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MiscRes: Magazine Articles

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Gear Ratios, A Gearing Change Can Unlock Potential

FOR YOUR INFO

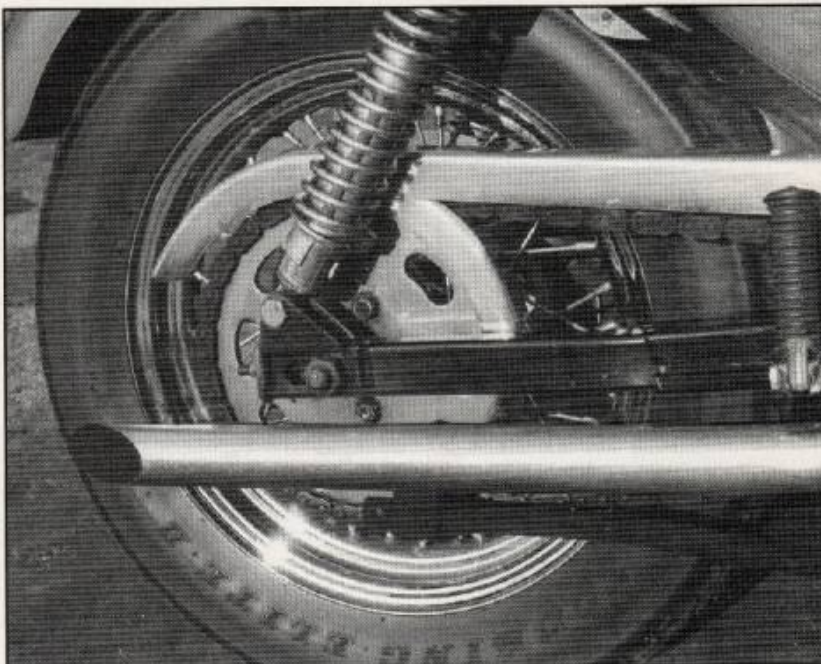
GEAR RATIOS

A Gearing Change Can Unlock Potential

Text by Stephanie Feld, photos by Tom Hurd

Owners of Sportsters are both cursed and blessed by the gods of Harley-Davidson. One of the most common complaints we hear from Sportster owners is that the bike revs too high for comfortable highway travel. That's the curse. As for the blessing, not only are there more sprocket sizes available for Sportsters than you can shake a dipstick at, but the sprockets are almost absurdly easy to change. A re-gearing project which would take most of a day on a Big Twin can be accomplished in less than two hours on a Sportster. (Even if you're mechanically challenged like me!) And we're talking both sprockets and a new chain. As for belt drives, well, there aren't as many choices in pulley sizes but there's still enough variety to keep everyone happy. And, again,

Sportster sprockets are available in a variety of sizes, depending on the year bike, because of dirt-track and road-racing.



TRANSMISSION SPROCKETS

1957 - Early '79	Late 1979 - Early '84	Late 1984 - '90	1991 - Present
19			19
20		20	20
21	21	21	21
22	22	22	22
24	24	24	24
			25
			26

REAR WHEEL SPROCKETS

1957 - '78	1979 - '81	1982 - '85	1986 - Present
	46		
	47	47	47
	48	48	48
49	49	49	49
		50	50
51	51	51	51

The above sprocket sizes were gleaned from common aftermarket sources. If you don't find what you need, companies like Sprocket Specialists can fabricate virtually any combination of splines and teeth you'd care to try.

you can change both pulleys and the belt in less time than it would take your Big Twin buddy to get his inner primary off. Not to mention you don't have to pull the swingarm to install a new belt; most of those Big Twin guys do. (Who says Sportsters are inferior?)

Sportster sprockets are available in a huge variety of sizes because of dirt-track and road racing. Early Sportsters have the same transmission as an XR750 so they use the same transmission sprockets. And later Sportsters have the 883 racing classes to thank for the wide variety of sprocket sizes on the market.

Belt drive owners have a more limited selection. Harley-Davidson offers only one gearing combo for the four-speed models: a 27-tooth transmission pulley with a 61-tooth rear wheel pulley. Owners of five-speeds

fare slightly better. They can choose between a 27- or 29-tooth tranny pulley, as well as a 61- or 55-tooth rear pulley. The only other company I've found that offers pulleys for Sportsters is Supermax Products. They offer 27-, 28-, and 29-tooth transmission pulleys and rear wheel pulleys in 58-, 61-, 66- or 68-tooth configurations, available for both the four- and five-speed models.

