FW:1.49.57

VP-16 Performance Chip

Installation
Instructions

CONTENTS

WARNING

Never Operate Your Vehicle In An Unsafe Manner
Never exceed legal speed limits on Public Streets. Performance tests, such as Dyno run or acceleration tests, should only be performed on a closed circuit. A loss of control from speeding could occur, causing serious or fatal injuries to yourself or other motorists.

Do Not Use Touchscreen While Driving
Come to a complete stop to adjust settings or review information.

Potential Risk of Damage
Performance Testing/tuning is inherently stressful to your vehicle's engine and drivetrain. It is your responsibility to ensure your vehicle is in good working order and capable of handling these stresses before proceeding.

Battery Drain
The VP16 will automatically enter low-power Sleep Mode when the vehicle is turned off. The VP16 Should be disconnected if you plan to park your vehicle for more than a week.

Bus Interference
Do not use OBD splitters or stack other OBD devices with the VP16, including scanners, monitors, modules, or other tuners. Additional devices will interfere with the VP16 and cause erratic results.

Parts

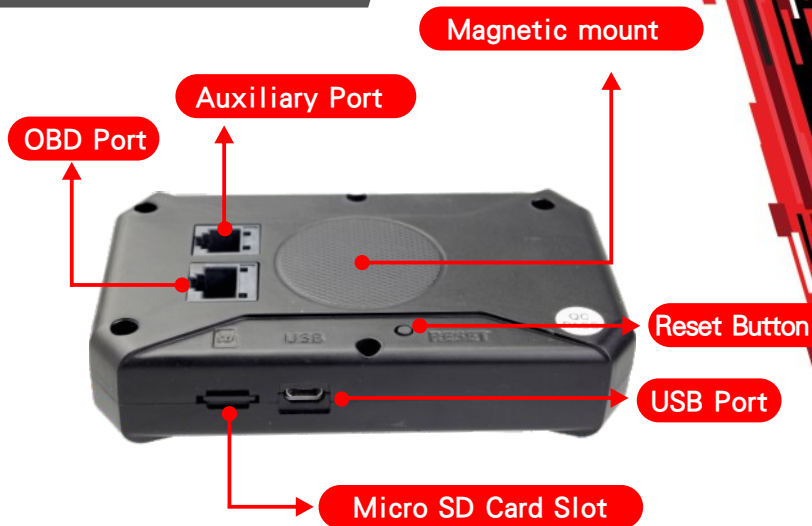**Volo VP-16 Performance Chip**

Windshield Mount

OBD Cable

Micro SD Card

256MB

USB adaptor

Overview

Magnetic mount

Auxiliary Port

OBD Port

Reset Button

USB Port

Micro SD Card Slot

Auxiliary Port Setup

The Auxiliary Port can be used to control external devices based on engine parameters. Visit www.volochip.tw/vp-16 for a detailed Auxiliary Port setup guide.

Micro SD Card

Micro SD Card holds all of your settings and vehicle specific information, and is also used to update firmware.

Removal

Push in First

Then Remove

USB Adaptor

Insert Card into Reader Then

Plug Reader into USB

★Do Not format the SD card, otherwise the VP-16 will not work properly.

★If you need to replace the SD card, please contact Volo Performance Inc. or your local distributors.

VP-16 Setup

★If you select dealer program, then you can skip this step.

1. Remove Micro SD Card

- Remove Micro SD Card
- Insert Micro SD Card into the included USB adaptor, then plug the adapter into your PC.

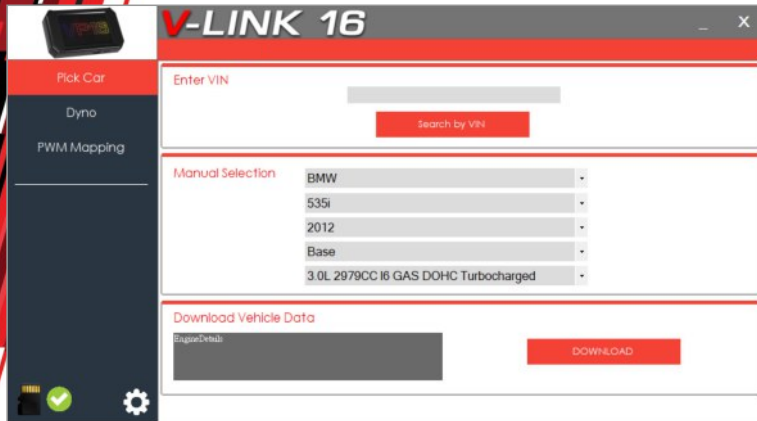★Do Not format the SD card, otherwise the VP-16 will not work properly.

