AI-04646 Ford Ranger Raptor Suspension Calibration

In 2024 Ford Ranger Raptor, I replaced the 4 suspension springs to life the truck and fit a 35" tires and the ride is now tougher. I've read that there is a procedure to reset/fine tune the electronic shock absorber. Create a step by step procedure on how to fine tune the electronic suspension.

Yes. **Your 2024 Ranger Raptor is equipped with FOX 2.5-inch internal-bypass Live Valve electronic shocks**, and changing the spring/ride height can affect the relationship between the suspension-position sensors and the Live Valve control system. Ford confirms that the system uses suspension-height sensors along with accelerometers, steering, braking and other inputs to continuously control damping. (**Ford Australia**)

There is, however, an important distinction:

You can recalibrate the ride-height sensors electronically, but that is not the same thing as electronically changing the internal mechanical damping zones of the FOX shocks. There is conflicting information online about this, so I would not simply "reset the shocks" and assume the 35-inch-tire setup is fully tuned. (**Ranger6G**)

For your situation—**four new springs + increased ride height + 35-inch tires + noticeably harsher ride**—I would approach it in this order.

1. What you are actually trying to recalibrate

Think of the system as:

Wheel movement → ride-height sensors → Live Valve ECU → electronic damping command → FOX shock

The Live Valve system continuously changes damping based on vehicle inputs. (**FOX**)

When you change the spring/ride height, the suspension sensors can sit at a different position than the factory calibration expects.

A **Ride Height Calibration** tells the vehicle:

> "This is the new zero/reference position of the suspension."

That is the procedure you are probably referring to.

Owners of 2024+ Ranger Raptors have reported using **FORScan/FORScan Lite** to perform the ride-height calibration after lift/leveling modifications. In one Ranger6G discussion, an owner specifically reports doing the service procedure with FORScan Lite on an iPhone. (**Ranger6G**)

Step-by-step procedure I recommend

STEP 1 — Get the truck into its final configuration

Before calibrating:

- Install all four new springs
- Install your 35-inch tires
- Set tire pressures correctly

- Make sure all suspension components are fully torqued
- Make sure the ride-height sensor links are correctly attached
- Make sure none of the sensor arms are bent or binding
- Make sure the truck is carrying its normal permanent equipment

Do not calibrate it and then subsequently change spring height.

The calibration should represent the truck as you actually intend to drive it.

STEP 2 — Put the truck on a genuinely level surface

This is extremely important.

Find a **very flat concrete surface**.

Ideally:

- garage floor
- alignment rack
- level concrete pad

Avoid:

- driveway slope
- crowned road
- uneven asphalt
- jack stands
- one wheel sitting higher than another

The suspension needs to settle naturally.

STEP 3 — Establish the truck's normal weight

Before calibration:

1. Fill the fuel tank to your normal operating level.
2. Remove unusual cargo.
3. Close all doors.
4. Make sure the truck is sitting normally.
5. If you normally carry permanent equipment, leave it installed.

Owners performing Gen 3 Raptor calibration have specifically reported using a full tank and removing unnecessary cargo before calibration. (**Ford Raptor Forum**)

For your truck, I'd use:

Full fuel tank + normal permanent accessories + no temporary cargo.

STEP 4 — Let the suspension settle

After driving the truck onto the level surface:

1. Drive forward several feet.
2. Stop.
3. Roll backward several feet.
4. Stop.
5. Put the transmission in Park.
6. Settle the suspension.
7. Do not jack up any corner.

You want the springs to settle naturally.

If you have just installed new springs, I would actually drive the truck for a short distance first and then repeat the procedure once everything has settled.

STEP 5 — Connect FORScan

You will need:

FORScan + compatible OBD-II interface

You can use either:

- FORScan for Windows
- FORScan Lite, where supported

The 2024 Ranger Raptor community has specifically reported using FORScan for this service procedure. (**Ranger6G**)

I strongly recommend a **wired OBD connection** for the first calibration rather than relying on an inexpensive Bluetooth adapter.

STEP 6 — Connect to the vehicle

With the truck stationary:

1. Connect the OBD interface.
2. Connect your computer/phone.
3. Turn the ignition on.
4. Do **not** start the engine unless FORScan specifically requests it.
5. Allow FORScan to identify the vehicle.
6. Let it complete the module scan.

Save the original configuration if FORScan offers that option.

Do not start changing configuration values manually.

STEP 7 — Find the suspension service procedure

In FORScan, go to the **Service Procedures / wrench icon**.

Look for a procedure related to:

Ride Height Calibration

The exact wording can vary with FORScan version and vehicle software.

You are looking for a **service procedure**, not an As-Built programming change.

This distinction is important.

You should **not** randomly modify:

- suspension module As-Built values
- damping tables
- CAN parameters
- ride-height offsets
- shock calibration numbers

unless you have the Ford service information telling you exactly what those parameters mean.

STEP 8 — Check the ride-height sensor values FIRST

Before actually calibrating, I recommend recording the existing values.

You may find four suspension-position/ride-height measurements:

- LF — Left Front
- RF — Right Front
- LR — Left Rear
- RR — Right Rear

The exact PID names can vary.

Record them.

For example:

LF	___ mm
RF	___ mm
Corner	**Before calibration**
RR	___ mm

This is extremely useful because it tells you whether the lift has pushed one or more sensors significantly outside the expected range.

Owners have reported situations where the front sensors were reading substantially different values after a lift, preventing successful calibration. (**Ford Raptor Forum**)

STEP 9 — Inspect the sensor arms if the readings look extreme

This is an important diagnostic step.

If you see something like:

LF = 45 mm

RF = 48 mm

LR = 5 mm

RR = 3 mm

don't immediately force the calibration.

That could indicate that the sensor linkage is now operating outside the range expected by the system.

In documented Gen 3 Raptor experiences, owners have had to reposition the sensor linkage into an acceptable range before the calibration would succeed. (**Ford Raptor Forum**)

This is particularly relevant to your truck because **you changed all four springs**, rather than merely installing larger tires.

STEP 10 — Run Ride Height Calibration

If the sensor linkages are mechanically correct and the truck is sitting level:

1. Select **Ride Height Calibration**.
2. Follow FORScan's prompts.
3. Do not touch the truck.
4. Don't open/close doors.
5. Don't move the steering wheel.
6. Don't apply the brake unnecessarily.
7. Allow the procedure to complete.

