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’12-’19 Suzuki GSX-R600

		1	2	3	4	5							
Ratios X:1		2.690	2.110	1.760	1.520	1.350	Primary Ratio= 1.974:1						
Front	Back	1st	2nd	3rd	4th	5th		Front	Back	1st	2nd	3rd	4th	5th
11	44	21.24	16.66	13.90	12.00	10.66		14	44	16.69	13.09	10.92	9.43	8.38
11	45	21.72	17.04	14.21	12.27	10.90		14	45	17.07	13.39	11.17	9.64	8.57
11	46	22.21	17.42	14.53	12.55	11.14		14	46	17.45	13.69	11.42	9.86	8.76
11	47	22.69	17.80	14.84	12.82	11.39		14	47	17.83	13.98	11.66	10.07	8.95
11	48	23.17	18.18	15.16	13.09	11.63		14	48	18.21	14.28	11.91	10.29	9.14
11	49	23.65	18.55	15.48	13.37	11.87		14	49	18.59	14.58	12.16	10.50	9.33
11	50	24.14	18.93	15.79	13.64	12.11		14	50	18.96	14.88	12.41	10.72	9.52
11	51	24.62	19.31	16.11	13.91	12.36		14	51	19.34	15.17	12.66	10.93	9.71
11	52	25.10	19.69	16.42	14.18	12.60		14	52	19.72	15.47	12.90	11.14	9.90
11	53	25.58	20.07	16.74	14.46	12.84		14	53	20.10	15.77	13.15	11.36	10.09
11	54	26.07	20.45	17.06	14.73	13.08		14	54	20.48	16.07	13.40	11.57	10.28
11	55	26.55	20.83	17.37	15.00	13.32		14	55	20.86	16.36	13.65	11.79	10.47
12	44	19.47	15.27	12.74	11.00	9.77		15	44	15.58	12.22	10.19	8.80	7.82
12	45	19.91	15.62	13.03	11.25	9.99		15	45	15.93	12.50	10.42	9.00	7.99
12	46	20.36	15.97	13.32	11.50	10.22		15	46	16.28	12.77	10.65	9.20	8.17
12	47	20.80	16.31	13.61	11.75	10.44		15	47	16.64	13.05	10.89	9.40	8.35
12	48	21.24	16.66	13.90	12.00	10.66		15	48	16.99	13.33	11.12	9.60	8.53
12	49	21.68	17.01	14.19	12.25	10.88		15	49	17.35	13.61	11.35	9.80	8.71
12	50	22.13	17.35	14.48	12.50	11.10		15	50	17.70	13.88	11.58	10.00	8.88
12	51	22.57	17.70	14.77	12.75	11.33		15	51	18.05	14.16	11.81	10.20	9.06
12	52	23.01	18.05	15.06	13.00	11.55		15	52	18.41	14.44	12.04	10.40	9.24
12	53	23.45	18.40	15.34	13.25	11.77		15	53	18.76	14.72	12.28	10.60	9.42
12	54	23.90	18.74	15.63	13.50	11.99		15	54	19.12	14.99	12.51	10.80	9.59
12	55	24.34	19.09	15.92	13.75	12.21		15	55	19.47	15.27	12.74	11.00	9.77
13	44	17.97	14.10	11.76	10.16	9.02		16	44	14.60	11.45	9.55	8.25	7.33
13	45	18.38	14.42	12.03	10.39	9.22		16	45	14.93	11.71	9.77	8.44	7.50
13	46	18.79	14.74	12.29	10.62	9.43		16	46	15.27	11.97	9.99	8.63	7.66
13	47	19.20	15.06	12.56	10.85	9.63		16	47	15.60	12.24	10.21	8.81	7.83
13	48	19.61	15.38	12.83	11.08	9.84		16	48	15.93	12.50	10.42	9.00	7.99
13	49	20.01	15.70	13.10	11.31	10.04		16	49	16.26	12.76	10.64	9.19	8.16
13	50	20.42	16.02	13.36	11.54	10.25		16	50	16.59	13.02	10.86	9.38	8.33
13	51	20.83	16.34	13.63	11.77	10.45		16	51	16.93	13.28	11.07	9.56	8.49
13	52	21.24	16.66	13.90	12.00	10.66		16	52	17.26	13.54	11.29	9.75	8.66
13	53	21.65	16.98	14.16	12.23	10.86		16	53	17.59	13.80	11.51	9.94	8.83
13	54	22.06	17.30	14.43	12.46	11.07		16	54	17.92	14.06	11.73	10.13	8.99
13	55	22.47	17.62	14.70	12.69	11.27		16	55	18.25	14.32	11.94	10.31	9.16

Hyper Racing EVO Fuel Injection

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How To Use a Gearing Chart:

Use the information in the gearing charts to determine front and rear sprocket combinations. The numbers in the charts represents the final drive ratio (FDR). This gearing ratio or FDR is the number of times the crankshaft turns to every one turn of the rear axle. The formula for calculating this is very straight forward:
final drive ratio (FDR)= primary x secondary x tertiary ratio

Primary ratio *= crankshaft to main transmission shaft ratio, number of teeth on the trans shaft divided by number of teeth on crank shaft*

Secondary ratio *= the ratio between the gears in the transmission. These will be different for each gear that you have in the transmission.*

Tertiary ratio *= the rear rear sprocket # of teeth divided by the front sprocket # of teeth so a 13 - 51 sprocket combination = a 3.923 ratio.*

For example, if you are running in third gear and you need to add a tooth but don't have the sprockets to do it, you may be able to use second gear or a different combination with a different front tooth sprocket. Just find the same ratio you want in another combination, and the chart will tell you which sprockets use. It also can be used to find a ratio between two teeth. Look for different ratios that might fall in between two sprockets.

