

Jatco CVT

Nissan, Infiniti, Mitsubishi, Dodge, Jeep, Chev City Express, Suzuki CVT Install instructions



WARNING!!

**Failure to follow these instructions will result
in a denied warranty claim.**

**If you have any questions, please call
780 456 4498**

Toll Free 1 866 456 4498

Website www.napc.ca

Introduction

The **JATCO** line of transmissions are widely used in Nissan, Infiniti, Dodge, Jeep, Mitsubishi, Suzuki and GM

Nissan vehicles include Altima, Cube, Juke, Maxima, Murano, NV200, Pathfinder, Quest, Rogue, Sentra, Versa, Infinity

Chrysler vehicles include Dodge Caliber, Jeep Compass, Jeep Patriot

Mitsubishi vehicles include Lancer, Mirage, Outlander,

Suzuki vehicles include Kizashi, SX4

GM vehicles include Chevy City express

CVT Installation

THESE STEPS MUST BE PERFORMED WHEN INSTALLING A NAPC REMANUFACTURED UNIT.
THESE STEPS & PROCEDURES MUST BE FOLLOWED IN ORDER TO QUALIFY FOR FULL WARRANTY

Coolers and Flushing

NAPC CVT TRANSMISSIONS COME EQUIPPED WITH NECESSARY TYPE AND QUANTITY OF FLUID (LUBEGARD®'s COMPLETE™ CVT FLUID) AND SOME WITH AN AUXILIARY COOLER (SEE PAGE 15) SOME MODELS ALREADY MAY HAVE AN AUXILIARY COOLER. THE COOLERS AND LINES MUST BE REPLACED OR FLUSHED & REVERSE FLUSHED WITH CLEAN APPROVED FLUSHING FLUID AND EQUIPMENT AND ALL INLINE FILTERS MUST BE REPLACED. ANY DAMAGE TO THE TRANSMISSION RESULTING FROM CONTAMINANTS IS NOT COVERED BY THE NAPC WARRANTY.

Installation

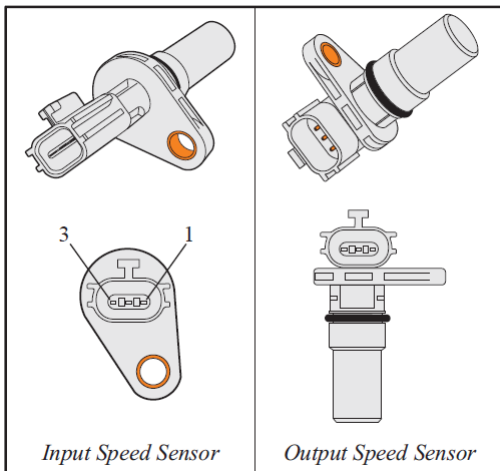
When the transmission has been removed from the vehicle, compare it with the remanufactured transmission for proper application before transferring any additional parts from original unit (i.e. Number of converter pads, speed sensors etc.) Install the transmission and torque converter assembly into vehicle insuring that all electrical problems are addressed, all related external components are in good working condition and connected properly (i.e. flex plate not bent, cracked or worn, **all locating dowels installed properly**, crankshaft pilot hole correct size, free from burrs and wear. Ensure CV joints, motor mounts and transmission mounts are in good condition. The main case connector, speed sensors and MLP (if equipped) connectors **MUST** be cleaned with electrical contact cleaner. Codes should be checked **BEFORE** removal of transmission & documented. Radiator coolant level must be checked for proper transmission & engine cooling.

Speed sensor Adjustment

There are as many as 3 Speed sensors externally on these CVT transmissions. **On RE0F08A CVT1 and 09A/B CVT 3 the primary speed sensor is located on the valve body.** They are 3 wire hall effect sensors. They are powered up through the ignition switch and grounded. They generate a DC pulsed signal and as speed increases so does frequency. This signal is sent to the TCM. Because they are used on many models' shims are used to set the clearance of .040 between the sensor and the exciter wheel.

Use as many shims as require achieving a clearance of .040 between exciter and end of sensor. Use your calipers to do measurements.