You should receive a result such as:

SUCCESS

If you receive:

FAILED

don't repeatedly run the procedure.

Go back and investigate:

- sensor position
- sensor linkage
- vehicle level
- sensor wiring
- suspension modification
- excessive ride-height change

STEP 11 — Re-read the sensor PIDs

After calibration, go back to the live PID data.

Record:

Corner	After calibration
LF	___ mm
RF	___ mm
LR	___ mm
RR	___ mm

You want the four readings to be **reasonable and consistent**, not necessarily mathematically identical.

This is an important point: owners of the 2024+ Raptor have reported that getting exactly 0 mm at every corner isn't always possible; values close to zero can be acceptable depending on the particular truck/calibration. (**Ford Raptor Forum**)

STEP 12 — Clear suspension-related DTCs

If the system generated codes during the modification/calibration process:

1. Read all DTCs.
2. Save them.
3. Correct any active faults.
4. Clear the codes.
5. Turn the ignition off.
6. Wait several minutes.
7. Restart the truck.
8. Scan again.

You want:

No active suspension-related DTCs.

STEP 13 — Perform a controlled road test

Don't immediately go bouncing around in Baja mode.

Start with:

Test #1 — Normal

Drive:

- smooth pavement
- rough pavement
- speed bumps
- small potholes

Pay attention to:

- harshness
- rebound
- front-end impact
- rear-end kick
- body movement

- steering response

Then try:

Test #2 — Sport

Sport is intentionally firmer than Normal. Ford describes Normal as the everyday compromise and Sport as emphasizing body control and handling with a firmer feel. (**Ford Australia**)

Then:

Test #3 — Off-Road

This allows you to determine whether the Live Valve system is behaving differently across its programmed damping strategies.

Very important: 35-inch tires are NOT a suspension calibration

This is where I think some online explanations get confusing.

Changing:

33" → 35"

doesn't directly require you to recalibrate the FOX Live Valve system merely because the tire is larger.

The significant suspension change in your case is:

OEM springs → different/lifted springs

The tire affects:

- unsprung mass
- tire sidewall
- rotational inertia
- tire stiffness
- effective gearing
- road-force transmission

but the **spring/ride-height change** is what makes ride-height sensor calibration particularly relevant.

Why your ride became tougher

I would not assume that recalibration alone will restore the original ride.

You have potentially changed several variables simultaneously:

1. Spring rate

Your new springs may simply be stiffer than the factory springs.

If:

Spring rate ↑

then:

Ride harshness ↑

particularly over small sharp bumps.

2. Static suspension position

The new spring changes where the shock sits within its available travel.

That's important with the Ranger Raptor's internal-bypass FOX design.

3. Shock operating zone

The FOX shock isn't simply a conventional shock with one fixed damping value.

The internal bypass design provides different damping characteristics through different portions of the stroke, while Live Valve electronically controls damping. (**FOX**)

4. Tire characteristics

Your 35s can change ride feel substantially depending upon:

- tire model
- load rating
- construction
- pressure

This is especially noticeable if you're running a very stiff LT tire.

5. Tire pressure

This is one of the easiest variables to overlook.

A 35-inch tire at the same pressure you previously used for the OEM tire doesn't necessarily produce the same ride characteristics.

The critical distinction: calibration vs. tuning

This is the part I want you to be particularly careful about.

There are really **three different things** people call "suspension tuning":

A. Ride-height sensor calibration

YES — electronically possible.

FORScan can be used for the service procedure reported by Ranger Raptor owners. (**Ranger6G**)

B. Live Valve electronic damping control

YES — the vehicle does this automatically.

FOX describes Live Valve as a closed-loop system that continually processes vehicle and terrain information and adjusts damping. (**FOX**)

C. Mechanical FOX shock tuning

NO — not simply through a FORScan reset.

Changing the shock's internal mechanical behavior, bypass characteristics, piston/bypass configuration, etc., is fundamentally different from recalibrating the ride-height sensor.

There is actually disagreement in the Raptor community about how much sensor recalibration changes the underlying shock behavior after a lift. One detailed discussion argues that changing the static position moves the shock relative to its designed travel zones and that a true mechanical correction would require shock modification rather than merely software calibration. (Ranger6G)

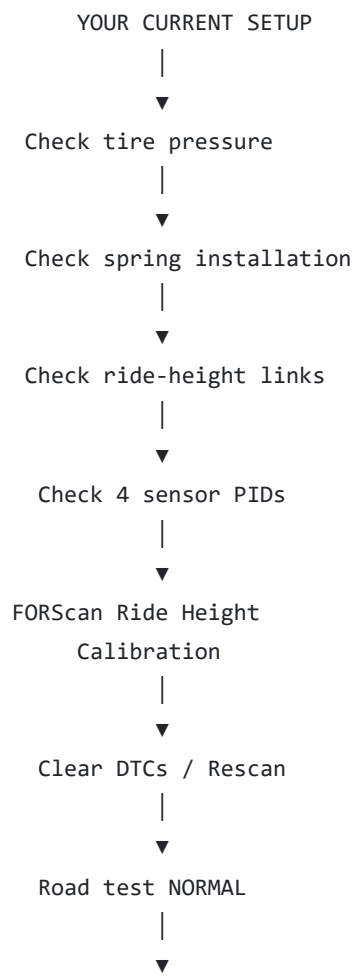
That's why I wouldn't promise that a FORScan calibration will make your modified truck ride like the factory truck.

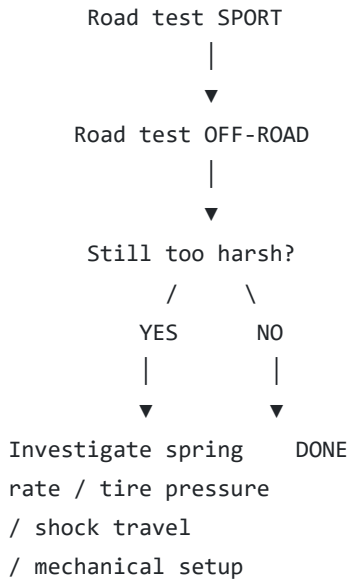
What I would do with YOUR truck

Given your description:

2024 Ranger Raptor
→ 4 replacement/lift springs
→ 35" tires
→ noticeably harder ride

I'd use this diagnostic sequence:





My strongest recommendation

Do the FORScan ride-height calibration first before replacing anything else.

