

**S**ooner or later you're going to experience the hollow feeling that comes when a usually stiff clutch lever abruptly pops and goes limp in your fingers. Or when your Genuine MX Style throttle suddenly feels smoother than it ever has, accompanied by a sudden drop in rpm. Or when a brake pedal somehow finds an extra two inches of travel and your downhill velocity approaches terminal.

The Dread Broken Cable Syndrome happens to the best of us from time to time. But what do you do about it? If you have a replacement cable handy the answer is simple. But there are often times when we are forced to make do. Like when part number 58100-26921 is back-ordered indefinitely. Or when you've just installed a set of supertrick bars only to discover that the cables no longer fit. Or when you happen to be the proud owner of a 1967 Jawa Speedway bike, for which there are even fewer parts outlets than places to ride it. In these and similar circumstances it may become necessary to (shudder) *make a cable*. The very thought is enough to strike fear in the hearts of many. Not to worry. Once you know how, it's a lot easier than you might think.

The whole job has been made virtually painless over the past few years through the development and continual improvement of the universal cable. Not too long ago the term "universal cable" meant that it universally didn't fit. Often it was easier to build up a whole new cable from scratch rather than mess with one of the so-called universal jobs. However, thanks largely to companies like Flanders Motorcycle Accessories, universality has taken on a whole new meaning.

A universal cable is, in reality, simply one that has been designed to fit a wide variety of applications. For example, Flanders' throttle cable #CA430 fits BMW, CZ, Husqvarna, Maico, Penton and Sachs. Universal

# CABLES... AND HOW TO COPE WITH THEM

cables can either come ready to install or else require that you solder one fitting in place. Flanders also makes a fitting assortment that is available from most dealers. If you foresee making a lot of cables, you can purchase the kit for \$19.95.

Even though universal cables are widely available, there still may be times when you'll need to build a cable from scratch. It's a good skill to have and one easily acquired, given the right information. So, before reaching for the acid-core and butane torch, here are a few things you should know.

According to both John Flanders and Terry Davis (of Terrycables fame), the best solder to use for cable work is called 50/50. This designation means that the wire is an alloy composed of 50 percent tin and 50 percent lead. Don't use acid or rosin core, 60/40, or, contrary to what you may read or hear elsewhere, silver solder. Silver solder generally has a melting temperature so high that applying it may ruin the temper of the cable wire. An eight-ounce roll of 50/50 solder runs about \$4 at hardware stores.

For shop use, or for anyone contemplating a lot of soldering, Flanders sells a device called a solder pot and bars of 50/50 solder. The pot is plugged into a wall socket, the tip of the bar inserted into the pot, and soon you have a nice pool of liquid solder at just the right temperature. Simply dip the cable end into the solder and allow it to cool. Very sanitary, but, at around \$40 for the pot and \$10 each for solder bars, a bit pricey for occasional use.

For you and me, the standard sol-

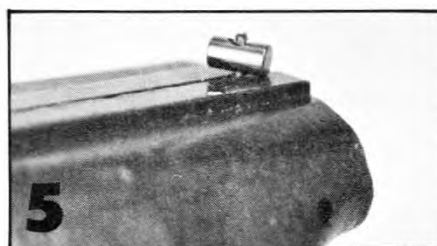
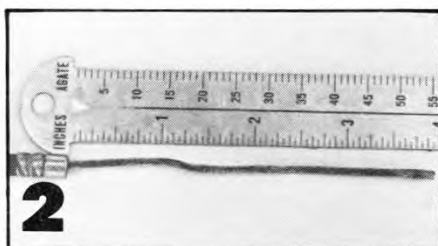
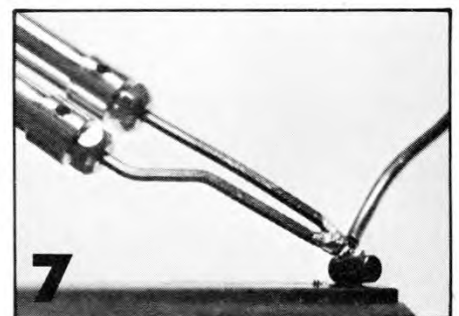
dering gun is the most practical way to go. Guns with extra tips can be picked up for \$10-\$20 and will come in handy for other soldering uses. Old-fashioned soldering irons will also do the job, but usually take longer to heat and are not as safe or convenient as the gun. A butane torch is not recommended for our purposes, as it's easy to damage the wire with its hot flame.

