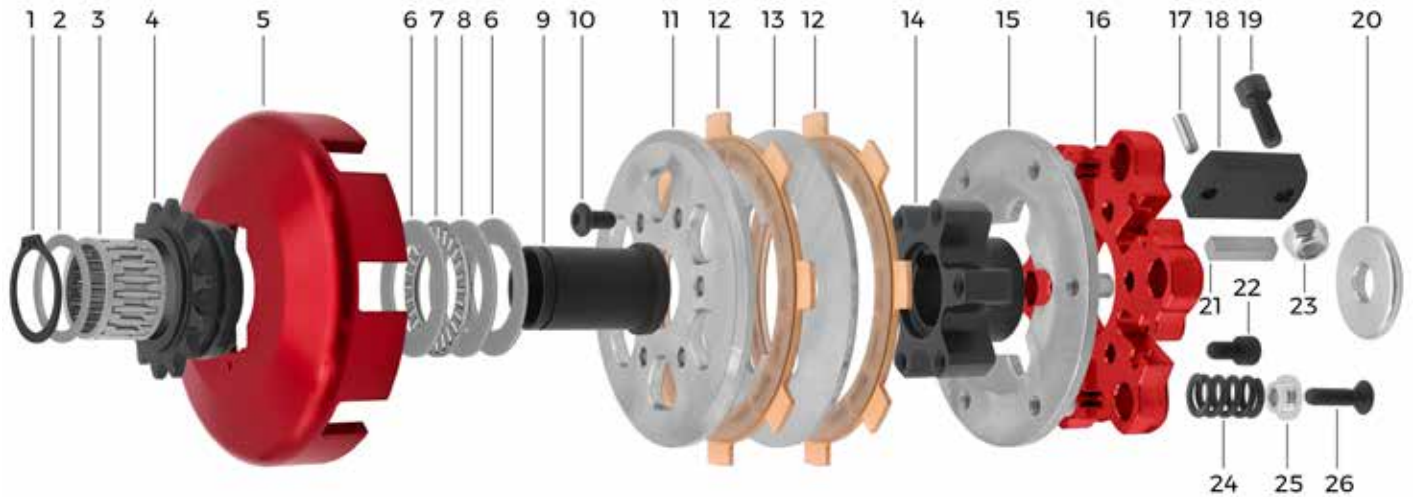




EC EGO Racing Disc Clutch for 3/4" Shafts



REF #	PART #	DESCRIPTION			
	ECO-1D	Aluminum 1-Disc Clutch	21	ECO-14	Clutch Key 3/16" x 3/4"
	ECO-2D	Aluminum 2-Disc Clutch	20	ECO-15	Aluminum Clutch Retaining Washer
	ECO-2DS	Steel 2-Disc Clutch	18	ECO-16	Clutch Lever
	ECO-2DV	Aluminum Vented 2-Disc Clutch	17	ECO-17	Clutch Lever Dowel Pin
	ECO-3DS	Steel 3-Disc Clutch	24	ECO-18	Clutch Stall Spring
1	ECO-1	7/8" Snap Ring (for Bearing Sleeve)	26	ECO-19	Stall Spring Adjustment Screw
2	ECO-2	1-18" x 7/8" x 0.030" Washer	25	ECO-20	Stall Spring Retaining Washer
5	ECO-3	Aluminum 1-Disc Basket	23	ECO-21	Clutch Lever Weight Nut
5	ECO-3A	Aluminum 2-Disc Basket	19	ECO-22	Clutch Lever Weight Bolt
5	ECO-3B	Steel 2-Disc Basket			Clutch Bolt Kit
5	ECO-3C	Steel 3-Disc Basket	13	ECO-090	0.090" Floater Plate
6	ECO-4	Thin Inner Race Thrust Washer	13	ECO-095	0.095" Floater Plate
7	ECO-5	Inner Race Needle Bearing	13	ECO-100	0.100" Floater Plate
8	ECO-4A	Thick Inner Race Thrust Washer	4	3575-11T	11 Tooth #35 Sprocket 3/4" Bore
9	ECO-6	Inner Race (Bearing Sleeve)	4	3575-12T	12 Tooth #35 Sprocket 3/4" Bore
10	ECO-7	10-32 x 3/8" BH-TORX Backing Plate Bolt	4	3575-13T	13 Tooth #35 Sprocket 3/4" Bore
11	ECO-8	Backing Plate	4	3575-14T	14 Tooth #35 Sprocket 3/4" Bore
12	ECO-9	Friction Plate	4	3575-15T	15 Tooth #35 Sprocket 3/4" Bore
15	ECO-10	Pressure Plate	4	3575-16T	16 Tooth #35 Sprocket 3/4" Bore
14	ECO-11	Drive Hub 1-Disc	4	3575-17T	17 Tooth #35 Sprocket 3/4" Bore
14	ECO-11A	Drive Hub 2-Disc	4	3575-18T	18 Tooth #35 Sprocket 3/4" Bore
14	ECO-11B	Drive Hub 3-Disc	4	3575-19T	19 Tooth #35 Sprocket 3/4" Bore
16	ECO-12	Aluminum Activator Plate	4	3575-20T	20 Tooth #35 Sprocket 3/4" Bore
22	ECO-13	10-32 x 3/8" SHCS Activator Plate Bolt	4	3575-21T	21 Tooth #35 Sprocket 3/4" Bore
			3		Sprocket Needle Bearing

