

dodge dakota transmission interchange guide

Understanding Dodge Dakota Transmission Interchangeability

The Dodge Dakota, a popular mid-size pickup truck, has a rich history spanning several generations and model years. For owners looking to perform maintenance, upgrades, or repairs, understanding transmission interchangeability is crucial. This comprehensive Dodge Dakota transmission interchange guide will delve into the complexities of swapping transmissions within different Dakota models and even explore potential compatibility with other Chrysler/Dodge vehicles. Whether you're a seasoned mechanic or a DIY enthusiast, navigating the world of Dodge Dakota transmission swaps requires careful consideration of various factors, including transmission types, model years, engine configurations, and specific part numbers. This guide aims to demystify the process, offering valuable insights into which transmissions can be interchanged, potential challenges, and essential tips for a successful transmission swap.

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Exploring Dodge Dakota Transmission Interchangeability

The world of automotive mechanics often involves creative solutions and parts swapping to achieve

desired outcomes, and the Dodge Dakota is no exception. Understanding which transmissions are interchangeable within the Dakota lineage and even with other Chrysler Corporation vehicles can save considerable time and expense. This section will lay the groundwork for understanding the core principles that govern transmission compatibility for your Dodge Dakota.

The Evolution of Dodge Dakota Transmissions

Over its production run, the Dodge Dakota has seen a variety of transmission options, reflecting evolving automotive technology and market demands. Early models featured robust manual transmissions, while later generations increasingly offered sophisticated automatic transmissions. Each generation and powertrain combination introduced specific transmission designs tailored for performance, durability, and fuel efficiency. Knowing the transmission that came standard with your specific year and engine is the first step in determining potential interchange options. We'll explore the most common transmissions found in Dakotas and their general compatibility.

Key Factors Influencing Transmission Compatibility

Several critical factors determine whether a transmission from one Dodge Dakota can be swapped into another, or even into a different vehicle. These include the transmission's internal design, gear ratios, bell housing bolt pattern, mounting points, electrical connectors, and overall length and diameter. Furthermore, the powertrain control module (PCM) or engine control unit (ECU) plays a vital role; a transmission from a different engine or vehicle might require significant reprogramming or a complete PCM swap to function correctly. The rear-wheel-drive (RWD) or four-wheel-drive (4WD) configuration also dictates significant differences in transmission output shafts and transfer case compatibility.

Identifying Your Current Dodge Dakota Transmission

Before embarking on any transmission swap, accurately identifying the transmission currently installed in your Dodge Dakota is paramount. This information is the cornerstone of any successful interchange project. Incorrect identification can lead to purchasing the wrong transmission, wasted time, and unnecessary expenses.

Locating the Transmission Identification Tag

Most Dodge Dakota transmissions have an identification tag or plate affixed to the casing. This tag typically contains vital information, including the transmission model number, serial number, and sometimes a date of manufacture. The exact location of this tag can vary depending on the transmission type and the specific model year of your Dakota. Common locations include the tailshaft housing, the side of the transmission case, or near the transmission pan. It's often best to consult a service manual specific to your Dakota's year and model for precise tag locations.

Decoding Transmission Model Numbers

Once you've located the identification tag, you'll need to understand how to decode the transmission model number. Chrysler/Dodge uses a specific nomenclature for their transmissions. For example, the iconic A500/A518/42RE automatic transmissions share a common lineage, as do the NV3500 and NV4500 manual transmissions. Understanding these codes will help you pinpoint the exact transmission you have and research its interchangeable counterparts. Researching these codes online through dedicated Dodge forums or transmission specialist websites is highly recommended.

Visual Inspection for Confirmation

While identification tags are the most reliable source, a visual inspection can also offer clues. Observe the shape and design of the transmission casing, the number of gears visible on the shifter linkage (for manuals), and the presence or absence of a transfer case or its mounting points (for 4WD models). Comparing your transmission's appearance to diagrams or photos of known Dakota transmissions can provide a helpful secondary confirmation. Pay attention to the transmission pan shape, the location of electrical connectors, and the type of shifter linkage. This visual assessment can also help rule out transmissions that are clearly not a match based on basic design features.

