



by Mike Souza

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THE JATCO CVT “POWER GLIDE”

Jatco has been making CVTs since the early 1990s. The list of makes and models throughout the world that use a Jatco CVT would take up at least four magazine pages. We'll mainly be discussing Nissan vehicles in this article, since they seem to be the most common on the ATRA HotLine.

The RE0F06A (those are zeros; not the letter O on all models) is one of the earliest and largest design CVTs, with a 5.5:1 ratio. It appeared in Nissans starting as early as 1991 in some countries. The latest design — RE0F11A — is the smallest model, and is used in mini or small vehicles.

Most Jatco CVTs are similar in design, with differences in size and some internal components. I call the RE0F11A the Nissan/Jatco CVT “Power Glide,” because it has a Ravigneaux planet assembly, giving it a two-speed, 7.5:1 ratio capability, using two forward clutches, a low brake, a high forward clutch, and a reverse brake clutch.

It normally shifts from low to high gear at about 27 MPH (43.4 km/h) in drive, during takeoff and after coming

to a stop. Jatco refers to this new, CVT clutch-and-planetary stepped design as an “auxiliary gearbox” (figure 1). The Jatco designation is JF015E (CVT7 platform); also referred to as Xtronic CVT.

There's also a CVT7 JF020E model made for small (not mini) cars, with the auxiliary gearbox (another power glide), just like the JF015E. These CVT7 model Jatco CVTs apply the lockup torque converter clutch as

