



FORD **PERFORMANCE**

M-9603-REB
2019-2020 RANGER ECOBOOST POWER PACK CALIBRATION
Instruction

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

PRIOR TO INSTALLATION READ THESE INSTRUCTION COMPETELY

Kit contains:

- 1 – K&N AIR FILTER*
- 1 – Ford Performance ProCal 4
- 1 – ProCal 4 Voucher
- 1 – Emissions Exemption

Warning: Read ProCal voucher before starting installation!

*K&N® washable, reusable High-Flow Air Filters™ feature a state-of-the-art design of layered, oiled cotton media engineered to improve airflow and capture contaminants, and are designed to provide an increase in horsepower. Each performance air filter is reusable, engineered to last for the entire lifespan of your vehicle, and backed by K&N's 10-Year/Million Mile Limited Warranty.

Air Cleaner

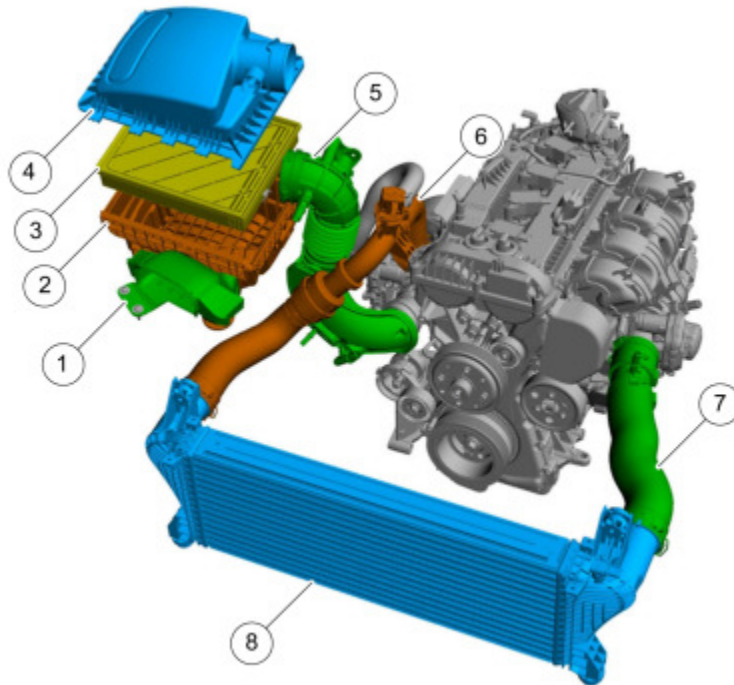
Removal

NOTICE: The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.



NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

Intake Air Distribution and Filtering – Component Location



E288006

Item	Description
1	Air cleaner inlet pipe
2	Air cleaner housing
3	Air cleaner element
4	Air cleaner housing cover
5	Air cleaner outlet pipe
6	Charge Air Cooler (CAC) intake pipe
7	CAC outlet pipe
8	CAC



