CHAINS

BASIC CONSTRUCTION AND CARE

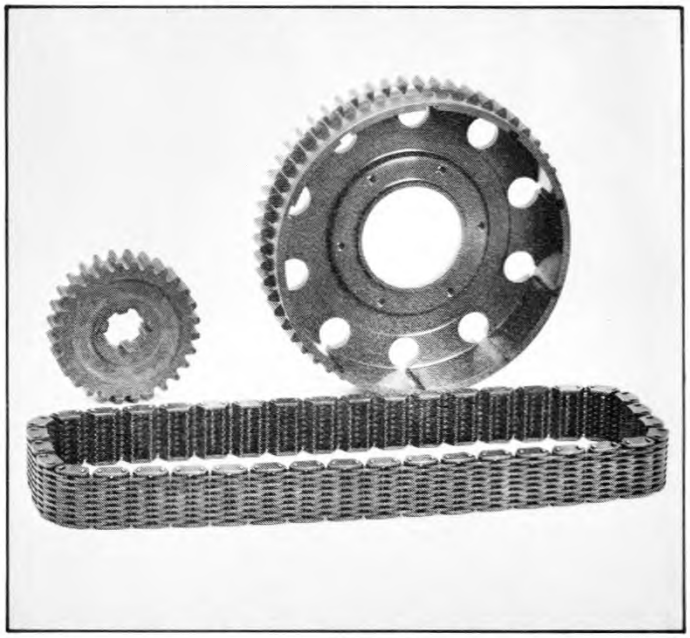
ALL THEY WANT IS A LITTLE OIL AND SOMEONE TO KEEP THEM STRAIGHT

Unlike motorcycles of just a few years ago, most of today's rolling stock uses gears to transmit power generated by the crankshaft to the clutch to the gears in the transmission. But from the transmission output (countershaft) sprocket a single-row chain is most often used to get those ponies to turn the rear wheel. Why? A roller chain is relatively inexpensive to manufacture, easy to keep lubricated (though somewhat messy and inconvenient at times) and usually a breeze to keep in proper adjustment.

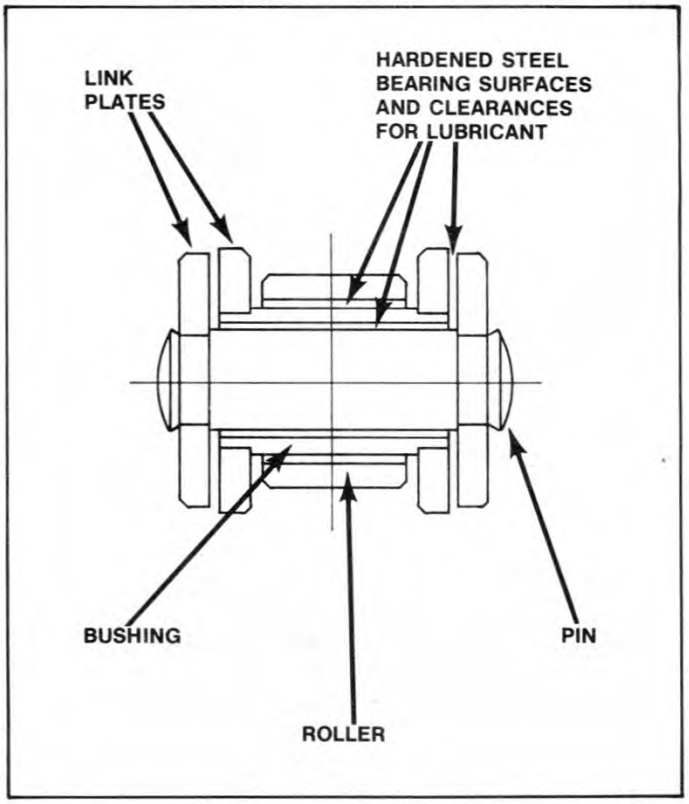
A roller chain is merely a series of alternating inner and outer plates separated by rollers and held together by pins. The inner, or roller links, consist of two sideplates supported by hollow bushings through which pass the hardened steel pins of the outer, or pin links. The pin/bushing joint is surrounded by a movable roller which protects it. This design sounds a lot simpler than it really is, but there is no real mystery about the way a chain is put together and why. The advantages exhibited by a roller chain are sometimes not so obvious: A properly adjusted and lubricated roller chain exhibits efficiency as high as 98 percent, which is more than that obtainable by using gears in lieu of a chain to do the same job. A correctly maintained roller chain will also last many thousands of miles. Rarely do they break for any reason besides neglect. And they eliminate the complication, expense, weight and handling peculiarities that accompany a driveshaft. Their only drawback, as we see it, is a need for frequent lubrication which has a nasty tendency to be flung all over your motorcycle and up your back, leaving your apparel decorated with a Milky Way of tiny black stars.