It's the logical first step because you've changed the suspension's static geometry.

But if the ride remains substantially harsher afterward, **don't assume the electronic system is malfunctioning**. The new springs themselves may be the primary reason.

Also, I would **not change As-Built data or attempt to invent damping values**. The Live Valve system is considerably more sophisticated than simply setting "soft = X" and "firm = Y."

If you want, I can also give you a **very detailed FORScan procedure specifically for the 2024 Ranger Raptor**, including **which module to select, where to find the Ride Height Calibration service function, how to read LF/RF/LR/RR sensor PIDs, what values to look for, and what to do if calibration fails**.

Where can I buy a Forscan for a windows and ODB2 which compatible to Ford Ranger Raptor 2024 Diesel.

Yes. For your **2024 Ford Ranger Raptor diesel**, if your goal is the **Windows-based FORScan setup for suspension/ride-height calibration**, I would buy a **wired OBDLink EX USB adapter** rather than a generic ELM327.

My #1 recommendation: OBDLink EX

FORScan Ready OBD Adapter With Ford Diagnostics And CAN Bus

$130.87

The **OBDLink EX** is specifically designed for FORScan on Windows and is the adapter I would choose for your Raptor. The manufacturer states that it provides access to **100% of Ford ECUs**, supports Ford's MS-CAN/HS-CAN networks, and is designed for advanced FORScan functions. (**OBDLink® | OBD Solutions LLC**)

The **official OBDLink EX price is currently $69.95**, and it is available directly from OBDLink. (**OBDLink® | OBD Solutions LLC**)

Buy OBDLink EX directly from OBDLink

What I would buy

Windows laptop	Windows 10/11
OBD adapter **Item**	**OBDLink EX USB** **Recommendation**
Software	**FORScan for Windows**
FORScan license	**Extended License** if the specific service/configuration function requires it
Vehicle	2024 Ranger Raptor diesel
Purpose	Ride-height calibration, diagnostics, live data, service functions

FORScan's current guidance says that **Windows is the appropriate platform when you need configuration/service capabilities**, and recommends a stable wired adapter such as the OBDLink EX. (Forscan.com)

Why I prefer the EX over a cheap Amazon/Aliexpress adapter

For what you're trying to do, I wouldn't save $20–30 on the interface. A failed connection during a module configuration procedure is not worth the risk.

The OBDLink EX has:

- **USB connection**
- Ford **MS-CAN support**
- automatic CAN switching
- reliable high-speed communication
- Windows support
- FORScan compatibility
- support for advanced Ford functions (OBDLink® | OBD Solutions LLC)

OBDLink also specifically recommends the EX for FORScan and provides Windows drivers and setup instructions. (OBDLink® | OBD Solutions LLC)

A cheaper alternative

If you want to spend less, there are FORScan-oriented **Vgate vLinker FS USB** adapters available.

Vgate Vlinker FS ELM327 USB OBD2 FORScan Adapter

$39.65

I'd consider this a **second choice**. For your particular project—**2024 Raptor + modified springs + electronic Live Valve suspension + ride-height calibration**—I'd spend the extra money and get the **OBDLink EX**.

One more thing: FORScan software

Don't buy a random "FORScan lifetime license" from eBay/Amazon. FORScan licensing should be obtained through the FORScan organization; the current FORScan guidance says the Windows Extended License is what unlocks

configuration/service capabilities that you may need. (Forscan.com)

Official FORScan site

Bottom line: For your Ranger Raptor, I'd buy **OBDLink EX + Windows laptop + official FORScan Extended License**. That's the setup I'd use before attempting the **Ride Height Calibration** we discussed.

If you want, I can next give you the **exact FORScan installation/setup procedure for your 2024 Ranger Raptor, including the specific module and menu to look for when performing the ride-height calibration.**

Do I need to buy a license for the FORScan?

Not necessarily. For your specific goal—**2024 Ranger Raptor ride-height calibration after changing the four springs**—I would **install the Windows version of FORScan first and see whether the Ride Height Calibration function is available under the Standard license**.

FORScan says the Windows **Standard License is free and included with the software**; only certain advanced functions require the Extended License. Their current documentation specifically lists configuration/programming functions and certain service functions as Extended-only, while ordinary diagnostics and many service procedures do not require it. (FORScan Forum)

For your Raptor, I'd do this

1. **Buy the OBDLink EX USB adapter.**
2. Install **FORScan for Windows**.
3. Connect to your 2024 Ranger Raptor.
4. Go to **Service Procedures**.
5. Look for **Ride Height Calibration**.
6. **If FORScan lets you execute it → you don't need to buy a license.**
7. If FORScan displays an **Extended License required** message, then get the Extended License.

There is also a **free 2-month Extended License** available, so you don't necessarily have to purchase a paid license just to perform this one-time job. FORScan's current instructions describe the free trial process. (FORScan Forum)

One correction to my previous answer

I previously made it sound as though you **would need to purchase** the Extended License. That's too strong. **You should not buy it until we establish that the specific Ride Height Calibration function on your 2024 Ranger Raptor requires it.**