Nissan part number for .040" shim.....08915-4361A

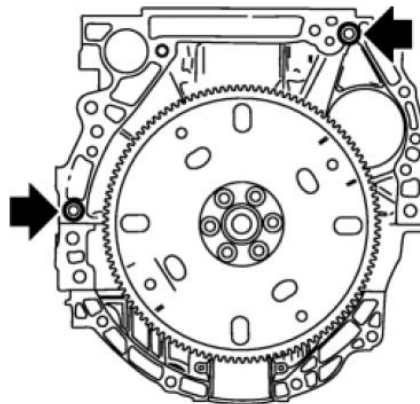


Speed sensor shim

Converter clearance and torque

With the bell housing bolted flush to the engine block, insure that converter bolts are loose in the flex plate holes before bolting up the torque converter to the flex plate and insure that there is a space between the torque converter and flex plate of 1/16 to 3/16 of an inch when the torque converter is fully seated into the transmission. **Use Red Loctite on the converter bolts and torque them to specifications. Caution: DO NOT TURN ENGINE BACKWARDS WHEN REMOVING OR INSTALLING CONVERTER BOLTS.**

Typical Dowel pin locations



Before you start the engine

1. Clean the battery terminals
2. Ensure the battery is fully charged and the charging system is functioning properly
3. Erase/repair any fault codes

Fluid usage and filling chart

Ensure the unit contains the correct **amount and type** of fluid for start-up. **See charts below.**

NAPC UNITS NOW INCLUDE THE CORRECT TYPE AND QUANTITY OF LUBEGARD®'S COMPLETE™ CVT FLUID

1. Install 50% of the total capacity before starting the engine.
2. **Immediately** after the engine is started pour in all the remaining fluid.
3. Select all the ranges (gears) and recheck and adjust the fluid level.
4. Bring to operating temperature and check level again.

Nissan OE Fluid Guide

Model	Year	Engine Displacement Trans Type	Total Qt/Liter	OEM Fluid Type
Altima	07-12	3.5L (VQ35DE) RE0F09B (CVT)	10.7/10.2	Nissan CVT NS-2 (VTF)
Altima	09-12	2.5L (QR25DE) RE0F10A (CVT)	7.7/7.3	Nissan CVT NS-2 (VTF)
Altima Coupe	13-17	2.5L (QR25DE) RE0F10A (CVT)	7.7/7.3	Nissan CVT NS-2 (VTF)
Altima Sedan	13-17	2.5L (QR25DE) RE0F10D (CVT)	7.8/7.4	Nissan CVT NS-3 (VTF)
Altima Sedan	13-17	3.5L (VQ35DE) RE0F10E, RE0F10H	8.6/8.2	Nissan CVT NS-3 (VTF)
Cube	09-14	1.8L (MR18DE) RE0F08B (CVT)	7.8/7.4	Nissan CVT NS-2 (VTF)
Juke	11-14	1.6L (MR16DDT) RE0F08B (CVT)	8.6/8.2, 9.1/8.6	Nissan CVT NS-2 (VTF)
Juke	15-17	1.6L (MR16DDT) RE0F10B	9.1/8.6	Nissan CVT NS-3 (VTF)
Juke Nimo RS	15-17	1.6L (MR16DDT) RE0F10D	8.4/7.9	Nissan CVT NS-2 (VTF)
Maxima	08-14	3.5L (VQ35DE) RE0F09B (CVT)	10.7QT, 10.2L,	Nissan CVT NS-2 (VTF)
Maxima	16-17	3.5L (VQ35DE) RE0F09B (CVT)	8.6/8.2	Nissan CVT NS-3 (VTF)
Murano	03-10	3.5L (VQ35DE) RE0F09B (CVT)	10.7/10.2	Nissan CVT NS-2 (VTF)
NV 200	13-17	2.0L RE0F10D, RE0F10A	8.6/8.2	Nissan CVT NS-3 (VTF)
Pathfinder	13-17	4.0 (VQ40DE), 5.6L (VK56DE) RE0F10E, RE0F10J	9.3/8.8	Nissan CVT NS-3 (VTF)
Quest	11-14	3.5L (VQ35DE) RE0F010	8.6/8.2	Nissan CVT NS-2 (VTF)
Quest	15-17	3.5L (VQ35DE) RE0F09B (CVT)	9.3/8.8	Nissan CVT NS-3 (VTF)
Quest	09-10	2.5L (QR25DE) RE0F10A (CVT) AWD	7.7/7.3	Nissan CVT NS-2 (VTF)
Rogue	09-10	2.5L (QR25DE) RE0F10A (CVT) 2WD	9.1/8.6	Nissan CVT NS-2 (VTF)
Rogue	11-13	2.5L (QR25DE) RE0F10A (CVT) 2WD	7.9/7.5, 9/8.5	Nissan CVT NS-2 (VTF)
Rogue	14-17	2.5L (QR25DE) RE0F10A (CVT) 2WD	8.4/7.9	Nissan CVT NS-3 (VTF)