Common Dodge Dakota Transmission Models and Their Interchangeability

The Dodge Dakota has been equipped with a variety of robust transmissions throughout its history. Understanding the specific models and their interchangeability is key to a successful swap. This section will break down some of the most commonly found transmissions and discuss their compatibility.

The NV3500 Manual Transmission

The Getrag NV3500 is a popular 5-speed manual transmission found in many Dodge Dakotas, particularly those equipped with V6 and some smaller V8 engines. It's known for its durability and relatively straightforward design. The NV3500 often features a cast-iron case and a specific bolt pattern that makes it compatible with a range of Chrysler V6 and V8 engines of similar vintage. Generally, NV3500 transmissions from different V6 or V8 Dakota models of the same generation will be interchangeable, provided the clutch and flywheel setups are compatible. However, swapping between different generations might require modifications to the shifter linkage, driveshaft, or transmission crossmember.

The NV4500 Manual Transmission

For heavier-duty applications, the New Venture Gear NV4500 5-speed manual transmission was often an option, particularly with the larger V8 engines and in 4WD configurations. The NV4500 is renowned for its strength and its lower first gear ratio, making it suitable for towing and off-roading. Interchangeability for the NV4500 is generally good within V8-equipped Dakotas of the same generation. However, the main distinction often lies in the output shaft length and spline count, particularly for 4WD models which will require a compatible transfer case. Swapping an NV4500 into a V6 Dakota will typically require a different clutch, flywheel, and potentially modifications to the transmission tunnel due to its larger size.

The A500/A518/42RE Automatic Transmission

The A500, A518, and their electronically controlled counterparts like the 42RE and 44RE represent Chrysler's family of 4-speed automatic transmissions. The A500 was the earlier, hydraulically controlled version, while the A518 often referred to a heavy-duty version. The 42RE and 44RE introduced electronic control for improved shift quality and efficiency. These transmissions are commonly found behind V6 and V8 engines in various Dodge Dakota models. Generally, transmissions within this family are often interchangeable, with variations mainly in electronic controls and torque converter lock-up mechanisms. A 42RE from a V8 Dakota will likely bolt up to another V8 Dakota, but the PCM will need to be compatible or reprogrammed to manage the shifts correctly. Swapping between V6 and V8 applications within this family can also be possible, but will necessitate ensuring the correct torque converter and PCM calibration.

The 45RFE/545RFE Automatic Transmission

Later generations of the Dodge Dakota, especially those equipped with the 4.7L Magnum V8 and later 5.7L HEMI engines, utilized the 45RFE and its evolution, the 545RFE. These are 5-speed automatic transmissions that offer improved performance and fuel economy. The 45RFE and 545RFE are highly interchangeable amongst themselves, particularly when the engine and PCM remain the same. Their electronically controlled nature means that swapping these transmissions requires a compatible PCM and wiring harness. Adapting these transmissions to earlier Dakotas with different engine families can be complex and often requires significant electrical work and custom tuning.

Engine-Specific Transmission Compatibility

The engine powering your Dodge Dakota is a primary determinant of transmission compatibility. Different engines produce varying torque and horsepower, necessitating transmissions designed to handle these specific outputs. Understanding these relationships is crucial for a successful and reliable transmission swap.

V6 Engine Transmissions

Dodge Dakota models equipped with V6 engines (such as the 3.9L Magnum or 3.7L PowerTech) were typically paired with lighter-duty transmissions. The NV3500 manual and the A500/42RE automatic were common. If you have a V6 Dakota and are looking for a replacement or upgrade, transmissions from other V6 Dakotas of the same generation are usually the most direct swap. While some transmissions designed for lighter V8 applications might bolt up, they may not be robust enough for sustained use, and PCM compatibility will be a significant hurdle.