2. Install VLINK-16

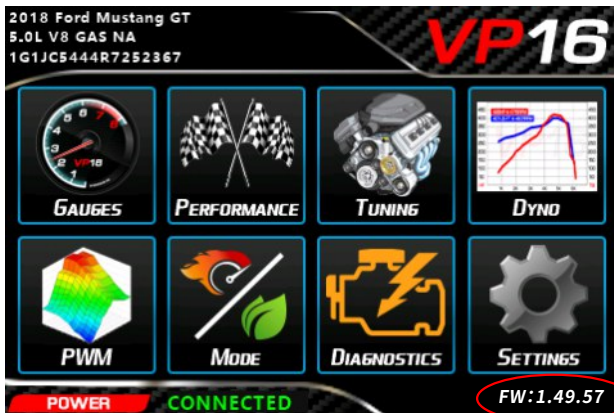- Visit www.volochip.tw/vp-16 to download and install VLINK-16 program.

- Start VLINK-16 program, make sure the ✓ is displayed next to the SD card icon on the lower left corner before setting. Then select the mark, model, year, sub-model, and engine of your vehicle from the drop-down menu, then click the DOWNLOAD to save the settings into your SD card.
- Or enter your VIN number to automatically download vehicle tuning data to your Micro SD Card.
- Return the Micro SD Card to Vp16
- Each time when you start VLINK-16 program, it will automatically run updates if your computer stays connected with the Internet. It will not be notified if there are any differences between the installation instructions and the actual updates.

★Follow your VP16's on-screen instructions to complete the tuning and calibration.

★If you need to install VP-16 Performance Chip to a new vehicle, please follow the steps above to re-program the vehicle settings.

VP-16 Firmware Update Process

★The VP-16 firmware will be updated from time to time. If there is a firmware update, follow this page to update it.

★Please follow the official volochip Facebook site to receive updates.

  www.facebook.com/volochip/

★Please confirm your current firmware version before running updates.
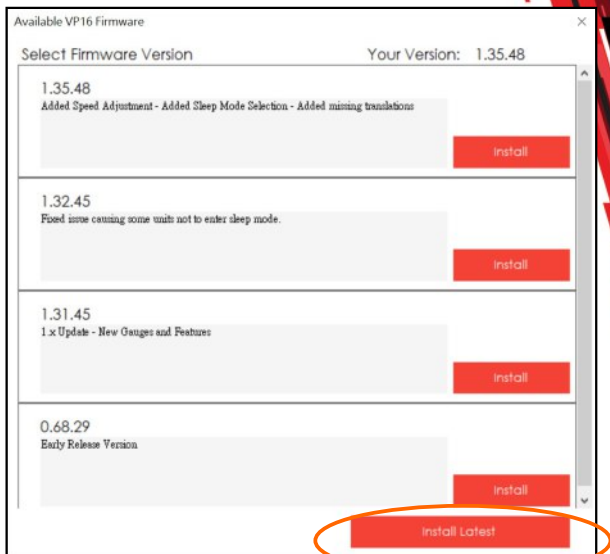
1. Remove Micro SD Card

- Remove Micro SD Card from VP-16
- Insert Micro SD Card into the included USB adapter.

2. The Update Process

- Visit www.volochip.tw/vp-16 to download and install VLINK-16 program.
- Start VLINK-16 program, then plug the SD card adapter into your PC. The "Update Available" will show-up automatically on the left side of the screen. On the next page, click "Install Latest" to proceed update. Please wait for the update process to be finished to unplug the SD card adapter. (You don't need to re-download the settings for the vehicle). Or, you can choose the firmware versions from the list as recommended or preferred.

★Do Not format the SD card, otherwise the VP-16 will not work properly.

Available VP16 Firmware

Select Firmware Version   Your Version: 1.35.48

1.35.48
Added Speed Adjustment - Added Sleep Mode Selection - Added missing translations
Install

1.32.45
Fixed issue causing some units not to enter sleep mode.
Install

1.31.45
1.x Update - New Gauges and Features
Install

0.68.29
Early Release Version
Install

Install Latest

- After the update is completed, insert the SD card back into the VP-16,
  install it back in the car, and start the engine. The VP-16 will be
  automatically updated. (It will take 5 ~ 15 minutes to update, there is
  no need to perform performance tune / adjustment after the update is
  completed)
- After update is completed, please press the reset button on the back of
  the screen to reboot the vp16 to use the update features.

