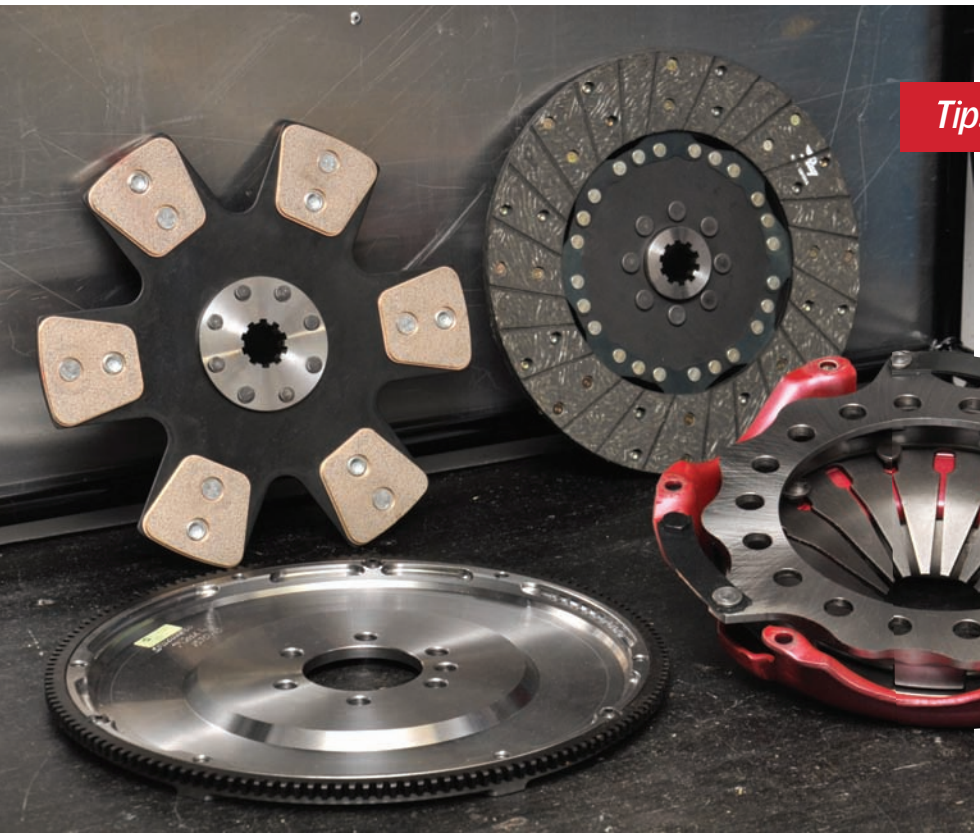
HOW TO MAKE A

Street Stock Clutch Survive



Tips to help yours last longer.

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Your street stock's clutch provides a driver-controlled, mechanical method of applying varying amounts of clamping force to transmit power from the engine into a gearbox so the rest of the drivetrain can smoothly convert your stationary wheels into ones that move the car.

Typically, street stock rules require heavy, large-diameter OEM-style clutches. Using a clutch with a smaller diameter and lighter weight significantly improves performance, but those clutches tend to be more expensive, so rules that mandate stock weights and diameters intend to save racers money.

Reducing the clutch's weight is beneficial, but it is not a procedure for a do-it-yourselfer. Home-lightening, at best, leads to an intolerable vibration from imbalance and greatly increases the risk of a high-rpm explosion. Achieving performance gains from a reduced diameter and/or lighter-weight clutch comes from purchasing one that has been properly designed and manufactured.

Professional clutch makers agree that there is a point where further reducing a stock-diameter clutch's weight decreases its durability without gaining performance. The point at which that occurs is hotly debated. Some say reducing too much weight means the clutch can fail prematurely due to its design and/or environment of driver abuse, such as the especially taxing process of driving the car on or into the trailer. These manufacturers add that racers may retain 50 percent greater clutch longevity *without any* perceptible loss in power by using a properly designed clutch.

Here are ways to reduce these unnecessary costs by prolonging the life of the racing clutch through care and inspection.

Persistent Clutch Killer

Probably the most persistent clutch killer strikes when the racer is on his own. Without crew members or a winch to assist, he is often obliged to load the car by himself. So he slips his thin lightweight clutch a couple of times and as it overheats it colors dark blue and its end is near. To minimize clutch damage during loading and unloading without crew members, it pays to use a winch.

Of course, the amount of wear on all racing clutches is largely determined by how much the slippage is provoked during takeoff. Excessive slippage will cause premature warping, especially in lighter components. Obviously, clutch life can be prolonged extensively by minimizing clutch slippage on takeoff. And getting the car rolling and engaging it without hesitation is a good start.

Other factors that have a detrimental effect on clutch life include the weight of the vehicle, gearing and the number of gears employed. Heavier cars, for example, invite clutch slippage to gain momentum. Higher gearing (lower numerically)

How to Inspect the Flywheel

Flatness of the flywheel is critical. The lighter the flywheel, the more susceptible it will be to warping. Flywheel warping should not exceed 0.015–0.020".

Some lightweight or scalloped flywheels may not have sufficient surface material to allow regrinding. This judgment is based on how much heat the system has been exposed to and how much warping is present.

If severe warping, bluing, or smearing is visible, the flywheel must be replaced. As a general rule, if there's evidence of bluing on the backside of the flywheel, replace it.

Flywheels otherwise may be resurfaced up to a maximum of about 0.030".

Finally, ensure the flywheel is surface-ground and not machined on a lathe. A lathe will not provide a sufficiently flat surface for the clutch disc to seat and operate properly.

How to Inspect the Cover Assembly

The fingers of the cover assembly—the tips where the release bearing makes contact with them—should not exhibit any grooving or excessive wear. If such were the case it would indicate the release bearing is adjusted too close or is constantly riding the clutch fingers.

Check the pressure plate for warping. Using a straight edge, warping should be less than 0.010". To make their pressure plates less susceptible to warping and candidates for rebuilding or resurfacing, Ram uses thicker pressure plates on some of their stock-style covers. These units are supplied under part numbers 401, 401CT, 1675, and 1675L.

On the other hand, highly modified lightweight stock-style covers with lightened pressure plates, like part No. 851 shown, usually offer insufficient material for resurfacing. Thus if warping exceeds 0.015–0.020", the unit needs to be replaced.

Lastly, stock-style cover assemblies featuring aluminum pressure plates with steel inserts (part No. 801) can be resurfaced or rebuilt.

How to Inspect the Clutch Disc

Most competition clutch disc manufacturers use one or more friction materials. Ram uses two: organic and metallic. Organic is the choice when the rules specify full-circle discs or no metallic discs permitted. Otherwise use the metallic example. Sintered bronze metallic pads dissipate hot temperatures better than organic materials. Thus they are less likely to distort the disc. It follows they also combat abuse better hence they last longer.

Original equipment metallic discs pads measure 0.325". Pads should exhibit a blackish finish from use. However, any deep bluing indicates extensive slippage and should be rebuilt or replaced.

Original equipment organic discs measure 0.315". Excessive shininess or smearing of the friction material indicates slippage and the clutch disc should be rebuilt or replaced.

also provokes clutch slippage during take off. And transmissions with gears removed, like those running third and fourth gears only in an effort to reduce drag and save a little weight, sustain appreciably more slippage on takeoff than desirable. It's also a good idea to pop-it-out-and-coast whenever possible and safe to do so in the pits.

In addition to adopting smarter driving techniques that prolong clutch life, it's smart to know how to inspect and maintain the racing clutch assembly. Here's how to do it (see sidebar).

Source
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