The following charts show what a typical four- or five-speed Sportster's engine will be turning at 55, 65 and 75 mph with these sprocket/pulley combinations. These

**Remember,
very "leggy"
or "tall" highway
gearing can make
your Sportster
a bit sluggish off
the line, especially
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amounts of luggage,
pull a trailer, or
if the combined
weight of you and
your girlfriend
exceeds the bike's
recommended load
capacity.**

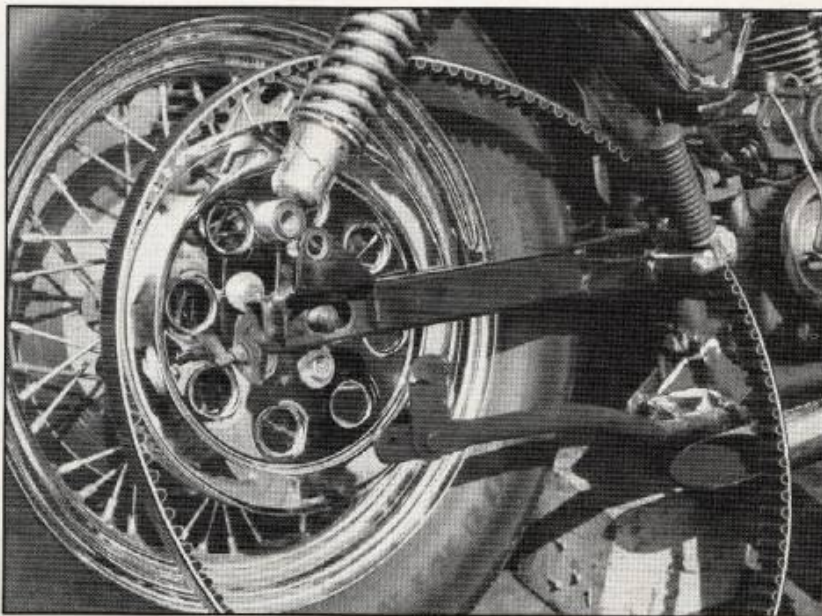
charts include only the more popular sprocket and pulley sizes sold. Just decide what road speed is most important to you and what rpms you'd like your engine to be turning at that speed. Then find the right combination in the charts, order your new sprockets or pulleys, install them and away you go!

Remember, very "leggy" or "tall" highway gearing can make your Sportster a bit sluggish off the line, especially if you carry huge amounts of luggage, pull a trailer, or if the combined weight of you and your girlfriend exceeds the bike's recommended load capacity. In that case, you could probably use a wide-ratio first gear. Ironhead owners can check out the tech story on page 40 to see what's involved with a tranny rebuild/gear swap. If we get some requests for it, we'll also do one on Evos.

CHAIN-DRIVEN, FOUR-SPEED SPORTSTER

Rear Sprocket	Tranny Sprocket	RPMs @ 55 mph	RPMs @ 65 mph	RPMs @ 75 mph
47	19	3150	3725	4300
	20	3000	3550	4100
	21	2850	3400	3900
	22	2750	3250	3750
	23*	2600	3100	3575
48	24*	2500	2950	3425
	19	3250	3850	4400
	20	3100	3650	4200
	21	2950	3450	4000
	22	2800	3300	3800
49	23*	2700	3150	3650
	24*	2550	3050	3500
	19	3300	3900	4500
	20	3150	3700	4300
	21	3000	3550	4100
51	22	2850	3400	3900
	23*	2750	3250	3750
	24*	2600	3100	3550
	19	3450	4050	4700
	20	3300	3900	4450
	21	3100	3700	4250
	22	3000	3500	4050
	23*	2850	3350	3900
	24*	2750	3225	3700

* Note: The 23- and 24-tooth transmission sprockets may require some modifications to the sprocket cover on some models.



Though belt drive owners have less choices than the chain gang, there are aftermarket companies that have a good selection available.

SPRING 1998 HOT XL 63

SUPERMAX PULLEYS

Supermax's pulleys offer several advantages over Harley's parts. First, they're made of a super-strong, polyurethane with a steel spline cast into the center. The combination is kinder to belts than the stock steel and aluminum units, and the Supermax pulleys are as much as four pounds lighter than a corresponding OEM tranny pulley. They're also available in many colors (red, blue, yellow, black, and so on) and with several different choices of machined outer flanges and hub centers. What's not to like?