To design a racing clutch that is both durable and high-performing is a tricky feat but easily captured by the EGO Clutch 4 cycle racing clutch. The EGO Clutch was purpose-built for the racer by racers. Utilizing cutting-edge friction disc material allows the clutch to run longer between rebuilds with minimal performance loss. Spring and lever location work together and are crucial in the performance and longevity of the clutch.

Specially selected clutch springs give the clutch repeatability in every race without the chance of coil bind. Coil bind results in the clutch hitting hard, slipping for a moment, and then accelerating. The hesitation is eliminated with the EGO Clutch.

No warranty is expressed or implied for any racing component, including this Racing Clutch. Parts that appear, in our opinion, to have been installed cannot be returned under our return policy.

Models

- **1-Disc** AKRA/NKA JR/Restrictor Plate, Box Stock Predator 5500rpm limit. The 1-Disc allows our small plate racers to eliminate rotating weight and maintain positive lock-up.
- **2-Disc** design allows us to run this clutch in Animal and Clones Adult Stockers and Mild Modifieds.
- **3-Disc** version is purpose-built to handle the torque output of Limited & Open Modified Animals and Clones.
- **4-Disc** is for extreme engine output such as Honda GX390, Predator 420 & WildCat 460 Big Block Engines with 1-inch Output Shaft.

EC Clutch Sprockets are sold separately.

Sprockets

EC Clutch Sprockets are manufactured using the highest grade materials, CNC machining, and heat treat processing. The sprocket has a removable needle bearing designed for applications with minimal lubrication. You only need to apply a light amount of lubrication to the bearing before installation; we recommend using high-temperature assembly grease or gear oil during a rebuild or maintenance period and allow the bearing to air dry before reinstalling the bearing. If you can see the lubricant on the needle rollers, you have probably used too much. Lubricates and other contaminants can migrate to the friction discs, reducing the life expectancy and engagement quality.

When installing the sprocket in the clutch drum, use the large snap ring and the set screws to prevent the snap ring from rotating. The outer washer is installed between the sprocket and the drive hub snap ring. When measuring with a feeler gauge, the end play clearance should be between .010" and .030".

Blueprinting

The EGO Clutch comes factory blueprinted. The parts are CNC machined, and the plate is accurately and professionally ground. Following our instructions will give you the most performance out of your clutch. If you choose to have a "Blueprinted clutch," be sure you are dealing with a reputable blueprinter. Some shops or individuals offer clutch blueprinting that does not have the equipment to do the job or test the results correctly. Often they do little more than set the spring height and air gap and send a hefty bill. With that being said, there are also some outstanding craftsmen blueprinting clutches. Make sure you research and know the clutch builder.

