

automatic to manual transmission swap

Automatic to Manual Transmission Swap: A Complete Guide for Enthusiasts

automatic to manual transmission swap is a popular modification among car enthusiasts who crave more control and engagement behind the wheel. While automatics provide convenience and ease, manual transmissions offer a more connected driving experience, better fuel efficiency, and often improved performance. If you're considering making the leap from an automatic gearbox to a manual setup, understanding the process, challenges, and benefits is essential before diving in.

Why Choose an Automatic to Manual Transmission Swap?

Many drivers who start with automatic vehicles eventually desire the tactile feel and precision that only a manual transmission can offer. The swap isn't just about nostalgia or bragging rights – it can truly transform how your car behaves and feels.

Enhanced Driving Experience

One of the main reasons people opt for an automatic to manual transmission swap is the sheer enjoyment of driving. Manual gearboxes give you direct control over shift points, allowing for a more engaged and responsive ride. Whether you're navigating winding roads or cruising down the highway, the ability to modulate power delivery through clutch and gear choices deepens the connection between driver and machine.

Improved Performance and Fuel Efficiency

Manual transmissions can offer better fuel economy due to their simpler mechanical design and lack of power losses associated with torque converters in automatics. Additionally, manual gearboxes often allow for quicker acceleration as the driver controls the timing of gear changes precisely. This control can lead to better traction and power application, especially in performance-oriented vehicles.

Cost and Maintenance Considerations

While automatic transmissions are complex and costly to repair, manual

transmissions tend to be more robust and cheaper to maintain over time. However, the initial cost to perform an automatic to manual transmission swap can be significant, depending on the car model and parts availability.

Understanding the Components Involved in the Swap

Swapping from an automatic to a manual transmission isn't as simple as just swapping out the gearbox. Several components must be addressed to ensure proper operation.

The Transmission and Clutch Assembly

The most obvious component is the manual transmission itself, along with the clutch assembly. This includes the clutch disc, pressure plate, flywheel, and release bearing. The flywheel replaces the automatic's flexplate and serves as the contact surface for the clutch.

Pedal Assembly

Manual cars require a clutch pedal that the driver operates to engage and disengage the clutch. This means installing a clutch pedal assembly if the vehicle did not originally come with one, along with proper linkage or hydraulic systems to actuate the clutch.

Shifter and Linkage

A manual gear shifter and the corresponding linkage or cables must be installed to physically change gears. This often requires modifications to the center console and floor area where the shifter is mounted.

Driveshaft and Mounts

Because manual transmissions can differ in length and mounting points compared to automatics, the driveshaft may need to be adjusted or replaced. Transmission mounts might also differ and require swapping or modification.

Electronics and Wiring

Modern vehicles with automatic transmissions often have electronic control modules (ECUs) that manage shifting and torque converter lockup. Swapping to manual may involve reprogramming or replacing the ECU to recognize the manual gearbox and disable automatic transmission functions. Additionally, wiring for reverse lights, clutch switches, and neutral safety switches must be integrated.

Step-by-Step Process of an Automatic to Manual Transmission Swap

Although the process varies based on make and model, here is a general overview of the key steps involved.

1. Research and Planning

Before starting, gather as much information as possible about compatible manual transmissions for your vehicle. Forums, swap guides, and parts suppliers can be invaluable. Identify what parts you'll need, whether OEM or aftermarket, and set a realistic budget.

2. Removing the Automatic Transmission

Begin by safely lifting the car and disconnecting the battery. Drain transmission fluid and disconnect the driveshaft, shifter linkage, wiring harnesses, and transmission mounts. Remove the automatic transmission and torque converter.

3. Preparing the Engine and Transmission Bay

Install the manual flywheel and clutch assembly onto the engine. Ensure the pilot bearing is in good condition or replaced. Prepare the transmission tunnel to fit the manual transmission and shifter if necessary.

4. Installing the Manual Transmission

Bolt the manual transmission to the engine using the appropriate bellhousing. Attach the clutch release mechanism, connect the driveshaft, and secure all mounts.