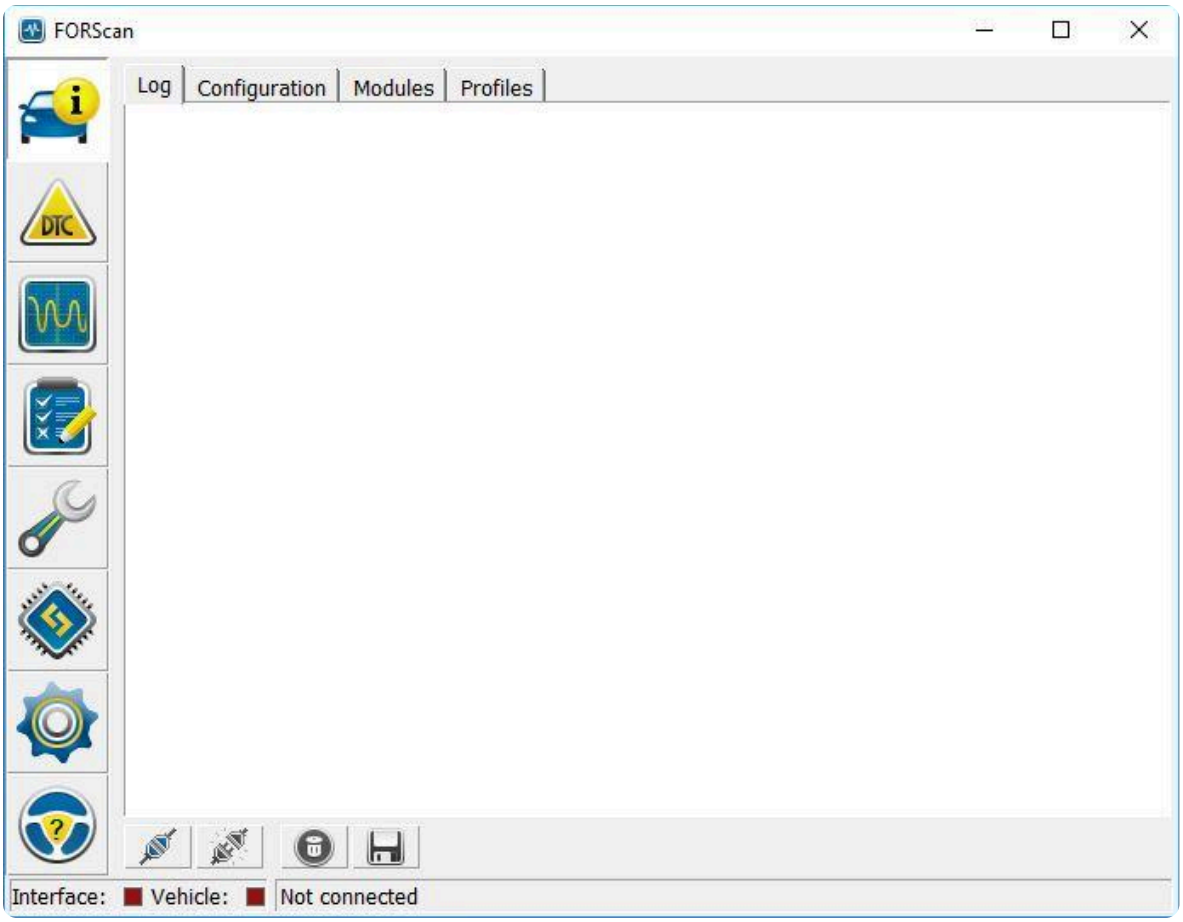
Also, FORScan changed its Extended License protection system in version 2.3.69 in January 2026, so I'd use the **current FORScan software/documentation**, rather than following older YouTube instructions. (FORScan Forum)

If you'd like, I can **look up the exact 2024 Ranger Raptor/Diesel FORScan procedure and determine whether Ride Height Calibration specifically requires the Extended License**, before you spend any money.

List all the procedures I can do with OBDLink EX and FOrscan for Windows

Yes. With an **OBDLink EX + FORScan for Windows**, you have a very capable Ford diagnostic/service tool—far beyond simply reading the check-engine light. The important qualification is that **FORScan exposes functions based on the specific Ford model, year, market, engine, modules and software level**; therefore, no one can truthfully guarantee that

every item below will appear on your 2024 Ranger Raptor. FORScan itself recommends checking the functions actually presented after connecting to the vehicle. (**FORScan Forum**)


FORScan
Log
Configuration
Modules
Profiles
DTC
Interface:
Vehicle:
Not connected

1. Diagnostics — the everyday functions

These generally don't require Extended licensing.

Read diagnostic trouble codes — DTCs

You can scan **multiple vehicle modules**, not just the engine:

- PCM — Powertrain Control Module
- TCM — Transmission Control Module
- ABS
- BCM/BdyCM — Body Control Module
- IPC — Instrument Panel Cluster

- RCM — Restraints/Airbag
- APIM — infotainment
- SCCM — steering-column controls
- HVAC
- AWD/4WD modules
- suspension-related modules
- parking/brake modules
- camera/ADAS modules
- other modules installed on the vehicle

FORScan is designed to read module-level faults rather than being limited to generic OBD-II engine codes. (**Forscan.com**)

Clear DTCs

After repairing the underlying problem you can:

- clear individual/module faults
- clear multiple DTCs
- rescan to see which faults return
- determine whether a fault is active or historical

Freeze-frame information

Where supported, you can examine the operating conditions associated with a fault.

Live data / PIDs

This is one of the most useful capabilities.

You can monitor things such as:

- engine RPM
- coolant temperature
- intake temperature
- boost pressure
- fuel pressure
- fuel rail pressure
- accelerator position
- throttle position
- airflow
- EGR parameters
- DPF parameters
- transmission temperatures
- wheel speeds
- steering angle
- brake parameters
- battery/charging parameters
- sensor voltages
- suspension-related sensor values

- ride-height sensor readings
- numerous module-specific PIDs

The exact PIDs depend on the vehicle.

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2. Module tests / actuator tests

FORScan can perform **output/actuator tests** where the vehicle supports them.

Examples can include:

- cooling fans
- fuel-system components
- solenoids
- relays
- lights
- pumps
- valves
- actuators
- doors/flaps
- electronic brake components
- other module outputs

This is extremely useful for troubleshooting because you can command a component rather than merely observing its behavior.

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3. Service procedures

This is where FORScan becomes particularly interesting for your **Ranger Raptor diesel**.

Available functions vary by vehicle, but FORScan documents service functions such as:

Engine / PCM

- Reset all adaptations
- Reset learned values
- Reset engine-oil deterioration learned value
- Fuel-pump adaptation/reset
- MAF adaptation reset
- O2 sensor adaptation reset
- EGR adaptation reset
- turbocharger adaptation procedures
- injector correction-factor reading
- injector correction-factor programming
- injector calibration
- injector manual testing
- pilot-injection learning/relearning

- fuel-system priming
- DPF static regeneration

FORScan specifically documents these types of diesel service procedures and warns that they should not be run simply out of curiosity because they can change ECU learned values and vehicle behavior. (FORScan Forum)

DPF / diesel emissions

For supported diesel vehicles:

- DPF status monitoring
- DPF regeneration
- DPF static regeneration
- DPF-related learned-value resets
- differential-pressure-related diagnostics
- exhaust temperature monitoring
- regeneration diagnostics
- fuel-system priming

For example, FORScan added **DPF Static Regeneration, Low Pressure Fuel System Prime, injector correction-factor reading and injector correction-factor changing** for the 2022 Ranger P703 2.0 TDCi. (FORScan Forum)

That doesn't prove every one of those functions is present on your particular **2024 Raptor diesel**, but it demonstrates that FORScan has substantial Ranger diesel support.