Installation

1. Connect OBD Cable

- Connect the OBD Cable to your OBD-II port, usually found on the driver's side under the dash.

- Route the cable away from the pedals and up to the windshield.

- Cable must be secured so it cannot interfere with vehicle operation.

- Push the cable into the VP16's OBD port until it clicks.

2. Install Magnetic Mount

- Make sure your windshield is clean and dry.

- Remove the protective film from the suction cup.

- Raise the lever, then press the suction cup mount firmly against your windshield, then press lever down.

- Placement must not interfere with your view of road.

Volo Vp16 Initial Setup

Turn on your engine, then press the reset button behind the VP16 performance chip. VP16 will reboot. Follow the steps below while engine is idling.

1. Go to Settings > Language to set the language you prefer.
2. Go to Settings > Units to set the units you prefer.
3. Go to Settings > Device to set the Brightness, Dim Level, Sleep Delay (Initial @ 20), Sleep mode(Initial @ ECU), Refresh Rate (Initial @ 100, Do not adjust refresh delay unless advised by Volo performance Inc. or your local distributors), and Advanced Mode (After the advanced mode is checked and turned on, more advanced data will be added to the customize gauges.)


(Advanced Mode Off / On)
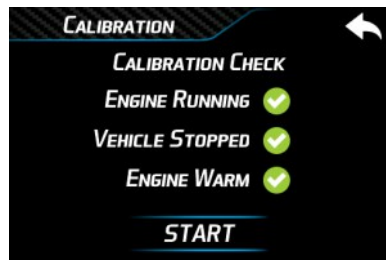
4. Back to the main menu, Tap the Tuning button and follow the on-screen instructions to set your tuning options. Verify you have three green checkmarks ✓ , then press start to begin calibration. (The Tuning process must be repeated to change tune modes or to add/remove performance modifications.)

5. The calibration takes around 5~6 minutes to complete. Keep engine at idle and vehicle stationary for the duration of the calibration process. After calibration completes, the VP16 requires an adjustment period represented by a progress bar on the lower left corner. All performance enhancements will be optimized after the adjustment period is completed.
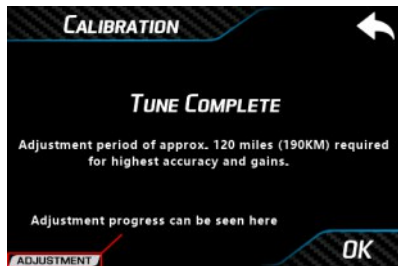
# Un-installation, Re-installation, and Re-programming

VP-16 un-installation & re-installation

- If you temparally disconnected the VP-16 performance chip from your vehicle, please press the reset button behind the screen to re-connect.

- If you disconnected the VP-16 performance chip from your vehicle for a long period of time, please press the reset button behind the screen to reconnect. Please also redo "Tuning" for best results.

Re-programming for a new vehicle

- If you need to install VP-16 Performance Chip to a new vehicle, please follow the steps (P6-P13) to re-program the vehicle settings before using it.

★Before disconnecting or changing your battery, please un-install the VP-16 performance chip.

All New 8 Major Features
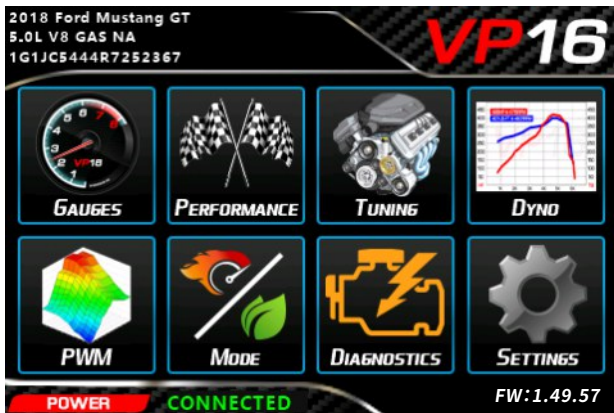
Gauges	Various types of vehicle data display
Performance	0-100km & 1/4 Mile acceleration tests.
Tuning	Vehicle performance tuning
Dyno	Dyno test and comparison of results
PWM	External device settings
MODE	Fast switching of driving modes
Diagnostics	Vehicle Diagnosis and Code Clearing
Settings	Various parameter settings

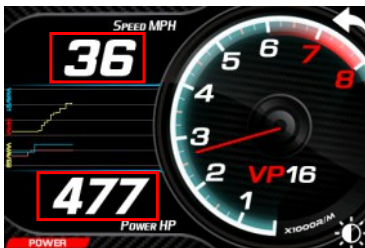(Free Firmware Updates for Life! New features coming soon.)

