USUALLY SIDEWAYS RALLY TEAM

SmartShift for A1 Chasis Install Guide

SmartShift is designed for drivers who want the precision and positive feel that only a spherical bearing linkage can deliver. These systems work with all Mk1, Mk2, and Mk3 4-cylinder “020” transmissions (i.e. non-cable actuated).

This design eliminates all of the old stud/snap connectors which are replaced with spherical rod-ends. All rotating bushings are replaced with Delrin® equivalents as is the relay shaft ball. The steel weighted section is professionally powder coated with a gorgeous finish.

Upon installation, all slop is eliminated for a virtually indestructible shifter setup. It requires little if any maintenance and provides dead-on shifting with that oh-so-nice, “click-click” feel. USRT has produced what we know is the best kit available on the market anywhere. All components are rally-grade and far exceed the quality found in other kits. A short-shift component is under development.

Please note, that modifying your OE parts is done at your own risk. US Rally Team, nor any reseller will be held liable to damages incurred on the installers behalf. If you have any questions or concerns in regards to this kit, please contact
US Rally Team at *tech@usrallyteam.co***m.**

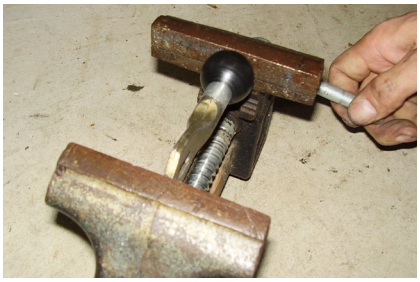
Tools Required.

Vise or other stable surface to drill at
Flat Screwdriver
11mm, 13mm wrenches to disassemble
1/2” wrench for new bolts
Drill with bits, sizes up to 5/16”
Punch
White Lithium Grease
Drilling lubricant
Bench Grinder and Angle Grinder (optional)

Disassembly. If you have never worked on your shifter linkage before, you will find it easiest to move your cooling reservoir out of the way, and remove the intake tube. The car in the above picture has a fuel management system installed, that is why there is no CIS air box there.

The pictures here have all of the parts we removed from the old shifter linkage. Most of the linkage pieces you will be working on can be accessed from the top of the engine bay. You will need to get under the car to get at the relay lever and cage, and to replace the ball. The linkage comes apart pretty easily. Pop open the ends of the plastic rods with a screwdriver.

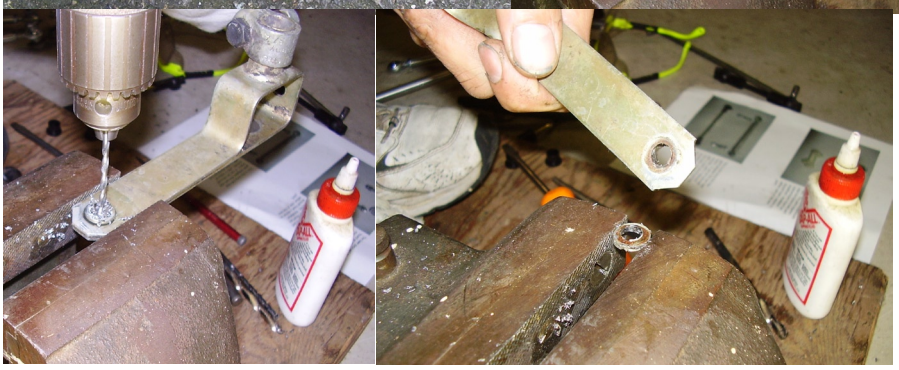
The Bolts on this kit are 1/2” size, you will want to get yourself a 1/2” wrench if you do not already have one so that you don’t strip the new bolts.



The rubber ball. The stock ball is replaced in the USRT kit by a Delrin® ball. Cut or pull off the old ball from its metal base. Then, press the new ball on with a vise or press. The Delrin® Ball is made slightly smaller than the diameter of the metal base so that it can be pressed on and not fall off.

In the picture at left, You can see the rods that are replaced by USRT SmartShift pieces. At this point, match the lengths and angles as best you can to the original stock parts. Be careful to note the angle of the ends of the long rod.

Drilling. Tip: This can break a few drill bits if it is your first time drilling steel. Before attempting this project, get a few extras. You can go straight from a center punch to a 5/16" bit. When drilling steel, you want to apply a lot of force, but with a SLOW RPM...the slower the bit turns, the better it will cut. Generally, if you can't see the flutes on the bit while your drilling (they look like a blur), then you are spinning the bit way too fast, and you'll hot-work the metal. What this does is basically harden the metal because you are putting heat and force into it. If you do this for a long time, you'll find it almost impossible to drill a hole with any sort of bit, and will have to anneal the metal.



Drilling out the ball parts of the linkage: There are two different ways of doing this, but it is very important that the holes are centered.

The first and preferred method is to cut the ball off from the top with an angle grinder. Then punch in the center, and drill the hole. Start with smaller bits and work to larger ones. Remember that it is very important to keep your drill bit oiled.

You can also drill from the other side of the ball, but you have to be even more careful to be centered. Use a punch, and go slowly.

Relay Rod. On the relay rod, press in the aluminum bushing. it is designed to be a tight fit so that it won't move later. We did this with a vise.

A big weak point on the linkage is the relay rod. As you can see in this picture, the bottom bushing had been missing, and it wore down the rod. It had a lot of play, and would cause the linkage to be loose. Also check toward the top of this rod for wear.

You can order this part from many online parts sources, or you can replace it with a short shifter kit from another manufacturer. Some manufacturers make their rods larger than the stock VW rods, so you may have to enlarge the two Delrin® bushings for it to fit properly. Make sure you sand out with fine paper and lubricate the bushings after modification.

Delrin® Bushings. The bushings at left are the old stock bushings. Two are on the relay rod on the bracket that is attached to the steering rack. The other two are for the pivot piece on the transmission.

The bolt for this pivot is often another weak point in the linkage, especially if the factory bushings were worn or broken. This bolt is a special one, the top half is M8 and the bottom half is M6, so it has a 13mm head, but a 10mm (or 11mm) nut on the bottom. This bolt can be bought from the dealership, or scavenged from a good transmission if your bolt is in bad shape.

Aluminum Bushings. Assemble the kit using the included aluminum bushings. The bushings act as spacers to give the heim joints a full range of motion. Make sure you use the busings between heim joints and brackets to get the full motion of the shifter linkage. They are used as you would use washers on regular bolts.

The weighted rod, when installed, the heim should have a washer on one side, and the pressed in bushing on the other side. (use two long bolts)
The long rod, when installed, the heim should have a washer on either side (use two short bolts)
The short rod, when installed, the heim should have a washer, and a long spacer on one side, and two short spacers on the othr side (use two long bolts)

That's it!

Maintenance. This kit was designed based upon the fact that the factory components simply required too much maintenance, were prone to failing and needed to be replaced in frequent intervals to get the same response when shifting.

Knowing this, we have designed this kit to require very little maintenance For the life of this kit, all you will need to do is occasionally apply white lithium grease to the heim joints.

Delrin , a material developed by DuPont, is designed for the most demanding applications, including both high/low temperatures. It has an amazingly low coefficient of friction. These factors make it an ideal product to use in an engine bay, where temperatures can vary from frigid winter, to an extremely hot exhaust setup.

We hope you enjoy your SmartShift kit, and as always, we'd love to hear your feedback.

– US Rally Team (*tech@usrallyteam.com*)