Sentra	07-12	2.0 (MR20DE), 2.5L (QR25DE) REOF10A (CVT)	7.7/7.3, 7.9/7.5	Nissan CVT NS-2 (VTF)
Sentra	13-17	2.0 (MR20DE), 2.5L (QR25DE) REOF11A	7.3/6.9	Nissan CVT NS-3 (VTF)
Sentra	07-10	1.8 (MR18DE), 1.6L (HR16DE) REOF08B (CVT)	7.8/7.4	Nissan CVT NS-2 (VTF)
Versa	11-13	1.8 (MR18DE), 1.6L(HR16DE) REOF08B (CVT)	7.3/6.9	Nissan CVT NS-2 (VTF)
Versa, Versa Note	14-17	1.8 (MR18DE), 1.6L(HR16DE) REOF11A	7.3/6.9	Nissan CVT NS-3 (VTF)

Jeep/Dodge OE Fluid Guide

Jeep					
Model	Year	Engine	Trans	QT/L	Fluid
Compass	07-17	2.0, 2.4L	CVT2	8.6/8.1	Mopar CVT+4 (VTF)
Patriot	07-17	2.0, 2.4L	CVT2	8.8/8.4	Mopar CVT+4 (VTF)
Dodge					
Caliber	07-12	2.0, 2.4L	CVT2	8.6/8.1	Mopar CVT+4 (VTF)

Mitsubishi OE Fluid Guide

Mitsubishi					
Model	Year	Engine	Trans	QT/L	Fluid
Mirage, Mirage G4	15-16		JF015E	7.4/7	CVTF J-4
Mirage, Mirage G4	17		JF015E	7.4/7	CVTF J-4
Outlander	07-12	2.4L (4B12)	JF011E	7.5/7.1	CVTF-J1
Outlander, Outlander Sport	12-17	2.4L (4B12)	JF011E	7.3/6.9	CVTF J-4

All Suzuki's JF011E use Suzuki CVT Green 1
15-17 GM Chevy Express JF016E CVTs use AC Delco CVT 19260800

Programming

When the transmission is installed you must program the ECM to the latest software. If you are unable to do this, you will be required to take it to the dealer or have someone who can come to your shop and reprogram. There have been many software updates with the Jatco CVT transmissions, so it is imperative you have the latest software update. Search for Mobile Programming to find someone to help you.

Initialization/Relearn

IMPORTANT: WHEN REPLACING A FAILED TRANSMISSION WITH A REPLACEMENT UNIT, IT IS IMPORTANT TO RESET (INITIALIZE) THE TCM OR P167A - CALIBRATION MISMATCH MAY SET. IF YOU DO NOT INITIALIZE THE TCM (OR CANNOT) YOU WILL HAVE TO INSTALL THE EEPROM (ROM) FROM THE ORIGINAL UNIT.SEE PAGE 14 FOR ROM REPLACEMENT.

Dodge and Jeep TCM Initialization:

A. Initial learn (brand-new module, memory already clear)

1. Battery must be connected.
2. If the Totally Integrated Power Module (TIPM) is to be configured, configure the TIPM and then turn ignition key to OFF/LOCKED briefly, then back to RUN.
3. The shifter must be in PARK or NEUTRAL, engine not running.
4. Turn the ignition key to RUN for 4 seconds to allow reading of new values.
5. Turn ignition key to OFF/LOCKED for 2 seconds to allow storing new values in EEPROM.