Power Graph
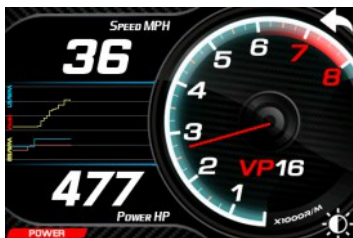
(Default) Shows the vehicle's instantaneous speed, engine rpm, and instant horsepower output. The left area graphs speed, engine rpm, and instant horsepower output.

-☼- on the lower right corner is dimmer control (day / night time)

Tap on the instant speed or instant horsepower, you can change the data you wish to display from the customize gauges (for customize gauges, see P.21 ~ 26)

Eco Graph

Digital display of the vehicle's MPG Average, Trip Cost, and Trip Miles. The left area graphs MPG Average over time. The bar-graph gauge in the center displays instantaneous fuel efficiency. Keep the bar green for maximum efficiency. 🌿ECO on means your instant fuel consumption is lower then average. ☀- on the lower right corner is dimmer control (day / night time)
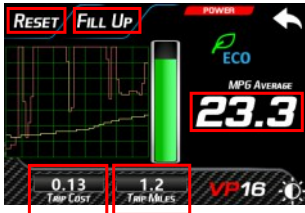
- Tap on MPG Average、Trip Cost、Trip Miles, you can change the data you wish to display from the customize gauges
(for customize gauges, see P.21 ~ 26) .

- After each refueling, please tap on "Fill Up" to enter the fuel sale amount and the number of liters to help the VP-16 accurately calculate your fuel consumption and Trip Costs.

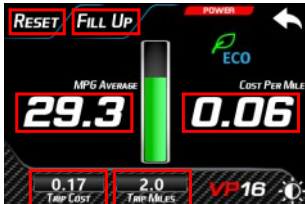- Tap on "Reset" to zero Trip Cost and Trip Miles.

Eco Gauge

Digital display of the vehicle's MPG Average, Cost Per Mile, Trip Cost, and Trip Miles. The bar-graph gauge in the center displays instantaneous fuel efficiency. Keep the bar green for maximum efficiency. ECO on means your instant fuel consumption is lower then average.

on the lower right corner is dimmer control (day / night time)

- Tap on MPG Average、Cost Per Mile、Trip Cost、Trip Miles, you can change the data you wish to display from the customize gauges (for customize gauges, see P.21 ~ 26).

- After each refueling, please tap on "Fill Up" to enter the fuel sale amount and the number of liters to help the VP-16 accurately calculate your fuel consumption and Trip Costs.
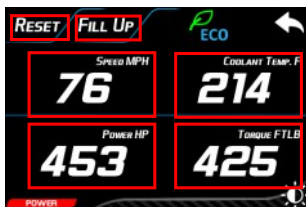
- Tap on "Reset" to zero Trip Cost and Trip Miles.

Multi Gauge 4

Digital display of the vehicle's Speed MPH, Coolent Temp F, Power HP, and Torque FTLB. 🌿ECO on means your instant fuel consumption is lower then average. 🔆 on the lower right corner is dimmer control (day / night time)

Tap on Speed MPH, Coolent Temp F, Power HP, and Torque FTLB, you can change the data you wish to display from the customize gauges (for customize gauges, see P.21 ~ 26).
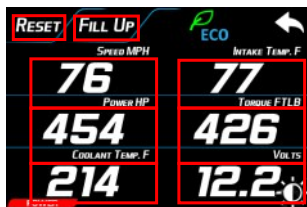

- After each refueling, please tap on "Fill Up" to enter the fuel sale amount and the number of liters to help the VP-16 accurately calculate your fuel consumption and Trip Costs.

- Tap on "Reset" to zero Trip Cost and Trip Miles.

Multi Gauge 6

Digital display of the vehicle's Speed MPH, Intake Temp F, Power HP, Torque FTLB, Coolent Temp F, and Volts. on means your instant fuel consumption is lower then average. on the lower right corner is dimmer control (day / night time)

Tap on Speed MPH, Intake Temp F, Power HP, Torque FTLB, Coolent Temp F, and Volts.you can change the data you wish to display from the customize gauges (for customize gauges, see P.21 ~ 26).