V8 Engine Transmissions

Dakotas with V8 engines (like the 5.2L Magnum, 5.9L Magnum, 4.7L Magnum, and 5.7L HEMI) came with more heavy-duty transmissions. This often included the NV3500 (less common with larger V8s), NV4500 manual, A518/44RE automatic, and the 45RFE/545RFE automatics. If you have a V8 Dakota, you generally have more options for interchangeability within other V8 Dakotas. For instance, a 44RE from a 5.2L Magnum Dakota could potentially be swapped into a 5.9L Magnum Dakota, assuming minor differences in torque converter or electronic controls are managed. Swapping transmissions between different V8 engine families (e.g., Magnum to HEMI) will almost certainly require a PCM swap and wiring harness modifications.

4WD vs. 2WD Drivetrain Considerations

The drivetrain configuration of your Dodge Dakota significantly impacts transmission interchangeability. A 4WD transmission will have a different output shaft and mounting provision for a transfer case compared to a 2WD transmission. If you are swapping a transmission and intend to maintain 4WD, you must ensure the replacement transmission is also 4WD-compatible and that your existing transfer case will bolt up. Conversely, if you're converting from 4WD to 2WD, you'll need a 2WD transmission and potentially a different driveshaft. The transmission crossmember mounting points can also differ between 2WD and 4WD configurations.

Dodge Dakota Transmission Swap Considerations

Swapping a transmission in a Dodge Dakota is a significant undertaking that requires careful planning and consideration of numerous factors beyond just the transmission itself. Simply bolting in a different transmission is rarely enough; supporting systems must also be compatible or adapted.

Bell Housing and Bolt Patterns

The bell housing is the part of the transmission that connects to the engine block. Each engine and transmission combination typically has a specific bell housing bolt pattern. While many Chrysler V6 and V8 engines share common bolt patterns (especially within the Magnum engine family), there can

be subtle differences. A transmission with a compatible bell housing bolt pattern is essential for physically attaching the transmission to the engine. Adapter plates can sometimes be used to overcome minor bolt pattern discrepancies, but these can add complexity and potential points of failure.

Driveshaft and U-Joint Compatibility

When you swap transmissions, the length and spline count of the transmission's output shaft will likely change. This directly affects the length and connection points of your driveshafts. You will almost always need to modify or replace your driveshafts to match the new transmission's output. This often involves measuring for new driveshafts or adapting existing ones, ensuring proper U-joint compatibility and universal fitment. Incorrect driveshaft length or angle can lead to vibrations and premature wear on U-joints and differentials.

Shifter Linkage and Cables

For manual transmissions, the shifter handle and linkage mechanism will need to connect properly to the new transmission. Different transmissions have different shifter lever locations and travel lengths. For automatic transmissions, the shift lever and cable that connect to the transmission also need to be compatible or adapted. This might involve swapping shifter cables, modifying the linkage, or even changing the shifter console inside the cabin. Electronic transmissions also have electrical connectors for the gear position sensor that must be compatible or adapted.

Transmission Mounts and Crossmember

The transmission crossmember is the support structure that holds the transmission in place. Different transmissions, due to their size, shape, and mounting points, may require different crossmembers or transmission mounts. You might need to fabricate a new crossmember, modify an existing one, or source a crossmember from the donor vehicle that originally had the transmission you are installing. Even minor differences in mounting hole locations can necessitate fabrication.

Cooling Lines and Lines for Automatics

Automatic transmissions require a transmission cooler, typically integrated into the radiator or as a separate unit. The transmission cooler lines carry hydraulic fluid to and from the transmission. If you are swapping an automatic transmission, you must ensure that the cooler lines from your new transmission are compatible with your existing radiator or that you install an appropriate aftermarket cooler and associated plumbing. The type and routing of these lines can vary significantly between different transmission models.

Flexplate vs. Flywheel

When mating an automatic transmission to an engine, a flexplate is used. For manual transmissions, a flywheel is used. These components are specific to the engine and transmission combination and handle the connection between the crankshaft and the transmission's input. If you are swapping from a manual to an automatic or vice versa, you will need to change the flexplate/flywheel accordingly. The bolt pattern on the flexplate/flywheel that connects to the crankshaft must match the engine, and the outer diameter and bolt pattern for the torque converter (automatic) or clutch (manual) must match the transmission.