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4. Transmission service

Depending on the transmission/module:

- transmission DTC diagnostics
- live transmission data
- transmission actuator tests
- adaptive-learning procedures
- transmission reset procedures
- clutch/adaptation procedures where supported
- TCM service procedures
- transmission temperature monitoring

Do not reset transmission adaptations unless you have a reason to do so.

A reset isn't a "performance upgrade"; it clears learned information and may temporarily change shift behavior while the transmission relearns.

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5. ABS / braking system

Depending on vehicle implementation:

- ABS diagnostics
- wheel-speed sensor diagnostics

- ABS live data
- brake-system actuator tests
- ABS service bleeding
- ABS initialization
- steering/vehicle-dynamics initialization
- related calibration procedures

FORScan has added ABS service procedures for various Ford models, although availability is model-specific. (**FORScan Forum**)

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6. Your Raptor's suspension

This is particularly relevant to you.

The important area is the **VDM / vehicle dynamics / suspension-related functions**.

Potentially available functions include:

Ride Height Calibration

This is the procedure we've been discussing.

It can establish the reference position for the ride-height sensors after suspension changes.

Read suspension sensor PIDs

You can potentially monitor:

- LF ride height
- RF ride height
- LR ride height
- RR ride height

This is extremely useful after your four-spring lift.

Suspension diagnostics

You can investigate:

- ride-height sensor faults
- sensor plausibility
- wiring faults
- module faults
- calibration status
- related vehicle-dynamics data

Live Valve diagnostics

You can monitor whatever suspension-related PIDs Ford exposes through the vehicle's modules.

Important: FORScan doesn't turn into a FOX suspension tuning application. It can communicate with the vehicle's electronic control system, but it doesn't give you a simple "compression = 35 / rebound = 42" adjustment interface for mechanically changing the FOX shock's internal bypass characteristics.

7. Steering calibration

Depending on the vehicle:

- steering-angle sensor data
- steering-angle calibration/initialization
- steering system diagnostics
- steering-related DTCs
- vehicle-dynamics sensor information

This can be particularly relevant after suspension or alignment work.

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8. ADAS / camera calibration

The newer Ranger platform has substantial electronic driver-assistance equipment.

Where implemented, FORScan can provide procedures involving:

- front camera calibration
- rear camera calibration
- lane-departure camera calibration
- 360° camera calibration
- Pro Trailer Backup Assist camera calibration
- LIN-related module calibration

FORScan's release notes specifically document these calibration procedures for **2022+ Ranger P703**. (FORScan Forum)

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9. Body electronics

You can diagnose and, where supported, configure things such as:

- door modules
- windows
- mirrors
- exterior lighting
- interior lighting
- locks
- alarm
- wipers
- switches
- remote functions
- BCM/BdyCM
- vehicle personalization

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10. Vehicle configuration

This is one of FORScan's most powerful capabilities.

With the appropriate license, you can access **Module Configuration** and, where supported, change factory configuration parameters. FORScan's current documentation gives examples such as changing lighting behavior, double-honk behavior and tire-size settings. (Forscan.com)

Examples commonly supported on various Ford models include:

- tire-size configuration
- lighting behavior
- DRL behavior
- auto-lock behavior
- double-honk behavior
- mirror functions
- remote-start-related options
- instrument-cluster settings
- door-lock behavior
- warning/chime settings
- trailer-related settings
- body-control options

But don't blindly copy an As-Built spreadsheet from another Ranger.

FORScan itself warns that configuration layouts can differ between models/years and recommends the human-readable **Module Configuration** function instead of blindly editing As-Built values. (FORScan Forum)

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11. Tire-size configuration — particularly useful for your 35s

This is something I would investigate on your Raptor.

You changed from the factory tire to:

35-inch tires

Depending on how Ford implements tire-size information on your particular Raptor, FORScan may expose a tire-size configuration parameter.

Correct configuration can affect systems that depend on vehicle speed/wheel circumference.

FORScan specifically documents tire-size configuration through Module Configuration and recommends using OBDLink EX. (FORScan Forum)

Don't simply enter "35" because you have 35-inch tires. The actual tire dimensions and Ford's available parameter values need to be matched correctly.

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12. Fuel-tank configuration

On supported vehicles, FORScan can modify fuel-tank-size configuration and therefore affect things such as:

- fuel-level calculation
- Distance to Empty (DTE)

FORScan has documented this procedure and notes that newer Ford platforms can store the relevant parameter differently. (FORScan Forum)

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13. Key / PATS functions

This is a much more sensitive area.

Where supported:

- PATS diagnostics
- key programming
- key learning
- immobilizer-related procedures
- remote/key-fob programming

However, **PATS programming is an Extended-license function**, and support depends on the vehicle. (FORScan Forum)

I would treat this as a professional procedure, not an experiment.

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14. Module configuration / As-Built

With Extended capability, you can potentially:

Module Configuration

Change supported human-readable parameters.

As-Built

Read/write the hexadecimal configuration blocks used by Ford modules.

Central Configuration

Read/change vehicle-wide configuration where supported.

Module reset/configuration

Some configuration changes require module reset/reinitialization.

These are among the functions FORScan explicitly identifies as Extended-license functions. (FORScan Forum)

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15. Module initialization / replacement

When supported by the vehicle, FORScan can assist with procedures such as:

- initializing replacement modules
- module configuration
- module reset
- relearning
- parameter reset
- module replacement procedures

OBDLink specifically states that the EX gives FORScan access to advanced functions such as initializing certain modules. (**OBDLink® | OBD Solutions LLC**)

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16. Programming / firmware

This is the **high-risk category**.

FORScan can support certain module programming/configuration operations depending on vehicle and software support.