Flanders also markets a flux solution which is basically muriatic acid, at about \$2 for an eight-ounce bottle. The flux is applied to the hot metal before soldering to clean the surfaces and assure a strong bond. Similar solutions can be found near the solder at most hardware stores.

Armed with the above knowledge, the right tools and a positive attitude, you're ready to go to work. The accompanying photographs will show you, step by step, exactly how to accomplish the task.

To the workbench!

**1.** First, compare the new cable with the old one (you *did* save the old one), to make sure the metal caps at each end (ferrules) are of the same size, wire diameter is the same, and new cable is long enough. If starting from scratch, just cut lengths of wire and conduit (outer housing) to match the old cable. See dealer for fittings.



2.

Push the good end of the old wire all the way into the conduit and measure the length of the exposed end. Most breaks occur right at the fitting, so it should be easy to estimate the original length. Test route the conduit on the bike to make sure there will be no kinks or pinches and a minimum of curves. Make few directional changes and make sure all curves are of the largest radius possible. Route cables so they won't snag on branches or protusions on the bike itself, and watch out for unseen pinches and kinks in areas such as under the gas tank and behind the headlight or number plate.

3.

Remove the wire from the new cable and, using dykes, cut the conduit to match the old cable. (When cutting cable conduit with ordinary dykes, it's best to first separate the coiled conduit wire with a knife. If you just cut straight into the housing, you run the risk of leaving a jagged end for the cable wire to rub against. After spreading the coil, make the cut as clean as possible so the ferrule will slip back over snugly.) If you're adding higher or wider bars, estimate the amount of extra cable required and leave the new conduit that much longer. Slip the ferrules over the ends of the conduit and crimp slightly. Make sure the ferrules fit without cutting into the conduit.

4.

Reinsert the new wire and cut the exposed end to match the measurement in Step 2, leaving about 1/16 inch beyond the new fitting. Scratch-builders must install the fitting on one end before cutting (See Steps 5-7 for soldering instructions). The new cable should now match the old one, except for one missing fitting.

5.

Clamp the wire in a vise so that when the fitting is slipped over the end approximately 1/16 inch of wire is exposed. If a vise is unavailable, use Vise-Grips or a friend with pliers.

6.

Using a punch or similar tool, "mushroom" the end of the wire by "peening" or mashing it into the cavity in the fitting. The strength of the new cable will depend on solder penetrating these strands and preventing them from pulling through.

7.

Touching the soldering tip to metal parts only, heat the wire. Apply a few drops of flux to the area and touch solder to the peened wire, letting it melt into the strands. Remove solder that might run up the wire and become brittle. For best results, slide the tip away from the metal before releasing the trigger. You're done. **M**

## CABLE LORE

Always follow the manufacturer's instructions for cable lubrication. You may want to use one of the cable oiling devices on the market or the old "paper cone" method. Some cables, such as the Teflon-lined models made by Terryables, require no lubrication at all. Teflon is the most expensive plastic made and it retains its friction-reducing quality throughout its service life. Teflon has the lowest friction coefficient of any solid material. Oil inside a cable can attract dirt and grit, making a substance not unlike valve grinding material. You decide what's best for you.

If a cable gets kinked, replace it. Even though the damage may not be apparent, the inner wire will soon wear through the lining at the stressed point and may fail rapidly.