5. Installing Pedal Assembly and Linkages

Install the clutch pedal and connect it to the clutch master/slave cylinder or cable mechanism. Install the manual shifter and connect the shift linkage.

6. Wiring and Electronics

Modify or replace the ECU to support manual transmission functions. Wire in clutch switches for starting interlocks and reverse lights. Ensure all sensors and connections are properly integrated.

7. Testing and Adjustments

Fill the transmission with the correct fluid. Test clutch pedal operation and adjust the cable or hydraulic system as needed. Start the car and test gear engagement. Take the vehicle for a careful test drive to ensure smooth shifting and operation.

Challenges and Tips for a Successful Swap

An automatic to manual transmission swap is a rewarding but complex project. Knowing some common pitfalls and handy tips can save you time and frustration.

Compatibility Issues

Not all manual transmissions will bolt up directly to your engine. Some swaps require adapter plates or custom mounts. Make sure to verify compatibility before purchasing parts.

Finding the Right Parts

OEM parts can be expensive and sometimes hard to find, especially for older or rare vehicles. Aftermarket kits or parts from similar models might be a more affordable and practical option.

Clutch Pedal Installation Can Be Tricky

If your vehicle didn't come with a clutch pedal, you might need to fabricate

mounts or modify the firewall. Hydraulic clutch systems are generally easier to install and adjust compared to cable-operated ones.

ECU and Electronics Integration

Modern cars rely heavily on electronics for transmission control. Successful integration may require professional tuning or ECU reprogramming to ensure the engine runs smoothly with the manual transmission.

Consider Professional Help

If you don't have mechanical experience, it's wise to consult or hire a professional mechanic familiar with transmission swaps. Errors in the installation can lead to costly damage or unsafe driving conditions.

Benefits Beyond the Swap: What to Expect After Conversion

Once you've completed an automatic to manual transmission swap, the changes extend beyond just the mechanical shift.

Improved Vehicle Control

You'll notice a significant improvement in how the car responds to your inputs. Manual transmissions allow you to control engine braking, downshifting, and acceleration more precisely.

Potential Resale Appeal

Certain sports cars and enthusiast vehicles command higher resale prices with manual transmissions due to the driving experience they offer. Your swap could increase the vehicle's value among the right buyers.

Increased Driver Engagement

Driving a manual requires more focus and skill, which can make everyday driving more enjoyable and rewarding. Many owners report feeling more connected and confident behind the wheel.

Fuel Economy and Maintenance Savings

Manual transmissions can be more fuel-efficient under proper driving conditions and usually cost less to maintain over the long run compared to automatics.

Switching from an automatic to manual transmission is a significant undertaking, but for many, it's a transformative upgrade that breathes new life into their vehicle. Whether you're after performance, control, or just the pure joy of shifting gears yourself, the swap can be a deeply satisfying project that enhances your driving experience for years to come.

Frequently Asked Questions

What are the main reasons to swap an automatic transmission for a manual transmission?

Swapping an automatic transmission for a manual transmission is often done to improve driving engagement, increase control over the vehicle, enhance performance, and sometimes to reduce weight and maintenance costs.

Is it difficult to convert an automatic transmission car to manual?

The difficulty of converting an automatic car to manual depends on the make and model, but generally it requires significant mechanical knowledge, specialized tools, and time, as it involves replacing the transmission, installing a clutch, modifying the pedal assembly, and updating the vehicle's electronics.

What parts are needed for an automatic to manual transmission swap?

Key parts typically include a manual transmission, clutch kit, flywheel, manual transmission pedal assembly, shifter and linkage, manual transmission driveshaft, manual transmission ECU or rewiring, and sometimes a new flywheel housing or crossmember.

Will an automatic to manual transmission swap affect my car's resale value?

An automatic to manual swap can either positively or negatively affect resale value depending on the buyer. Enthusiasts may value the manual conversion highly, while some buyers prefer the original automatic setup, so it is important to consider the target market.

Can I keep my car's original engine when swapping from automatic to manual transmission?