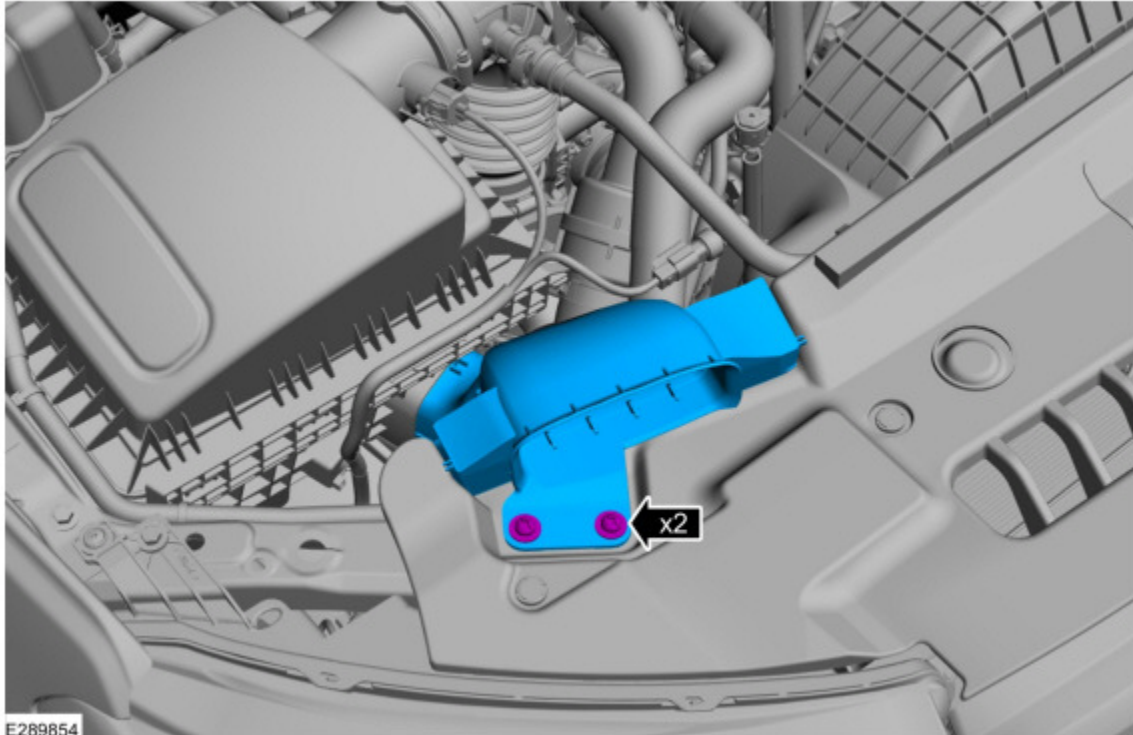
FORD PERFORMANCE

M-9603-REB 2019-2020 RANGER ECOBOOST POWER PACK CALIBRATION Instruction

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

NOTE: Removal steps in this procedure may contain installation details.

1. Remove the fasteners and the air intake duct.
Torque: 42 lb.in (4.8 Nm)



E289854



FORD PERFORMANCE

M-9603-REB 2019-2020 RANGER ECOBOOST POWER PACK CALIBRATION Instruction

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF FORD PERFORMANCE PARTS © Ford Motor Company 2020

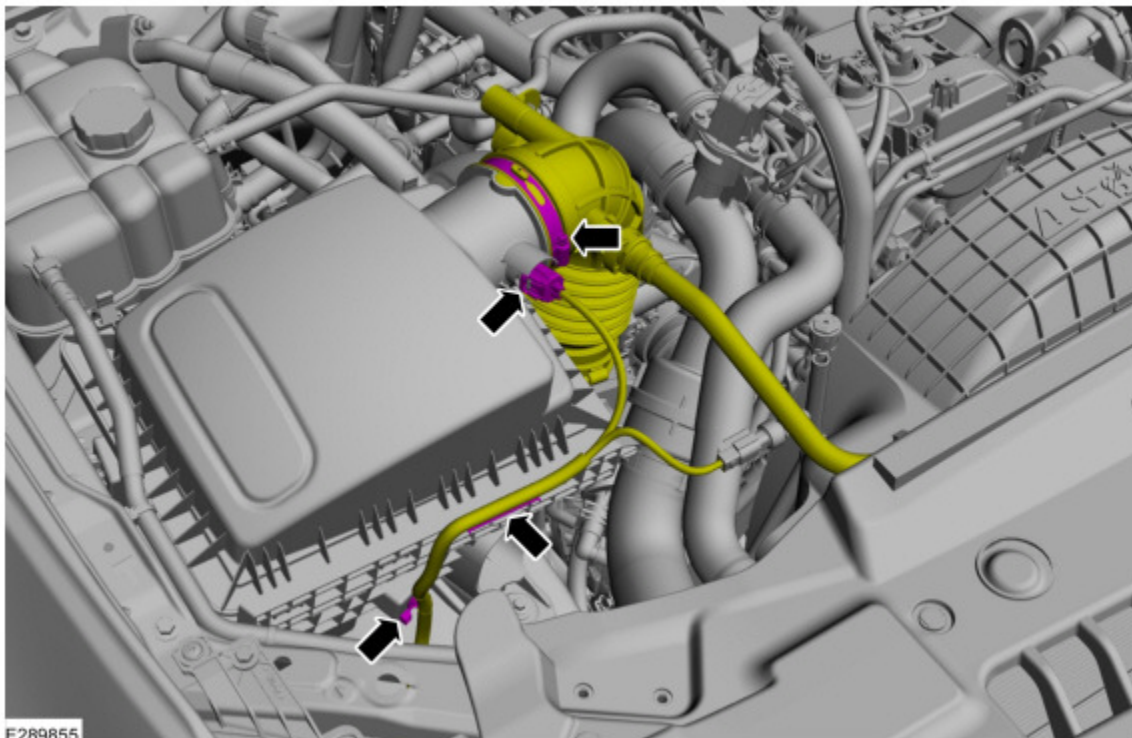
2. Disconnect the electrical connector.

- Detach the retainers.
- Loosen the clamp and position aside the air cleaner outlet pipe.

