SOFTWARE & TECH

42re Transmission Parts Diagram

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Introduction to the 42RE Transmission and Its Parts Diagram

The 42RE transmission is a four-speed automatic transmission that was widely used by Chrysler Corporation in their Jeep, Dodge, and Ram vehicles from the early 1990s through the mid-2000s. Known for its durability and relative simplicity compared to later electronically controlled transmissions, the 42RE has become a favorite among off-road enthusiasts and DIY mechanics. However, like any complex mechanical system, understanding how it works requires more than just a general overview. That is where a **42RE transmission parts diagram** becomes invaluable. Whether you are rebuilding a transmission from scratch, troubleshooting a shifting issue, or simply trying to identify a specific component, a detailed parts diagram acts as your roadmap. In this article, we will explore the anatomy of the 42RE transmission, explain why a parts diagram is crucial for any repair or rebuild, and break down the key components you will see on that diagram. By the end, you will have a solid, working knowledge of what is inside your 42RE and how all those parts work together.

Understanding the 42RE Transmission: A Brief Overview

The 42RE is part of Chrysler's A-series family of transmissions, which includes the 30RH, 32RH, 36RH, 42RE, 44RE, 46RE, and 47RE. The "42" indicates the torque capacity (42 foot-pounds of input torque multiplied by a factor), and "RE" stands for "Rear-wheel drive, Electronic control." Unlike the earlier hydraulic-only versions, the 42RE uses electronic solenoids and sensors to control shift points and torque converter lockup. This makes it more efficient and drivable, but also introduces potential failure points that a parts diagram can help diagnose. The transmission is found behind a variety of engines, including the 4.0L inline-six, 5.2L V8, and 5.9L V8, making it a common unit in Jeep Grand Cherokees (ZJ and WJ), Dodge Dakotas, Ram 1500s, and some early Durangos.

A typical **42RE transmission parts diagram**will show the transmission in exploded view, detailing every gear, shaft, clutch pack, seal, and electronic component. To read such a diagram effectively, you need to first understand the major sections of the transmission: the bell housing, the front pump, the torque converter, the planetary gear sets, the clutches and bands, the valve body, the extension housing, and the electronic controls. Each of these sections contains multiple parts, and a good diagram will label them clearly, often with reference numbers that correspond to a parts list. Knowing how these parts interact is key to successful maintenance or repair.

Why a Parts Diagram is Essential for DIY Transmission Work

Working on an automatic transmission is one of the most intimidating tasks for a home mechanic. Unlike an engine, where you can follow a logical top-down disassembly, transmissions are intricate layers of gears, seals, and hydraulic passages. Without a visual guide, it is all too easy to forget the order of washers, the orientation of a one-way clutch, or the correct way to install a snap ring. A **42RE transmission parts diagram**solves this

problem by giving you a clear, exploded view of the entire unit. Here are the main reasons why you need one:

- Correct Assembly Order: The diagram shows how each part stacks onto the next. For example, the rear planetary gear set must be installed before the output shaft, and the diagram makes that sequence obvious.
- Part Identification: Many parts look similar—different clutch packs for different gears, for instance. A diagram with callout numbers helps you distinguish the 2-4 clutch from the overdrive clutch.
- Troubleshooting Fluid Leaks: The diagram will show every seal, gasket, and O-ring location. If you have a leak at the rear of the transmission, you can trace the possible sources: rear extension housing seal, speed sensor O-ring, or the government seal.
- Diagnosing Shift Problems: Electronic components like solenoids, the governor pressure sensor, and the transmission control module are all shown on the diagram. If your 42RE is not shifting properly, you can locate the relevant part on the diagram, test it, and replace it.
- Cost Estimation: By using the parts diagram alongside an online parts catalog, you can quickly identify exactly which parts you need for a rebuild kit, saving you from buying unnecessary or incorrect items.

Key Components in the 42RE Transmission Parts Diagram

Let us walk through the major components you will see on a typical **42RE transmission parts diagram**, grouping them by functional area. This will give you a mental map of the transmission.

1. Torque Converter and Front Pump

The torque converter is the fluid coupling between the engine and transmission. On the diagram, look for the converter assembly with its turbine, stator, and impeller. It also contains an internal lockup clutch, which is electronically controlled to reduce slippage at highway speeds. Attached to the torque converter is the front pump, which pressurizes the transmission fluid. The front pump consists of a housing, drive gear, driven gear, and a bushing. The diagram will show how the pump mounts to the transmission case and meshes with the torque converter hub.

2. Input Shaft and Overdrive Unit

In the 42RE, the overdrive section is integrated into the main transmission case, not a separate add-on unit as in some earlier designs. The input shaft transfers torque from the torque converter to the planetary gear sets. On the diagram, you will see an overdrive planetary gear set, overdrive clutch pack, and the overdrive one-way clutch. The overdrive piston applies the clutch when commanded by the transmission control module (TCM). The parts diagram is critical here because the overdrive assembly is often the root cause of 3-4 shift issues.