Yes, in most cases you can keep the original engine when swapping from automatic to manual, but you may need to ensure compatibility with the manual transmission and possibly modify or replace engine components like the flywheel or ECU.

Do I need to reprogram my car's computer after swapping from automatic to manual transmission?

Yes, in many modern vehicles, the car's ECU needs to be reprogrammed or modified to recognize the manual transmission and disable automatic transmission controls, which may require specialized tuning or software updates.

Additional Resources

****Navigating the Intricacies of an Automatic to Manual Transmission Swap****

automatic to manual transmission swap is a modification that has intrigued automotive enthusiasts and professionals alike for decades. This process involves replacing a vehicle's automatic transmission system with a manual gearbox, fundamentally changing the driving dynamics and mechanical engagement of the car. While it might seem straightforward to some, the swap is a complex undertaking that requires a deep understanding of automotive mechanics, compatibility considerations, and a clear rationale for why such a modification is desirable.

The appeal of switching from automatic to manual transmission often lies in the enhanced control, improved fuel efficiency, and the driving experience that many purists favor. However, any owner considering this swap must weigh the technical challenges, cost implications, and potential impact on the vehicle's value and reliability.

The Technical Complexity of an Automatic to Manual Transmission Swap

At its core, an automatic to manual transmission swap is not merely about changing the gearbox. It entails a comprehensive overhaul of the drivetrain components, electronic control units, and sometimes even the vehicle's chassis and interior elements.

Compatibility and Vehicle-Specific Considerations

The first step in the swap process is ensuring compatibility between the manual transmission and the vehicle's engine. Not all engines are designed to mate with manual gearboxes, which makes sourcing the correct transmission, clutch assembly, flywheel, and pedal set essential. For instance, vehicles designed with integrated automatic transmission controls might require additional modifications to the ECU (Engine Control Unit) to communicate properly with a manual system.

Furthermore, the physical space and mounting points within the engine bay must accommodate the manual transmission's size and shape. Some swaps necessitate custom fabrication of transmission mounts or modification of the driveshaft length, which adds layers of complexity.

Component Requirements Beyond the Transmission Itself

A successful swap goes beyond installing a manual gearbox. Key components typically required in an automatic to manual transmission swap include:

- **Manual transmission unit:** The appropriate gearbox compatible with the engine and chassis.
- **Clutch assembly:** Includes the clutch pedal, master and slave cylinders, clutch fork, and pressure plate.
- **Flywheel:** Often incompatible with automatic setups; requires replacement to match the manual clutch.
- **Pedal assembly:** Manual transmissions require a clutch pedal in addition to the brake and accelerator pedals.
- **Shifter mechanism:** Includes the gear stick, linkage, and shift cables or rods.
- **ECU and wiring harness modifications:** To disable automatic transmission controls and integrate manual transmission signals.

Missing or incorrectly installing any of these elements could result in poor performance or mechanical failure.

Advantages and Challenges of Switching from Automatic to Manual

The decision to undertake an automatic to manual transmission swap is often motivated by a combination of performance, engagement, and sometimes economic factors. However, the benefits must be weighed against potential drawbacks.

Performance and Driving Experience

Many driving enthusiasts argue that manual transmissions provide superior control over vehicle speed and engine power through direct gear ratio selection. This can lead to:

- Enhanced driver engagement and enjoyment.
- Improved acceleration response due to the ability to hold gears longer.
- Potential fuel savings, especially when driving efficiently in higher gears.

Additionally, in certain performance applications, manual gearboxes can be lighter and more mechanically efficient than automatics, translating to better power delivery.

Challenges and Limitations

On the flip side, an automatic to manual transmission swap has inherent challenges:

- **Cost:** High parts and labor expenses can deter many owners. A full swap can exceed several thousand dollars, especially when factoring in custom fabrication and ECU tuning.
- **Complexity:** The technical knowledge required is substantial. Improper installation can lead to transmission damage or safety hazards.
- **Resale Value:** Not all buyers appreciate manual transmissions, and in some markets, this modification may reduce the vehicle's appeal.
- **Daily Usability:** Manual transmissions may be less convenient in stop-and-go traffic or for drivers unfamiliar with clutch operation.