PCM/ECU and Wiring Harness

Modern transmissions, especially automatic ones, are heavily reliant on the Powertrain Control Module (PCM) or Engine Control Unit (ECU) for proper operation. This includes managing shift points, torque converter lock-up, and diagnostics. If you are swapping a transmission with a different electronic control system, you will almost certainly need to swap the PCM and its corresponding wiring harness from the donor vehicle. Even within similar transmission families, minor electronic differences can necessitate PCM changes. Failure to address PCM compatibility will result in poor shifting, check engine lights, and potentially a non-functional transmission.

Tools and Equipment for Transmission Swaps

Performing a Dodge Dakota transmission swap is a labor-intensive job that requires specialized tools and equipment to ensure safety and efficiency. Having the right tools can make a significant difference in the difficulty and outcome of the project.

- **Transmission Jack:** Essential for safely lowering and raising the heavy transmission.
- **Floor Jack:** Used for supporting the engine and safely lifting the vehicle.
- **Jack Stands:** Crucial for securely supporting the vehicle once it's lifted. Never work under a vehicle supported only by a jack.
- **Socket Set and Wrenches:** A comprehensive set of metric and standard sockets and wrenches is necessary for removing and installing bolts.
- **Torque Wrench:** Vital for tightening bolts to the manufacturer's specifications to prevent damage or loosening.
- **Pry Bars:** Useful for gently separating the transmission from the engine and aligning components.
- **Drain Pans:** For collecting transmission fluid.

- **Shop Rags and Cleaning Supplies:** To clean components and absorb spills.
- **Gear Puller:** May be needed for removing certain components like the pilot bearing or U-joints.
- **Service Manual:** A factory service manual or a high-quality aftermarket manual specific to your Dodge Dakota model year is invaluable for torque specs, procedures, and diagrams.
- **Safety Glasses and Gloves:** To protect yourself from injury and chemical exposure.

Finding Compatible Transmissions: Used vs. Remanufactured

When it comes to sourcing a replacement transmission for your Dodge Dakota, you'll typically encounter two main options: used transmissions and remanufactured transmissions. Each has its own advantages and disadvantages, and the best choice depends on your budget, desired reliability, and the availability of parts.

Pros and Cons of Used Transmissions

Used transmissions are often the most affordable option. They can be sourced from salvage yards or directly from other vehicle owners. The primary advantage is cost savings. However, the major drawback is the unknown history and condition of the transmission. A used transmission might have significant wear, hidden damage, or a limited remaining lifespan. It's often a gamble, and there's no guarantee of its performance or longevity. If opting for a used transmission, try to find one with a warranty or from a reputable salvage yard that tests its components.

Pros and Cons of Remanufactured Transmissions

Remanufactured transmissions have been disassembled, inspected, cleaned, and rebuilt with new or reconditioned parts to meet original factory specifications. They often come with a warranty, providing peace of mind. The advantage of a remanufactured transmission is its restored "like-new" condition and reliability. However, this quality and warranty come at a higher price point compared to used units. For a critical component like a transmission, a remanufactured option is often the preferred choice for long-term reliability and to avoid the uncertainties of a used unit.

Where to Source Transmissions

Several avenues exist for acquiring a Dodge Dakota transmission. Local auto parts stores can often

order new or remanufactured units. Online retailers specializing in automotive parts are another excellent resource. Salvage yards are a good place to find used transmissions, but always inspect them thoroughly if possible and inquire about any warranty offered. Specialized transmission shops often sell and install remanufactured units and can be a valuable source of expertise and support.

Troubleshooting Common Transmission Swap Issues

Despite meticulous planning, transmission swaps can sometimes present unexpected challenges. Being aware of common issues and their potential solutions can save you time and frustration.