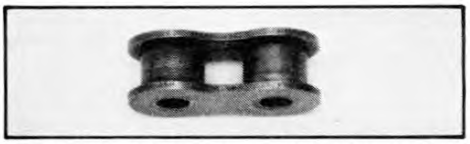
The rider must realize where and why a chain needs oil. First, lubricant in the pin/bushing joint prevents metal-to-metal contact and subsequent excessive wear as the chain spins around its sprockets. Second, lubricant underneath the roller cushions its impact with the sprocket teeth. Contrary to its name the roller does not roll at all as it engages the sprocket—its sole purpose is to protect the bushing from sprocket wear, a job it cannot do without a proper cushion of oil. Third, since a chain experiences very little sideloading when properly aligned, there isn't much friction between the sideplates, but an oil film there still doesn't hurt. Finally a chain must be coated with oil to prevent corrosion and rust.

The easiest and most sanitary way to oil a chain is to prop up the bike so the rear wheel spins freely. Any name brand of aerosol spray will suffice as a lubricant, although the ones which come with a small plastic tube that press-fits into the nozzle are the simplest to apply. While spinning the back wheel, squirt oil between the link plates top and bottom on both sides. The pressure of the aerosol or its built-in foaming action will help the oil penetrate the critical pin/bushing joint and the usual spillover will be sufficient to sneak under the rollers and fend off rust. If you oil the chain while it's still hot after a ride, the heat will thin the lubricant and help it penetrate the labyrinthine path



This Morse Hy-Vo chain and sprocket kit was developed as a replacement primary drive for Triumph and BSA dirt track twins. Honda uses Hy-Vo chains, built by Tsubaki under license by Morse, to drive the jackshaft in GL1000, CB-550 and CBX Six engines. The 400 Hawks and the CBX also use Hy-Vo cam chains to reduce noise and "whip."





The heart of any chain, the roller link, is connected to the next roller link by the pin link.

to the pin/bushing joint. If you wait a minute or two and then wipe the chain thoroughly with a Turkish towel, the oil's fling factor will be less evident on your clothes and your bike will stay cleaner.

Some people remove their chain, go to the trouble of cleaning it in solvent and then soaking it in good old SAE 30W motor oil to be sure of total penetration. Occasional cleaning is wise since the sludge left by oil mixed with road dirt can prevent freshly applied lubricant from reaching the chain's inner sanctums. Some fanatics still cling to a tedious and messy drill popularized in British service manuals by cooking their chain in a thick grease fortified with molybdenum disulphide. If you have the time and want the satisfaction of giving a chain your best shot, order a tin of genuine imported Duckhams Chain Grease from Brian Slark Classic Motorcycles, 1690 Placentia Ave., Bldg. D, Costa Mesa, CA 92627.

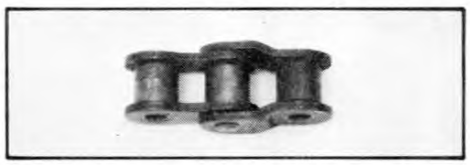
With the advent of today's large displacement, high horsepower road machines the chain's life is made even more difficult. Due to less than perfect design of the shock absorbing mechanisms at the clutch and rear wheel, improper chain adjustment (a responsibility of the machine's owner), sloppy riding habits, and the S/S (stoplight-to-stoplight) freaks, the manufacturers of such machines had to come up with bigger, stronger and more *idiot-proof* chains. Enter the ¾ x ¾-inch (630) chain with lubricant permanently sealed in the pin/bushing joint by rubber O-rings between the inner and outer link plates. These chains require slightly less attention from the owner in the lubrication department but oiling is still necessary to replenish the roller's shock-absorbing cushion and prevent rust.

Proper alignment and tension are equally important to chain life and performance. Theoretically the chain will be aligned with both sprockets when the two wheels are properly aligned. One of the surest ways to align the wheels is to get a rough beginning by lining up the rear axle adjuster notch with the notches stamped on your swing arm, assuming said notches appear on your bike. Then run your bike up to 25 or 30 mph and carefully let go of the bars to see if the bike veers in either direction on its own. Small changes in rear axle position will eventually result in a true-tracking motorcycle with a happy chain.

CHAIN SIZES

Number	Roller Diameter (in.)	Pitch (in.)	Roller Width (in.)
420	0.306	½	¼
425	0.312	½	5/16
428	0.335	½	5/16
520	0.400	⅝	¼
525	0.400	⅝	5/16
530	0.400	⅝	⅜
630	0.469	¾	⅜
600	0.469	¾	½

This is a typical master link. The locking clip (bottom) should always be installed with the closed end facing the direction of chain travel.



A half link, or cranked link as it is sometimes called, helps when the chain's length is almost *right.*

Drive-chain tension is not only critical to chain life but also to sprocket teeth and countershaft bearings. One to 1½ inches of slack is about right when the chain is at its tightest—that point when the countershaft, swingarm pivot and rear axle are all in the same plane. Once tension at this point is set, you can record the distance from the bottom of the swing arm to the top run of the chain with the bike on its centerstand (or a prop stand) and use that measurement for subsequent readjustments.

The life you can expect from your chain will be a direct result of keeping it well lubricated and adjusted, along with a factor of how hard you ride. When is it time for a new chain? Simple. Pull the chain away from the rear sprocket and if you can see half a sprocket tooth or more, pitch it. *M*