Adjustment

Rule of Thumb: Clutch engagements are usually set within 200rpms of peak torque for the engine. Each type of racing is unique and different classes of engines have different power curves; dyno and on-track adjustments are necessary for optimized performance. If you don't have a dyno or your engine builder did not provide a dyno sheet to know the engine's peak torque rpm, don't worry; we can still get you to set your clutch for optimal acceleration.

We can provide a recommended starting engagement, but if your clutch is not accelerating as it should, lower the rpm engagement but above idle so the clutch doesn't engage when the kart needs to stand still. The low stall will likely bog the engine during low-speed acceleration, but you'll do no damage to the clutch. After a few practice laps, raise the engagement in ¼ to ½ turn increments (clockwise) until the engine no longer bogs on acceleration. Check your lap times, and if you have a data logger like an AIM SPORTS MYCHRON or ALFANO 6, you can check the data for cornering acceleration. OHV Engines produce peak torque at lower RPMs than flatheads, so expect to lower your clutch engagement to utilize your engine's entire powerband. If the engagement is too high, much higher than the peak torque, this can cause slippage, heat, and costly repair. By following these steps, you have optimized your engagement point. Record your install height and data; this will be useful when you experience changes in performance to tune further or service and rebuild your clutch.

Recommended Starting Engagement								
Clone Red Plate	Clone Green Plate/ 212cc Out-of-the-box	Clone Purple Plate	Clone Blue Plate	Briggs LO206/ Tillotson 212RS/ Ghost 212	Tillotson 225RS/ Adult 196 Stocker	OHV Super Stock	OHV Limited Modified	OHV Open Modified
2800	3000	3200	3400	3400	3800	4200	4800	5800

Spring Height:

Modified Race Engines that require more than 4200rpm can remove the lever weight bolt and nut to extend the engagement. They are measured from the bottom of the spring retainer to the activator plate. To set the springs is simple; if you need a higher stall, turn them in equally ¼ turn at a time; lower engagement turns them out equally.

2-Disc Clutch	Adjustment Spring Install Height (Top of Activator Plate to Top of Retainer)							
	Clutch Stall Engagement RPM							
Approx. RPM w/ Bolt	2800	3000	3200	3400	3600	3800	4000	4200
Spring install Height	.505	.490	.475	.460	.445	.430	.415	.400
Approx. RPM w/o Bolt	3400	3625	3850	4100	4300	4550	4750	5000

Installation

1. Check the engine's crankshaft for smoothness and cleanliness. Remove all dirt, rust, and burrs.
2. Install the clutch and sprocket towards the engine, checking to make sure the clutch does not extend over the end of the crankshaft
3. Install the keyway provided with the clutch
4. Install the clutch mounting bolt kit. Check for a minimum of .015" and a maximum of .030" end play. After installing your clutch to your engine, measure the end play with a feeler gauge between the end of the drive hub and the crankshaft washer. Reducing end play is done by using shims. If the crankshaft is short, you will need to increase the end play with a stepped-aluminum bushing on the end of the crankshaft. You can do this by placing the bushing on the end of the crankshaft, allowing the clutch hub to slide over it. Not having enough end play can cause permanent damage to your EGO Clutch.

Clutch Maintenance

Always do clutch maintenance as soon as possible following a race. Calcium and moisture in the air are two significant dangers when working with clutches. Rust and corrosion will hinder clutch performance and longevity. Clutches should be stored in a dry, clean, controlled environment. Never lube your chain with a spray-on lubricant (Tri-flow/WD-40). Use a non-fling style lubricant. We have had excellent results with chain wax or a dry film lubricant. We recommend Maxima Racing Oil Chain Wax Lube.

To maintain an optimal performing clutch, clean the clutch immediately after each race night.

1. Remove the Clutch from the engine, check the output shaft for wear, clean the surface with brake cleaner, and wipe the shaft with Maxima MPPL to prevent rust.
2. Use compressed air to blow the loose dirt and debris off the clutch. Remove the 7/8 Snap Ring to remove the clutch basket and sprocket from the inner race-bearing sleeve. Check the sprocket and needle bearing for cracks, hot spots, and wear. Check the clutch basket for wear and cracks where the sprocket mounts and the tangs of the friction discs meet the basket. The sprocket should fit tight and firmly; if it cannot support itself firmly against the basket, the basket needs to be replaced.

