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Nissan CVTs
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Nissan & Infiniti Tech News



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Caution: Vehicle servicing performed by untrained persons could result in serious injury to those persons or others. Information contained in this publication is intended for use by trained, professional auto repair technicians ONLY. This information is provided to inform these technicians of conditions which may occur in some vehicles or to provide information which could assist them in proper servicing of these vehicles.

Properly trained technicians have the equipment, tools, safety instructions, and know-how to perform repairs correctly and safely. If a condition is described, DO NOT assume that a topic covered in these pages automatically applies to your vehicle or that your vehicle has that condition.

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Mastering the Nissan & Infiniti Techinfo Websites. The best way to service Nissan and Infiniti vehicles is to have all the correct information at your fingertips.

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Nissan & Infiniti Parts Department



Remanufactured Transmissions Now Available at Your Local Dealer

Nissan, in conjunction with your local dealership, is pleased to announce the availability of an expanded line of remanufactured transmissions.

These remanufactured automatic transmissions and CVTs reflect the latest transmission technology and provide exceptional OE quality.

Nissan remanufactured transmissions:

- > Are remanufactured by a division of the OE suppler, using OE components
- Meet or exceed all OE specifications and are suitable for new car repairs
- Are available for select Front Wheel Drive and Rear Wheel Drive applications
- Use only new OEM parts when replacements are required. Each core is completely disassembled and all parts are cleaned, inspected and kept together as a set throughout the remanufacturing process.

Select remanufactured CVTs are also available, providing a cost-effective alternative to breaking down a CVT to repair or replace the belt or drive discs.

General applications are listed below.

FRONT WHE	EL DRIVE	REAR WHE	EL DRIVE	-	
VEHICLE	MODEL DATE	VEHICLE	MODEL DATE	VEHICLE	MODEL DATE
Sentra	Various 1994 -2009*	Armada	Various 2004- 2006*	Truck	Various 1988- 1997*
Quest	Various 1992- Current*	Pathfinder	Various 1989- 2005*	240SX	Various 1988- 1994*
Altima	Various 1994- Current*	Xterra	Various 1999- 2005*	300ZX	Various 1989 - 1993*
Maxima	Various 1991- 2009*	Frontier	Various 1994- 2005*	350Z	Various 2003 - 2005*
		Titan	Various 1991- 1995*	Murano	Various 2003 - 2008*

For a more detailed listing, please contact your local Nissan dealer.

Transmission application is becoming increasingly complex. <u>Be sure to</u> <u>supply the vehicle VIN when ordering</u>. <u>Always verify the part number</u> <u>with your Nissan Parts Dealer before placing your order</u>.

CORE CHARGE

All remanufactured parts programs are dependent on a constant supply of cores. A core charge will be charged to your account and refunded when a fullyassembled, properly prepared, identical model transmission in rebuildable condition is returned to your dealer.

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Getting Up to Speed with Nissan CVTs



Servicing continuously variable transmissions can be a scary thing if you don't have any experience with these belt-driven critters. To help get you started, here's some basic info on how they operate, which Nissan vehicles are equipped with CVTs and what services you can offer.



Nissan is the leader in the use of continuously variable transmissions (CVTs) – with great success. However, most independent service facilities are not familiar with CVT operation, diagnostics, troubleshooting, service and repair.

If it hasn't already occurred, a Nissan vehicle equipped with a continuously variable transmission (CVT) may arrive at your shop in need of transmission service. While these belt-driven trannies are extremely durable, any automotive component can be damaged or need some form of maintenance.

Rather than turning away the work because you are not knowledgeable of CVTs, you should begin now to inform yourself of CVT operation, repair and service. The number of CVT-equipped Nissan vehicles on the road is growing by leaps and bounds and will continue to increase.

CVTs are here to stay. Because of their smooth, fuelefficient operation – especially on smaller vehicles with smaller engines – CVTs have grown in popularity over the last several years. There are over a million vehicles with CVTs on the road in the U.S. and hundreds of thousands are being sold each year. Due to the current trend of downsizing to smaller vehicles with lower fuel costs, CVTs are likely to grow in numbers for at least the next decade or so.

The advantages of CVTs

Automotive engineers list these advantages of CVTs:

- Better fuel economy. The engine rpms stay fairly constant and therefore, operates more efficiently.
- Lower exhaust emissions. Lower engine speeds emit less exhaust gasses.
- Simplicity. Because CVTs have fewer moving parts than standard gear-driven automatic transmissions, they are less expensive and easier to build and repair.