Potentially:

- module programming
- module configuration
- firmware-related operations
- module replacement programming
- calibration/configuration writing

But **do not start firmware programming casually**.

A programming failure can leave a module unusable until properly recovered.

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17. OBD-II generic functions

Separate from Ford-specific functions, you can also access standard OBD-II information such as:

- generic DTCs
- emissions readiness
- Mode 01 live data
- Mode 02 freeze-frame
- Mode 03 DTCs
- Mode 04 clearing DTCs
- Mode 06 test results
- Mode 07 pending codes
- Mode 09 vehicle information
- Mode 0A permanent codes

Availability varies with vehicle and FORScan version.

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18. Data logging

This is one of the functions I think **you'll find particularly useful**.

You can record live PIDs while driving.

For example, on your Raptor you could create a data log containing:

Engine

- RPM
- boost

- coolant temperature
- fuel pressure
- throttle
- accelerator

Transmission

- gear
- transmission temperature
- input/output speed
- shift-related parameters

Chassis

- vehicle speed
- wheel speeds
- steering angle
- brake information

Suspension

- ride-height sensor values
- available vehicle-dynamics parameters

Then compare:

Normal vs Sport vs Off-Road

That could be extremely useful for determining whether the harsh ride you're experiencing is primarily related to the **spring rate/geometry** or whether the electronic suspension control is behaving unexpectedly.

What I'd consider your "Top 20" FORScan functions

For your **2024 Ranger Raptor**, I'd prioritize these:

1	Full-module scan	Establish vehicle health
2	Read DTCs	Find faults
#	**Function**	**Why I'd use it**
4	Live PIDs	Troubleshooting
5	Data logging	Compare vehicle behavior
6	**Ride Height Calibration**	**Your suspension modification**
7	Ride-height sensor PIDs	Verify calibration
8	Suspension/VDM diagnostics	Live Valve investigation
9	Tire-size configuration	**Your 35-inch tires**
10	Steering-angle calibration	Suspension/alignment work

11	ABS diagnostics	Brake/chassis troubleshooting
12	ABS service procedures	Brake service
13	DPF diagnostics	**Diesel**
14	DPF regeneration	**Diesel**
15	Fuel-system prime	**Diesel**
16	Injector correction factors	**Diesel**
17	Injector/pilot learning	**Diesel**
18	Transmission diagnostics	Drivetrain
19	ADAS/camera calibration	Cameras/safety systems
20	Module configuration	Vehicle customization

Standard vs Extended License

Here's the practical distinction for you:

🟢 Standard/free

Generally includes:

- DTC scanning
- DTC clearing
- live data
- basic tests
- diagnostics
- reports

FORScan's official license documentation says Standard is sufficient for basic diagnostics. (Forscan.com)

🟠 Extended

You'll need it for protected functions such as:

- PATS programming
- Module Configuration
- As-Built configuration
- Central Configuration
- certain protected service functions

The official FORScan forum identifies **Configuration and Programming functions** as Extended-license functions. (FORScan Forum)

One important correction regarding the license

I want to correct something from my earlier answer because **FORScan's licensing situation has evolved in 2026**.

The current FORScan ecosystem/documentation distinguishes Standard and Extended capabilities, but newer FORScan 2.4.x releases have introduced additional licensing requirements. The safest approach is to use the **current official FORScan Windows release and its current licensing instructions**, rather than assuming that an old "free two-month Extended license" rule applies identically to every current release. (CyanLabs Official Community)

For your purposes, I'd start with the current Windows release and **OBDLink EX**. OBDLink specifically describes the EX as its FORScan Windows adapter and says it supports the full range of FORScan functions for Ford vehicles. (OBDLink® | OBD Solutions LLC)

And for your Raptor specifically...

The three things I would investigate **before touching anything else** are:

① Ride Height Calibration
② Ride-height sensor live PIDs
③ Tire-size configuration for your 35s

Then we can use FORScan to determine whether your **harder ride is actually related to the electronic Live Valve calibration or whether the new springs/tire pressure/shock operating position are responsible.**

If you want, I can next build you a **2024 Ranger Raptor FORScan "toolbox"** showing **each module (PCM, TCM, ABS, VDM, BCM, IPC, RCM, APIM, etc.), what you can read/change in it, what is safe to touch, and what you should NEVER change.**

Yes. I checked the current FORScan material and recent **2024–2025 Ranger Raptor** owner reports before laying this out. One important correction to my earlier answer: FORScan's published release notes originally documented **VDM Ride Height Calibration for the Bronco**, while the **Ranger Raptor implementation is confirmed by recent P703/Raptor reports and procedures**, so the exact menu/PID names can vary with your FORScan version and vehicle software. (FORScan Forum)

For your truck—**2024 Ranger Raptor, four replacement/lift springs and 35-inch tires**—I would perform the three operations in this order:

① Read the existing VDM height PIDs → ② Perform VDM Ride Height Calibration → ③ Configure tire circumference and perform the required module relearns.

Before you start

You need

- Windows 10/11 laptop
- **OBDLink EX USB**
- Current FORScan for Windows
- FORScan license appropriate for the function
- Good laptop battery or AC power
- Truck on a **flat, level surface**
- Normal operating fuel level
- Suspension fully assembled and settled
- 35-inch tires installed and properly inflated

FORScan itself recommends the OBDLink EX for Ford configuration work. (FORScan Forum)

Do not use As-Built editing for these procedures unless you have a specific Ford service-data reason to do so.
FORScan explicitly recommends using the human-readable Module Configuration rather than manually manipulating As-Built values. (FORScan Forum)

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① READ THE RIDE-HEIGHT SENSOR LIVE PIDs

I recommend doing this **before calibration** so you have a baseline.

A. Prepare the truck

1. Park on a **flat concrete surface**.
2. Put the truck in its normal unloaded configuration.
3. Remove temporary cargo.
4. Make sure the four wheels are on the ground.
5. Let the suspension settle.
6. Ideally, drive a short distance and return to the level surface.
7. Turn ignition **ON**, engine **OFF**.

A recent Ranger Raptor procedure recommends normal vehicle weight and allowing recently installed suspension components to settle before calibration. (G.O.A.T Offroad)

Important

For calibration, I would preferably have the fuel tank **fairly full** and then accurately tell FORScan the fuel level when prompted.