3. Main Planetary Gear Sets and Clutches

Below the overdrive section are the two main planetary gear sets: the front (or forward) planetary set and the rear (or reverse) set. These are connected through a common sun gear and carrier. The diagram will show the forward clutch, reverse clutch, 2-4 clutch, and low/reverse clutch. Each clutch pack has multiple steel and friction discs, separated by waved snap rings or pressure plates. The diagram allows you to see the order of these discs and identify any differences between clutch packs (e.g., the number of discs can vary).

4. Bands and Servos

The 42RE uses a combination of clutches and bands to hold specific elements of the planetary gear sets. The two bands are the front (or kickdown) band and the rear (or low/reverse) band. The diagram will show the band applying levers, pins, and the servo pistons that actuate them. Servos are sealed with large O-rings and can fail, causing a loss of reverse or a flare on the 1-2 shift. Locating these on the diagram helps when replacing the servo cover or adjusting band clearance.

5. Valve Body

The valve body is the hydraulic brain of the transmission, routing fluid pressure to the correct clutches and

bands through a maze of channels and check balls. On a parts diagram, the valve body is shown as a separate assembly, often with an exploded view of the separator plate, gaskets, and the individual valves

42RE transmission parts diagramwill also include the electronic solenoid pack, which controls shift solenoid A, shift solenoid B, a pressure control solenoid, and a torque converter clutch solenoid. The diagram makes it easy to identify each solenoid by its position in the valve body.

6. Electronic Control Components

Unlike older hydraulic transmissions, the 42RE relies on electronic inputs. The diagram will show the output speed sensor (VSS), input speed sensor, and the governor pressure sensor/solenoid assembly (often mounted in the valve body or case). The transmission control module (TCM) is not physically part of the transmission but its connectors are. On the parts diagram, you will see the wire harness that runs from the solenoid pack to the transmission case connector. Understanding the routing of this harness is important when removing or reinstalling the transmission.

7. Extension Housing, Tailshaft, and Speedometer

At the rear of the transmission, the extension housing supports the output shaft and houses the speedometer gear (on older models) or the output speed sensor ring. The diagram will show the extension housing gasket, rear seal, and the bushing pressed into the housing. If you have a leak at the rear of the transmission, the diagram helps you decide whether to just replace the seal or replace the entire extension housing if the bushing is worn. For 4x4 models, the parts diagram also includes the transfer case adapter and mounting hardware.

8. Seals, Gaskets, and O-Rings

A transmission rebuild or repair is only as good as its sealing components. A quality **42RE transmission parts diagram**will label every seal location: the front pump seal, front pump gasket, input shaft seal, clutch piston seals (often Teflon rings), seal rings on the shafts, servo cover O-rings, cooler line fittings, pan gasket, and the rear seal. Having a visual reference ensures that you do not miss a critical seal during assembly, which could lead to internal leaks and burnt clutches.

How to Read a 42RE Transmission Parts Diagram

Reading an exploded view diagram takes some practice. Typically, the diagram is arranged with the torque converter at the top or left side, and the output shaft at the bottom or right. Each part is numbered, and a corresponding parts list provides the name, quantity, and often the Chrysler/Mopar part number. When using the diagram for a rebuild, follow these steps:

1. Start at the input end (torque converter) and work your way toward the output end. Do not skip ahead.
2. Lay out all removed parts in the same order as the diagram, using a clean workspace.
3. Note the orientation of one-way clutches—they often have an arrow indicating the direction of free rotation.
4. Check the diagram for any special tools required, such as a spring compressor for the clutch packs or a bushing driver for the front pump.
5. Verify that you have the correct parts by comparing the appearance on the diagram with the actual component. For example, the 2-4 clutch drum may have a distinct number of splines that matches the diagram.

Common Problems Diagnosed Using a Parts Diagram

Many transmission issues can be traced back to specific parts that are clearly shown on the diagram. Here are a few common symptoms and the related parts:

- No forward movement (1st gear won't engage): Likely a failed forward clutch, a broken forward one-way clutch, or a stuck valve in the valve body. The diagram helps you locate the forward clutch drum and its seals.

• No reverse: Check the low/reverse clutch drum, the reverse band and servo, or the valve body's reverse circuit. The diagram shows how these components interconnect.

• 3-4 shift flare or shudder: Usually the overdrive clutch pack or the overdrive one-way clutch. The diagram's exploded view of the overdrive section is essential for disassembly.

• Transmission slipping in all gears: This often points to a worn front pump, a faulty torque converter, or low fluid pressure from a clogged filter. The diagram shows the pump assembly and the filter location.

• Erratic shifting or no shift: Electronics failure. Use the diagram to locate the solenoid pack and the speed sensors. Also, check the wiring harness for breaks at the connector.

Where to Find a Reliable 42RE Transmission Parts Diagram

You can find **42RE transmission parts diagrams**in several places. Factory service manuals (FSM) for your specific vehicle are the best source because they include detailed exploded views, torque specs, and diagnostic procedures. Many of these manuals are available online as PDFs. Aftermarket rebuild kits often come with a simplified diagram, but it may not show every seal location. Online parts retailers like Mopar Parts Giant or dealer websites have interactive diagrams that you can zoom into. Also, YouTube rebuild videos frequently include screenshots of the parts diagram. For accuracy, cross-reference multiple sources, especially when dealing with the electronic control components, as there are subtle differences between the early (1993-1995) and late (1996-200

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