6. Turn the ignition key to RUN, with scan tool clear DTCs.
7. Turn ignition key to OFF/LOCKED for 2 seconds.
8. After at least 7 seconds, read DTCs.
9. If DTCs reset, perform appropriate diagnostics for related fault codes.

B. Relearn, after replacing a transaxle

1. Turn ignition key to RUN.
2. Clear learning memory using the scan tool.
3. Turn the ignition key to OFF/LOCKED for 2 seconds.
4. Turn the ignition key to RUN Clear DTCs.
5. Turn the ignition key to OFF/LOCKED for 2 seconds.
6. Turn ignition key to RUN.
7. After at least 7 seconds, read DTCs.
8. If DTCs reset, perform appropriate diagnostics for related fault codes.

P167A - Calibration mismatch

During the initial ignition on, the Transmission Control Module (TCM) receives the calibrated data from the EEPROM assembly inside the transmission and stores this information in the EEPROM of the TCM. At every ignition on, the TCM compares the stored data in the EEPROM to the transmitted data from the EEPROM in the transmission. If the calibration data does not match the DTC will set and the MIL will illuminate after one failure.

When Monitored: One time at initial ignition on with a system voltage between 9.0 and 16.0 volts.

Set Condition: If the TCM stored calibration does not match the EEPROM assembly in the transmission. This DTC requires only one problem identification to set the MIL.

Possible Causes:

1. TCM relearn procedure not performed
2. The use of an incorrect TCM
3. The use of an incorrect EEPROM

Note: When dealing with TCM related codes, always verify the vehicles charging system voltage as well as the TCM 's power supply and grounds. The TCM will monitor system voltage once the engine is above 450 RPM's, Secondary Pulley Pressure is greater than 43.5 psi, along with no active implausible engine speed signal DTC's present. The TCM will then produce a P0562 for low battery voltage only when it detects system voltage below 9.0 volts for more than 5 seconds. It is not suggested to rely on this code being set to alert the technician that low system voltages exist. The TCM may not function correctly if system voltage is below 12 volts. If this code is stored in the PCM, it indicates that battery voltage to the PCM is less than 11.7 volts. This would be far more reliable than waiting for the TCM to report a system voltage problem. Similarly, system voltage too high code P0563 sets (more than 16 volts past 5 seconds), after seeing engine speed above 450 RPM's, the Secondary Pulley Pressure is greater than 43.5 psi, vehicle speed is 0 mph, and there are no implausible engine speed and secondary pulley speed signals detected. The PCM is much quicker to set this code. If it sees 1 volt higher than desired voltage for more than 5 seconds the code will set.

Possible causes with code in TCM:

1. Charging system DTC's present
2. TIPM Power control circuit DTC's present
3. Improper jump starts or by a 24 volt or higher system.
4. TCM

Nissan Relearn Procedures:

After the CVT assembly, engine assembly, and valve body assembly are replaced, their learned value must be relearned. Nissan has 3 specific procedures. **Pattern "A"** is when only the TCM has been replaced. **Pattern "B"** is when a used TCM has been replaced or and/or a new or used transmission or valve body was replaced. **Pattern "C"** is when a new TCM was replaced along with the replacement of a new or used transmission or valve body.

Pattern "A": TCM Replaced

1. Shift the selector lever to "P" position after replacing TCM.
2. Turn ignition switch ON.
3. Check that the shift position indicator in the combination meter turns ON (It indicates approximately 1 or 2 seconds after turning ignition switch ON.)

Note: Check the following items if shift position indicator does not turn ON, repair or replace as necessary.

- A) The harness between TCM and ROM assembly in transaxle assembly is open or shorted.
- B) Terminals disconnected, loose, or bent from connector housing.