A brief history of CVTs

The concept of a continuously variable transmission may be fairly new to the automotive industry, but the idea is over 500 years old. In1490, Leonardo Da Vinci sketched plans of a stepless power transmission device. In 1939, inventor Adiel Y. Dodge of South Bend, Indiana, was granted a U. S. patent for his "Variable Speed Transmission" but, the complicated contraption was never produced because the automobile industry was already perfecting the gear-based automatic transmission.

More recently, Van Doorne, a Dutch company, created the first viable automotive CVT. In 1958, the system was first marketed in a very small car, the DAF 600, which was mildly popular in Western Europe, but never imported to North America. The system used reinforced rubber belts, which weren't very durable and were exposed to the weather, further minimizing their life span.

The modern CVT was born in the 1990s, when Nissan developed its own CVT, which was designed for higher torque and included a torque converter. Later, in 1999, Nissan created a separate company called TransTechnology, Ltd. By 2002, the company was renamed Jatco (Japanese Automatic Transmission Company) Ltd, and – as they say – the rest is history. Because of the relationship, Nissan is Jatco's largest customer and the largest user of CVTs.

CVT Operation

The type of CVT used in Nissan vehicles operates on the "two pulleys and a belt" principle. Each pulley consists of two conical discs, facing each other, mounted on a single axle. A transmission control unit responds to sensors and other input commands to activate an actuator system, which moves the discs closer together or farther apart.

The system contains two pulleys. One pulley is the input or "driving" pulley, powered by the engine; the other pulley is the output or "driven" pulley that powers the wheels. The torque transfer belt rides in the V-notch of both pulleys.

The two pulleys are in a constant state of changing from one ratio to another, actuated by the vehicle's needs. As one pulley narrows, the other conversely widens, changing the ratio – thus the name: continuously variable transmission.

If the driving pulley discs move apart, the belt drops lower in the pulley notch (and higher in the driven pulley notch as the pulley discs move closer together) the result is a lower "gear" with more power or torque. Conversely, if the driving pulley discs are drawn closer together, the belt rides higher in the pulley notch (and lower in the driven pulley notch as the pulley discs move apart) the result is a higher "gear" with more speed.

Nissan CVTs



When the drive (driving) pulley actuates apart and the driven pulley actuates closer together, a low gear ratio results.

A sturdy belt transfers the power. It consists of hundreds of tiny metal plates, held together by high-strength steel bands. The key to its strength and durability is that it pushes, rather than pulls – like rubber-based automotive accessory drive belts. Transmission operation is monitored by sensors and controlled by an electronic powertrain module to perform at optimum efficiency. Whether the vehicle needs speed for passing, or power for climbing a hill, the CVT delivers the correct ratio smoothly.



The CVT drive belt is made up of hundreds of small plates, held in place by steel bands.



The heart of the CVT is the steel drive belt that transfers the power.

Nissan models equipped with CVTs

In 2003, Nissan launched its popular Murano model in the U.S. with a CVT. No less than seven Nissan models are now equipped with the company's XTronic belt boxes:

Murano	2003-2009
Altima	2007-2009
Maxima	2007-2009
Sentra	2007-2009
Versa	2007-2009
Rogue	2008-2009
Cube	2009

The JF009E (CVT1) is used with 1.8L engines, including Versa and Cube.

Three CVT units

Three basic CVT units are used on Nissan vehicles. They differ in size and torque transfer ability, based on the displacement and power output of the engines to which they're mated:

The JF009E (CVT1) is designed for vehicles up to 1.8L. It's a light, compact design with a wide gear ratio range for acceleration, performance and low fuel consumption. This unit is found on 2007-2009 Versa and 2009 Cube models.

The JF011E (CVT2) is for medium-sized vehicles up to 2.5L. It's also is a light, compact design, but with wider gear ratio range for performance and fuel efficiency. It's designed to handle the increased torque. This unit is used on Sentra, Rogue and Altima 2.5L models.

The top-of-the-line JF010E (CVT3) is beefier, with high torque capacity to handle vehicles up to 3.5L models, where hefty horsepower exists. Look for it on Murano, Maxima and Altima 3.5L models.



Jatco's JF010E (CVT3) is used with larger displacement engines, such as those found on Nissan's Murano, Maxima and Altima 3.5L models.