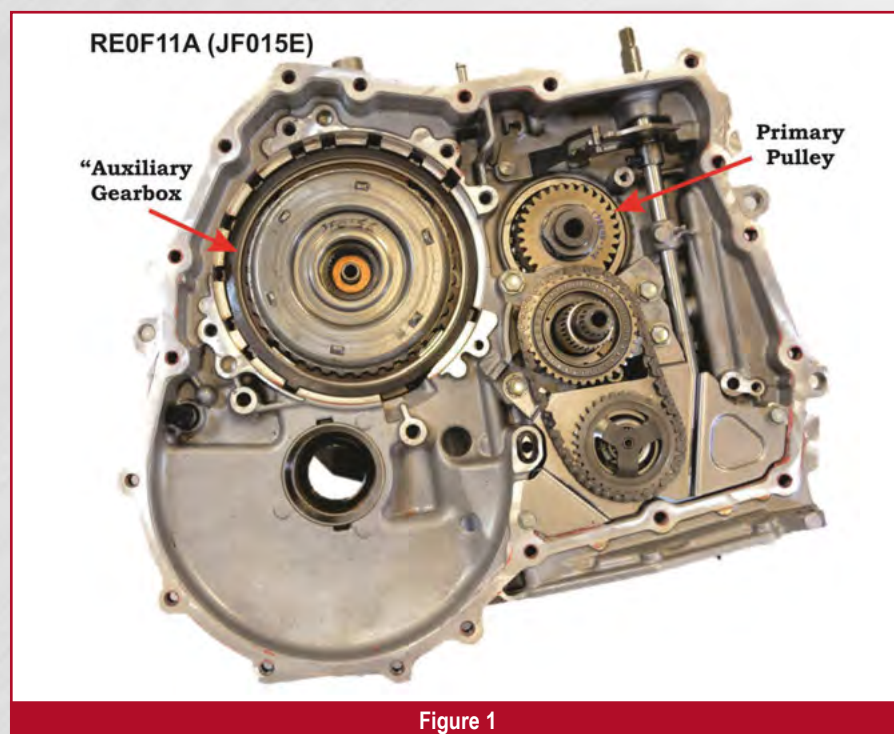


Figure 1

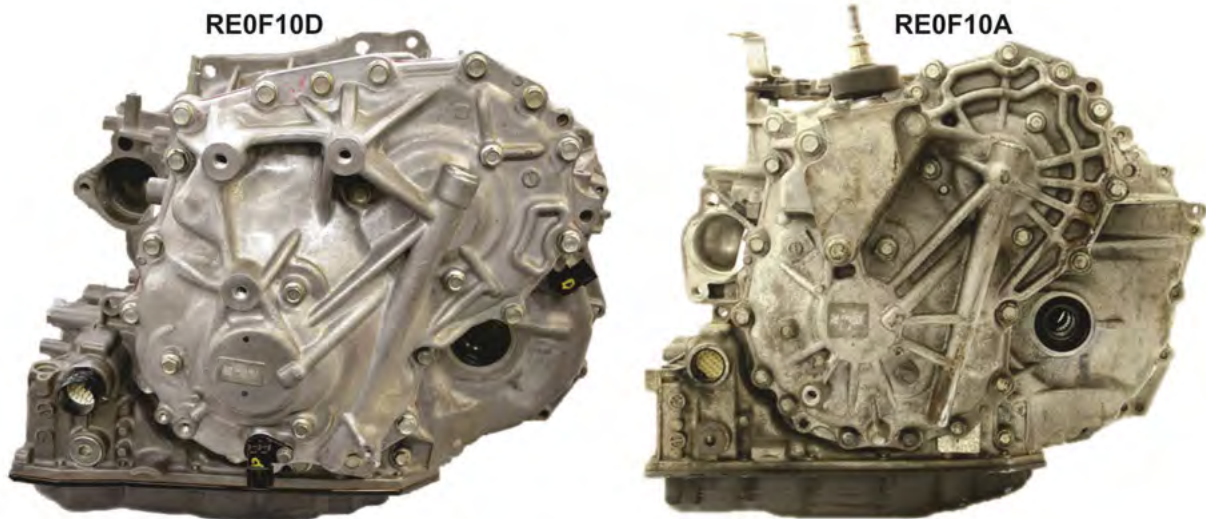


Figure 2

low as 12 MPH (19.3 km/h), which is often mistaken for a shift.

For now, other Jatco CVTs have only one forward and one reverse clutch, including the new CVT8 (platform) models, such as the JF016/17E. These models are referred to as the RE0F10D/E/H/J in Nissan applications.

In our latest findings, the CVT8 is similar to the RE0F10A/B platform (JF011E; figure 2). This includes hybrid models, such as the JF018/19E. So far we haven't seen any U.S.-manufactured Nissan hybrid vehicles with this new Jatco hybrid CVT.

The major changes with the RE0F10D/E/H/J models are that the ratio control (stepper) motor was eliminated and they have a wider ratio of 7:1, compared to the RE0F10A/B, which has a 6.1:1 ratio. Other changes are the use of a chain instead of a belt on some vehicles with larger engines, such as the RE0F10E/H/J and hybrid models JF018/19E.