- After each refueling, please tap on "Fill Up" to enter the fuel sale amount and the number of liters to help the VP-16 accurately calculate your fuel consumption and Trip Costs.

- Tap on "Reset" to zero Trip Cost and Trip Miles.

Customize Gauge

Performance

You can change the data you wish to display from the list of customize gauges. **(Please note the units behind each options)**

Tap on ▲ ▼ to scroll up and down

Tap **OK** to choose.

- Power HP
- Power KW
- Torque FTLB
- Torque NM
- PWM Channel 1
- PWM Channel 2
- Tune Adjustment %
- Power KGM

Efficiency

You can change the data you wish to display from the list of customize gauges. (Please note the units behind each options)

Tap on ▲ ▼ to scroll up and down

Tap OK to choose.

KPL Instant
L/100KM Instant
MPG Instant
Cost Per Mile
Cost Per KM
KPL Average
Trip Cost
Range KM
Range Miles
L/100KM Average
MPG Average

▲

OK

▼

You can change
the data you wish
to display from
the list of
customize gauges.
(Please note the
units behind each
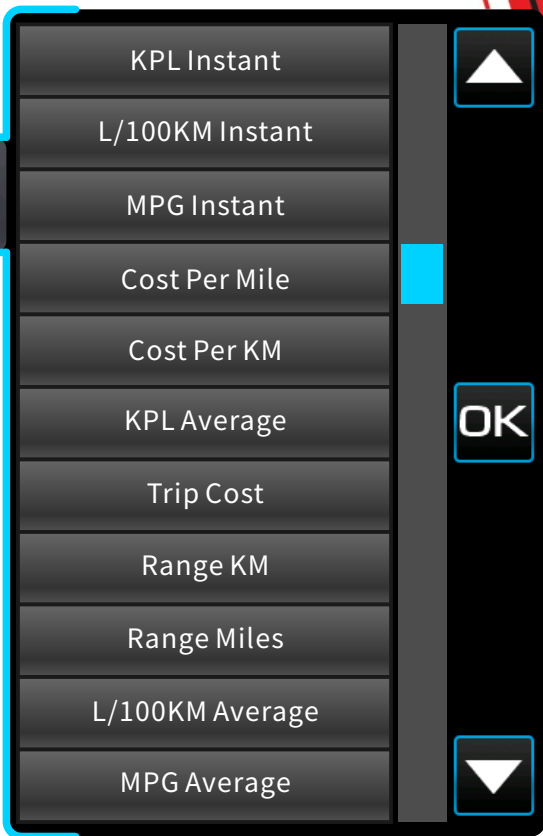options)

Engine

Tap on ▲ ▼
to scroll up
and down

Tap OK
to choose.

★Under Advanced Mode.
(The availabilities of
Customize Gauges under
Advanced mode will be
different from each
vehicles. It all depends
on the data streams the
vehicles provide)

Boost PSI

Boost BAR

Coolant Temp. F

Intake Temp. F

Engine Load %

Coolant Temp. C

★Fuel Trim ST 1/3

★Fuel Trim LT 1/3

★Manifold Pres. kPa

RPM

Intake Temp. C

Continue to the Next page

OK

You can change the data you wish to display from the list of customize gauges. (Please note the units behind each options)

Engine

Tap on ▲ ▼ to scroll up and down

Tap OK to choose.

★Under Advanced Mode. (The availabilities of Customize Gauges under Advanced mode will be different from each vehicles. It all depends on the data streams the vehicles provide)

★Intake Flow G/S

Throttle Pos. %

★O2 Short Term B1-1

★Sec. Since Start

★Fuel Pressure

★Commanded Evap. %

★O2 F:A Rat. Sens. 1

★Cat. Temp. B1/1

★Absolute Load

★A:F Target Ratio

★O2 Sec. LT Trim

Intake Temp.

OK

You can change the data you wish to display from the list of customize gauges. (Please note the units behind each options)

Tap on ▲ ▼ to scroll up and down

Vehicle

Tap OK to choose.
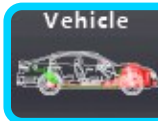
★Under Advanced Mode. (The availabilities of Customize Gauges under Advanced mode will be different from each vehicles. It all depends on the data streams the vehicles provide)

Speed MPH

Volts

Trip KM

Trip Miles

Speed KMH

★CEL On KM

★Fuel Level %

★Warm Ups/CEL Clear

★Distance/CEL Clear

★Baro. Pressure

★ECU Voltage

Continue to the Next page

OK

You can change the data you wish to display from the list of customize gauges.
(Please note the units behind each options)

Tap on ▲ ▼
to scroll up
and down

Tap OK
to choose.

