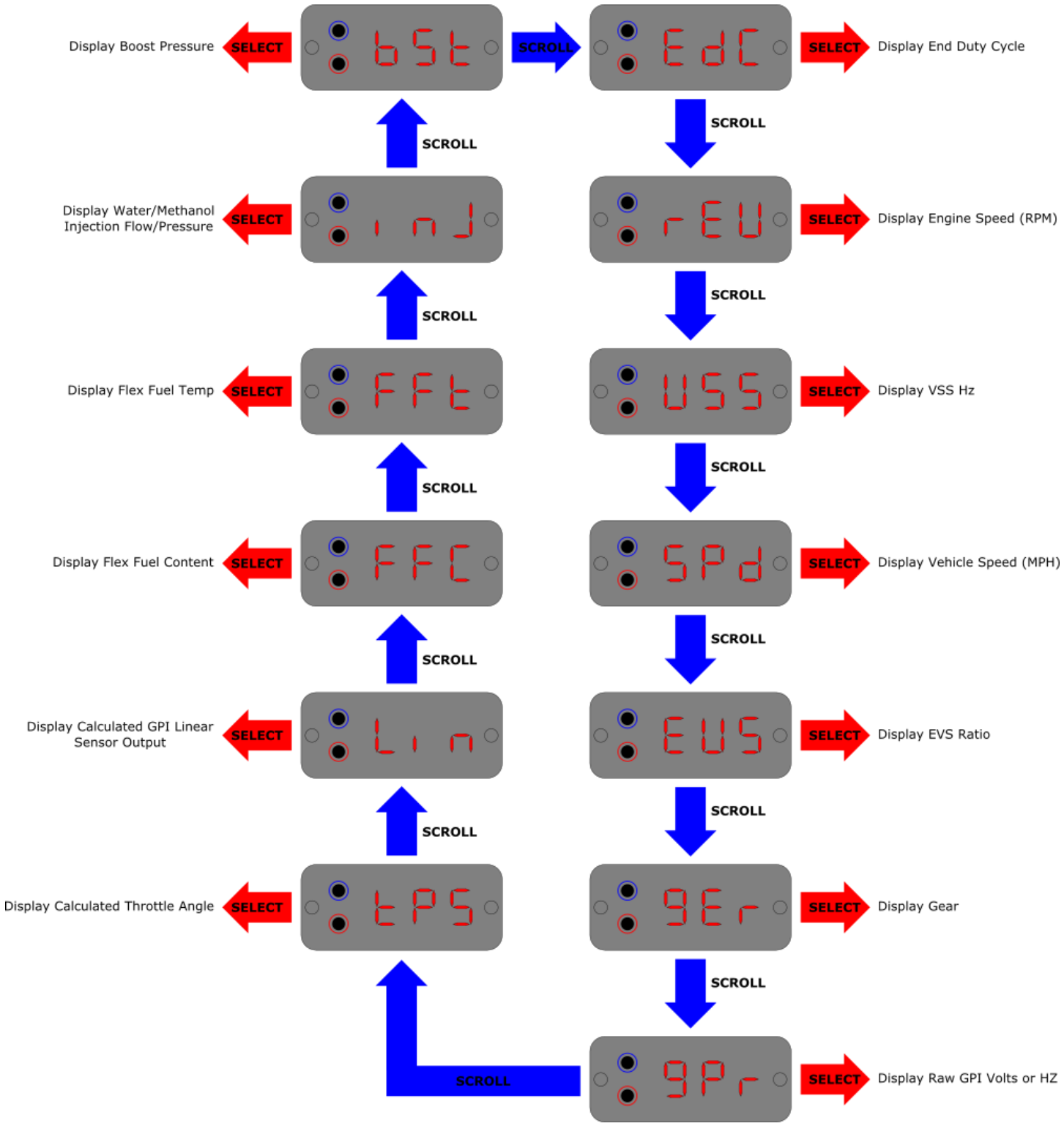
BCS Port IN	Connect BCS Port IN to compressor outlet on one turbocharger. Plug compressor outlet pressure port on remaining turbocharger.