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BELT-DRIVEN, FOUR-SPEED SPORTSTER

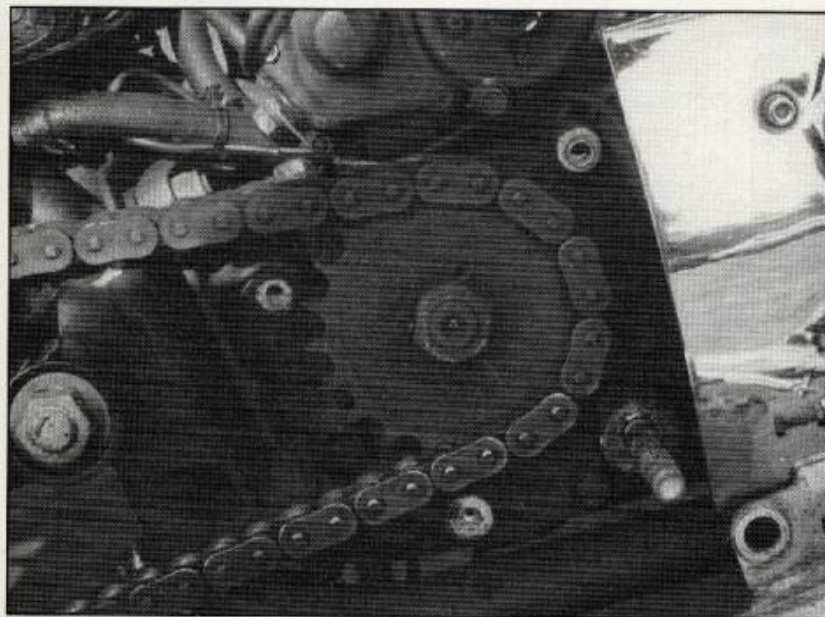
Rear Pulley	Tranny Pulley	RPMs @ 55 mph	RPMs @ 65 mph	RPMs @ 75 mph
55	27	2600	3100	3550
	28	2525	3000	3450
	29*	2450	2900	3300
58	27	2750	3250	3750
	28	2650	3150	3625
	29*	2550	3050	3500
61	27	2900	3450	3950
	28	2800	3300	3800
	29*	2700	3200	3700
66	27	3150	3700	4250
	28	3050	3600	4100
	29*	2950	3450	4000
68	27	3250	3800	4400
	28	3100	3700	4250
	29*	3000	3550	4100

CHAIN-DRIVEN, FIVE-SPEED SPORTSTER

Rear Sprocket	Tranny Sprocket	RPMs @ 55 mph	RPMs @ 65 mph	RPMs @ 75 mph
47	19	2950	3450	4000
	20	2800	3300	3800
	21	2650	3150	3600
	22	2550	3000	3450
	23	2425	2850	3300
	24	2325	2750	3150
	25	2225	2650	3050
48	19	3000	3550	4050
	20	2850	3350	3850
	21	2700	3200	3700
	22	2600	3050	3500
	23	2475	2900	3350
	24	2375	2800	3225
	25	2275	2700	3100
49	26	2200	2600	2975
	19	3050	3600	4150
	20	2900	3450	3950
	21	2750	3250	3750
	22	2650	3100	3600
	23	2525	3000	3450
	24	2400	2850	3300
51	25	2325	2750	3150
	26	2250	2650	3050
	19	3200	3750	4350
	20	3000	3550	4100
	21	2900	3400	3900
	22	2750	3250	3750
	23	2650	3100	3600
	24	2500	2975	3450
	25	2400	2850	3300
	26	2325	2750	3150

BELT-DRIVEN, FIVE-SPEED SPORTSTER

Rear Pulley	Tranny Pulley	RPMs @ 55 mph	RPMs @ 65 mph	RPMs @ 75 mph
55	27	2400	2850	3300
	28	2350	2750	3150
	29	2250	2650	3050
58	27	2550	3000	3450
	28	2450	2900	3350
	29	2375	2800	3225
61	27	2700	3150	3650
	28	2600	3050	3500
	29	2500	2950	3400
66	27	2900	3400	3950
	28	2800	3300	3800
	29	2700	3200	3650
68	27	3000	3500	4050
	28	2900	3400	3900
	29	2800	3300	3800



This is what is under the sprocket cover. Though this is a sprocket, the pulley lives in the same spot and is just as accessible. Big Twin owners have to remove the entire primary drive system to get this far. ■

SOURCES

Supermax Products
PO Box 23, Dept. HXL
California Hot Springs, CA 93207
805/548-6000

Sprocket Specialists
PO Box 265, Dept. HXL
Palermo, CA 95968
916/533-0802

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