Long-Term Maintenance Considerations

Manual transmissions typically require less maintenance compared to automatics, which rely on complex hydraulic systems and electronic controls. However, clutch components are subject to wear and eventual replacement. The quality of the swap and integration with existing vehicle systems also determines long-term reliability.

Industry Trends and Market Considerations

While automatic transmissions have become the dominant choice in new vehicles due to convenience and advancements in technology (such as dual-clutch and CVT systems), there remains a niche market for manual transmissions, especially in sports cars and enthusiast vehicles.

Aftermarket Support and Popular Models for Swaps

Certain vehicle models have robust aftermarket support that simplifies the automatic to manual transmission swap process. Sports cars like the Mazda Miata, Ford Mustang, and various BMW models often have well-documented swap kits and community expertise, making conversions more accessible.

Conversely, modern vehicles with sophisticated transmission control modules and integrated drivetrains pose greater challenges for swaps, often requiring advanced electronic reprogramming and custom wiring solutions.

Environmental and Efficiency Perspectives

From an emissions perspective, manual transmissions can offer marginal improvements in fuel economy when driven efficiently, potentially lowering carbon footprints. However, modern automatic transmissions with more gears and adaptive shift strategies have closed much of this gap.

Practical Advice for Those Considering the Swap

For anyone contemplating an automatic to manual transmission swap, a methodical approach is crucial:

1. **Research Vehicle Compatibility:** Verify the availability of compatible

manual transmissions and components for your specific make and model.

2. **Assess Mechanical Skill Level:** Determine if professional installation is necessary or if DIY methods are feasible.
3. **Budget Realistically:** Include costs for parts, labor, potential custom fabrication, and tuning.
4. **Plan for ECU and Electronics:** Prepare for necessary modifications to the vehicle's computer systems to ensure proper operation.
5. **Source Quality Components:** Use OEM or reputable aftermarket parts to avoid reliability issues.

Consulting with experienced mechanics or automotive forums can provide invaluable insights and help avoid common pitfalls.

The automatic to manual transmission swap is more than a mechanical alteration; it's a transformative modification that redefines how a vehicle behaves and connects with its driver. While it demands a significant investment of time, money, and expertise, for many enthusiasts, the reward lies in the unparalleled control and engagement that a manual transmission delivers.

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automatic to manual transmission swap: Camaro Restoration Handbook Ron Sessions, 1990-05-14 Camaro fever is sweeping the country! And with the help of the Camaro Restoration Handbook, you can restore your 1967 through 1981 Camaro either piece by piece, or from the ground up. Authors Tom Currao and Ron Sessions detail the complete restoration process necessary to turn any street-beaten Camaro into a true show winner. With over 500 photos and drawings, it's the most complete Camaro restoration resource available. Plus, you'll find chapters on year-by-year identification and model changes, disassembly, electrical wiring, interior and door reconditioning, convertible, and vinyl top repair. Also included are details on rebuilding suspensions, steering, brakes, and sheet metal repair. Procedures for body prep and paint, gauges, driveline reconditioning, subframe repair, and what to do after the restoration are fully illustrated. A complete Interior/Exterior color chart is an added bonus. The Camaro Restoration Handbook is the answer to your dream of a restored vintage Camaro. What are you waiting for?

automatic to manual transmission swap: How to Modify Your Mopar Magnum V-8 HP1473 Larry Shepard, 2005-09-06 Famed Mopar performance guru Larry Shepard offers a comprehensive guide on modifying Chrysler's popular Magnum V-8, used in 1992-and-newer Dodge Ram and Dakota; 1998-and-newer Durango; and 1994-98 Jeep Grand Cherokee 5.2L and 5.9L V8 engines. Includes sections on the cylinder block, piston/rods/crankshafts, cylinder heads and valvetrain, induction, exhaust, ignition and lubrication systems, engine swapping guide and horsepower calculations.

automatic to manual transmission swap: Swap LS Engines into Chevelles & GM A-Bodies:

1964-1972 Jefferson Bryant, 2017-05-15 The GM LS engine has revolutionized the muscle car and the high-performance V-8 market. It has become a favorite engine to swap into classic cars because it offers a superior combination of horsepower, torque, and responsiveness in a compact package. As such, these modern pushrod V-8 engines are installed in vintage GM muscle cars with relative ease, and that includes Chevelles and other popular GM A-Body cars. In fact, General Motors manufactured about 500,000 Chevelles and A-Body cars between 1968 and 1970 alone. Jefferson Bryant, author of *LS Swaps: How To Swap GM LS Engines into Almost Anything*, has performed many LS swaps throughout his career, and has transplanted the LS into several A-Body cars. In this comprehensive guide, he provides detailed step-by-step instructions for installing an LS powerplant into a Chevelle, Buick GS, Oldsmobile Cutlass, and Pontiac GTO. To successfully install an LS engine, you need to select or fabricate motor mounts and adapter plates to mount the engine to the chassis. Also, you need to integrate the electronic engine controls and wiring harness to the A-Body car. If you run a fuel-injection system, a new tank or high-pressure fuel pump, fuel lines, and related equipment must be installed. Bryant covers all of these crucial steps and much more. He explains essential procedures, time saving techniques, and solutions to common problems. In addition, he performs a new LT swap into an A-Body car. Swapping an LS engine into an A-Body is made much easier with a comprehensive guidebook such as this, whether you plan on doing it yourself or decide to have a shop do it for you. A huge and thriving aftermarket provides a wide range of suspension, brake, steering, chassis, and other parts that produce functional improvements. Before you tackle your LS Swap project, arm yourself with this vital information to guide you through the process. p.p1 {margin: 0.0px 0.0px 0.0px 0.0px; font: 12.0px Arial}

automatic to manual transmission swap: Jeep TJ 1997-2006 Michael Hanseen, 2018-08-15 p.p1 {margin: 0.0px 0.0px 0.0px 0.0px; font: 12.0px Arial} The Jeep CJ, the icon that started it all, is the most popular off-road vehicle of all time. The look, style, and functionality of the CJ made it instantly popular and recognizable the world over, in no doubt partly due to its military presence in World War II. The Jeep Wrangler platform had the difficult task of replacing the extremely popular CJ platform. Outwardly similar in appearance, the YJ, TJ, and JK that followed all had significant design improvements, as can be expected when a platform has a life span of more than five decades. The YJ was the first Chrysler release after it purchased AMC in the mid-1980s, and it was aimed at taming the original CJ for more comfort and, arguably, a larger audience. The TJ that followed next was an evolutionary update, significant in that it featured a coil spring suspension and the celebrated return of round headlights, for a more traditional look compared to the square lights of the YJ. In *Jeep TJ 1997-2006: How to Build & Modify*, everything you need to know about how to modify your TJ for off-road use is covered. Beginning with why you should choose a TJ for modification, Jeep expert Michael Hanssen takes you through all the different systems needing modification, including engine modifications and swaps, transmission swaps, transfer case and driveshafts modifications, axles and traction systems, suspensions and lifts, wheels, tires, brakes, chassis protection, electrical, and winches. Included in every chapter are step-by-step modification instructions to help walk you through the process. If you want to build a TJ for serious off-road trail use, or you just want a capable and great-looking Jeep for around town, this book has you covered.

automatic to manual transmission swap: How to Hot Rod Small-Block Mopar Engines Larry Shepard, 2003-03-04 *How to Hot Rod Small-Block Mopar Engines* is a completely revised, updated edition of Larry Shepard's classic, first published in 1989. Inside you'll find the latest, updated information to help modify your small-block A series Mopar for high performance, street, circle track, or drag racing. Also included are updated parts information and techniques for: - Block, cranks, pistons and rods - Cylinder heads - Camshafts and valvetrain - Blueprinting techniques - Step-by-step engine assembly guide - Oil, cooling, ignition and induction systems - Engine swapping guide - Engine installation and break-in tips - Casting numbers and torque specs New part numbers, photos, parts combinations and illustrations highlight this classic handbook on how to build the ultimate small-block Mopar engine.