BCS Port B	Connect to lower port of external wastegates using hose tee fitting.
BCS Port EX	Leave open.
BCS Port A	Connect to top port of external wastegates using hose tee fitting.

Device Menu Flow Diagrams

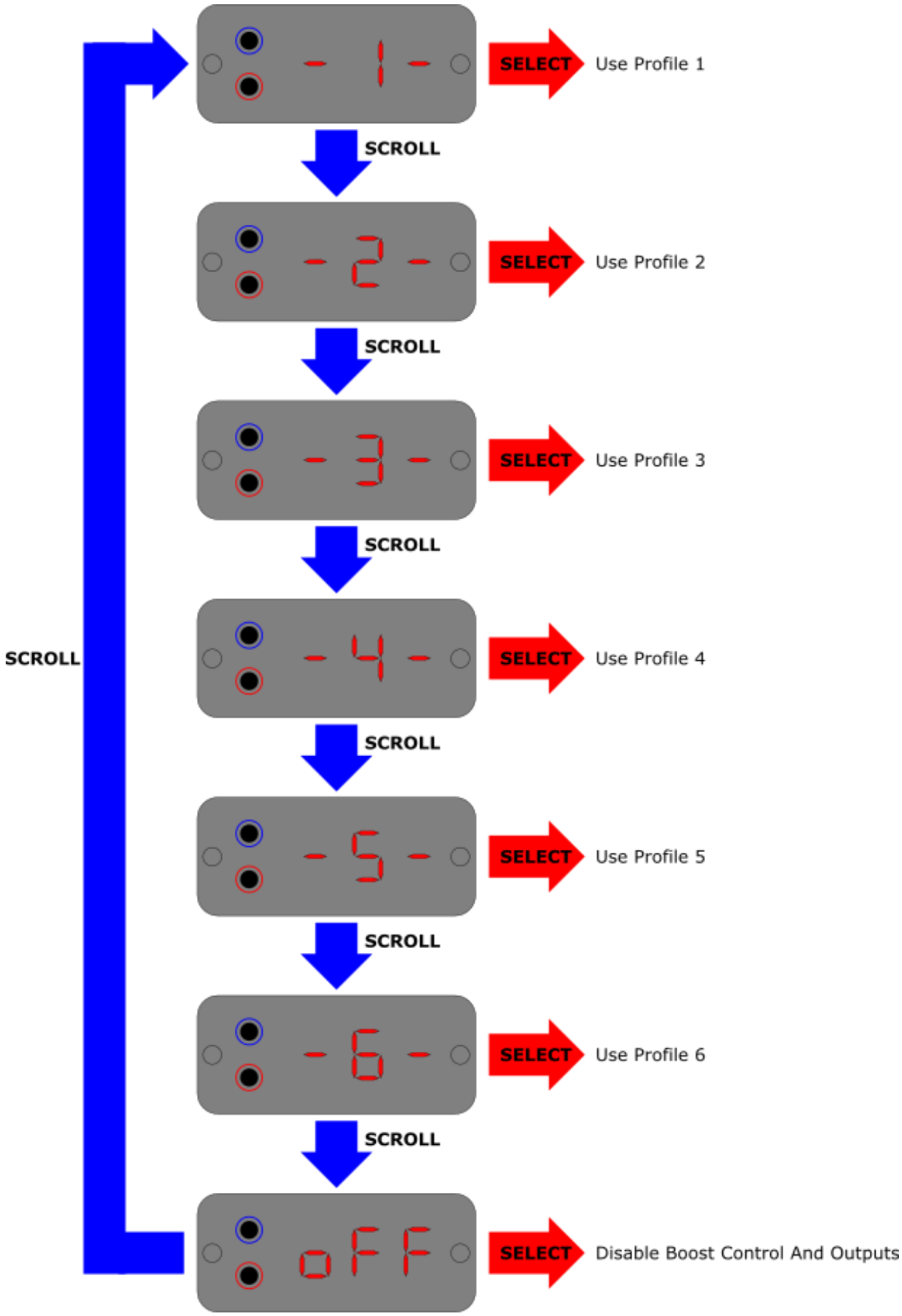
Main Menu Flow Diagram



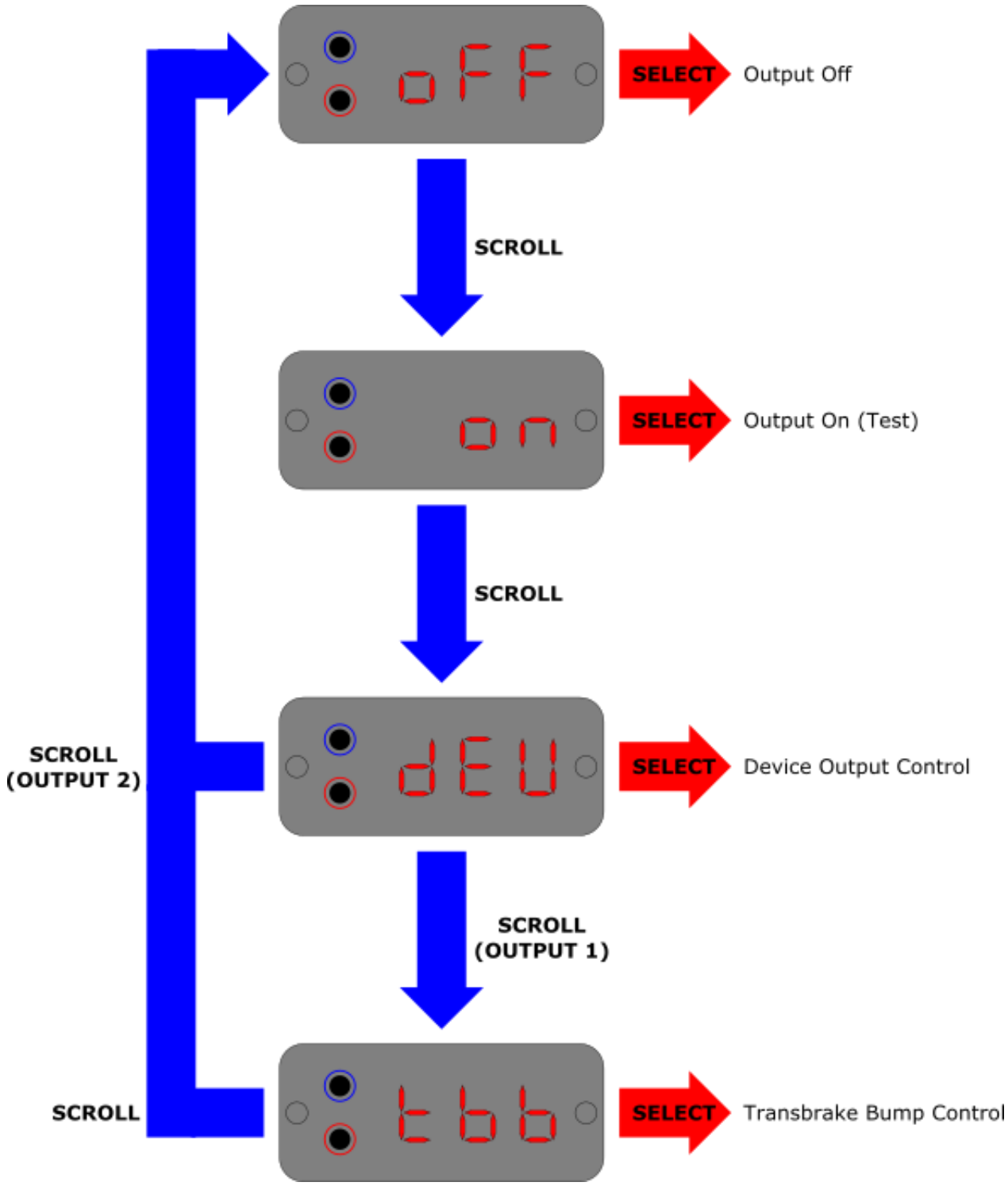