Servicing CVTs

Most of the service procedures on CVTs are performed the same as on any other automatic transmission. The first thing you'll want to do is read any diagnostic trouble codes, then obtain the correct service information for the vehicle and proceed with service. Here's a list of services you can perform, just as you would with any other automatic transmission malfunction:

- Diagnostics, clearing of diagnostic trouble codes (DTCs)
- Re-flash software
- Replacement of sensors or actuators

- Replacement of leaking gaskets or seals
- Fluid change or refill
- Service wiring and connectors
- Valve body service

If your shop has full transmission skills and the proper tools, repairing or replacing clutch packs, torque converters or gears is certainly an option. Perhaps the toughest procedure on a CVT is totally breaking down the unit to repair or replace the belt or drive discs. At this point, a remanufactured trans may be your best option – and may be much cheaper. A reman tranny will also have a warranty. Another option is a salvaged unit, but that can be very risky.

Diagnostics

Full diagnostic and troubleshooting procedures for each Nissan model are available on the Nissan TechInfo website at http://www.nissan-techinfo.com. While other sources of service information may have some or most information, only the Nissan TechInfo site will have all up-to-date information and bulletins.

Parts

As with any other sophisticated component, using the correct parts is of utmost importance. Genuine Nissan Parts are readily and quickly available from your local Nissan & Infiniti Wholesale Program Dealer. You can also obtain parts information via the Nissan Parts website at www.Nissan4Parts.com.

Special Tools

Having the correct tools to do the job properly cannot be overstated. Using an improper or homemade tool may jeopardize the operation of the transmission or cause failure of the unit. You can obtain Nissan Tech-Mate Special Service Tools at www.nissantechmate.com, or call 800-662-2001.

Just because you haven't serviced a CVT before, you shouldn't be afraid of them. If you want CVT business in the future, you're going to have to start somewhere. It may as well be with the next CVT-equipped vehicle that comes through your door.

SOMETIMES THINGS ARE NOT WHAT THEY APPEAR TO BE.



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SHIFT_the way you move

Altima Hybrid Service

Don't be afraid to tackle service on the Nissan Altima Hybrid. Beyond the high-voltage electrical system, it's really just like any other Altima. But, there are a few special facts you should know.





You can do it

There's no reason for qualified independent shops to turn away hybrid work. Obviously, technicians must take the time to educate themselves before working on unfamiliar systems, and shops must be properly equipped. Nissan makes all of this possible by providing independent repair shops the same information and tooling available to Nissan and Infiniti dealerships. You can find technical information and self-guided training courses at www.nissan-techinfo.com, and dealer level equipment at www.nissantechmate.com.

If you are up to the challenge, maintenance work is a great place to start. Not only is it relatively easy to learn, it's also all that a two-year-old Nissan is likely to need.

Do no harm

The Altima Hybrid has proven extremely reliable, and it will continue to be reliable for years to come if it is properly maintained. However, maintenance can be detrimental when incorrect procedures, parts, or fluids are used during service. When servicing the Altima Hybrid, it's best to adopt an axiom from the medical profession: "First, do no harm". If any ingredient is missing, whether it be knowledge, tooling, fluids, or parts, it's much better to simply do nothing until everything is in place and the job can be done correctly.

Read, then do

You wouldn't want to drain the inverter coolant only to find you'll need a special tool you don't own to fill it, would you? The best place to start is in the Maintenance section of the online manual. The Maintenance section has all of the information you are likely to need, such as service schedules, procedures, fluid types and quantities, torque specifications, etc. It might even be a good idea to give the Maintenance section a quick read before the car arrives, so you'll be fully prepared once it does.

Torque it!

A torque wrench should not sit buried in a toolbox until an engine repair rolls into the bay! Drain plugs, spark plugs, and lug nuts all have specified torque values. Many experienced technicians believe they have "the touch", and can get it just right every time. However, if you use a torque wrench daily, you may notice that some days 18 ft. lbs. "seems tighter" than other days.

Inspections

Inspecting the vehicle is arguably one of the most important aspects of a maintenance service. Vehicle owners rely on their technician to alert them to any problems that might be dangerous or potentially costly if not addressed. For the most part, the inspection on the Altima Hybrid is the same as any other car. However, there are a few additional items that should be checked.

It's not a bad idea to check the High Voltage (HV) cables for looseness or damage. If a HV cable is open or shorted, a trouble code will set. However, it is possible for undercar collisions to tug the cables loose and leave them more vulnerable to further damage.