Vehicle

★Relative Throttle

★Ambient Air Temp.

★Throttle Pos. B

★Pedal Pos. D

★Pedal Pos. E

★Throttle Actuator

OK

★Under Advanced Mode. (The availabilities of Customize Gauges under Advanced mode will be different from each vehicles. It all depends on the data streams the vehicles provide)
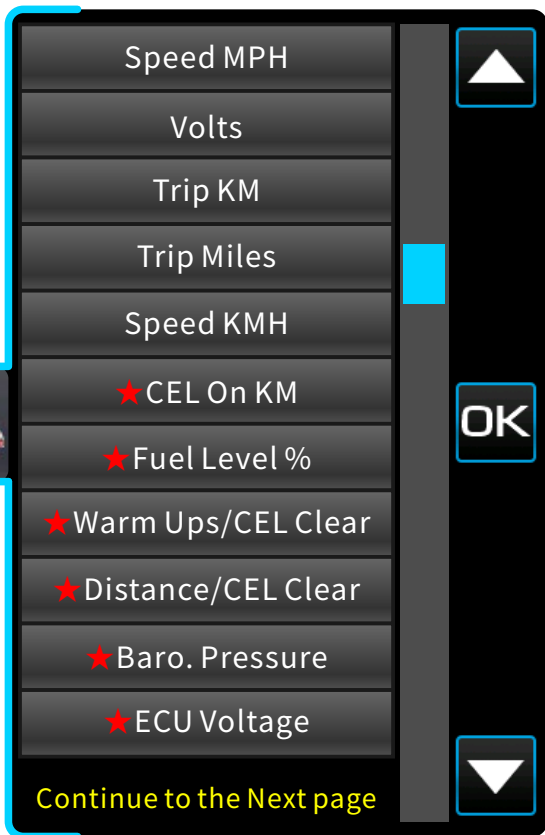
CUSTOMIZE GAUGE

SHOW ALL ✔
SEARCH...

Power HP
Power KW
Torque FTLB
Torque NM
PWM Channel 1
PWM Channel 2

OK

GAUGE SEARCH

SEARCH FOR:

Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	

?123 Z X C V B N M ⌫

↵
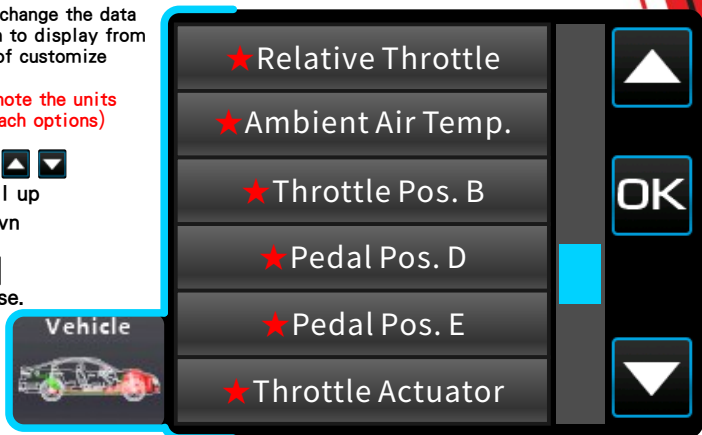
Checking SHOW ALL ✔ is equivalent to turning on the advanced mode.

Run ☰ to search for the particular gauges.

Features

0-60 mph Acceleration Test

Measure your 0-60 mph time. From a complete stop, the acceleration will start to calculate the 0-60 mph acceleration seconds.
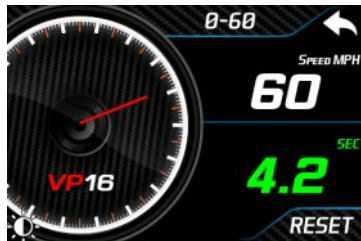
1/4 mile Acceleration Test

Measure your 1/4 mile time. From a complete stop, the acceleration will start to calculate the number of seconds of 1/4 mile completion time.

Tap on "Reset" to zero the testing results.