Cables that have been soldered at home should be replaced after six months to a year. Manufacturers of cables have special machinery to secure fittings. The strongest cables have swaged or hammered fittings, a process that can't be duplicated at home. Homemade cables usually won't last as long as the mass-produced items.

Make sure the barrel fittings in your lever blades are well-lubricated and free to rotate as the lever is pulled. Rubber or leatherette covers help keep dust out. The cable must also enter the lever straight to prevent binding and premature wear. Ball ends are best to use in throttle assemblies to allow for slight variations in rotational direction.

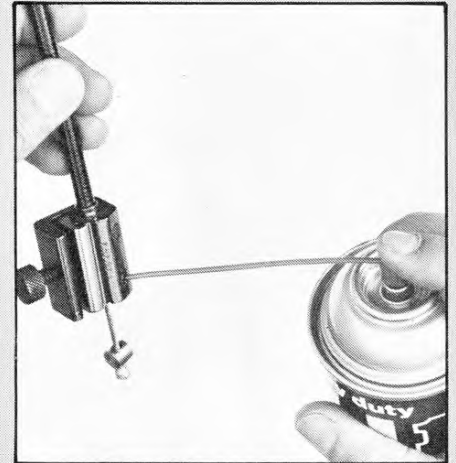
Even immaculately waterproofed machines will collect water and grudge on top of the carb slide. This occurs because the vacuum created in the carburetor draws water and dust down the length of the throttle cable under severe conditions. Make sure the throttle drum fits as snug as possible and avoid submerging it in water or mud. Check the cable/carb-top junction.

If you're using the new Gunnar's Gasser throttle, be sure you use only fine wire and a good liner for the cable. In this throttle the cable must make an extra curve, which may increase friction. As of this writing, Terry Industries makes the only 49-strand, 1/16-inch cable for this throttle. Many feel Gunnar's Gasser is the best throttle on the market, partly because it routes the throttle cable along the bars where it's better protected.

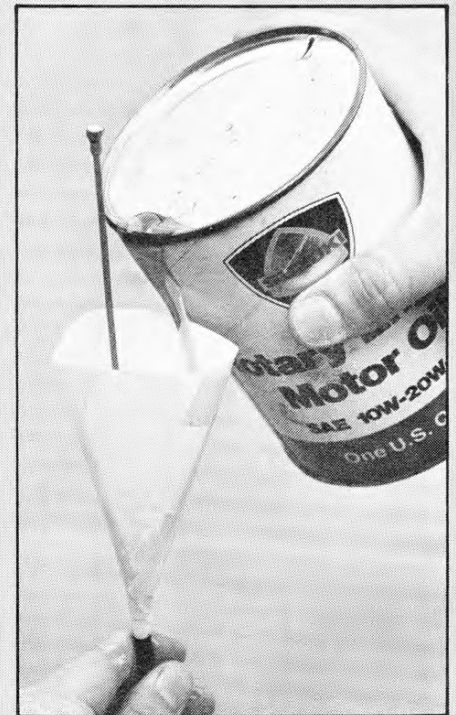
When adjusting, you should allow

about 4mm (0.16 inch) of play in the clutch cable before pressure is felt at the lever. Front brake cables should have about 20-30mm (0.8-1.2 inch) distance between lever and grip when compressed, approximately the same amount of travel in the rear brake pedal. Personal preferences may vary.

If you have trouble locating cables or cable parts through your dealer, we recommend you contact Flanders Motorcycle Accessories directly at: 340 S. Fair Oaks, P.O. Box 229D, Pasadena, CA 91105. (213) 681-2581.



*This Yamaha cable oiler makes lubing quick and easy. Be sure to remove the bottom end of the cable so oil and grit aren't forced into the engine or carburetor.*



*For the tried and true paper cone method, tape a cone of heavy paper around one end of the cable, fill it with oil and hang overnight. By morning you'll have a lubed cable, and a puddle on the floor.*