Over time, these CVTs went from large and heavy with lower ratios to small and light with higher ratios, to save space in the newer, more fuel efficient vehicles.

One thing that's quite different about this latest design CVT7 platform — designated RE0F11A (JF015E) or FICJB in Mitsubishi — is that the pulley assemblies, or variators, are located above the area of the case that holds oil (figure 3). This was to provide less frictional drag and to help prevent aeration of the fluid.

In the earlier Jatco CVT designs, such as the RE0F10/09/08A-B/06A, the pulleys are lower, in area of the case that holds oil. Even in the latest model RE0F10D/E/H/J CVTs, the pulleys are lower.

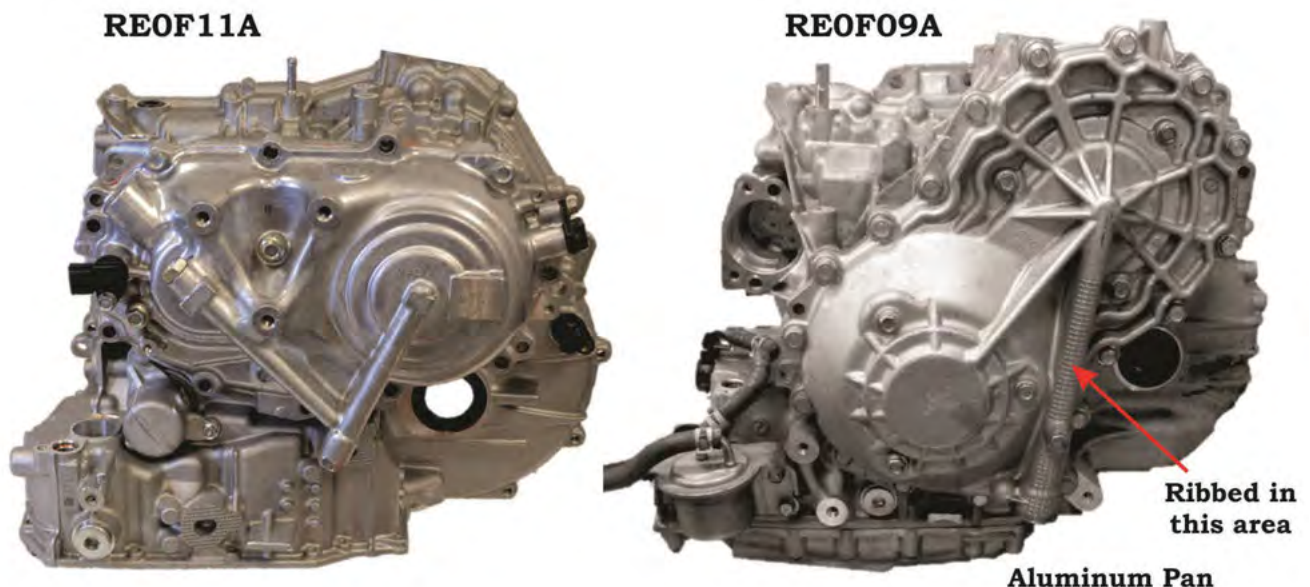


Figure 3

Jatco refers to this new CVT clutch-and-planetary design as an "auxiliary gearbox."