Features   Tuning

Tap the Tuning button and follow the on-screen instructions to set your tuning options. Verify you have three green checkmarks ✅ , then press start to begin calibration. (The Tuning process must be repeated to change tune modes or to add/remove performance modifications.)
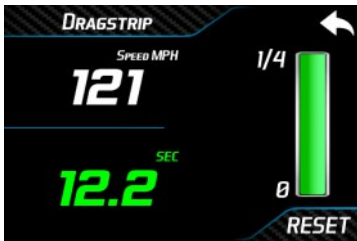

SELECT MODE

SPORT
ECO
MIX
FACTORY

BACK   NEXT

OEM TIRE SIZE

MM   IN

235 / 50 R 18

BACK   NEXT

MODS

IMPROVED AIR FLOW
Select installed performance upgrades:

☑ HIGH-FLOW AIR FILTER   ☑ FULL EXHAUST SYSTEM
☑ HIGH-FLOW INTAKE   ☑ HEADERS/DOWNPIPE
☑ TEST PIPE

BACK   NEXT

CALIBRATION

CALIBRATION CHECK
ENGINE RUNNING ✅
VEHICLE STOPPED ✅
ENGINE WARM ✅

START

★Each time when changing the driving mode and/or vehicle settings, adjustment progress must take places to optimize the performance enhancement 。

Features

New Dyno

Test horsepower and torque outputs of your vehicle.
Please follow the on-screen instructions to run the tests.
The test should only be performed on a closed circuit.

DYNO

SELECT 2ND GEAR

P R N D **2** 1

Confirm the area is clear and that it is safe to perform a Dyno Run.
Do not perform tests on public streets.

READY

DYNO

TEST BEGINS AT 30MPH

SPEED MPH

0

DYNO

SLOWLY PUSH ACCELERATOR TO FLOOR

Pressing pedal too quickly may cause transmission to downshift.
Transmission must stay in 2nd gear for Dyno testing.

POWER HP
439

Torque FTLB
345

12 2019 Ford Mustang   Tune: POWER
5.0L 4951CC 302CI V8   /dynos/run_12.dym

472HP @ 6786RPM
446FTLB @ 4385RPM

RPM (x1000)

Compare

The results of the Dyno tests can be selected by tapping **BACK** or **NEXT** and checking **COMPARE** ✓

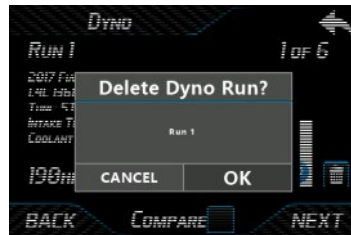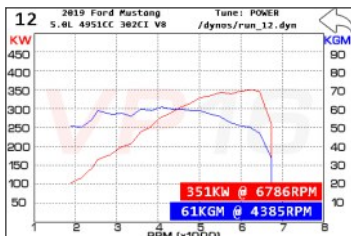The Dyno results can be cross-compared by tapping 🔍 in the Dyno chart to check the Dyno tests that have been selected. Pressing the 🗑 can delete the Dyno test result.

Features

PWM

Auxiliary Port

Channel 1

The VP16's AUX port is located on the back of the device. It outputs 2 PWM channels and can be used to control Nitrous Oxide Injection or HHO Systems. Visit www.volochip.com/vlink16 and click Aux. PWM Port Manual for more details.

Channel 2

The VP16's AUX port is located on the back of the device. It outputs 2 PWM channels and can be used to control Nitrous Oxide Injection or HHO Systems. Visit www.volochip.com/vlink16 and click Aux. PWM Port Manual for more details.

PWM	
CHANNEL 1	ENABLE ✔
◄ HHO23.MAP ►	TEST
CHANNEL 2	ENABLE ☐
◄ NOS1.MAP ►	TEST

Features

Mode

Driving Mode Quick Switch > You can quickly switch the driving mode according to your preference (no need to go through other fuel, load, tire size, modified parts ... setting process). Verify you have three green checkmarks ✓ , then press start to begin calibration.

★Each time when changing the driving mode, adjustment progress must take places to optimize the performance enhancement 。
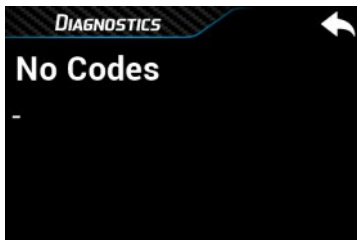
Features Vehicle diagnosis

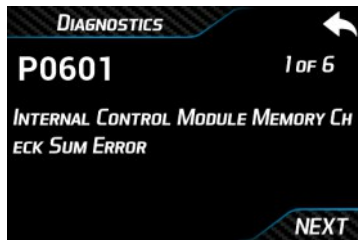## View Code

Vehicle diagnosis

Clear Code

Clear the vehicle's fault code
(Ensure the source of the code has
been resolved before clearing!)