The inverter cooling system should be inspected just like the ICE (Internal Combustion Engine) cooling system.

The 12V battery should be tested at least every 15,000 miles. The 12V battery has no role in "cranking" the ICE, so there will not be the typical slow cranking associated with a weak battery. Because of this, owners usually do not notice a bad 12V battery until the car suddenly fails to start.



Test the 12V glass mat battery using an internal resistance tester such as the Midtronics EXP-1000 or EXP-1200.

Tires

Tires should be rotated every 7,500 miles (every other oil change). Nissan recommends front to rear rotation with no crossover on the Altima Hybrid. Lug nuts should be tightened to 83 ft. lbs.

Tire pressure should be set to 35 psi at 70 deg. F, before driving. Please keep in mind that tire pressure will increase or decrease about 1 psi for every 10 deg. F above or below 70 deg. F. With the advent of TPMS (Tire Pressure Monitoring System), accuracy in temperature compensation will be put to the test. For instance: if tire pressure is set to 35 psi after a freeway road test, the TPMS warning icon will probably be on the next cold morning.

Don't forget about the spare tire. There is no TPMS sensor on the spare, so be sure to check the pressure on the spare when servicing.



Check and fill the Altima Hybrid spare tire pressure to 60 psi.

Filters

The ICE air filter should be replaced every 30,000 miles, or sooner if the vehicle is driven though dusty or otherwise polluted air.

The service interval for the cabin filter is every 15,000 miles. However, cabin filter life will vary depending on a number of factors: such as how often the blower is used, the level of local air pollution, and whether the car is parked under trees. Be sure to clean any leaves or other debris from the fresh air duct located at the bottom of the windshield. The Altima Hybrid does not have a serviceable fuel filter.

The oil filter should be replaced every 3,750 miles when the motor oil is changed. The oil filter gasket should be lubricated with fresh motor oil and the filter should be tightened to 13 ft. lbs. or 2/3 turn after the gasket makes contact.



Cut an old coolant bottle to make an oil deflector. It will save you clean-up time and avoids customer complaints.



Always lubricate the oil filter gasket with clean motor oil so it won't become stuck in place. The "next guy" may be you! When the ICE restarts after idle stop or EV mode driving, it will be cranked at a speed four times faster than an engine in a normal car. Oil filter quality is critical. Nissan oil filters use a high quality anti-drainback valve, and will perform as they should. Installing an aftermarket filter is a gamble with any Nissan, but it's even riskier with this hybrid.

FLUIDS

ICE oil

The ICE oil should be replaced every 3,750 miles along with the filter. The drain plug torque is 25 ft. lbs. and a new crush washer should be used every time.

The Altima Hybrid uses OW-20 synthetic motor oil. Using an incorrect grade can cause accelerated engine wear as well as performance issues. OW-20 synthetic oil is not commonly available from wholesale lubricant vendors, but Nissan dealers will have it in stock. In warmer climates, 5W-20 oil can be used in a pinch, but OW-20 is preferable.

Transaxle oil

The transaxle fluid should be inspected and its condition evaluated every 15,000 miles. If the vehicle is driven under harsh conditions – towing a trailer for instance – it should be automatically replaced every 30,000 miles.

The transaxle fluid will degrade at different rates depending on how the car is used. The fluid in a typical Altima Hybrid will usually look "like new" at the first 15K inspection, "somewhat discolored" at the 30K inspection, and "very discolored" at the 45K inspection.

HybridTransaxle fluid replacement is similar to manual transaxle fluid replacement: the fluid is drained and filled from the underside of the car, and the fluid level should be adjusted to be even with or just below the bottom edge of the fill port.

Be sure not to overfill the transaxle. The transaxle is sealed to protect the fluid from moisture; you may even notice a hissing as you loosen the fill plug due to the pressure differential. Overfilling the fluid may cause over-pressurization and leaks, as well as excessive drag and loss of fuel economy.

The transaxle houses both the MG1 (Motor/Generator 1) and MG2 (Motor/Generator 2) and is quite different from typical automatic transmissions, including other CVTs (Continuously



A cooling system vacuum fill tool also works great for the inverter cooling system.

Variable Transmissions) found in Nissan products. This very special transaxle requires a very specific transaxle fluid: Nissan Type W. Don't let salesmen talk you into using any of the "multi-vehicle" fluids, as they will cause transaxle damage and void the warranty.

