It's all done with wires...

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Nine speed rear gear systems make the modern day mountain bike a balancing act of performance, efficiency, and functionality. One of the key pieces of the puzzle is the cable that lets the shifter's message get through to the derailleur. This has been and still is one of the most troublesome areas to maintain a crisp shift whilst needing to ride in all manner of conditions. Most cables sold on bikes aren't well sealed from the intrusion of dirt and water. If your shifter takes more than a nudge to select a shift or if the gears have a delayed action going down the rear cassette (up on rapid rise), the cable is dragging and could need replacing. Read on for the right way to do this.

Tools required: cable cutters, fine grease gun, 5mm allen key, screw driver, sharp spike.

Parts required: gear inner wires, length of 4mm gear outer housing (different from brake!), sealed ferrules (Shimano are the best sealing for 1.1mm inner), cable end caps.

Photography by Birgit Utech
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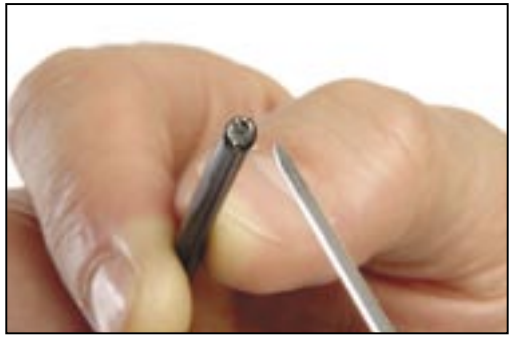
Step 1 ↑↓ Cut the old cable inner at the rear derailleur and remove the outer casings. Remove the small plug from the shifter and slide out the inner wire. The small length of inner at the rear derailleur should also be removed at this point by loosening the clamping bolt on the derailleur.

Step 2 ↑ Clean out the outer casing mounting lugs on the frame of any dirt. If the original lengths of outer were the correct length, duplicate them with new outer casing (4mm diameter is the most versatile). If you are not sure of the length; insert one end of your new casing (uncut) into the shifter and turn the bars both ways whilst offering the casing up to the mounting lug to determine the best length. All the sections of outer casing should be cut to offer the smoothest line of travel between the two lugs without sharp kinks or excess length. Take care where suspension linkages move and change the positioning of the cables...go a tad long at first then trim back if you are not sure.

Step 3 ↓ Use the jaw on the inside of the cutters to gently make round the outer casing where cut, then use a sharpened spike to open up the Teflon inner pipe.



Step 4 ↑ Squirt some grease in one end of the outer casing (only a small amount is required), fit the sealed ferrules and wipe a small amount of grease on the greased end as an indicator so you know which end to feed the inner wire into. The inner wire will carry the grease right through the casing. If 1.1mm inner wire is used there will be more grease retained in the casing upon assembly.

Unsealed versus sealed ↑ The Shimano sealed ferrule on the right will keep grit out of your cables longer than the unsealed ferrule resulting in crisper shifting for longer.

Step 5 ↓ Fit the new inner wire into the shifter and thread the sections of greased outer onto the wire whilst mounting them into position. Pull the inner through and clamp with the retaining bolt at the derailleur then pull firmly on a section of exposed inner wire to seat in all the ferrules and outer casing.

Step 6 ↑ Now loosen the retaining bolt and pull through any excess cable, check the adjuster is wound out around 1-1/2 turns before retightening the cable clamp.

Step 7 ↓ It is very important to mount the cable in the right position to ensure the gears function correctly. Leave around 30mm of inner protruding and crimp on an end cap.

Step 8 With the new cable installed it's time to tune the gears. Refer back to Workshop Issue 2 on how obtain the perfect shift.

Note: Rather than running several sections of outer casing another option is to run one continuous length from the shifter to the rear derailleur, thus eliminating entry points for dirt and water. This system works well, although care must be taken on full suspension bikes when securing the outer to frame to ensure that the suspension action doesn't damage the cable or rub the frame.