★Code viewing and clearing are only for the international general code of the engine and gearbox.
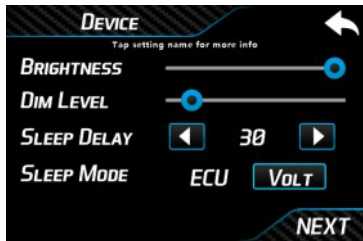
Features Settings

Device

Display

Set the Brightness、Dim Level、Sleep Delay
(Initial @ 20)、Sleep mode(Initial @ ECU),
Refresh Rate (Initial @ 100, Do not adjust
refresh delay unless advised by Volo
performance Inc. or your local distributors),
and Advanced Mode (After the advanced mode
is checked and turned on, more advanced data
will be added to the customize gauges.)

★ Please note there are 2 pages on Device settings.
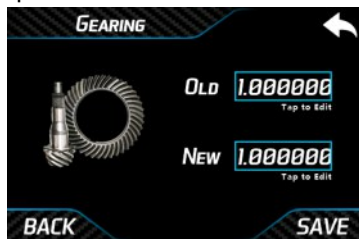
Features
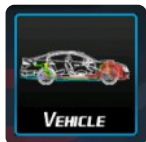
Tire Size

Individually enter your OEM and New Tire Sizes to correct the speed deviation.
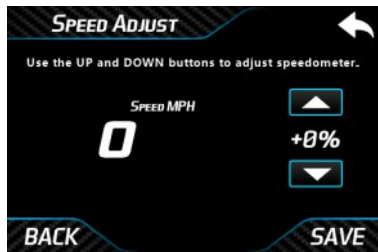

Gearing

For vehicles with modified differential gear ratios only. Individually enter your New and Old Gearings to correct the speed deviation.

Speedmeter

Use the UP and DOWN buttons
to adjust speedmeter.

SPEED ADJUST

Use the UP and DOWN buttons to adjust speedometer.

SPEED MPH
0   +0%

BACK   SAVE

Voltage

Use UP and DOWN buttons to
adjust voltage readings.

VOLTAGE ADJUST

Use the UP and DOWN buttons to adjust voltage reading.

VOLTS
12.2   +0.1

BACK   SAVE
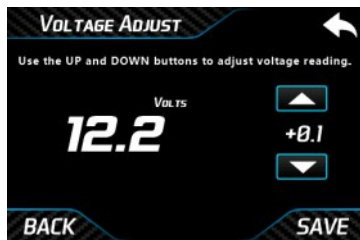
Boost

With Engine OFF and Ignition
ON, tap the ZERO button to set
ambient pressure.

BOOST ADJUST

With ENGINE OFF and IGN ON, tap the ZERO
button to set ambient pressure.

BOOST PSI   ZERO
0.0   RESET

BACK   SAVE
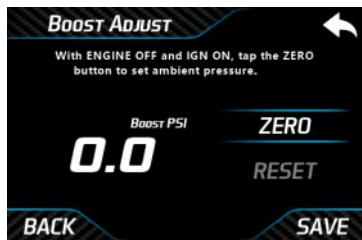
Features

Units

set the units you prefer.

UNITS			
FUEL	GAL.	L	
DISTANCE	MILE	KM	
CURRENCY	$ £ ¥ 元 €		
TEMPERATURE	F	C	
TORQUE	FTLB	NM	KGM
POWER	HP	KW	
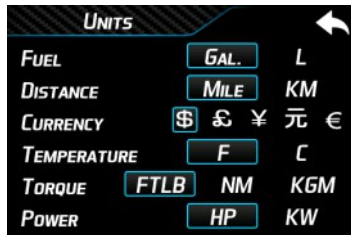
Language

set the language you prefer.

LANGUAGE

ENGLISH

繁體中文

简體中文

日本語

CMD Advanced

Used for advanced functions and troubleshooting.
(Please contact your Volo dealer before proceeding)

Enter Command:

```
Q W E R T Y U I O P
 A S D F G H J K L
?123 Z X C V B N M ⌫
```

| CC01 | Force chip reset |

| CC02 | Erase vehicle settings and restore all settings to default |

| CC08 | Disable sleep mode until reset |

| CC10 | Create vehicle data log |

| CC16 | Get chip Unique Identifier |

★Please contact Volo Performance Authorized Dealers for Technical Support.

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