

## FREEING A STUCK CONE-CLUTCH ON BCS WALK-BEHIND TRACTOR

A common problem encountered on BCS walk-behind tractors is that the cone-clutch may become STUCK, meaning the clutch plates “stick” in the “mated” position, and therefore power cannot be interrupted by the clutch (so if you squeeze the clutch handle, it is extremely hard to squeeze, and the machine keeps going or grinds when you try to shift gears) **What typically causes this is that the tractor has been stored with the clutch handle in the “released” position** (that is, with the clutch handle dropped down away from the handlebar, in the normal position where you would be working with the machine)...and the damper the storage climate, the faster the clutches will “stick”. The CURE, of course, is to utilize the “clutch-lock” that all post-1988 BCS machines have, and **LOCK THE CLUTCH HANDLE IN THE “SQUEEZED” POSITION WHENEVER THE TRACTOR IS NOT IN USE.**

Some folks will try to break free a stuck clutch by jamming the tractor in gear, or by putting a “cheater pipe” on the upper portion of the clutch fork (the part that protrudes above the rubber boot down by the engine) to get more leverage. I have seen both of these methods result in disastrous results: broken or stripped gears, or a broken transmission housing. NOT cheap fixes...DON'T DO IT!!!

**THIS** document shows you how to break the clutch loose SAFELY, after the clutch has been removed from the tractor. For **actual removal of the engine & clutch**, please refer to the appropriate Engine & Clutch Removal documents on our website (2 choices, depending on clutch mounting system). THEN, refer to this document for the actual breaking-free and checking of the clutch. Refer back to the first document for re-installation of the clutch and engine, and final adjustment of the clutch.



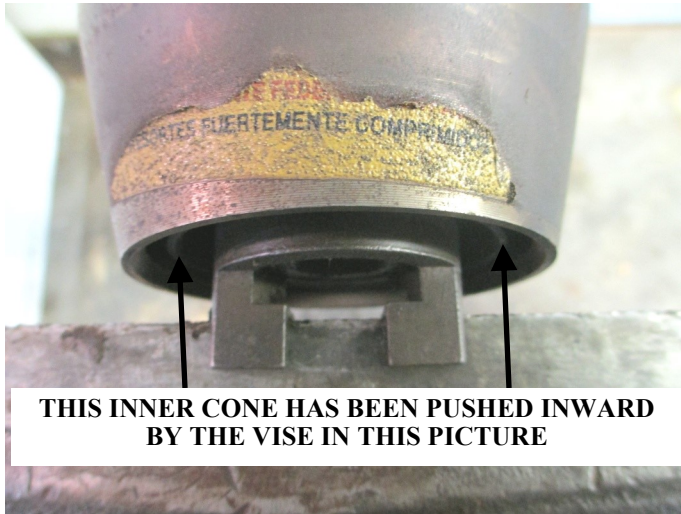
After removing the stuck clutch from the engine, place the clutch in a vise, front-to-back.



Side view of clutch in vise. One of the vise jaws is against the hole where the clutch came off the engine, and the other vise jaw is against the **flat pad** on the throwout-bearing plate. NOTE: we are NOT pushing on the two little “tabs”—they are rotated so they are up over the vise jaw.

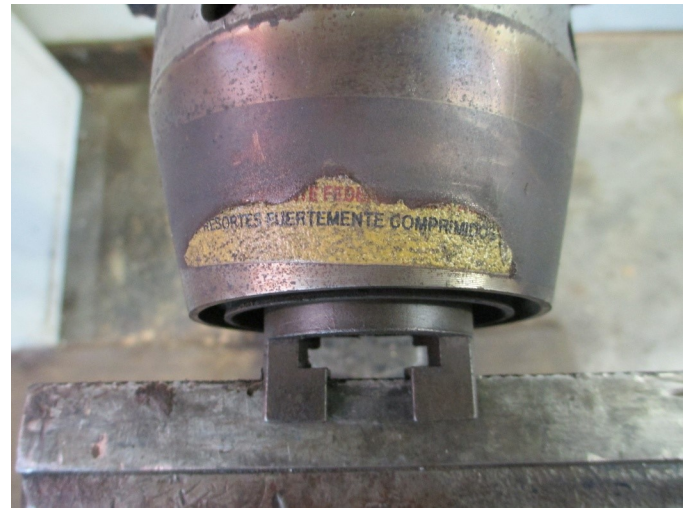


Tighten the vise...you may have to really crank down on it to get the clutch to break loose. You can generate many more times the force with the vise than you can with the clutch linkage on the tractor. When it breaks free, you will undoubtedly hear a load “POP” or “BANG”...don't freak out!



**THIS INNER CONE HAS BEEN PUSHED INWARD BY THE VISE IN THIS PICTURE**

Once it breaks loose, you will note how the clutch is supposed to work: When the “throwout bearing” of the clutch is pushed in (usually by the clutch linkage on the tractor, but now by the vise), the inner ‘cone’ of the clutch moves inward, separating the inner & outer cones of the clutch, so power is NOT transferred through the clutch.



...And when you let the vise back out (or let go of the clutch handle, if the machine were assembled) to take pressure off the throwout bearing, the inner cone re-seats against the inside of the outer cone, so the clutch will transfer power to the tractor. *When the inner & outer cones are mated together like this for long periods of storage, particularly in damp environments, sticking can occur.*



While you have the clutch in a vise, it is a great time to check the throwout bearings. (There are 2...one on the outside, that you can see...and one on the INSIDE, that you cannot see) To check the bearings: Compress the clutch with the vise until it stops (it only moves in a quarter-inch or less), THEN, let the vise back out a hair, so you are not “bottomed out.” With the clutch in this compressed state, put the edge of your thumb, or your finger, or a screwdriver, or something, against the outer steel edge of the inner cone, and rotate it. With the outer and inner cones separated, you should be able to rotate the inner cone with minimal resistance, since it is rolling on the two bearings. **If you feel any “crunchy” or “rough” feeling during the rotation, one (or both) of the bearings are bad.** The outer bearing you can replace yourself...the throwout bearing “shield” (with the two tabs on it) slides off the bearing, and the bearing is relatively common. If the outer bearing does not fix the “roughness”, however, you will have to send the clutch to Earth Tools to have the inner bearing replaced. (BCS actually says you can’t take the clutch apart at all, and that if the inner bearing goes bad, you have to replace the whole clutch. But at Earth Tools, we made tools to get the clutches apart, and we save our customers TONS of money) Here is a video link for this process: [https://www.youtube.com/watch?v=\\_Yn8mP4Ag1E&feature=youtu.be](https://www.youtube.com/watch?v=_Yn8mP4Ag1E&feature=youtu.be)



**THIS IS HOW YOU KEEP A CLUTCH FROM GETTING STUCK DURING STORAGE!!**

CLUTCH “LATCH” HOLDING LEVER IN SQUEEZED POSITION

**Questions?  
EARTH TOOLS  
502-484-3988**