Torque:

Stage 1: 21 lb.in (2.4 Nm)

Stage 2: 36 lb.in (4.1 Nm)



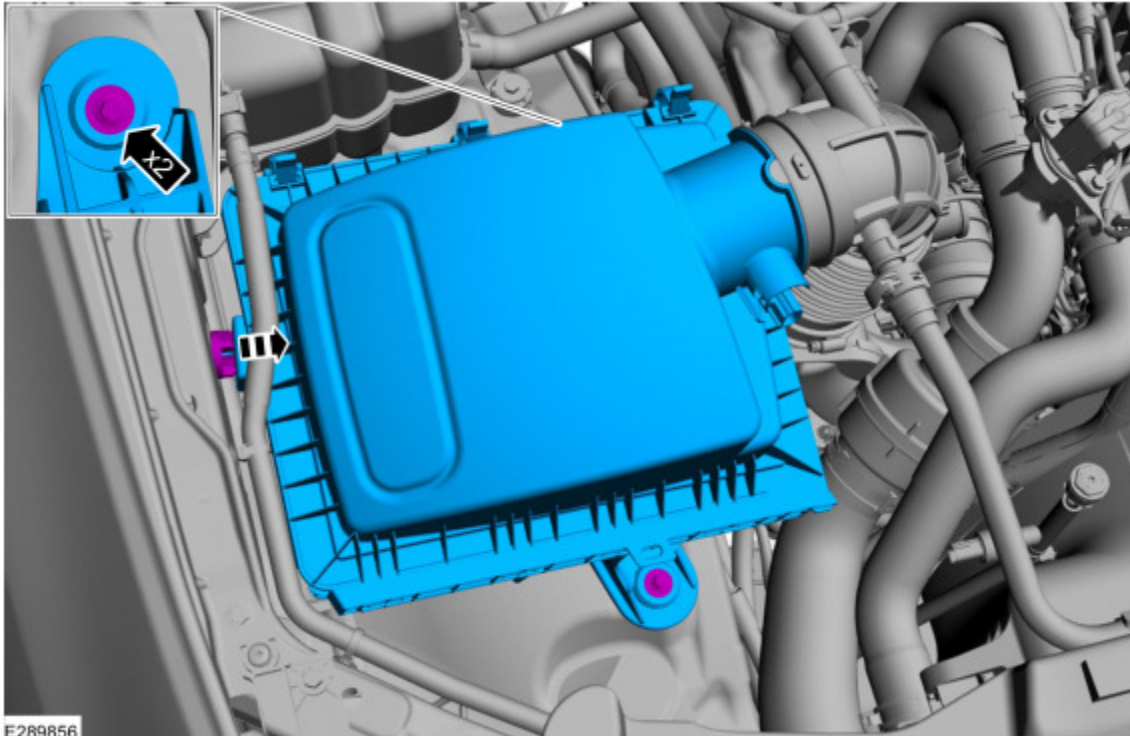


FORD PERFORMANCE

M-9603-REB 2019-2020 RANGER ECOBOOST POWER PACK CALIBRATION Instruction

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF FORD PERFORMANCE PARTS © Ford Motor Company 2020

3. Remove the isolator.
 - Remove the fasteners and air cleaner assembly.
Torque: 97 lb.in (11 Nm)



4. Removed the Air Cleaner Element and replace with the K&N Replacement Air Filter Element

Installation

1. Inspect the turbocharger or engine air intake system components and clean, if necessary.
2. To install, reverse the removal procedure.



FORD **PERFORMANCE**

M-12655-F PROCAL4 INSTRUCTIONS

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

PRIOR TO INSTALLATION READ THESE INSTRUCTION COMPETELY

*****NOTE***** The ProCal 4 tool is shipped without a calibration; the end user must register with Ford Performance Parts (FPP) and download the ProCal 4 software and follow the instructions below. The software provided to install performance calibrations to the ProCal 4 tool is compatible only with Windows 7 or above and can be found.

Installing FPP ProCal 4 software on PC

1. Create account
2. Upon account creation, log into account and navigate to “Download” page to download ProCal 4 software
3. Once software is downloaded, install software on PC

Preparing ProCal 4 tool for use

1. After software install is complete, connect ProCal 4 device to PC via supplied USB cable
2. Program should connect automatically with programmer displaying serial number, firmware version number, and automatically check for updates. Follow all on screen prompts and fully complete all updates for ProCal software and ProCal tool before connecting to vehicle

Before connecting the ProCal 4 tool to the vehicle

1. Turn off all accessories & unplug any electronic devices from any power or USB ports (A/C, radio, lights, etc.)
2. Ensure vehicle battery is sufficiently charged (12 volts or more)
*****NOTE*** IT IS HIGHLY RECCOMENDED TO CONNECT VEHICLE TO A BATTERY CHARGER/TENDER TO ENSURE ADEQUATE BATTERY VOLTAGE DURING CALIBRATION PROCESS**



FORD PERFORMANCE

M-12655-F PROCAL4 INSTRUCTIONS

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

Saving Stock calibration to ProCal 4 tool

1. Turn ignition to "RUN" position
*****NOTE*** DO NOT start engine. Keep foot off brake/clutch to ensure engine does not start**
2. Connect tool to the vehicle OBDII port (Generally located on the bottom of the dash, to the right of the hood release)
3. Select "PROGRAMMING" option in the main menu and follow the on-screen prompts to read/save your stock calibration file. Do not turn off the ignition or unplug the tool until prompted to do so.

