Just the other day I received a phone call from an old friend. As I picked up the phone, I recognized the voice on the other end: It was my dear friend Happy Jack. After we got over the initial “Hi, how are you” part, he finally asked me the big question, “Where the heck have you been?” I told Happy Jack that I’d been on sort of what the Australians call a “walk-about.” So we conversed a bit, and then got down to some interesting stuff.

Happy Jack asked me if I knew about the single-sided friction clutches being used in the 48RE. I said yes, I was very familiar with the Chrysler single-sided clutches. We discussed the advantages of this stack-up vs. the double-sided stack-up. Here is what I told him:

The single-sided frictions first appeared in the overdrive-direct clutch pack in 2003. They’ll interchange with all earlier A500 and A518 models. This includes the models when Chrysler began using the newer designations: 42RH, 42RE, 46RH, 46RE, 47RE, 48RE... and somewhere in there is a 44RE.

“Why go single-sided?” He asked. “A good question,” I replied. The information in the chart (figure 1) will help explain why.

Notice that the 6-clutch drum with a backing plate of .086” with 9 single sided frictions will have a capacity equal to the double sided 9 clutch drum using the same .086” backing plate.

The optimum stack up is the 9 clutch drum with a .086” backing plate and internal and external spline single sided frictions. This would increase the standard 9 clutch drum capacity by 35%.
Here it is in a nutshell:
If you have a 6-clutch drum (6 frictions based on double-sided frictions), you can increase capacity by removing a 0.216" top backing plate and installing a 0.086" top backing plate and installing a 0.086" 

capacity by 35%.

IMPORTANT: Always check the OD sun gear height to the sliding hub and the OD piston shim for correct thickness, regardless of whether you’re using single- or double-sided frictions.

Figure 2 shows the single-sided stack-up in a 9-clutch drum with the 0.086" pressure plate. Figure 3 is a close-up showing the bottom, inside spline, single-sided friction. Since it turns with the bottom, inside spline pressure plate, there won’t be any wear between the two plates.

Figure 4 shows a close-up of the bottom friction of the double-sided stack-up. Take a look at the friction layer on the lower side of the bottom, inside spline friction plate: Since the bottom friction and pressure plate turn together, the bottom layer isn’t a working surface.

Here it is in a nutshell: If you have a 6-clutch drum (6 frictions based on double-sided frictions), you can increase capacity by removing a 0.216" top backing plate and installing a 0.086" top backing plate. You can now install 7 double-sided frictions instead of 6. Or, you can install 15 single-sided frictions and increase the number of working surfaces from 11 (6 double-sided plates) to 15 (15 single-sided plates).

Eleven working surfaces you say? How can that be? There are 12 working surfaces on 6 double-sided frictions. But when you load the overdrive-direct drum, the first thing you instaion the sliding hub is the inside spline pressure plate. Then you insert a friction plate.
The side of the friction plate that goes toward the inside spline pressure plate does nothing but take up space and go for a ride. So you have only 11 of the 12 available working surfaces actually working. This much is old tech that most transmission rebuilders should know. When you install single-sided friction plates, always install the friction side up or away from the inside spline pressure plate. This turns all of the friction surfaces into working surfaces.

The next question Happy Jack asked me is one I’d been expecting: “So is this like the high capacity single-sided clutch pack being made for the 4L60E?” “No,” I answered. That’s because the technology for those clutches is more than just single-sided frictions. As we all know, General Motors released single-sided frictions for the THM 440-T4 back in the 80s. This increased the clutch pack capacity from 6 working surfaces to 8, and then later the capacity increased to 10. So, single-sided friction technology isn’t new.

Happy Jack then asked if I could explain the difference. I explained that single-sided frictions will increase clutch pack capacity. But when used in a shifting clutch, they have a torque and heat limitation (the 48RE overdrive-direct clutch isn’t a shifting clutch). These limitations keeps regular single-sided clutches from being used in shifting clutch applications. The technology used for the 4L60E single-sided 3-4 clutch breaks the limitations and allows you to use single-sided frictions where you need more capacity or higher performance.

The main issue with single-sided frictions is where excessive heat buildup — created during high torque / high horsepower applies — causes the clutches to cone. The high-capacity design controls or reduces the heat buildup. This, in essence, raises the bar, allowing us to push more horsepower and torque during the shift without suffering clutch failure.

So, if the overdrive-direct clutch in the 48RE isn’t a shifting clutch, why would it need more capacity? In today’s trucks with the diesel engines being pushed to the limit and with horsepower making a comeback, it becomes necessary to increase clutch capacities. The
overdrive-direct clutch is applied all the time, except in 4th gear or overdrive, and it has a double roller clutch to back it up in all forward ranges. But if this clutch slips or won’t hold in reverse, the vehicle won’t move.

Just when I thought our conversation was over, Happy Jack asked me to clear up one thing (He gets a little picky sometimes.) He asked me to clarify what I meant by a shifting clutch application. He said he thought all clutch packs were shifting clutches. I advised him that although most people might agree with him, a shifting clutch, by definition, is a clutch that’s applied during a shift, and more precisely an upshift. This is often called a dynamic application. The forward clutch and the overdrive-direct clutch are holding clutches, or a static application.

So to sum it up, the 48RE overdrive-direct single-sided clutches will retrofit all years. The 48RE overdrive direct clutch is a static application, not a dynamic application; that is, it’s a holding clutch, not a shifting clutch.

Well, until next time, if you’ve got a problem, take a minute and read: It’s cheaper than parts.

* 2 ID frictions must be stacked together on top or bottom for proper stack height (1 ID and 9 OD) or 1 OD spline friction added to the top of the pack (10 ID and 10 OD). Never install an OD spline on top of the bottom ID spline pressure plate.
** Due to an extra single-sided plate, a total of 20 frictions surfaces are used; only 19 are working surfaces.