

# How To Adjust A Hurst Competition/Plus Four-Speed Shifter

By: Jeff Smith | 08/20/2021



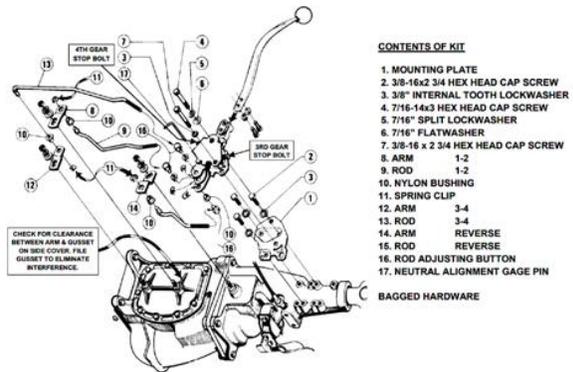
If you had to list the 50 most influential speed parts of all time – the classic Hurst four-speed Competition/Plus shifter would have to be up near the top of that list. Back in the crazy 1960s and 1970s when high-revving small-blocks and torque-infested big-blocks roamed the earth, it wasn't a bigger carburetor or headers opted as the first change – it was usually a Hurst shifter.

This author bought a '66 SS 396 Chevelle in 1971 that had all the right bones with good power and 4.10:1 gears but it was handicapped by a Muncie shifter that was balky and impossible to shift quickly. A Hurst shifter was the very first modification to my muscle car.

Four speed fanatics also learned that while the Hurst offered excellent design, it required careful assembly to allow it work properly. Modern manual transmissions use internal shifter mechanisms that do not require adjustment. But the original Hurst shifters employed multiple

rods and linkage pieces that, when properly assembled and adjusted, would produce butter-smooth shifts even from what is now considered a less-than ideal synchro design.

This story will outline how to install the shifter and how to set the multiple adjustments to create a superb shifting mechanism. None of this is difficult, but it does require some attention to detail.



The shifter we're working on uses the classic four-speed H-pattern with reverse over to the left and up. If the shifter is properly adjusted, that 3 to 4 shift will be smooth and effortless. This schematic is from the online instructions that can be found at [Holley.com](http://Holley.com). Note the layout of the shifter arms and rods: the 3-4 arm angles away from the transmission while the 1-2 arm angles inboard. This will help you orient the parts correctly.

There are four gates that the shifter must operate, the 1-2, 3-4, and reverse gates all operate with a fore-aft movement travelling through the horizontal neutral gate. This pattern is illustrated as the classic four-speed pattern engraved on the shifter ball. The key to proper shifter adjustment is the ability to make easy gear changes through the vertical gates. A quick pass down the quarter-mile requires an efficient 2-3 shift, generally considered the most difficult, as effortlessly as possible. In road racing, the shifter must also be able to cleanly execute the 3-2 down-shift with equal ease.

These can be accomplished only if the shifter is properly set up. The key is to use the factory-supplied alignment pin. In early Hurst shifter packaging, this was a 1/4-inch diameter, right-angle steel pin designed to fit into a cutout in the side of the shifter body extending through all three levers and connecting into the shifter case on the opposite side. This forces the levers into the neutral position so that all three shift rods can be assembled to their proper length.

Newer kits offer a plastic version of this pin, which works just as well. If this pin is missing or you purchased a used shifter without the pin, you will need to fashion one from a 1/4-inch steel dowel. With the shifter in the car, you can also use a 1/4 -inch Allen wrench or we've even used a properly sized Phillips screwdriver in an emergency if there is sufficient room. Regardless of how you get there, it is critical that some kind of neutral alignment pin be used. The shifter cannot be properly adjusted if all three levers are not in the neutral position.



(Left) This is the same shifter and installation kit assembled on the transmission. Keep in mind that Third and Fourth gears are farthest forward on the transmission followed by First and Second with Reverse in the rear position in the extension housing. (Center) On some transmissions there may be more than one mounting position so make sure the plate is positioned correctly. These mounting plate bolts are not accessible once the shifter is in place so use thread locking compound to ensure they remain in place. (Right) If you don't have an alignment pin, substitute an Allen wrench or a length of bent 1/4-inch steel rod. Also make sure the pin fully seats in the notch in the back of the shifter to ensure all the shift arms are in neutral. This is critical to all subsequent adjustments.

Always start with the reverse rod, which is the shortest rod hooked to the innermost Reverse arm on the shifter. Install the reverse arm oriented as show in the instructions with connection for the rod oriented below the Reverse gear shaft coming out of the transmission. Hook the rod through the shifter arm on the transmission. The shift rod is guided on both ends with a plastic bushing in between the rod and the arm and secured with a spring clip. The included photo shows how the clip should be installed.

Only the shifter end of the rod is threaded. Adjust the rod length with these threaded pins until the pin and bushing can slip into the shifter arm as smoothly as possible. Experiment with rod length until the pins fits precisely in the shift arm. Once that is achieved, attach the rod the arm with the spring clip. Now you can move to the 1-2 rod.