Downloading Performance calibration to ProCal 4 tool

1. Connect ProCal 4 tool to PC using provided USB cable
2. Open ProCal software and confirm VIN now displays within software
3. Software will prompt user to backup/save stock calibration to FPP servers for backup purposes, in case of ProCal 4 loss/damage/etc.
4. After successful backup of stock calibration, the software will download the FPP performance calibration.
 - a. Follow any on-screen prompts that may occur
5. Confirm software now shows Ford Performance calibration in addition to Stock file

Installing performance calibration in vehicle

*****NOTE*** ONCE CALIBRATION PROCESS HAS BEGUN, DO NOT PRESS ANY BUTTONS OR DISCONNECT TOOL UNTIL PROMPTED TO DO SO. ENSURE ALL ELECTRONIC ITEMS (RADIO, WINDOWS, DOORS, LIGHTS) ARE OFF AND ARE NOT OPERATED UNTIL CALIBRATION PROCESS IS COMPLETE**

1. Connect ProCal 4 tool to vehicle OBDII port
2. Ensure vehicle is in "RUN" position (Key on, Engine Off)
*****NOTE*** ENGINE MUST NOT BE STARTED/RUNNING UNTIL PROMPTED BY TOOL, OR CALIBRATION PROCESS IS COMPLETE**
3. Select "PROGRAMMING" option from main menu
4. Select "Preloaded calibration" Option on ProCal 4, and Drag/Click to select the desired calibration.
*****NOTE*** DURING CALIBRATION PROCESS, THERE WILL BE VARIOUS WARNING CHIMES/ALARMS (Check Engine light, TPMS light, etc). THIS IS EXPECTED, AND PART OF THE PROCESS.**
5. Follow ALL on-screen prompts, until "Clearing Codes, Finished, Key off for 3 seconds" is displayed, signaling the end of the procedure



FORD PERFORMANCE

M-12655-F PROCAL4 INSTRUCTIONS

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

Diagnostic Features of ProCal 4Tool

1. Module Info

- a. Identified VIN, Vehicle description, calibration, and software installed in the PCM

2. Diagnostics and Tools

- a. Read DTC
 - i. Displays any Diagnostic Trouble Codes (DTC) stored in the vehicle PCM
- b. Clear DTC
 - i. Clears all DTC stored in the PCM

3. Service Functions

- a. Clear KAM
 - i. Clears all data stored in vehicle Keep Alive Memory (KAM)
*****NOTE*** THIS IS RARELY NEEDED OPTION, ONLY USE IF YOU EXPERIENCE DRIVABILITY CONCERNS (IRREGULAR SHIFTING, ETC)**
- b. Clear Adaptive KAM
 - i. Clears adaptive learning fuel related data stored in KAM
- c. Crank Relearn
 - i. Used to re-learn the misfire profile for the crank position sensor. Generally used if vehicle has misfire DTC after calibration procedure
- d. KOEO
 - i. Performs a Key on Engine off diagnostic self-test on the vehicle
- e. KOER
 - i. Performs a Key on Engine running diagnostic self-test on the vehicle
- f. Flash TRID
*****THIS OPTION IS ONLY TO BE USED WHEN DIRECTED TO DO SO BY FPP. MIS-USE OF THIS FEATURE MAY CAUSE ISSUES WITH THE VEHICLE*****
- g. Tire/Gear Adjust
 - i. Allows the end user to change the tire size or axle ratio stored in the PCM. Only to be used if installed tires or gears deviate from factory installed parts



FORD PERFORMANCE

M-12655-F PROCAL4 INSTRUCTIONS

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF
FORD PERFORMANCE PARTS © Ford Motor Company 2020

Datalogging

4. Gauges

- a. Allows user to monitor real-time data supported by the tool.
- b. Some examples of monitorable data
 - i. Air fuel ratio
 - ii. Spark timing
 - iii. RPM
 - iv. Temperature
- c. To utilize; select gauges, then select a channel, then select the desired function to be monitored

5. Datalog

- a. Allows recording of signals received in the “Gauges” screen. To utilize; first select a datalog file and pick a log file to record to. Once complete, select the “start recording” button. The selected logfile number will show up in red in the upper right corner of the screen. When complete, select the “stop recording” button. The logfile can be retrieved by plugging the tool into a computer, opening the ProCal 4 software, and navigating to the datalog tab. Data is stored in a .csv format.

*****NOTE***** If vehicle is equipped with an automatic transmission, several miles and/or days of driving may be required for all adaptive learning to complete. Do not be alarmed at shift quality immediately after installing of calibration. It is recommended to do light throttle driving until shift quality has stabilized.

IS M-12655-F 032720