All You Need to About Springs by Larry Linder

Standard Springs, Optional Suspensions & Ride height

Standard, F40, F41, and Datona Spring part numbers and rates.

Background:

The judging manual is not inclusive as applies generally to most cars. When I talked to several NCRS

Judges and Judges at Bloomington and Springfield, they said they had seen several documented cars with a

high HP (365 HP) and the F40 suspension package for 1965. The cars were also equipped with 3:70, 4:11, or 4:56 gears and usually the larger black wall tires.

They also said that the F40 even with an FI or 396 was very rare. When you look at the spring rate information, you will understand why anyone who wanted to drive his car on the street didn't buy it.

They also said that there is no documented case of an original 250, or 300 HP car with such an

option. One of the judges I talked to was "Dobbins" when he was judging a 63 - Z06 car.

The F40 used in 64 & 65 are derived from the Z06 parts.

F41 in 66 and 67 share these part number in the Chevrolet part manual.

	PN	Rate #/in
Production Front Spring	346939	280
RPO F40* & F41*	3832518	550
"Datona" 1975*	3986032	860
Production Rear	3850839 (356825)	140
RPO F40* & F41*	3828811 (3977578)	305
"Datona" 1975*	6258056	450

* Lowers vehicle approximately 1 to 1.5 inches.

Testing your spring rates:

To check your spring rates, you need two - two hundred pound guys set in car and see

Continued on page 2

All You Need to About Springs (con't)

Continued from page 1

how far the car drops. Weight distribution for small block cars is 51% rear wheels, 49% front wheels, big block cars 52 % front 48% rear wheels. You should be able to calculate the spring rate.

The basic rates are determined by coil diameter and steel alloy.

To accommodated for Air Conditioned, big block, and big block with air. the free length was different than the non air cars but the rates were similar. The factory used color stripes to code the springs as well as broad cast number for production.

A simple way to test the springs and ride height.

See the service manual for you year of car to determine the correct location to measure make height measurement. Measure the ride height at the base of frame front and rear and from side to side on the 63 - 67.

Spring rates: Sling a 100 # bag of sand to each bumper and re measure the ride height.

Measure the height difference and divide by 200 lb and you can determine the spring rate both front and rear.

Spring Data: If you intend to have your springs repaired by a spring shop you will need to specify to them what the spring deflection is to be at what weight and the compressed length. If you buy new springs you need to shop with this data in hand and have them checked before you install them.

You need to know the front wheel weight and rear wheel weight. Published data can be used but actual measured data is better. Tire wheel / tire weight may have changed and accessories added or deleted. The half load is normally used , 1 passenger and 1/2 tank of fuel, for weighing. The mid year cars have the engine off set to the right by approximately 1" from true center. With a driver on board the car is balanced - right to left. The small block has approximately 51% of the weight on rear wheels and the big block has 49% of the weight on the rear wheels. Cars with energy absorbing bumpers must be weighed.

Front coil example.

Total front end weight of a 66 small block without air is 1400 lb.

divide the 1400 lb by 2. Each wheel supports 700 lb of weight.

Current ride height as measured from the floor to the bottom of frame is 5.5 "

Desired ride height as measured from floor to bottom of frame is 6.4"

Continued on page 3

All You Need to About Springs (con't)

Continued from previous page 2

We do not know the free length of the spring.

Specify to the spring shop that the Spring should deflect 0.9" less @ 700 lb.

They will modify the spring accordingly. This will restore the proper ride height to your car.

Rear leaf spring Example:

I just installed a new spring from Chevrolet and the car sets too high in the rear.

The rear wheel weight of the car is 1500 lb or 750 per wheel.

Measure the current height at the center of the spring. 16.5"

Measure the end height of the spring near the bolts. 10.3"

Ride height from frame to ground.

Measure the current rear ride height 7.8"

Desired ride height. 6.6"

We want to drop the rear ride height by 1.2"

The data the spring shop needs to know.

Spring deflection @ what weight.

Current ride height - desired ride height = spring deflection.

7.8 - 6.6 = 1.2" - amount we want to drop the rear.

1.2" - delta spring deflection.

new spring:16.5 - 10.3 = 6.2" of spring deflection @ 750 lb.

desired: 16.5 - 10.3 + 1.2 = 7.4" of spring deflection @ 750 lb.

What happens when the spring is re-installed the ride height is 6.6 " - just what we wanted.

The new center height is 15.3 inches (determined by spring deflection).

The end height is 10.3 inches (determined by wheel / tire size).

Over the years you can expect the re-arched springs to sag as did the original springs 40 years ago. In 40 years will you care?

Snags & Opportunities: When the spring shop reassembles the leaf spring remind them to use silicone grease on the vinyl separators or you may experience some strange non linear jounce / rebound rates, choppy ride on rough surfaces.

Continued on page 20

All You Need to About Springs (con't)

Continued from page 3

Now would be a good time to have the spring cleaned and painted. The spring needs to be disassembled and cleaned. Use special chemical to remove silicone or paint will not stick. Paint all leaves a light gray, apply silicone grease to vinyl separators and re assemble.

Once you change the ride height you will need to have the wheels realigned. This will re-stored the proper caster to the front end and camber to the rear end. It should now ride and drive as it did when new.

Data Source: Experienced Judges

Chevrolet Corvette Parts Manual 1953 - 1973

Chevrolet Corvette Chassis Preparation manual 1975