(Top Left) This is the correct orientation of the spring clip with the long, straight part of the clip feeding through the hole in the rod. Sometimes we add a thin 0.030-inch AN washer underneath the spring clip to ensure the pins don't rattle. (Top Right) Begin by making sure the transmission is in neutral. Install the Reverse arm on the transmission and route the rod back to the innermost arm on the shifter with the pin in place. The threaded portion of the rod is always next to the shifter. Make sure the pin fits through that hole as easily as possible and then install the spring clip. (Bottom Left) For the 1-2 arm and rod assembly, note how the rod fits underneath the reverse arm and that the transmission arm is angled inward with the rod pin pointing outward. (Bottom Right) Adjust the length of the rod with the threaded pin at the shifter until the pin fits cleanly through the hole with minimal resistance and then install the spring clip.

Here's where we should point out that the 1-2 and 3-4 arms that bolt to the transmission must be oriented upwards. A classic install error is to position the arms down from the mounting point. This error will allow the arms to bolt in place and might even adjust but the shifter will operate backwards – in other words Second gear will be where First gear should be with the same dyslexic orientation for Third and Fourth. We have an acquaintance who oriented the 3-4 arm upside down on his Super T-10 transmission only to discover that when he shifted from Second into what he thought was Third, the transmission went into Fourth gear instead.

For this Muncie four-speed application, the 1-2 arm on the transmission kicks inboard or closer to the transmission and the 1-2 rod fits into the arm with the pin pointing outboard. This may seem counter-intuitive because it places the 1-2 rod very close to the transmission, but that's the

way the shifter was designed and the rod will not rub on the transmission if it is installed properly.

This is where we reinforce the idea to take the time and experiment with how the adjustment pin fits into the arm on the shifter. The pin should slide easily into the hole in the arm on the shifter. A single turn on the fine thread shift rods produces a very slight adjustment that can make a big difference. Once the pin fits cleanly into the shifter hole, install the spring clip and move on to the 3-4 shift rod assembly.



Note how the 3-4 arm angles away from the transmission case and the rod fits through with the pin pointing toward the trans. Adjust the length of the rod and then install the pin into the shifter arm and affix the spring clip.

Follow the same procedure for the 3-4 placement except that the arm on the transmission will now kick out away from the transmission body and the rod will enter the arm from the outside – the opposite of the 1-2 arrangement. This creates clearance for the shift rods.

With the 3-4 pin properly adjusted, this will complete the installation of the rods. Before moving on to the next step, remove the neutral pin and move the shifter through all the gears to check operation. If the shifter is adjusted properly, it should be easy to insert the pin back in with the shifter in neutral. If the pin does not fit smoothly, re-check the adjustments – you may find one rod out of adjustment.

Another quick test of a properly adjusted shifter is that the shifter handle will swing across the entire neutral gate without feeling notchy. If the shifter does not swing freely across into the

Reverse gate, the Reverse rod is out of adjustment. This is a simple test and if you pay attention, the shifter will tell you where the adjustment problem lies.



Remove the neutral pin from the transmission and slide the shifter across the neutral gate to see if it moves freely both across all the gates and also into Reverse. If you detect a catch or resistance to movement, the shifter is likely not adjusted properly. The shifter should move freely. With the shift rods properly adjusted, now we can set the stops. Loosen the lock nut on the Third gear shifter stop bolt on the rear of the shifter body and back the bolt out several turns. Place the shifter firmly into Third gear then turn the stop bolt in until you feel it contact the shifter. Now back the bolt out one turn and tighten the lock nut. This will set the stop for First and Third gears.

Assuming we have a free neutral gate and the alignment pin can be easily slipped into place, we can now perform the last two adjustments. Hurst shifters come with travel stops on the front and back side of the main shifter body. The rear adjustment bolt is for First and Third gears which is the one we will adjust first.

Loosen the lock nut on the adjustment bolt and back the bolt out by several threads. Shift the transmission into Third gear and thread the adjustment bolt in until the bolt contacts the shifter arm. Then loosen the stop bolt one full turn and tighten the lock nut. Now perform the same procedure with the Second and Fourth gear stop located on the forward side of the shifter body by placing the shifter in Fourth gear.

With both stops adjusted, your Competition/Plus shifter is ready for some high rpm shifts with the engine at full song!



Now we can duplicate that process for Second and Fourth gears on the stop bolt on the front of the shifter. Again, loosen the stop bolt, shift into Fourth and tighten until the bolt contacts the shifter and then back out one turn and tighten the lock nut. Here is a similar Hurst Competition/Plus shifter on a Richmond Super T-10 four speed. The linkage is different but the orientation is the same as the Muncie and the adjustment procedure is also identical.

## Parts List

	<b>Description</b>	<b>Part Number</b>
	Hurst Competition/Plus Shifter, Muncie 4-Speed	3917308
	Hurst Competition/Plus Shifter Install Kit, Muncie 4-Speed	3733163
	Hurst Master Repair Kit	3327303
	Hurst Pit Pack, bushings, and spring clips	3327302
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