Here are some of the more interesting highlights of a few hours with an old Moog catalog.

Front Coil Springs

Front Springs									
Inside Diameter	Moog Number	Wire Diameter	Load Height	Spring Rate lb./in	Free Height	OEM Applic.	Spring force @ installed height	Force at wheel	Front end weight
4.080	5598	0.672	11.000	346	15.387	G-body	1517	1062	2124
4.085	5600	0.672	11.000	346	15.616	G-body	1597	1118	2236
4.085	5602	0.672	11.000	346	15.847	G-body	1677	1174	2348
4.085	5604	0.672	11.000	346	16.076	G-body	1753	1227	2454
4.085	* 5606	0.690	11.000	420	14.637	G-body	1530	1071	2142
4.085	* 5608	0.690	11.000	420	14.897	G-body	1637	1145	2290
4.085	5610	0.690	11.000	420	15.157	G-body	1745	1222	2444
These are the primary springs used in G-bodies. There were a few others not listed that shared the same rates. * HD spring used in MCSS and 442 with A/C.									
4.085	5658	0.690	10.750	579	13.176	S-series	1405	984	1968
4.085	5660	0.720	10.750	639	13.159	S-series	1539	1077	2154
4.085	5662	0.740	10.750	706	13.149	F-body	1693	1185	2370

4.085	** 5664	0.760	10.750	767	13.184	F-body	1870	1309	2618

The primary springs used in G-bodies were also used in most F-bodies. There were a few others not listed that shared the same rates. ** HD spring used in IROC convertible.

Not sure where they get the load height value, I had to compress the spring to 11" to get it in the arm! Probably 8 or 9".

By Rob Smith

Appended by Jeff Davidson with permission.

As you can see by the added numbers, there are numerous springs of the same spring rate available. This allows the spring to be matched to the weight of the vehicle since, depending on options, the ride height would vary if only one spring was available. If you know the weight of the front axle of your car, you could pick a spring that would give you the ride height you desire.

Example:

Let's say you want to use the **5658** S-10 spring in your Monte to gain some spring rate. Assume you already have **5606** springs in your Monte. Let's install a set of **5658** and see what happens. We know that we already have a front end weight of 2142 pounds (assumed) or, 1530 pounds at the spring, but if you look at the installed height weight capability of the **5658**, you can see that it can't support that weight, at that height, so it compresses until it can. In this case, it compresses about .5" further than the **5660** does for the same weight vehicle.

The following chart shows the various spring forces generated by the different springs. As you can see, the stiffer springs lose much of their "push" at heights greater than their Installed Height. The **5606** produces almost twice the force at a 12.00" loaded length than the **5658** does. This should help handling as there will be less weight transferred when cornering. The stiffer spring will decrease body roll as well. One interesting comparison is the **5606** and the **5658**. These two springs would have similar ride and produce the same force at around 9.00" height, but the **5658** force drops off rapidly under rebound conditions when the spring height gets above 10.75". This

should prevent the vehicle from rising too far in the front in response to a rise in the road and get rid of the "floaty" feeling of excessive rebound. But, the **5660** will provide more spring rate if the spring is going to be shortened to attain a custom ride height. You already get around a .25" drop, but that really depends on the actual weight of the vehicle involved. If you want an even stiffer ride, the **5662** springs have been used with good success by several members of the Monte Carlo Mailing list. This spring will really resist the tendency to bottom the front suspension and is needed if you choose to lower the front end by two inches. If you only want to lower by one inch, trimming a quarter or half coil off of the **5660** would probably sufficient to give the ride height you desire and not bottom. The **5662** is strong enough to resist almost .75" of further travel compared to the **5658** and about .5" compared to the **5660**.

Stare at this chart for a while and you will see how different springs function. Interesting!

Spring Comparator-Various forces from various springs and ride heights					
Original application	**SS spec**	**SS spec**	**S-10**	**S-10**	**F body**
Part Number	**5606**	**5608**	**5658**	**5660**	**5662**
Spring Rate	420	420	579	639	706
Load Height	11.00	11.00	10.75	10.75	10.75
Free Height	14.637	14.897	13.176	13.159	13.149
lbs @ load height	1528	1637	1405	1539	1694
Compressed height					
12.00	1108	1217	681	741	811
11.75	1213	1322	826	900	988
11.50	1318	1427	970	1060	1164
11.25	1423	1532	1115	1220	1341
11.00	**1528**	**1637**	1260	1380	1517

10.75	1633	1742	**1405**	**1539**	**1694**
10.50	1738	1847	1549	1699	1870
10.25	1843	1952	1694	1859	2047
10.00	1948	2057	1839	2019	2223
9.75	2053	2162	1984	2178	2400
9.50	2158	2267	2128	2338	2576
9.25	2263	2372	2273	2498	2753
9.00	2368	2477	2418	2658	2929

Blue highlighted (and bold) fields indicate design installed height. Notice that the **5658** would drop the front end almost an inch compared to the **5606**. Cells with red borders indicate the installed height relative to the **5606** (around 1500 lbs spring force). Yellow highlights indicate spring force closest to 2400 pounds.