B. Connect OBDLink EX

1. Plug the **OBDLink EX** into the truck's OBD-II port.
2. Connect the USB cable to the Windows laptop.
3. Turn ignition ON.
4. Start FORScan.
5. Allow FORScan to identify the vehicle.
6. Wait until the vehicle/interface status indicates that the connection is ready.

Save the vehicle profile when prompted.

C. Open the PID Data Reader

In FORScan:

Left-side menu → Oscilloscope / PID icon

The exact icon can vary slightly with the version.

Then:

1. Open the PID selection window.

2. Select **VDM — Vehicle Dynamics Module**.
3. Look for the ride-height/corner-height PIDs.

Recent Ranger Raptor-specific instructions identify four corner-height parameters, typically along the lines of:

- **FL / Front Left**
- **FR / Front Right**
- **RL / Rear Left**
- **RR / Rear Right**

The exact names can vary, so don't worry if your version uses a slightly different naming convention. (G.O.A.T Offroad)

D. Record the four values

Create a little record like this:

Front Left	___
Front Right	___
Rear Left	___
Rear Right	___

Sensor **Before calibration**

Then press **Play/Start** and watch the readings.

Let them stabilize for several seconds.

What you're looking for

You aren't necessarily looking for four identical numbers.

You're primarily checking that:

- all four sensors produce plausible readings;
- none is stuck;
- none suddenly jumps around;
- no sensor shows an obviously abnormal value;
- the readings respond when the suspension moves.

Recent Raptor owners have also used FORScan to compare the individual wheel sensors before and after calibration. (Ranger6G)

STOP here if you see something abnormal

If one sensor is dramatically different or doesn't respond normally, **don't calibrate yet**.

Inspect the corresponding:

- sensor linkage
- mounting bracket
- wiring
- connector

- suspension arm

A loose/bent ride-height sensor can itself cause a stiff or abnormal ride. A 2024 Raptor owner specifically reported investigating a loose rear trailing-arm sensor after the ride became stiff. (Ranger6G)

---

② PERFORM VDM RIDE HEIGHT CALIBRATION

Once you've established that all four sensors appear healthy:

A. Stop the PID recording

Go back to the PID screen.

Press **Stop**.

This is important because you don't want the PID reader simultaneously running while you're attempting the service procedure.

B. Open Service Procedures

On the left side of FORScan:

Wrench icon → Service Procedures

Look for:

VDM — Ride Height Calibration

Recent 2024/2025 Ranger Raptor owners report this exact menu path/function. One 2025 Raptor owner described:

> wrench icon → VDM → Ride Height Calibration

and reported that the procedure took approximately 10 seconds. (Ranger6G)

C. Start the calibration

Select:

VDM Ride Height Calibration

Then press the **Play/Run** button.

FORScan will display a warning/information screen.

Read it carefully.

Proceed only if the truck is properly prepared.

D. Enter the fuel level

FORScan will ask for the vehicle's **fuel level**.

Enter the level that corresponds to the actual amount of fuel in the truck.

This is important because fuel weight affects static suspension height.

Recent Raptor-specific procedures explicitly report that FORScan asks for fuel level during VDM ride-height calibration. (**Ranger6G**)

My recommendation for your truck

Because you've changed all four springs:

Fill the tank before doing the final calibration.

Then select the appropriate fuel level when FORScan asks.

E. Get out of the truck

Before the calibration actually executes:

- transmission in the required stationary state;
- truck on level ground;
- engine off if instructed;
- doors closed;
- nobody sitting in the driver's seat;
- no cargo that isn't normally there;
- don't touch the suspension.

One owner-reported procedure specifically recommends leaving the vehicle before starting the recalibration. (**Reddit**)

F. Execute the calibration

Press **OK/Continue** when FORScan asks.

The procedure should be very quick.

You may see something like:

Processing...

followed by:

Service Procedure Completed Successfully

Do **not** disconnect the OBDLink EX while the procedure is running.

G. Re-read the four height PIDs

Now return to:

PID Data Reader → VDM

Select the same four corner-height PIDs.

Press **Play**.

Record:

Front Left	—	—
Front Right **Sensor**	**Before**	**After**
Rear Right	—	—

You should generally see the readings move toward their calibrated reference/zero position and become more consistent.

Recent Raptor procedures report that the post-calibration readings should be substantially more even, with small differences not necessarily indicating a problem. (G.O.A.T Offroad)

🚨 If calibration fails

Don't repeatedly press the button.

Check:

Mechanical

- Is the truck actually level?
- Are all four springs correctly installed?
- Are the ride-height sensor links correctly installed?
- Is anything bent?
- Is a sensor arm binding?
- Is a connector loose?

Electronic

- Scan VDM for DTCs.
- Check the four sensor PIDs again.
- Verify that all four sensors are communicating.

Suspension geometry

If your lift is substantial, the sensor/linkage may be operating outside its intended range.

Do not start changing VDM configuration values randomly.

---

③ CONFIGURE YOUR 35-INCH TIRES

This is a **separate operation** from ride-height calibration.

Your 35s change the effective rolling circumference, so the vehicle's stored tire circumference may need to be changed to maintain accurate vehicle-speed calculations. FORScan's official tire-size procedure says tire size is stored as **tire circumference in millimeters**, and that the value can be shared by PCM, TCM, ABS, AWD and other systems. (FORScan Forum)

A. Determine the actual tire size

Don't simply enter:

35

You need the **complete tire designation**.

For example, your tire might be:

35 × 12.50 R17

or:

35 × 11.50 R18

or something else.

Tell me the exact sidewall marking and I can calculate the starting circumference for you.

B. Calculate circumference

The theoretical circumference is:

Circumference = π × tire diameter

For a nominal 35-inch tire:

35 × 25.4 = 889 mm diameter

Then:

889 × π ≈ 2,793 mm circumference

But **do not automatically program 2,793 mm**.

Actual tire dimensions differ by manufacturer, wheel width, load and inflation pressure.

More importantly, FORScan's procedure says the vehicle expects a circumference value in millimeters and that some modules have their own allowable range. (**FORScan Forum**)

So use the actual tire size as your starting point rather than blindly entering 2,793.