If the parts are in good condition, take the two pieces and soak them in a bath of WD40 for about 10 minutes. Stubborn dirt can be cleaned with a soft-bristle brush. Afterward, blow the clutch out with compressed air and allow it to air dry completely.

Lubricate the sprocket bearing with a light, small amount of high-temperature bearing grease or gear oil. Some may recommend using Vaseline(Petroleum Jelly). Petroleum Jelly is not designed for high temperatures(melting point ~165 degrees), nor has the sheer stabilizers and anti-wear additives of an assembly grease. Petroleum Jelly melts away quickly, causing it not to stick well to surfaces, and doesn't offer wear protection. It can cover the friction surfaces of the clutch, hinder performance, and induce uneven wear.

3. Next, Remove the Thrust Washers and Bearings. Check for missing rollers, warpage, and wear. Replace if needed; otherwise, clean them with Maxima MPPL and allow them to dry on a lint-free towel. There is no need to lubricant the thrust bearings since the grease or oil can easily fling onto the friction discs.

4. Cleaning the Friction Surfaces. Do not clean or soak the EGO clutch with brake cleaner, acetone, or similar degreasers. These chemicals can damage the friction disc material and the clutch. Instead, we use penetrating oils like Maxima MPPL or WD-40 to remove dirt and contaminants from the material. In some cases of heavy dirt, we use a soft bristle brush to agitate and clean the friction discs.

First, Use compressed air to blow any loose dirt and debris from the clutch. Next, using Maxima MPPL or WD-40, spray the clutch from the inside out to push the dirt away from the levers, inner race, and friction surfaces. Use a long bristle brush to reach tricky areas. Otherwise, the dirt collects on the inside of the clutch. Spray the friction discs directly and as much as you can. Alternatively, you can soak the clutch in a container of WD-40 for 10-15 mins to loosen dirt and contaminants. Afterward, blow the clutch out with compressed air until completely dry and allow it to air-dry overnight.

5. The pressure plate and the clutch hub should periodically be checked for warpage and straightness. If in doubt, the plates and hubs should be re-ground or replaced.

6. Levers require visual inspection each time the clutch is disassembled. Look for flat spots developing on the nose of the lever. By the nose, we refer to where the lever contacts the pressure plate. If any noticeable wear is seen, the lever should be replaced. Also, ensure the lever can rotate freely on the dowel pin.

Clutch Rebuilding

After extended use, it becomes necessary to rebuild the clutch.

Checking Air Gap

The air gap for the EGO is set between .028-.036" and optimized around a .032 air gap; we offer different sizes of floaters along with the offset backing plate allowing the racer to maintain a proper air gap setting at all times. A maximum air gap of .045 is the wear limit. Always have the beveled end of the clutch sprocket inner race towards the engine. The backspacer sits on the crankshaft after the clutch is already installed. Once the clutch is "run-in" after the first or second event, minor spring height adjustment may be needed. The run-in period allows the friction discs to seat with the floater & pressure plates.

Friction Disc/Surfaces

1. Whenever the friction discs are replaced, it is essential that all of the matching friction surfaces on the floaters and pressure plates be either re-ground or replaced. These surfaces rely on the crosshatch pattern ground on their surfaces to properly break in a new set of friction discs. If the steel friction surfaces are re-ground, the process must result in a proper crosshatch, and the finished surface must be completely flat. The contact between the surfaces will never become as intended without the appropriate surface finish, and performance will suffer.

2. Never use sandpaper to rough up or deglaze the surfaces. This method cannot keep the surfaces flat enough, nor can it provide the proper crosshatching. It will give some "teeth" for the friction material to bite into and may improve grip initially. However, after the roughness has worn off, the clutch will perform worse than it did before. (The coarse sanding usually takes 2 to 3 starts to be worn away)

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