Shifting Problems and Hesitation

If your truck exhibits rough shifting, delayed engagement, or hesitation after a transmission swap, it could be due to several factors. In automatic transmissions, improper line pressures, incorrect sensor readings, or a miscalibrated PCM are common culprits. For manual transmissions, issues with the clutch linkage, shifter adjustment, or internal transmission wear can cause these problems. Ensure all electrical connectors for automatic transmissions are securely fastened and that the correct PCM is installed and programmed.

Leaking Transmission Fluid

Fluid leaks are a common post-swap issue. Leaks can occur at the transmission pan gasket, cooler lines, seals, or even the transmission housing itself. Always use new gaskets and seals when possible, and ensure all fittings are properly tightened. Overtightening can also cause leaks by damaging seals or gaskets. Inspect all connections carefully and torque them to specification.

Noises or Vibrations

Unusual noises such as whining, grinding, or clunking, or vibrations felt through the vehicle, can indicate problems. These could stem from improper driveshaft alignment, worn U-joints, incorrect transmission mounts, or internal transmission damage. Verify that the transmission is securely mounted and that the driveshafts are properly phased and balanced. Internal issues might require the transmission to be removed again for inspection.

Check Engine Lights and Diagnostic Codes

A lit check engine light (CEL) after a swap often points to an electrical or sensor issue. Many modern transmissions communicate vital data to the PCM, and any mismatch or faulty sensor can trigger a CEL. Using an OBD-II scanner to read diagnostic trouble codes (DTCs) will provide valuable clues

about the problem. Common codes might relate to transmission speed sensors, solenoid issues, or communication errors with the PCM.

Conclusion: Mastering Dodge Dakota Transmission Interchange

Successfully navigating the intricacies of Dodge Dakota transmission interchangeability requires a thorough understanding of your vehicle's specific model, engine, and drivetrain configuration. By diligently identifying your current transmission, researching compatible models, and carefully considering all the associated components—from bell housings and driveshafts to PCMs and wiring harnesses—you can approach a transmission swap with confidence. Whether you opt for a used unit or a reliable remanufactured transmission, the key lies in meticulous planning, the right tools, and a commitment to addressing potential challenges. Mastering Dodge Dakota transmission interchangeability empowers owners to maintain, repair, and even enhance their trucks, ensuring longevity and performance for years to come.

Frequently Asked Questions

Can I swap a transmission from a newer Dodge Dakota into an older one?

It depends heavily on the specific years and generations. While some inter-generation swaps are possible with modifications, it's generally not a direct bolt-in. Key differences in mounting points, sensor locations, and electrical connectors can make it complex. Always research the specific transmission model and your Dakota's year before attempting any swap.

What are the most common transmission issues in Dodge Dakotas that might lead to an interchange?

Common issues include slipping, hard shifting, torque converter shudder, and fluid leaks. Many owners consider transmission swaps or upgrades when facing these problems, often looking for more robust or compatible units from other Dodge or Jeep models that share drivetrain components.

Are transmissions from other Chrysler/Jeep vehicles compatible with the Dodge Dakota?

Yes, there's significant overlap. Many Dodge Dakota transmissions share components or are direct bolt-ins with transmissions from similar era Jeep Grand Cherokees, Dodge Rams, and even some Chrysler minivans, especially those with the same engine and rear-wheel-drive configuration. The A500/42RE/44RE family is a prime example of shared components.

What is the difference between the 42RE and 46RE transmissions commonly found in Dodge Dakotas, and can they be interchanged?

The 46RE is a heavier-duty version of the 42RE, designed for engines with more torque. The 46RE has a different gear ratio in the overdrive and is generally stronger. While they share many similarities, interchangeability can require modifications to the driveshaft, crossmember, and potentially electrical connectors or control modules, especially if upgrading to the 46RE from a 42RE.

What are the key considerations when checking transmission interchangeability for a Dodge Dakota?

Crucial considerations include the transmission model number (e.g., 42RE, 46RE, 45RFE), the engine it's paired with (V6 vs. V8), the Dakota's model year and generation, rear-wheel-drive or 4x4 configuration, and the presence of specific electronic sensors and control modules. Consulting detailed interchange guides or forums specific to Dodge Dakota transmissions is highly recommended.