automatic to manual transmission swap: How to Build Performance Nissan Sport

Compacts, 1991-2006 HP1541 Sarah Forst, 2008-11-04 This is a comprehensive guide to modifying the 1991 - 2006 Nissan Sentra, NX, and 200sx and Infiniti G20 for street and racing performance. It includes sections on models and engines, engine theory, bolt-on performance components, cylinder heads and bottom end modifications, forced induction, engine swaps, brakes, suspension, wheels and tires, cosmetic and aerodynamics, and safety.

automatic to manual transmission swap: How to Tune and Modify Engine Management Systems Jeff Hartman, 2004-02-13 Drawing on a wealth of knowledge and experience and a background of more than 1,000 magazine articles on the subject, engine control expert Jeff Hartman explains everything from the basics of engine management to the building of complicated project cars. Hartman has substantially updated the material from his 1993 MBI book Fuel Injection (0-879387-43-2) to address the incredible developments in automotive fuel injection technology from the past decade, including the multitude of import cars that are the subject of so much hot rodding today. Hartman's text is extremely detailed and logically arranged to help readers better understand this complex topic.

automatic to manual transmission swap: Honda Engine Swaps Aaron Bonk, 2004-08-30 When it comes to their personal transportation, today's youth have shunned the large, heavy performance cars of their parents' generation and instead embraced what has become known as the sport compact--smaller, lightweight, modern sports cars of predominantly Japanese manufacture. These cars respond well to performance modifications due to their light weight and technology-laden, high-revving engines. And by far, the most sought-after and modified cars are the Hondas and Acuras of the mid-'80s to the present. An extremely popular method of improving vehicle performance is a process known as engine swapping. Engine swapping consists of removing a more powerful engine from a better-equipped or more modern vehicle and installing it into your own. It is one of the most efficient and affordable methods of improving your vehicle's performance. This book covers in detail all the most popular performance swaps for Honda Civic, Accord, and Prelude as well as the Acura Integra. It includes vital information on electrics, fit, and drivetrain compatibility, design considerations, step-by-step instruction, and costs. This book is must-have for the Honda enthusiast.

automatic to manual transmission swap: 1993-2002 Camaro and Firebird Performance Handbook Joseph Potak,

automatic to manual transmission swap: GM G-Body Performance Upgrades 1978-1987 Joe Hinds, 2013 The General Motors G-Body is one of the manufacturer's most popular chassis, and includes cars such as Chevrolet Malibu, Monte Carlo, and El Camino; the Buick Regal, Grand National, and GNX; the Oldsmobile Cutlass Supreme; the Pontiac Grand Prix, and more. This traditional and affordable front engine/rear-wheel-drive design lends itself to common upgrades and modifications for a wide range of high-performance applications, from drag racing to road racing. Many of the vehicles GM produced using this chassis were powered by V-8 engines, and others had popular turbocharged V-6 configurations. Some of the special-edition vehicles were outfitted with exclusive performance upgrades, which can be easily adapted to other G-Body vehicles. Knowing which vehicles were equipped with which options, and how to best incorporate all the best-possible equipment is thoroughly covered in this book. A solid collection of upgrades including brakes, suspension, and the installation of GMs most popular modern engine-the LS-Series V-8-are all covered in great detail. The aftermarket support for this chassis is huge, and the interchangeability and affordability are a big reason for its popularity. It's the last mass-produced V-8/rear-drive chassis that enthusiasts can afford and readily modify. There is also great information for use when shopping for a G-Body, including what areas to be aware of or check for possible corrosion, what options to look for, and what should be avoided. No other book on the performance aspects of a GM G-Body has been published until now, and this book will serve as the bible to G-Body enthusiasts for years to come.

automatic to manual transmission swap: How to Swap Ford Modular Engines into Mustangs, Torinos and More Dave Stribling, 2017-03-15 The Ford modular engine is a popular swap for

