INSTRUCTIONS FOR TPS STYLE 9030 CHAIN DRIVE TRANSMISSION FOR RC10

Note! These vintage transmissions were NEVER designed for modern brushless power. It is HIGHLY recommended to run these with mild brushed motors! The trans ratio is 2.0:1. The more power you put through these, the more wear and tear you will create- check the adjustments often!

STEP ONE: Assembly of the outdrive/differential section.

Clean both outdrives well to remove any manufacturing oil. Find the shiny side of the diff rings, and make sure to install them with the shiny face to the balls. We highly recommend gluing the rings to the outdrives using CA (superglue) making sure to avoid getting glue on the shiny surface. It does not take much to prevent slippage. Install both 4x8mm ball bearings onto the male outdrive. Liberally lube the rings and balls with your favorite diff lube. We like AE stealth lube. Now, set the machined nylon sprocket onto the ball bearings, and once in place add the 3.5mm balls. Install the female outdrive onto this assembly carefully. Lube and assemble the thrust bearing onto the diff screw- first a washer (note the groove!) then the thrust bearing, and another washer (again note the groove). We like AE black grease here, but you can use your favorite. Lastly, install a diff spring. Set this assembly to the side for a minute. Install the M2.5 locknut onto the assembly tool UPSIDE DOWN (plastic portion towards the tool) and insert the assembly into the male outdrive. You will need to get the nut into the pocket of the outdrive and use the tool to hold it there. If you lose the tool, you can use a screwdriver or ask us for the stl and print a new tool. Now, while holding the tool into the outdrive, install the diff screw assembly into the female outdrive side and tighten the screw. We recommend going until the screw feels tight, and then back off about a turn. Check the diff feel, make sure there I no slip when you hold both outdrives and try to spin the sprocket. Final adjustments will be made later. Lastly, install the dust seals onto the outdrives. Set the diff aside for now.



STEP TWO: Assembly of side housings, slack adjuster and upper shaft.

Install the motor plate onto the right-side case using 4-40 x ¼" screws. Do not overtighten. If you choose to use thread lock, make certain it is plastic compatible. The area where the outdrives sit will allow the dogbone pins to hit the motor plate. We highly recommend relieving this area on the motor plate with a Dremel. See first pic below. Install a 4x8mm bearing into the right-side case, and then install the top shaft. The shaft is installed from the motor plate side, and the threaded part will face outwards. Note the small flats on the shaft. Install the brass top sprocket with the setscrew side towards the motor plate. Loosely tighten a 3mm setscrew onto one of the flats. This will be adjusted later. Install a 3/8 x 5/8 bearing into the lower hole in the case side. Find your diff from earlier and set it into place with the adjustment screw facing the motor plate side. The chain can now be placed on the diff first, and then rotated into place on the brass sprocket. The chain will be very loose. Make certain the chain is oriented properly, see diagram. Assemble a 1/8 x 5/16 bearing onto the chain slack adjuster using a 3x16mm setscrew. Now take the left side case and attach the chain slack adjuster using the long 4-40 x 1 1/4" screw and washer at the top pivot and a 4-40 x 1/2" with washer at the adjustment. Only tighten the long screw until it protrudes through the adjuster for now. The adjuster can only be installed one way. Swing the adjuster back for clearance during assembly. Insert a 3/8 x 5/8 bearing into the left case side and drop the assembly into place on the diff and right-side case. Now you can hold the assembly together and tighten the long screw. Install a 4x8mm bearing and a 4mm e clip onto the shaft to hold the assembly together for now.



STEP THREE: Final Assembly

Install the transmission onto the RC10 chassis using the original screws. Install the trans brace using original screws. You may need to shim the front trans brace using washers. Attach the motor plate to the chassis using the stock screws. You can now install your slipper clutch.

If you are using the AVID Triad slipper, assemble as shown. Tighten the locknut down until the spring compresses a few mm. We will adjust the slipper and diff next. If you are using an AE or similar slipper, follow the instructions that relate to the kit they are from.

STEP FOUR: Adjustment

First you will adjust the chain slack adjuster. Loosen the two screws a bit and swing the adjuster into place, you want to just take up some slack but the chain should still be very loose. The chain needs to be able to grow a bit as it rotates. When you find a happy place, lock the chain slack adjuster into place. These diffs use very small drive rings and thus will tend to slip unless they are adjusted properly. They will not be silky smooth like a modern ball diff. With the car assembled and ready to drive, first hold the left wheel and spur gear with your left hand and try to turn the right wheel. Observe the slipper nut. There should be a lot of resistance, but the nut MUST turn with the right-side wheel. If the slip occurs and that nut stays in place, that means your diff is looser than the slipper. This will destroy the diff quickly if you run the car. Tighten the diff and/or loosen the slipper until the nut follows the right-side wheel. An alternate method to test would be to hold the car to the ground with both tires stationary and try to spin the spur gear. Since the wheels are not turning, that is what the nut should be doing as well. You can use whichever method suits you best. When you make sure that the slipper is the only thing slipping, you can then run your car. Adjust the slipper to the traction you desire, but always check the diff slip at the same time to be safe. It doesn't take much slippage to create enough heat to melt a sprocket.

STEP FIVE: Profit

That's it, enjoy! Happy racing!