Type W has a few special handling requirements. First, it's moisture sensitive, so care for it as you would brake fluid – store it in a sealed container and only open the container just before use. Also, Type W should not be mixed with any other fluid, so it's best to use a dedicated filling pump if possible. If not, the pump should be thoroughly drained and cleaned before filling with Type W.

The transaxle drain and fill plugs should be tightened to 29 ft. lbs. with new crush washers installed.

Coolant / Antifreeze

Coolant should be replaced for the first time at 60,000 miles or four years from the production date, whichever comes first. However, after the first coolant service, the coolant replacement interval is shortened to every 30,000 miles or two years.

The Altima Hybrid has two separate cooling systems: one for the ICE and one for the inverter and transaxle. It is important to read the service manual procedures before attempting to replace coolant. Improper procedures can lead to damage.

Altima Hybrid Service



Mix coolant 50/50 then verify with a coolant refractometer or hydrometer.

The Altima Hybrid uses Nissan Long Life Antifreeze for both the ICE cooling system and the inverter cooling system.

ICE coolant service

Using the Nissan cooling system filling tool, part number J-45695, will help ensure no air is trapped in the system. Drain coolant from the radiator drain plug and the engine drain plug. Use a new o-ring on the radiator plug and thread sealer on the engine drain plug.

The heater controls should be set to HOT while filling. Double click the Ready button without stepping on the brake. Then set the climate control to HOT. Read full instructions in the service manual before starting.

Inverter coolant service

Although not mentioned in the service manual, the cooling system filling tool makes bleeding the inverter system much easier. Use the Consult III INV WATER PUMP active test to run the inverter water pump while filling.

Using a coolant system vacuum filling tool helps to eliminate potentially harmful pockets of trapped air.



This is the inverter coolant drain in the transaxle. The other drain is on the inverter radiatior.

Drain coolant from the inverter radiator and the transaxle. Use a new o-ring for the inverter radiator and a new crush washer for the transaxle. Be sure to read full instructions in the service manual before starting.



Fill the transaxle with fresh Genuine Nissan type W fluid from a dedicated pump container.

Brake fluid

There is no set interval for bleeding the brake hydraulic system on the Altima Hybrid. However, it may become necessary to bleed the brake lines from time to time, so it bears mentioning here. For complete instructions, check the Maintenance section of the service manual.

It is impossible to bleed the brake hydraulic system without the Consult III, so bleeding should never be undertaken without a Consult III available. The procedures are far from intuitive, so be willing to spend time reading before beginning. Complete bleeding procedures would require an entire article to describe, but here are a few of the key points, which may make understanding the procedures a little easier:

Front brake lines

The section of the manual which describes bleeding the front lines is called AIR RELEASE OF STATIC PRESSURE SYSTEM (FRONT WHEEL).

Two ABS pump motor relays must be removed to bleed the front lines. If you ignore the instruction to set

The Consult III must be used for functions like bleeding the brake lines and servicing the inverter cooling system.



These are the ABS Pump Motor Relays.

the parking brake, you will be locked out and will not be able to bleed the brakes. Follow the instructions exactly.

The active test AIR REL INHIBIT allows bleeding of the front brakes. It may not seem entirely clear in the



This maintenance reminder light is indicating it's time for a tire rotation.

manual, but once conditions are set, bleeding the front lines is the same as on a conventional car: press the pedal, open bleeder, close the bleeder, repeat. You may hear the brake warning buzzer sound during bleeding. It's OK.

Rear brake lines

The two ABS pump motor relays must be installed. Use active test AIR REL INHIBIT to bleed the rear brakes. When bleeding the rear brake lines, accumulator pressure is used to push fluid through the lines. Just press and hold the brake pedal with the bleeder open to start the flow.

There are four additional ABS system bleeding procedures for sections other than the lines to the wheels:

- Suction drain system
- Power supply system
- Stroke simulator system
- High pressure line

Please read the manual for information on these procedures.

Spark plugs

Once a staple of vehicle maintenance, spark plugs now remain undisturbed for 105,000 miles; early replacement is seldom necessary. The quality of the installation should be commensurate with the expected service life. To that end:

- 1. Use compressed air to clean any grit from coils and spark tubes before removing the plugs.
- 2. Shine a light on the coil boots and check for carbon tracking or water intrusion
- 3. Apply dielectric grease to the coil boots
- 4. Don't attempt to re-gap or clean spark plugs
- 5. Use a dab of anti-seize on the plug threads
- 6. Tighten spark plugs to 18 ft. lbs. using an accurate torque wrench

Valve clearance

There is no set interval for inspecting valve clearance. Valve clearance should be inspected whenever there is valve noise or an idle quality concern. It also makes sense to check valve clearance any time the valve cover is removed for gasket replacement.