1964-1/2-1973 Mustangs, Fox-Body Mustangs, trucks, hot rods, and other muscle cars because these high-tech engines provide exceptional performance and improved economy compared to their dated counterparts. Found in Mustangs and other Fords since the 1990s, installing a modular motor in a classic Ford infuses new technology and all the benefits that come with it into a classic car. Modular engines feature an overhead cam design that has massive horsepower potential, and are offered in 4.6-, 5.0-, 5.2- 5.4-, and 5.8-liter iterations. These high-tech 2-, 3-, and 4-valve engines are readily available as a crate engine, from salvage yards, and in running cars. This engine design has a large physical footprint, and swapping the engine requires a thorough plan, using the proper tools and facilities. Author Dave Stribling specializes in modular engine swaps, and expertly guides you through each crucial step of the engine transplant process. Because of the large physical size, many components, such as brake boosters, steering rods and boxes, and other underhood components, may need repositioning or modification to co-exist in the engine bay. Stribling covers motor-mount selection and fabrication, suspension and chassis modifications, aftermarket suspension options, firewall and transmission tunnel modifications, engine management and wiring procedures, fuel systems, exhaust systems, electrical mods and upgrades, and much more. Many older Ford muscle and performance cars are prime candidates for a modular swap; however, shock towers protrude into the engine bay of these cars, so modifications are necessary to fit the engine into the car, which is also covered here. Swapping the engine and transmission into a muscle car or truck requires specialized processes, and this insightful, explanatory, and detailed instruction is found only in this book. If you are considering swapping one of these high-tech engines into a non-original chassis, this book is a vital component to the process. p.p1 {margin: 0.0px 0.0px 0.0px 0.0px; font: 12.0px Arial}

automatic to manual transmission swap: Jeep CJ 1972-1986 Michael Hanssen, 2017-11-15 Identifying the Jeep CJ series vehicles as the most popular off-road vehicles of all time may actually qualify as an understatement. They really are that popular. The CJ series arguably started after World War II with the CJ-2A being introduced to the masses, and while the early CJs have their share of enthusiasts, the largest group of enthusiasts began their love affair with the AMC-powered Jeep CJ-5s beginning in 1972. Joined by the longer-wheelbase CJ-7 models introduced in 1976, the CJ models were wildly popular through their discontinuation in 1986, when the Wrangler was introduced. These were the only models originally equipped with V-8 engines in any meaningful way. This era combined the ruggedness of the early Jeeps with some of the advancements and horsepower of a more modern era; it makes a platform that is both fun to own and to modify. Jeep guru Michael Hanssen covers all of the systems that can be upgraded to improve your Jeep's performance. Upgrades include suspension components such as springs, shocks, and steering modifications; driveline components including differentials, transmissions, transfer cases, and axles; engine upgrades including engine swaps; wheel and tire upgrades; aftermarket accessories; and armor such as skid plates, bumpers, brake upgrades, and more. Whether you are looking to get into serious off-roading or just want to make your classic CJ a little more fun, this book will be a valuable tool in your shop or library. p.p1 {margin: 0.0px 0.0px 0.0px 0.0px; font: 12.0px Arial}

automatic to manual transmission swap: How to Swap GM LT-Series Engines into Almost Anything Jefferson Bryant, 2020-09-21 Discover the latest GM swap technology in this all-new, comprehensive LT swapper's guide. The GM LS engine has dominated the crate and engine-swap market for the past 20 years, and now the new LT engine has become a popular crate engine for swap projects as well. As essentially the next-generation LS, the LT features a compact footprint, lightweight design, and traditional V-8 pushrod architecture similar to its predecessor, so it swaps easily into many classic cars, hot rods, and even foreign sports cars. The new LT1/LT4 takes a bold step forward in technology, using active fuel management, direct injection, an upgraded ignition system, continuous variable valve timing, and a wet- or dry-sump oiling system. With this advanced technology and higher performance, more engine swappers are using the LT platform. Swapping expert and longtime author Jefferson Bryant presents thorough instruction for each crucial step in the LT swap process. Although the new LT shares the same basic engine design with the LS, almost all of the LT engine parts have been revised and updated. As a result, the mounting