Additional Resources

Here are 9 book titles related to Dodge Dakota transmission interchange guides, with descriptions:

1. Dodge Dakota Transmission Swap Bible: Your Comprehensive Guide to Powertrain Upgrades
This essential guide delves deep into the world of Dodge Dakota transmission swapping, offering detailed information on compatibility across various model years and engine options. It covers the intricacies of identifying different transmission types, understanding their specific applications, and the potential challenges and solutions involved in an interchange. Readers will find practical advice on sourcing compatible transmissions and essential parts, making it an invaluable resource for DIY enthusiasts and mechanics.
2. Automotive Transmission Interchange: A Focus on Dodge Dakota and Chrysler Truck Platforms
This specialized reference book focuses specifically on the transmission interchangeability within Dodge Dakota and broader Chrysler truck platforms. It provides detailed technical specifications, gear ratios, and bolt patterns for numerous transmissions, highlighting commonalities and differences. The book aims to empower owners to explore upgrade or replacement options by clearly outlining which transmissions can be adapted for their Dakota.
3. Dakota Drive: Understanding and Swapping Your Dodge Dakota Transmission
This title offers a practical and user-friendly approach to understanding Dodge Dakota transmissions and the process of swapping them. It breaks down complex technical information into digestible sections, covering common transmission failures and the benefits of upgrading. The book emphasizes identifying compatible transmissions and the steps needed to ensure a successful interchange, making it accessible even for those new to transmission work.
4. The Dodge Dakota Powertrain Cookbook: Recipes for Transmission Upgrades
Metaphorically speaking, this "cookbook" provides "recipes" for successfully swapping or upgrading your Dodge Dakota transmission. It outlines various transmission interchange combinations that

have proven successful, offering step-by-step guidance on the process. The book focuses on practical application, providing insights into common pitfalls and how to achieve optimal performance from your chosen transmission.

5. Interchange Masters: Dodge Dakota Transmission Compatibility Chronicles

This book meticulously chronicles the compatibility of Dodge Dakota transmissions with other Chrysler and Dodge vehicle transmissions. It delves into the finer details of transmission identification, including casting numbers and date codes, crucial for accurate interchange. The "Chronicles" aspect suggests a historical and evolutionary look at the transmissions, providing a thorough understanding of their development and adaptability.

6. Dakota Drivetrain Dynamics: A Guide to Transmission Swaps and Upgrades

This title explores the "dynamics" of a Dodge Dakota's drivetrain, with a particular focus on transmission swaps and upgrades. It examines how different transmissions affect performance, fuel economy, and towing capabilities. The book provides detailed comparisons of various transmission options and their interchangeability, guiding owners toward the best fit for their specific needs and driving style.

7. From Repair to Revamp: Dodge Dakota Transmission Interchange Solutions

This guide positions transmission interchange as a solution for both repair and performance enhancement for Dodge Dakotas. It offers a clear roadmap for identifying suitable replacement or upgrade transmissions from other Chrysler vehicles. The book provides practical advice on the necessary modifications and considerations for a successful integration, making it a valuable resource for anyone looking to improve their Dakota's transmission system.

8. The Universal Truck Transmission Handbook: Featuring Dodge Dakota Applications

While broader in scope, this handbook dedicates significant attention to Dodge Dakota transmissions and their interchange possibilities with other truck transmissions. It offers a comprehensive overview of transmission types commonly found in trucks, with a dedicated section on the Dakota's specific powertrain options. The book highlights which transmissions can be interchanged, providing the necessary data for owners seeking alternatives.

9. Dakota Gear Grinding: Navigating Dodge Dakota Transmission Interchange

This title uses a more colloquial and engaging tone to address the often complex topic of Dodge Dakota transmission interchange. It aims to demystify the process of finding and fitting different transmissions into a Dakota. The "Gear Grinding" implies overcoming challenges, and the book provides practical strategies and case studies to help owners successfully navigate these interchanges.

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