Unlike many engines that use selective thickness buckets or shims, valve clearances on the OR25DE engine are checked hot. Valve clearance should be checked with engine temperature close to 176 deg. F. Nissan also provides cold clearance specs, for situations where the engine cannot be warmed. However, proper hot clearance should be verified later.

Valve clearance is adjusted by selecting a thicker or thinner lifter. There are 26 sizes available in increments of just under .001 inch. The camshafts must be removed in order to remove and replace the lifters, so measure twice, replace once.

Finishing touches

After maintenance work has been completed, be sure to reset the maintenance reminder, wipe off any finger prints and double check all of your work before returning the car to your customer.





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AVILLA

No Need to Know it All -Mastering the Nissan & Infiniti

The best way to service Nissan and Infiniti vehicles is to have all the correct information at your fingertips.





Just Where to Find Out: Techinfo Websites

Cars are complex. These days, even the simplest repair or maintenance tasks can prove difficult or impossible without access to reliable information. Gone are the days when a mechanic could learn how a type of system worked, and then apply what he knew to fix any car that rolled into the bay. It would be impossible for anyone to know all of the information necessary to diagnose all problems on even the most basic Nissan model, let alone every model.

A technician still needs to understand how systems work in general, but he also needs to be able to find specific information. The Nissan information sites, http://nissan-techinfo.com and http://infiniti-techinfo.com, provide both: training, and specific technical information. Mastery of information retrieval may be the single most important skill today's technician can develop.

Subscription options

The first step in becoming a master of information retrieval is to get access. There are currently four subscription options available:

One-year subscription	\$720.00
90-day subscription	\$225.00
30-day subscription	\$75.00
One day subscription	\$19.99

You may find that using the one-day or 30-day subscriptions on an as-needed basis discourages use by creating the question – "Is it really worth paying for a subscription for this project?" The energy spent thinking about the question and the energy spent trying to avoid the additional cost are very counterproductive. Not only is the one-year subscription option the best value in terms of dollar per day cost, it's the best value in terms of efficiency. If you subscribe for a year, you'll be hooked. It's very unlikely you will ever let your subscription lapse.

Why choose Nissan / Infiniti Techinfo?

Some may say, "But I already have an information system with Nissan information!" There are many sources of information available, each with its advantages and disadvantages. You will find some of the exact same information is available on other systems. However, no other system provides all of the information available on Nissan's information sites, and sometimes the missing piece is what you need to fix the car.

Service bulletins are published on the Nissan and Infiniti Techinfo sites first, frequently several months before other information services update their information. If you have ever had the experience of a customer alerting you to a campaign or recall bulletin, but being unable to find it on your information service, you've had first hand experience with this update lag.

If you like to stay ahead of the curve by reading service manuals for current models, you may have noticed that other information services may take several years to "flesh out" the information for newer models. With Nissan and Infiniti Techinfo, complete information is available for the current model year, and you may even find complete information for the next model year.

As an independent competing with Nissan and Infiniti dealers for customers, you'll need to be well informed to convince savvy consumers of your competence. If you want to be the best, you'll need the best information available. Simply put, Nissan's information sites are the best source of information for Nissan and Infiniti products.

Practice makes perfect

Learning to find information quickly will take some time. Some technicians become frustrated while trying to find information on unfamiliar OE information systems then, fall back on whatever system they were using previously. The problem with this is that eventually they will need information contained only on the OE site, but they have not developed the skills to find it, leading to further frustration.

The only way to become expert is to practice. It's best to start using Techinfo to find information for simple projects. Maybe start by looking for brake rotor specs or information on a familiar repair. If you wait until you have a difficult project and your overheated brain is causing your hair to smoke, you won't have the right state of mind for exploration and learning.

Luckily, Nissan's information sites have a comparatively short learning curve due to their familiar servicemanual-like interface. Initial navigation from the front page is a bit odd, but once it's familiar, it will not slow you down. You will find there is often more than one path to the same information. There is no one right way; just use what works for you.