Does it matter which front and rear sprocket I use?

It does not matter which rear gear you use or what size front sprocket. The final drive ratio is all that matters. If a smaller front sprocket makes the car come off the corners better, we would all be running 6 tooth front sprockets. Some drivers may say, "the car comes off the turn a lot better in second gear than third". Again, the final drive is all that matters! Many races have been won using 6th gear on a small track. It takes some funky sprockets to make that work, like maybe an 11-60, but it works the same as running in 2nd gear with a 16-47.
The engine and rear axle only know how many times the crankshaft turns relative to how many times the rear axle turns.

That being said, there may be some slight advantage to running larger front sprockets because the chain does not have to wrap as tight and may be more efficient, but on the dyno it does not show an advantage. Also a bigger sprocket, front and back, adds some rotating weight. Again, these effects seem to be so small it does not matter.

Tire Size Does Matter

Rear tires can be inconsistent in diameter, so take into account how it will affect your gearing when you change tire sizes, even from a 68" to a 69". Take a common example of changing from a Hoosier 69W tire to an American Racer 70" tire (measures more like 71").
Formula:
(Old Tire Size/New Tire Size) = New Sprocket/Old Sprocket or
(New Tire Size/Old Tire Size) x Old Sprocket=New Sprocket

*For example: Running a 52 tooth rear sprocket and changing from a 69" to a 71" right rear tire: (71/69)*52=53.51*

So, increase at least one tooth, maybe two teeth, on the rear due to the 3" increase in right rear tire circumference. It does not appear that the left rear affects the gearing nearly as much as the right rear does.

Comparing Ratio of Different Engines

If you switch engine models or manufacturers or you are trying to compare your gearing to a friend's who has a different type of engine, there is a formula to do just that. Due to different rev limiters, the final drive gear ratio will be different for each type engine.
Formula:
(New RPM Limit/Old RPM Limit) x Old Ratio = New Gearing Ratio

We try to gear our engines so we just hit the rev limiter at the end of the straight. If you have a rev limiter that is not stock and is higher than where you actually want to rev your engine, then use the RPM of your desired max rev limit.

FINAL DRIVE RATIO RECOMMENDATIONS

Size of Track	Rev Limit: 14,800	16,100	16,700	17,100
4/10 Mile	9.9	10.8	11.2	11.5
3/8 Mile	11.2	12.2	12.6	12.9
1/4 Mile	11.6	12.6	13.0	13.3
1/5 Mile	12	13.0	13.4	13.7
1/6 Mile	12.6	13.6	14.0	14.3
1/8 Mile	12.9	13.9	14.3	14.6
1/10 Mile	13.5	14.5	14.9	15.1

Final Drive Ratio

Above are some FDR ratios to start with based on a 69" right rear tire and winged racing. For wingless racing, you will need to drop a tooth in the rear, or subtract .3 from the final drive ratio.

Different parts of the country call their tracks different sizes. The FDR chart above is based on the track sizes listed below.

1/10 Mile or Hockey Rink Indoor
Trenton Cure Arena (NJ)
Boardwalk Hall, Atlantic City (NJ)

1/8 Mile
Action Track USA, Kutztown (PA)
Charleston Speedway (IL)
Port City Raceway (OK)

1/6 Mile
Lanco (Clyde Martin) Speedway (PA)
Macon Speedway (IL)
Cycleland (CA)
Greenwood Valley Action Track (PA)
Tulsa Shootout

1/5 Mile
Plaza Park Raceway (CA)
Lemoore Raceway (CA)
Sweet Springs (MO)

1/4 Mile
Linda's Speedway (PA)
Path Valley Speedway (PA)
Paradise Speedway (NY)
Jacksonville Speedway (IL)

1/3 Mile
Trail-Way Speedway (PA)
Clinton County Motor Speedway (PA)

3/8 Mile
Grandview Speedway (PA)
Chandler Speedway (IN)
Lincoln Speedway (IL)

4/10 Mile
East Bay Raceway Park (FL)
BAPS/Susquehanna (PA)

Different Rev Limiters

The FDR will be determined by the size of the track, the shape of the track, and where your rev limiter of the engine is set. The final drive gear ratio will be different if you are changing rev limiters or comparing gearing with a friend who has an engine with a different rev limiter. Here is the formula to calculate how the ratio will change for a different rev limiter setting:
(New RPM Limit/Old RPM Limit) x Old Ratio = New Gearing Ratio

We try to gear our engines so we just hit the rev limiter at the end of the straight. If you have a rev limiter that is higher than where you actually want to rev your engine, then use the RPM of your desired max rev limit.

We will set the rev limit to 17,200 for a 600cc engine and 16,700 for a Yamaha 2 mil engine, and 15,700 for a Kawasaki 636. U6SA engines by rule need to be set to 16,100 for a 600cc engine and 14,800 for any 2006 or older model year 636cc engine.