So, you can see that swapping in a **5658** spring in place of the **5606** would drop your front end about a half inch, if nothing else is changed! If you wanted a little more drop, then the spring could be trimmed, but only a little, instead of putting in a spring with way off dimensions and having to cut off a lot of coil. Since the design installed height of the **5606** is 11" and the installed height of the **5658** is 10.75", you would get an immediate .25" drop IF the **5658** could carry the same weight at that height, but we have seen that it doesn't, so it compresses until it can. The **5662** springs would give a normal ride height compared to the **5606** springs. If you trim coils off, you can re-measure the Free Height, but, the spring rate goes up a little when you shorten the spring.

The math:

To get the compression force on the spring at the installed height (meaning-car sitting on its wheels), take the Free Height and subtract the Load Height from the above charts. Then multiply that result by the spring rate for that particular spring. I assumed a relative wheel rate by multiplying the spring force by .7 to simulate the lower control arm. I based it on some simple measurements of the lower control arm, but .7 is close enough for our purposes. You can then multiply the last number (force at the ball joint) times 2 to see what the front end weight is. If you know the weight of the front end, you can work backwards through the math.

Free Height minus Load height equals distance spring is compressed when installed and holding up vehicle.

This distance times the spring rate equals the amount of force the spring is exerting on the suspension at the point where the spring contacts the lower control arm.

Rear Coil Springs

Rear Springs								
Inside Diam.	Moog Number	Wire Diam.	Load Height	Spring Rate lb./in	Free Height	OEM Application	Pigtail Type	Spring force @ installed height
5.580	5379	0.552	10.25	121	14.750	G-body	19	545
5.580	6321	0.531	10.25	118	14.300	G-body	19	478
5.570	5391	0.590	10.25	142	15.400	G-body	19	731
4.300	5665	0.484	10.25	107	15.420	F-body	17	553
4.310	6377	0.504	10.25	141	13.690	Monza / Sunbird	17	485
5.530	5413	0.580	8.50	167	12.930	A-body	19	738
5.580	5409	0.552	7.50	143	13.440	A-body	19	849
4.300	5659	0.500	10.00	162	13.550	?	17	575
4.300	5661	0.500	10.00	162	14.000	?	17	648

Note: The style 19 is double pig tail and style 17 is single pigtail, open coil top.

The following chart shows the spring included in the chart above, but with spring forces at various heights added. It's interesting to note that at least four of these springs would supply the stock ride height for a Monte SS, even though some were not intended for that application. The rear springs seem to have more variances than the front springs. It looks like at least two of them are intended for station wagon use (5391, 5461). The 6377 spring for the Monza would lower a Monte about a half inch and has the open coil style at the top so it could be trimmed slightly to lower the rear further.

Spring Comparator-Various forces from various springs and ride heights								
Application	**G body**	**G body**	**G body**	**F body**	**Monza**	**A body**	**A body**	**?**
Part Number	**5379**	**6321**	**5391**	**5665**	**6377**	**5413**	**5409**	**5659**
Spring Rate	121	118	142	113	141	166	140	162
Load Height	10.25	10.25	10.25	10.25	10.25	8.50	7.50	10.00
Free Height	14.768	14.300	15.362	15.214	13.895	12.944	13.539	13.550
lbs @ load height	545	478	731	553	485	738	849	575
Compressed height								
12.00	333	271	483	366	238	155	206	251
11.75	363	301	518	393	274	197	242	292
11.50	393	330	554	419	309	239	277	332
11.25	424	360	589	446	344	281	313	373
11.00	454	389	625	473	379	322	349	413
10.75	484	419	660	500	415	364	385	454

10.50	514	448	696	526	450	406	420	494
10.25	545	478	731	553	485	448	456	535
10.00	575	507	767	580	520	489	492	575
9.75	605	537	802	607	556	531	528	616
9.50	635	566	838	633	591	573	563	656
9.25	666	596	873	660	626	615	599	697
9.00	696	625	909	687	661	656	635	737

The aqua color represents the design installed height. Note that the two F-body springs are designed for a 10.25 installed height, so they don't appear on the chart. The red outlined squares indicate the height that spring would sit at at the same load as the 5379 spring.

After doing some investigation, I have determined that a load height of 10.25 for the rear springs is more realistic. One list member said that is where the stock Monte SS should sit. The spring loads match better using 10.25 as a reference, also.

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