C. Go to Module Configuration

In FORScan:

Configuration & Programming

Then select:

BdyCM Module Configuration

This is the method FORScan itself recommends for tire-size configuration. (**FORScan Forum**)

D. Search for "Tire"

The BdyCM configuration screen contains a large number of parameters.

Use the search/filter box.

Enter:

tire

Look for:

Tire Circumference

FORScan's official procedure specifically instructs users to filter for "tire" and select **Tire Circumference**. (FORScan Forum)

E. Record the factory value FIRST

Before changing anything:

Write down the existing Tire Circumference value.

For example:

> Factory: _____ mm

Take a screenshot if possible.

This gives you a recovery reference.

F. Change the circumference

Double-click:

Tire Circumference

Enter the appropriate value in **mm**.

Then press:

OK

G. Write the new value

Press:

Write

FORScan will warn you that you're changing vehicle configuration.

Confirm only after you've verified the number.

⚠️ Important: don't panic if DTCs appear

FORScan's own tire-size procedure explains that after changing the BdyCM/ECC value, other modules may temporarily have a different stored value.

This can produce discrepancies such as:

- **P160A**
- **P0610**
- and potentially other configuration-related codes.

Those aren't necessarily evidence that you damaged something. The next step is to have the affected modules learn the new configuration. (**FORScan Forum**)

H. Perform PCM vehicle-data relearn

Go to:

Configuration & Programming

Select:

PCM

Look for something similar to:

Module Initialization / Relearn Vehicle Data

Run the procedure.

The exact wording can vary by FORScan version/vehicle.

I. Perform TCM vehicle-data relearn

Then do the same for:

TCM

Look for:

Module Initialization / Relearn Vehicle Data

Run it if available.

FORScan's official tire-size procedure specifically describes using the PCM and TCM relearn functions after changing the ECC tire circumference. It also notes that some vehicles may require additional modules such as AWD or SOBDMC. (**FORScan Forum**)

J. Clear DTCs

After the relearns:

1. Perform a complete module scan.
2. Save the results.
3. Clear the configuration-related DTCs.
4. Turn ignition OFF.
5. Wait a few minutes.
6. Restart the truck.

7. Scan again.

You want to end up with:

No persistent tire-size/configuration DTCs.

K. Verify your speedometer

This is the final test.

Use a reliable GPS speed source.

For example:

Vehicle speedometer: 60 mph
GPS: 60 mph

Check several speeds:

30 mph	___
40 mph	
Speedometer	**GPS**
60 mph	___
70 mph	___

Don't use a single speed measurement to decide that the calibration is perfect.

VERY IMPORTANT FOR YOUR 35s

There is a potential issue here.

FORScan warns that some Ford modules have a **hard-coded minimum/maximum allowable tire circumference**. If your requested circumference is outside that range, the module may refuse to learn it and can generate codes such as **P1635 or U0422**. (FORScan Forum)

Therefore:

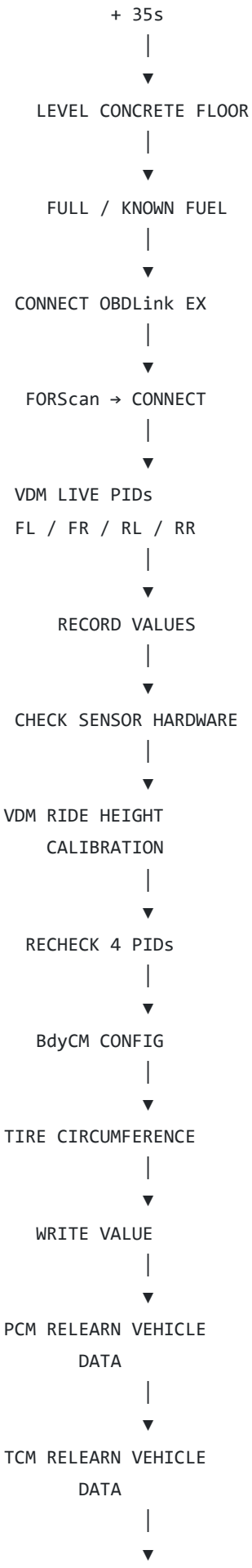
Do not force an arbitrary value just to make the speedometer read correctly.

If the Raptor's software won't accept the true circumference, that's a signal to investigate the vehicle-specific configuration rather than simply entering a fake value.

Recommended sequence for YOUR truck

I'd actually do the entire job as one controlled session:

```
2024 RANGER RAPTOR
4 NEW LIFT SPRINGS
```


+ 35s
LEVEL CONCRETE FLOOR
FULL / KNOWN FUEL
CONNECT OBDLink EX
FORScan → CONNECT
VDM LIVE PIDs
FL / FR / RL / RR
RECORD VALUES
CHECK SENSOR HARDWARE
VDM RIDE HEIGHT CALIBRATION
RECHECK 4 PIDs
BdyCM CONFIG
TIRE CIRCUMFERENCE
WRITE VALUE
PCM RELEARN VEHICLE DATA
TCM RELEARN VEHICLE DATA

```
CLEAR DTCs
    │
    ▼
GPS SPEED TEST
    │
    ▼
ROAD TEST RIDE
```

One thing I would change from my previous advice

Do the ride-height calibration before trying to judge the harsh ride.

Your particular combination—**lifted springs + 35s + FOX Live Valve**—makes the VDM calibration especially relevant. Recent 2024/2025 Raptor owners with lifts report using the VDM Ride Height Calibration successfully, including a 2024 owner running a **2.25-inch level + 35s**. (Ranger6G)

But calibration **doesn't change the mechanical spring rate**. If your truck is still substantially harsher after calibration, the next diagnostic step should be **tire pressure → spring rate → suspension travel → shock operating position**, rather than continuing to change FORScan settings.

I can make this much more precise for you

If you give me these **3 pieces of information**:

1. **Exact 35-inch tire size** printed on the sidewall (e.g. `35x12.50R17`)
2. **Brand/model of the four replacement springs**
3. **Approximate lift height** (e.g. +1", +1.5", +2")

I can calculate the **starting tire-circumference value** and make you a **Ranger Raptor-specific FORScan worksheet** with the exact values to record **before/after calibration**, including a troubleshooting table for what to do if one of the four VDM sensors doesn't zero correctly.