Navigating from the main page



When navigating from the main page, one possible first step is to move the mouse pointer over the Inside Publications tab at the top of the screen. This will provide a drop down menu with the following commonly used options:

Owner's Manuals – Nissan owner's manuals

TSBs – Nissan service bulletins

Find Publications –

A search page for technical information

Tools / Equipment -

A searchable Nissan special tool catalog



A different way to navigate away from the front page is the Available Products drop down menu on the left side of the screen. You will find the following commonly used categories:

Nissan Publications – A search page for technical information (same as above)

Online Subscriptions – Subscribe or extend ECM program data – Updated control unit calibration files

Consult Updates – Scan tool updates for the Consult II and Consult III

TSBs – Nissan service bulletins (same as above)

If you need software updates, then you'll have to start with the Available Products menu. If you need special service tools, then you'll have to start with the Inside Publications menu. Almost everything else can be accessed by starting with either menu. Most quests for information will begin with a publication search or browsing TSBs.

Finding information

Clicking **Find Publications or Nissan Publications** will produce a search page where you can search for several types of information such as:

Service manuals Owner's manuals Quick reference guides Training courses *Note: TSBs are not accessible through the Find*



Use the Internet Explorer "find on this page" feature to save time.

Publications search, so if you are investigating a symptom, visit the TSBs section first.

TSBs are organized by model, then system. Some systems on some models have quite a few bulletins. When faced with a large list of bulletins, it is often faster to use the Internet Explorer "Find on this page" feature rather than reading through all of the bulletins titles. Just use the key combination CTRL+F and type your search term. For instance, if a car in for repair had a converter code P0420, you could check for related bulletins by searching for P0420, converter, cat, pcm, etc.

Clicking on a bulletin will bring up a brief abstract. If the information looks promising, click the "Display TSB" link, if not, click the "back" link.

You can access the owner's manuals in either of two ways: use the Find Publications / Nissan Publications search feature, or click Owner's Manual from the Inside Publications menu. If you use the Find Publications search, select model and year from drop down menus and search. If you go the Inside Publications route, choose a model, then a year. It works either way, so use whichever way you like best.

It's OK to leave boxes blank. In fact, it usually results in a more productive search. A common mistake is to enter information in the Keywords box, such as "ignition system" or "transmission". While sections of the service manual and owner's manual may contain those search



| There's more than one way to find owner's manuals. Which one's best is a matter of preference.

terms, the document title does not. Entering text into the Keywords or Document Title boxes usually results in a "Sorry, no documents found" message.

Simply entering a year and a model can be a very effective search. For example, searching for Model Year: 2005 and Model: Sentra will result in a very manageable list of only three documents: the service manual, the owner's manual, and the quick reference guide.



Less is more when entering search criteria.

Owner's manuals: not just for owners!

Online owner's manuals are an underused resource. Today's Nissan and Infiniti cars are loaded with new technology, and owner's manuals are packed with information explaining how it operates. A 450-page owner's manual is common; a complete understanding of all the information it contains is not. If an owner inadvertently makes a change, and a system does not operate as it used to, his car may show up in your bay for repair.

Technicians often start with the diagnostic information in the service manual when presented with a customer complaint. The service manual may not explain system operation, since it is already covered in the owner's manual. The first step when diagnosing a problem is to verify the problem. If you are not familiar with how a system should work, it isn't possible to determine if it's malfunctioning. A quick search of the owner's manual can save you from hours of wasted time.



No need to thumb through the owner's manual. A search will find the information you want quickly.

Online PDF owner's manuals are just like the paper version in the glove box. They have a table of contents and an index, and all of the formatting is identical to the paper version. There are several advantages to using the online version: there's no need to dig around in your customer's glove box, the table of contents is hyperlinked for easy navigation and, most importantly, the entire PDF can be easily searched in seconds.



If you're familiar with paper Nissan service manuals, you

Technical service bulletins: start here to save time!

A tough diagnostic challenge is a test of your skills, but unlike other tests, looking through the answers beforehand is not cheating. It's working smart rather than hard. A service bulletin may contain information that will cut hours off diagnostic time. Some problems may even defy diagnosis without the information available in a TSB. Don't wait until the going gets rough, check TSBs right after attempting to confirm the symptom.