Display Gauge Parameter Flow Menu



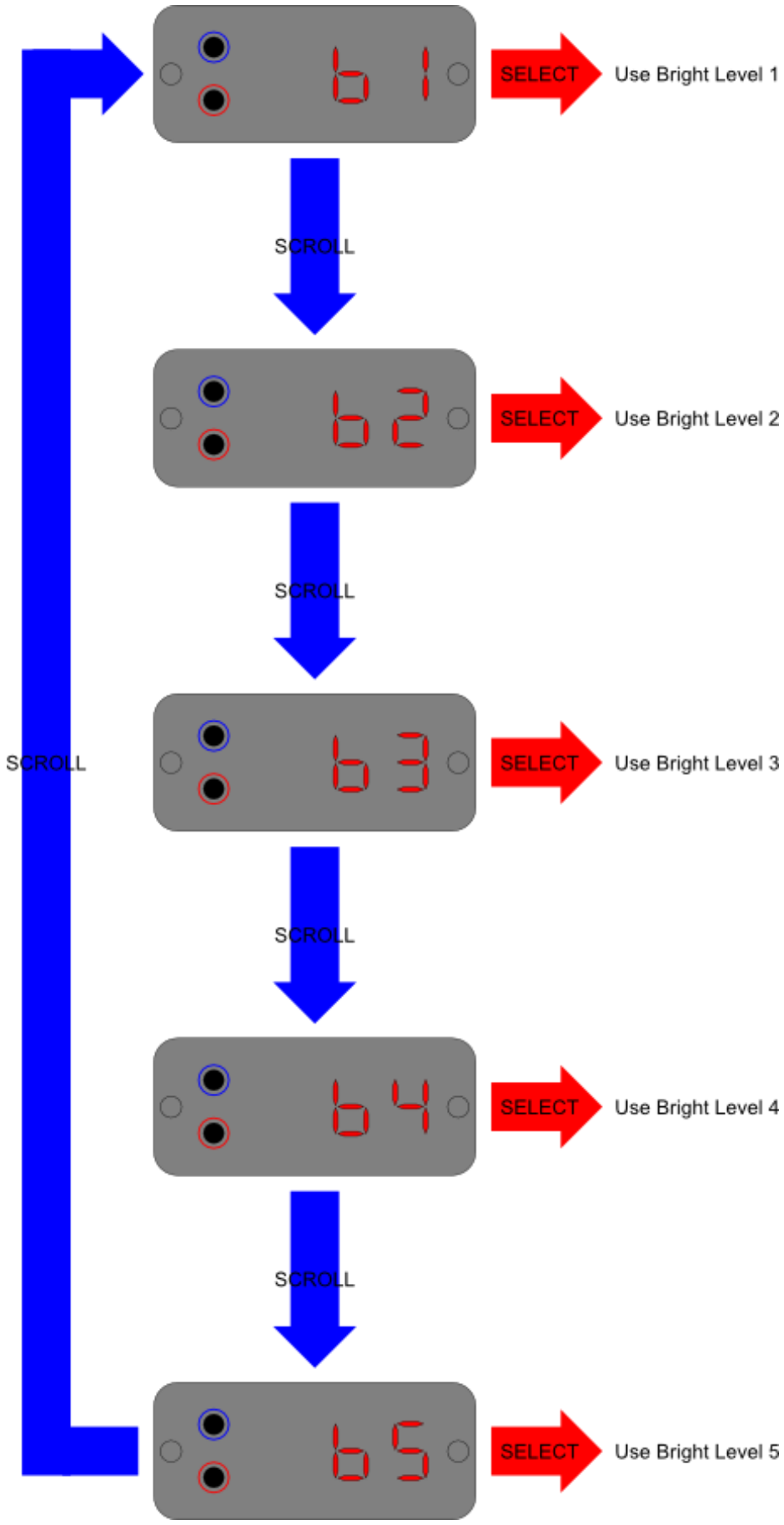
Boost Control Profile Menu Flow Diagram



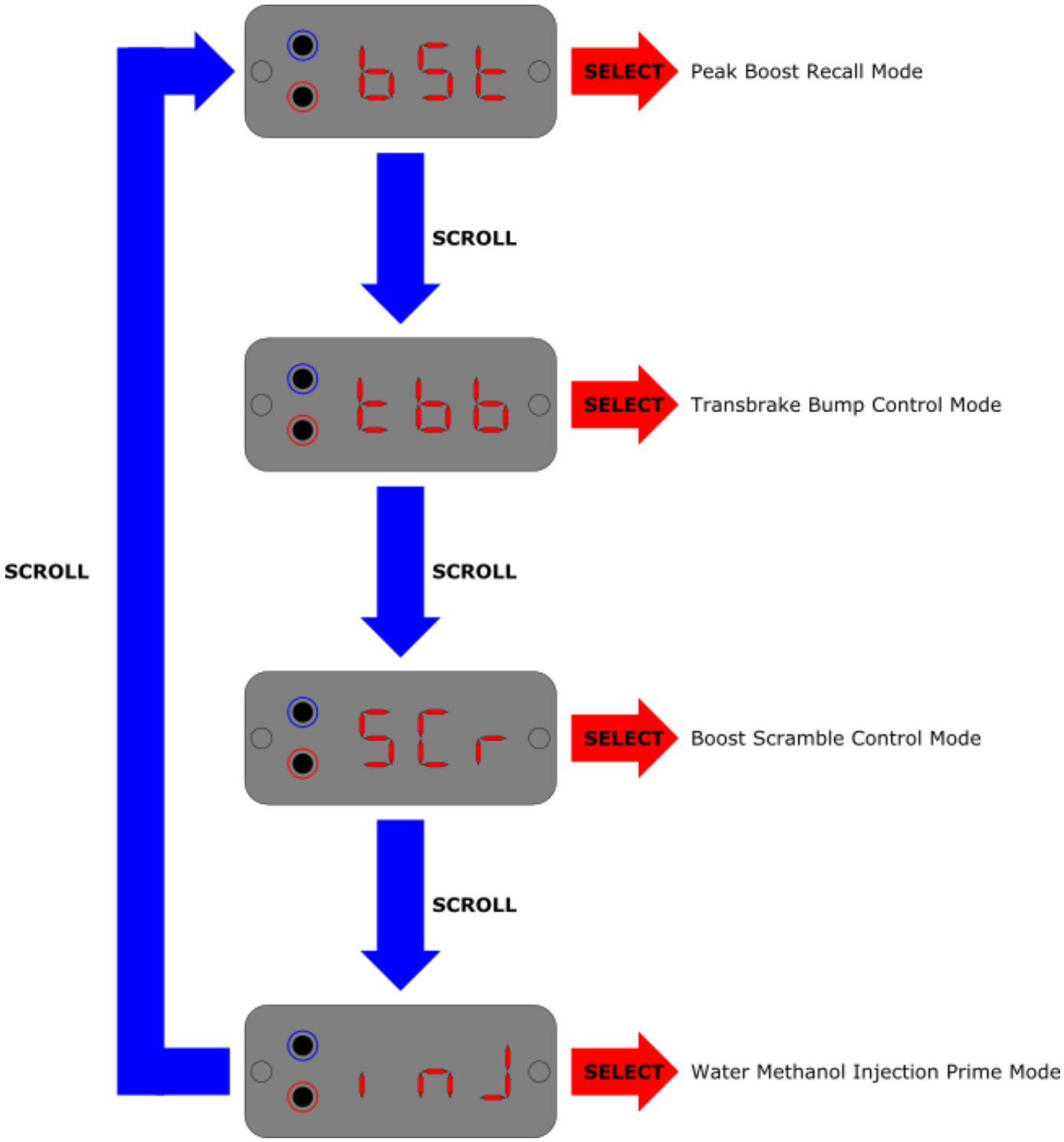
Programmable Output Mode Menu Flow Diagram



Display Brightness Menu Flow Diagram



Display Feature Menu Flow Diagram



Display Boost Units Menu Flow Diagram