There are major differences in the way some of the electronics work on several models, which we'll cover at another time. We'll compare the differences in pulley designs at the ATRA Powertrain Expo in the Paris Hotel in Las Vegas on October 27-30.

Let's look at what makes up the auxiliary gearbox; after all, this article is about the Jatco CVT "Power Glide":

The clutches are located over the secondary pulley; in other Jatco models they're located over the primary pulley. With the front case section removed, you can see the clutch assemblies (figures 4 and 5).

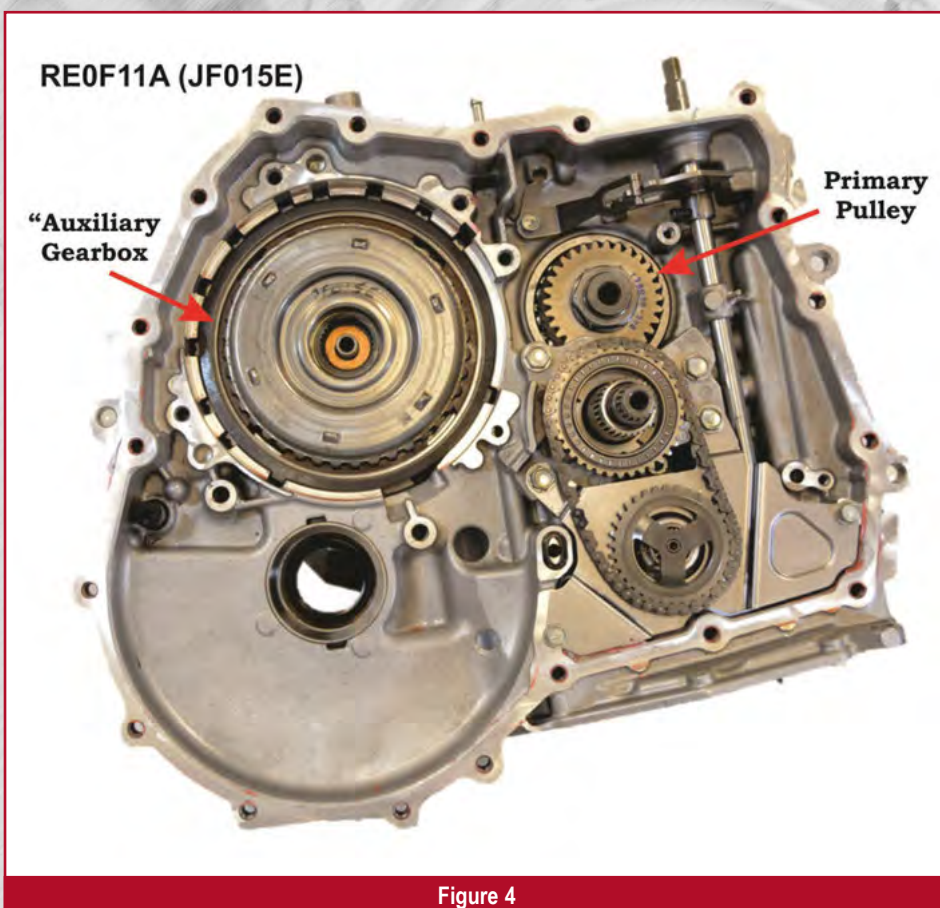


Figure 4

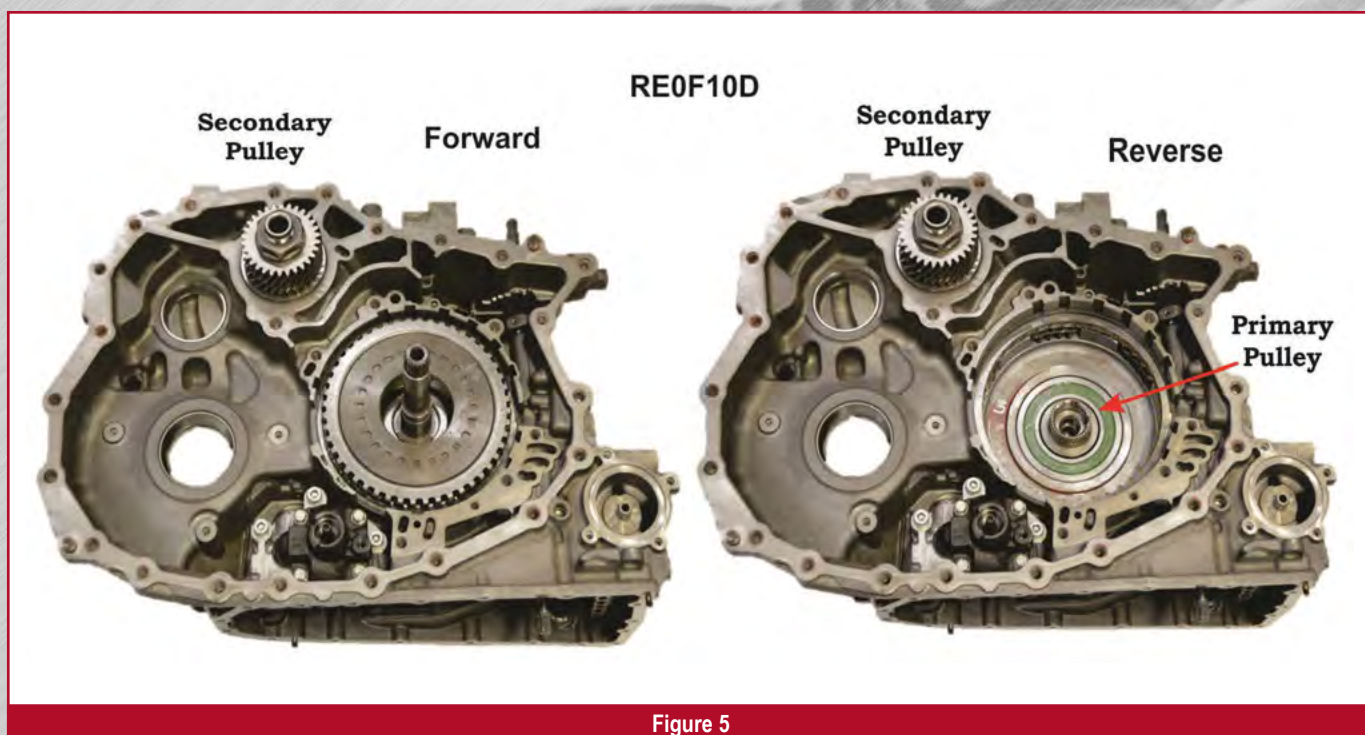


Figure 5

Automatic Transmission Parts

Hard Parts

- OE Manufacturer, Aftermarket New, Remanufactured, & Used
- Drums
- Shafts
- Pumps
- Planets
- Valve Bodies
- Complete Line of Miscellaneous parts

Torque Converters

- Complete line of CVC Remanufactured Converters

Soft Parts

- Master Kits
- Banner Kits (Less Steels)
- Overhaul Kits
- Paper/Rubber Kits
- Filters & Kits
- Frictions
- Steels
- Bushings
- CVT Belts
- Washers
- Bearings
- Gaskets
- Bands
- Flex Plates & Flywheels
- Coolers
- TeckPak Conversion Kits
- Superior Shift Correction Packages
- Transgo Reprogramming Kits
- Transgo Shift Kits

Standard Transmission Parts

- Rebuild Kits
- Bearing Kits with Syncro Rings
- Gasket Sets
- Forks & Sliders
- Gears & Shafts

Rebuilt Transmissions

- Transfer Cases
- Standards & Automatics

Clutch Parts

- LUK
- Forks
- Pilot Bushings & Bearings
- Clutch Alignment Tools

Transfer Case Parts

- Gasket & Seals Kits
- Overhaul Kits
- Chains & Sprockets

Shop Supplies & Tools

- Additives
- Assembly Lubricants
- Builders Benches
- Lifts
- Parts Washer Soap
- Rough Service Light Bulbs
- R.T.V. Black, Blue, Clear
- Technical Manuals
- Tools & Equipment
- Threadlock & Thread Repair