Technical Service Bulletins are a great tool, but they can be misused. Scrolling down a bulletin to find the repair procedure, then recommending it is wrong. Before recommending a TSB repair, you must first confirm applicability by vehicle, production date, VIN, and any other methods referred to in the bulletin. Then you must accurately perform any testing required in the TSB before making any recommendation to your customer. A carefully read and thoroughly executed TSB is a powerful repair tool. On the other hand, sloppy reading or lazy execution can lead to an expensive and unnecessary repair.

If your shop does not have a subscription to Nissan or Infiniti Techinfo, you can still view the TSB abstracts to determine whether there might be a relevant bulletin without spending a dime.

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	1	AIR CONDITIONER	AIG	Automatic Air Conditioner
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			LI	Lianana system
		u	Univer information System	
			THUNI, TREDING & FUTIL	
		040	Budy Control Bysian	
		LAN	LAR System	
		-	August Visual & Temphone System	
			ACO	Auto Cruise Control System
			M G	Power suppry, Ground & Circuit Elements
	L	MAINTENANCE	MA	Maintenance
	-	INDEX		

'll have no problem using the online version.

Using online service manuals

The familiar service manual interface is one feature of the Nissan and Infiniti Techinfo sites that new users really love. Once a new user finds the service manual, they usually don't need any additional help to navigate. Clicking a section pulls up the table of contents for that section. Clicking an item in the table of contents takes you to that page. It works just like a book, but no need to flip through the pages.

The bookmark pane on the left can be used to move through the content and check current position. The Quick Reference Index link returns you to the main table of contents. The Table of Contents link returns you to the current section's table of contents.

Newer manuals have features the older manuals do not. Pre model year 2000 manuals are scanned without optical character recognition, and cannot be searched. However, most, if not all 2000 and newer manuals, can be searched. The ability to search through sections of the manual makes the electronic manual format vastly superior to the paper format.

Some service manual sections are thousands of pages with 20 pages for just the table of contents. Using the search feature will save time. However, effective searching may take a little practice.



Bookmark Pane

Here are a few tips:

Try alternate terms if the first choice does not yield the desired results. For example, if searching for "TPS" doesn't work, try "throttle position" instead.

If a common term is used and many instances are found, use the "next" button to scroll thorough the results.

If you find a reference to something unfamiliar while reading, cut and paste into the search box to find other sections in the manual with the same term.

Text in some charts and graphics cannot be located with a search. A search is not always the best option. If searching is not working, check the table of contents and the index.

Subscribe, log on, practice, then be more productive

Try Nissan's techinfo sites; you'll be glad you did. Once you've mastered their use, you will be amazed how much easier fixing Nissan products is when you have access to all the information.

Also, check the free site, www.nissan4parts.com for parts lookup by vehicle or in job groupings. Nissan4Parts also has vehicle maintenance schedule information.

Nissan performance

Nissan Motorsports Oil Cooler Kit for 370Z



Nissan Motorsports has developed a competition oil cooler kit that allows the vehicle to keep oil temperatures low during track events. The 370Z is the first Nissan to have an "Engine Protection Mode" (EPM) if the oil temp is too hot. The EPM is activated at approximately 266 degrees F. At this point the Engine Control Unit limits the allowed RPM to 6,000. If the oil temp continues to rise to 280 F, the ECU limits the RPM to 5,000. Once the oil temp recovers below 260, the ECU will allow full RPM.

The Nissan Motorsports oil cooler kit uses a very large external air to oil cooler to dissipate the heat and has been tested by the Nissan Technical Center in Arizona. During this test, the kit was proven to keep oil temperatures from getting into the EPM range during ambient temperatures up to 100 F for over 20 minutes of abuse. Although the oil cooler is mounted in front of the radiator, the vehicles coolant temperatures are actually lower with the oil cooler kit installed than without. This is because the oil temp is having a large



influence on the engine block temp and cooling the oil keeps the whole engine running cooler. We initially tested the oil cooler used for a 350Z and it was quickly over heated. There may be many units on the market that claim to fit the 370Z, but the heat rejection rate of the cooler could be too low and therefore not be effective on the track.

The oil cooler kit uses only the highest quality racing specification parts available in the U.S. The kit includes Earl's braded steel oil lines with forged fittings, Setrab oil cooler, billet aluminum oil filter adapter, and all other parts needed to install as well as instructions. Nissan Motorsports recommends the installation be completed by a Nissan Dealership. The part number for this kit is 21300-SS370 and is available through any Nissan dealer's parts department.

Some drilling is required to mount the cooler. This kit also fits the NISMO Z.

This part is only intended for off road use only.

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