

How to: install & remove ball bearings

Handle them with care

One of the most essential performance items on your RC car can't even be seen with body off. I refer to the bearings hidden away in the drivetrain. With proper care and maintenance, bearings will last a very long time and offer excellent performance throughout their lifetimes. An often overlooked aspect of bearings, however, is the correct way to remove and install them, and that's where this article comes in. I'll show you how to do it right using a set of Ceramic Nitride bearings.

REMOVING BEARINGS

There is no one way to remove a bearing; you'll need to use a few different techniques depending on the situation. The first thing you should always try, however, is to tap the bearing-containing part in the palm of your hand to see if the bearing will fall out on its own. If the bearing seems determined to stay where it is, follow one of the steps below.

UNOBSTRUCTED

1 An unobstructed bearing is fully accessible from behind, making it the easiest type to remove. Using a drift punch or flat-ended dowel of larger diameter than the inner race, gently push the bearing out from behind. A tapered tool inserted into the inner race from behind also works well. Don't hack at the bearing, pry it out or hammer on it; just push. Easy.

PARTIALLY OBSTRUCTED

2 A bearing that is partially obstructed is accessible from behind, but only through a small hole. This is often the case when two bearings are inserted back to back, such as in a steering knuckle. You can only get to the back of one bearing through the inner race of the other, so using an oversize or tapered tool won't work. Use a piece of a parts tree or chopstick that will fit through the obstruction to reach the back of your bearing, and carefully start pushing it out on one side and then the other. Watch out for the shielding; focus your pressure on the edges of the inner race. You want to "rock" the bearing back and forth as you push it out, never allowing it to twist too far inside its mount. Take your time, go slowly, and be patient.

ANATOMY of a BEARING

The majority of the bearings used in any vehicle are radial bearings, such as those used in a transmission or a wheel hub. All radial bearings have an inner race, outer race and balls. The races have grooves that the balls roll in. Most radial bearings also have ball cages that keep the balls aligned and shielding to help protect their inner workings. The most common types of shielding are rubber (best seal), metal (least resistance) and Teflon (good overall compromise).

FULLY OBSTRUCTED

3 Fully obstructed bearings are recessed and are never accessible from behind. Gearbox and transmission cases often contain fully obstructed bearings that support shaft ends and idler gears. Do not be tempted to pry out the bearing with a screwdriver or pliers. We're going to do a bit of magic here. First, clean out the inner race with a cotton swab. Take the shaft that is designed to fit the bearing, and also wipe it clean of any oil or grease. Insert the shaft into the inner race and slowly rock it back and forth, pulling on the shaft as you go. The shaft will of course slip out of the hole, but the bearing will have started to work its way out. Continue rocking until the bearing has been completely removed.

SEATED IN ALUMINUM

4 Bearings mounted in aluminum parts can sometimes prove a real challenge to remove. If none of the above techniques are working, a heat gun is your next step. Make sure there are no plastic parts nearby, and begin to evenly heat the part. The heat will expand the metal and loosen the fit between the bearing and the part. Tapping the part with a plastic mallet after heating will also help; just be sure you hold the part with a pair of pliers after heating so you don't burn your hand. If that doesn't work and the bearing is still stuck, consider that it may not be worth removing at all; simply clean the bearing where it is. If you're going to replace the bearing anyway, go ahead and ruin it by hammering or prying it out, but be careful not to damage the aluminum part it's in.

INSTALLING BEARINGS

Installing bearings is much easier than removing them. There's only one rule to remember: use your fingers for the job. If you can't get a bearing seated using the pressures from your fingers, you're probably doing something wrong. If the bearing won't slip in place, you may have the wrong size bearing or a small obstruction in the bearing bore. Plastic parts will sometimes "peel" along an edge as the bearing is pushed in, leaving a tiny plastic shaving that prevents a clean fit. If everything looks good and you still can't get that sucker in there, press it against a flat surface such as your workbench. The most important part of a bearing installation is to make sure the bearing is fully and evenly seated. That is crucial.

MAINTENANCE

Most bearings come packed with grease or oil from the factory and will remain well lubricated for quite some time. Just wipe dirt off them from time to time, and you're good to go. Regularly check for smoothness of operation. If your bearings spin smoothly, simply wipe them off. If they feel gritty, however, you'll need to take a few steps. If you're lucky, the gritty feeling simply means that dirt has worked its way in between the races. You can clean the bearing out with motor spray and an RPM Bearing Blaster, and then lube the bearing with light oil. If the now-clean bearing still doesn't spin smoothly, you probably have dented, rusted, or cracked balls inside the bearing, and you should replace the bearing. Either way, once you have used motor spray on a bearing, it will no longer remain as well lubricated as when it was new. From now on, you'll need to clean and re-oil that particular bearing regularly.

WRAP UP

That's it! Now you know everything you need to work those ball bearings like a pro. Just remember to treat your bearings kindly, and they will repay you with many, many hours of trouble-free rolling.

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