Electrical

- Solenoids, Sensors, & Switches
- Electrical Components



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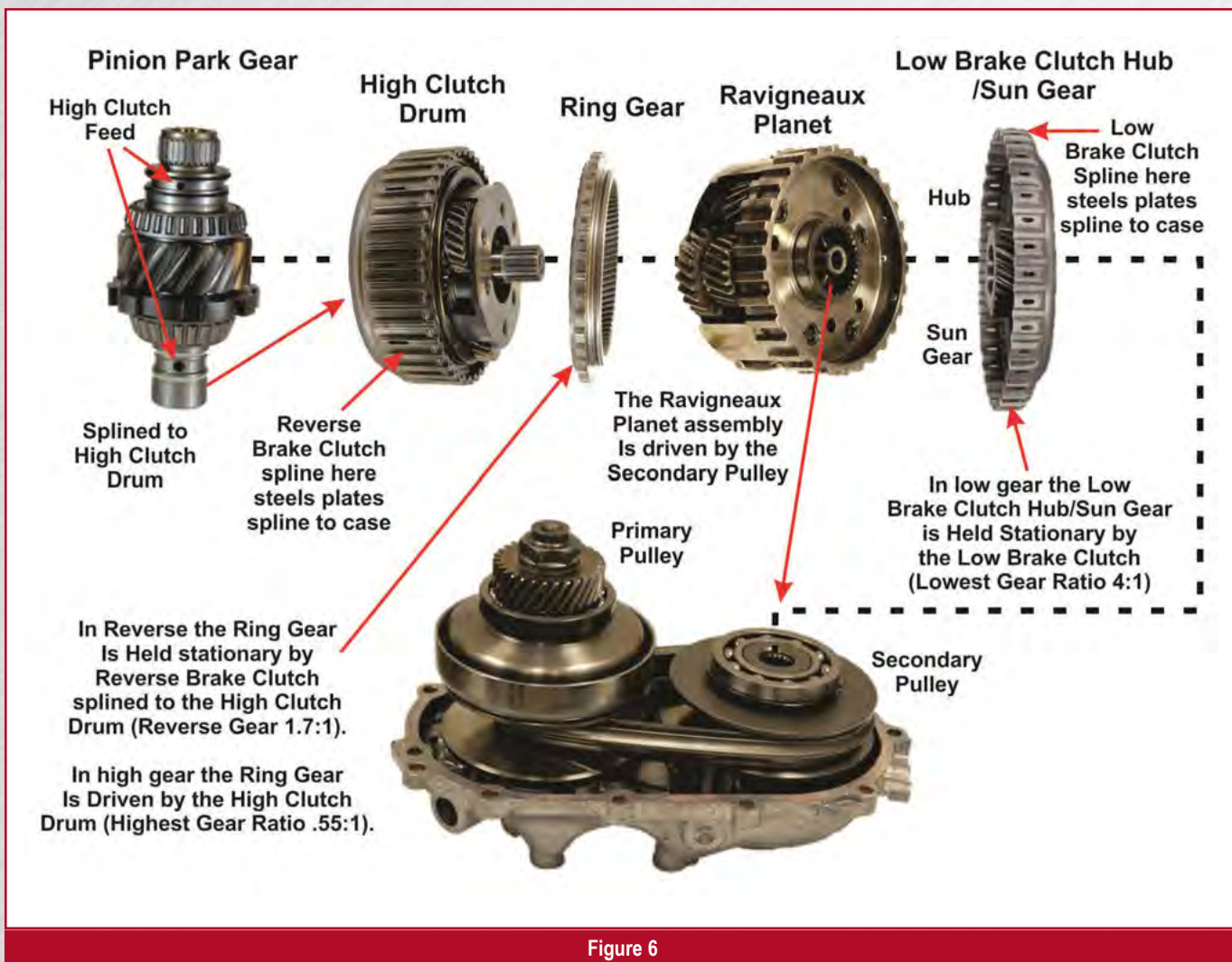


Figure 6

The diagram (figure 6) shows the layout of the components and how the auxiliary gearbox works: From takeoff until about 11-12 MPH, the low sun gear is held stationary by the low brake clutch at a 4:1 ratio.

The high clutch receives oil between the sealing rings, above and below the pinion/park gear, which is splined to the high clutch drum.

The high clutch drum is splined to the Ravigneaux planet assembly, which is driven by the secondary pulley. In high gear, the ratio can be as high as 0.55:1.

In reverse, the reverse brake clutch will hold the high clutch drum with the ring gear installed at the top of the drum, at a 1.7:1 ratio.

So there you have it: a Jatco CVT "Power Glide." Even though you can't feel the shift or ratio change when in drive, you can feel the shift (step) during manual shifting in the Sport mode in some models.



*Keep up with Mike Souza
as he compares
the differences in pulley designs
of the Jatco CVT
at this year's
ATRA Powertrain Expo
at the Paris Hotel
in Las Vegas.*

*For more information visit
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