

Fitting Instructions F4R-Hilux2-IS

Toyota Hilux Gen 7

91009 and 92009 F4R Shock Absorbers

F4R
FORMULA 4X4

Description of Shock

The F4R Formula 4x4 kit for the Toyota Hilux Gen 7 is a 3-way adjustable remote reservoirs shock in the front and 2-way adjustable remote reservoirs shock in the rear, specifically designed to suit your vehicle. The damper uses Fulcrums carefully chosen shim stacks to create the best damping characteristics for this vehicle.

The front damper is 3-way adjustable, Spring seat height, compression Low-speed bypass, compression high-speed valve and rebound bypass.

The rear damper is 2-way adjustable, compression Low-speed bypass, compression high-speed valve and rebound bypass.

The adjustment clickers allow the user to carefully control how much oil is allowed to flow and bypass the shim stacks in each direction. Opening the clickers allows more oil to bypass and flow, reducing the damping effort in either compression or rebound.

This allows tuning for different load scenarios and road conditions.

Use of adjustments

Please note that before making any adjustments you should always make a note of what settings you have and what you change them too. This will ensure you keep track of the positions and don't get lost. If you are ever unsure wind the clickers all the way clockwise and count back out to the desired position. Each clicker has direction of positive (more damping) and negative (less damping) listed on their surface.

Fulcrum recommends the following damping settings as a starting point. (Note that this number of clicks anti-clockwise from the fully closed position.)

Front and rear Compression Low: 4 clicks (1 to 8 total) – Small adjuster on reservoir

Front and rear Compression high: position 3 (1 to 6 total) – large adjuster on reservoir

Front and rear Rebound: 2 clicks (1 to 12 total) – on shaft end mount, blue adjuster or silver pin clicker depending on vehicle.



Due to the heavy-duty design of the damper, it may be required to turn the adjusters one or two more clicks anticlockwise in compression and rebound for the first couple of thousand km, to reduce the stiffness and account for a running in period. Please make is full adjustment range on clickers before install as they may be stiff from assembly.

Spring height can be adjusted using the spanners provided to raise or lower the spring seat. Raising spring seat will increase ride height and lowering will decrease. Each vehicle will differ in how much you need to adjust the spring seat as shock motion ratio differs. Motion ratio is the amount of travel the wheel moves compared to the shock.

Motion Ratio Adjustment Example:

Is you change spring seat height 25mm and gain 50mm ride height, the motion ratio is 2. Is you change spring seat height 30mm and gain 50mm ride height, the motion ratio is 1.67

How to tune the damping settings

It is important to remember whenever tuning a passive damper, every adjustment is a compromise. An improvement in one area of ride and handling will detract somewhere else. The aim is to create the best compromise for your driving style and scenario.

| Problem | Damper Adjustment |
|---------------------------------------|---|
| Car easily bottoms out. | More high-speed compression. |
| Car feels lazy or unresponsive. | More low-speed compression. |
| Car feels too harsh over bumps. | Less low-speed compression on small bumps Less high-speed compression on large bumps |
| Car Kicks off bumps. | More rebound. |
| Car feels floaty. | More rebound. |
| Car is harsh over cracks or potholes. | Less rebound. |
| Front is too high. | Reduce front spring pre-load. |
| Front is too low. | Increase front spring pre-load. |

Installation

Check spring preload

Initial captured spring length should be 305mm. This will be a suitable spring length a 50mm lift. If your vehicle has bull bar and or winch, adjust the captured spring length to 295mm for a 50mm lift. This vehicle has an approximate motion ratio of 1.88, so to increase the vehicle 25mm in ride height, the spring length will need to reduce 13mm. To adjust, ensure that the spring is compressed off the adjustable spring seat. Losing the clamping bolt and adjust using the provided spanner to required length. Tighten the bolt before releasing the spring. The maximum captured length of this spring is 315mm.

Please note these are suggested spring length values and still may differ depending on the set up and weight of your and vehicle and desired ride height. It is highly recommended that this be completed by your local Fulcrum workshop.

Install the strut assembly – Front

Firstly, the two braces that run underneath the Swaybar will need to be unbolted and spaced down with supplied spacers. There will be 5 spacers needed per brace.



With previous shock removed, Swaybar unbolted from the links and mounting point, insert the two relocation plates to sway bar mounting point with reservoir bracket in between. Once relocation plate is in position remount sway bar to plate.



Once this is complete, the shock can be inserted into the tower and bolted in. Make sure that the hose from the the top of the shock is pointing to the front of the vehcile for reservoir positioning. Ensure that the lower shock mount has the rebound adjuster pointing inwards.



Once shock is mounted, the reservoir canister can be inserted and hose clamps tightened. Below is the recommended position of the canister



Once installed, attached all removed parts to complete front install.

Install the shock assembly - Rear

The orientation of the new shock will be fitted into the vehicle with body on top and shaft below. The lower mount should have the rebound adjustment clicker point inwards to the vehicle making access easier. To help clearance to body, a spacer and peg extension boss are provided. Place the spacer over the top shock peg. The boss can be pushed into the inside face of the bush and shock placed onto peg. On the passenger side, there is a bracket to support cabling. Unbolt this to make the install of shock easier.



These spacers are also be required on bottom peg in same orientation.



The positioning the hose and reservoir may need to be adjusted to suit fitment in vehicle. Please see suggested images below on fitment. To realign, simply undo the bolt holding the clamp and place reservoir as needed. The reservoir is on a swivel hose, so can be inverted if necessary. It is always recommended to fit shock and articulate vehicle to ensure no contact is made with the reservoir positioning.

Left side of vehicle from rear



Right side of vehicle from front