process has changed substantially, including motor-mount location, K-member mounting process, and component clearance; all these aspects of the swap are comprehensively covered. The high-compression direct-injected engines require higher-pressure fuel systems, so the fuel pump and fuel lines must be compatible with the system. LTs also feature revised bellhousing bolt patterns, so they require different adapter plates. The oil pan profile and oiling systems are unique, and this can present crossmember clearance problems. All other important aspects of the swap process are covered, including accessory drives and cooling systems, engine management systems, tuning software, controllers, and exhaust, so you can install the LT in popular GM A- and F-Body platforms as well as almost any other chassis. Solutions for the major swapping challenges, parts compatibility, and clearance issues are provided. Muscle car, hot rod, truck, and sports car owners have embraced the new LT platform and the aftermarket has followed suit with a wide range of products to facilitate swap projects. This book affords comprehensive guidance so you can complete a swap with confidence. If you have a project in the works, are planning a project in the near future, or if you simply want to learn how the swap process takes place, this book is for you.

automatic to manual transmission swap: How to Rebuild and Modify Your Muscle Car

Jason Scott, As cool as classic muscle cars might be, they're only as good as the automotive technology of their era. That's where this book comes in. With clear, easy-to-follow instructions, this guide shows how to give your car all the muscle of today while preserving the classic styling of your muscle car. In this updated and fully illustrated edition of his popular handbook, veteran overhauler and automotive writer Jason Scott takes readers through the step-by-step improvements that will add more power, style, and handling capability to any classic muscle car. Full-color photos accompany Scott's detailed instructions, covering bodywork and interior restoration, engine enhancements, transmission and axle swaps, suspension, steering, chassis and brake upgrades as well as many other changes that will restore or maintain a muscle car's identity while making it perform as if it were built only yesterday.

automatic to manual transmission swap: Jeep Wrangler JK 2007 - Present Don Alexander, 2018-03-15 Since its release in 2007, the JK has become wildly popular and nearly 1 million units have been sold in North America. With a wider track and longer wheelbase, the Wrangler JK is roomier, more comfortable, and delivers better on-road performance than its predecessor. However, it needs serious chassis, suspension, and drivetrain upgrades to tackle demanding off-road terrain and rock crawling. A full complement of heavy-duty suspension, chassis, steering, drivetrain, and high-performance engine parts has been developed for this platform. Co-authors Don Alexander and Quinn Thomas offer comprehensive guidance for making key modifications and selecting the best parts to transform your JK into a superior off-road performer. Lift kits from 1.75 to 5 inches are available, so you can fit off-road wheels and tires for exceptional traction. Suspension springs, specially calibrated coil-over shocks, and sway bars must work in concert to provide the correct suspension articulation and ride quality to scale obstacles and negotiate terrain. To increase durability and essential reliability, pitman arms, drop links, driveline parts, steering boxes, and skid plates are examined. Because the drivetrain must be ready for off-road service, the authors cover the most rugged and reliable axle assemblies available. Exhaust, intake, and electronic engine mapping upgrades make the Jeep 3.6- and 3.8-liter V-6 engines much more potent. If you believe that paved roads are simply access-ways to the open range, you and your JK need this book. It contains the vital information to convert any mild-mannered street vehicle into an all-conquering off-road rig. Whether it's lift kits, wheels, tires, drivetrain, or suspension and engine parts, this volume provides detailed information, insightful guidance, and installation instructions, so you build an off-road JK to handle the toughest terrain.

automatic to manual transmission swap: BMW 3-Series (E30) Performance Guide 1982-1994

Robert Bowen, 2013-02-15 The model that truly launched BMW into the performance arena in the United States were the second generation of 3-series cars. Today, the E30 family of BMWs are both readily affordable, and are popular with enthusiasts wanting to personalize them.

automatic to manual transmission swap: *Street Rodding Tips and Techniques* Frank Oddo,

2007 How to build and maintain a show-winning street rod. A collection of brief, informative technical tips that cover the entire range of building and maintaining street rods. Includes tips on every aspect of the mechanicals, exterior, and interior.

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