Pattern "B": is when a used TCM has been replaced or and/or a new or used transmission or valve body was replaced

1. Turn ignition switch ON after replacing each part.
2. Connect scan tool to read CVT fluid temperature.
3. Start engine but do not drive.
4. Warm up transaxle assembly until approximately 68°F (20°C) or more, and then turn ignition switch OFF.
5. Turn ignition switch ON, do not start the engine and place the selector lever into Reverse.
6. Depress the accelerator pedal while depressing the brake pedal (engine off). Perform the operation of erasing DTC's under this condition (even if no codes are set)
7. Release brake pedal and accelerator pedal and turn ignition switch OFF while keeping the selector lever in "R" position.
8. Wait approximately 10 seconds and then turn ignition switch ON while keeping the selector lever in "R" position. With the scan tool, verify that all calibration data reads 00. Note: Restart the procedure from step 3 if all six gear values are not the same.
9. Shift the selector lever to "P" position.
10. Check that the shift position indicator in combination meter turns ON. (It indicates approximately 1 or 2 seconds after shifting the selector lever to "P" position.)

Pattern "C": is when a new TCM was replaced along with the replacement of a new or used transmission or valve body.

1. Replace transaxle assembly first, and then replace TCM.
2. Perform the service of "PATTERN A".
3. Perform the service of "PATTERN B" if TCM is replaced first.

Mitsubishi Initialization Procedure:

After the CVT assembly, engine assembly, and valve body assembly are replaced, their learned value must be initialized.

1. Move the selector lever to the "P" range and turn the ignition switch to the "LOCK" (OFF) position.
2. Connect a scan tool to read fluid temperature. Have the vehicle where the CVT fluid temperature is equal to ambient temperature Turn the ignition switch to the "ON" position, and then move the selector lever to the "R" range.
3. Depress the accelerator pedal while depressing the brake pedal (engine off). Perform the operation of erasing DTC's under this condition (even if no codes are set).
4. Release the pedals and then turn the ignition off while in Reverse. Then place the vehicle into Park.
5. Wait 10 seconds and start the engine and let idle in Drive for 20 seconds with the brake applied.
6. Run the vehicle at 25-30 mph (40-50 km/h) in Drive steadily for 5 seconds and come to a stop.
7. Bring CVT fluid temperature up to 176°F (80°C) and repeat steps 4 and 5.

RE0F11A, JF0015E, CVT7, Xtronic Auxiliary Trans re-learn

CLUTCH TOUCH POINT LEARNING

CAUTION: If clutch touch point learning is not performed, you may feel shift shock when the auxiliary transmission shifts.

NOTE: Before performing Clutch Touch Point Learning.

1. Erase memory data.

Line Pressure Sensor learning

2. Set the parking brake, turn OFF the A/C, and then bring the engine to normal operating temperature range.
3. CVT fluid temperature over 122°F (50°C).
4. Start engine.
5. Shut OFF engine.
6. Wait for 30 seconds.
7. Repeat steps 1-3 two more times, and then proceed to Learning of Clutch pressure.

Clutch Pressure Learning (Vehicle with Neutral idle; 2012 Versa Sedan only)

1. Start engine.
2. Shift the CVT into P or N and allow the engine to idle for 1 min.
3. Shift the CVT into D, drive the vehicle to over 6 mph (10 km/h), and then stop vehicle (when safe) and allow it to idle for 30 seconds. Repeat step 3 one more time and then proceed to step 4.
4. Turn OFF engine.
5. Start engine.
6. Accelerate the vehicle from a stop to 28 mph (0 km/h to 45 km/h) at low throttle (5-10 deg) and then stop vehicle (when safe).
7. Shut OFF engine.
8. Repeat steps 5-7 four more times.

Clutch Pressure Learning (Vehicle without Neutral idle; all other applied vehicles)

1. Start engine.
2. Shift the CVT into P or N and allow the engine to idle for 1 min.
3. Shift the CVT into D and accelerate the vehicle from a stop to 40 mph (0 km/h to 65 km/h) at low throttle (5-10 deg).
4. Release the throttle and coast down to 18 mph (30 kph) or less and then brake to a stop.
5. When at a complete stop turn the engine OFF.
6. Repeat steps 3-5 four more times.

Servicing

With the understanding that the first ATF change is the most important you must change the fluid and the filter at the first **20000 KM or 12000 Miles**. This will remove any debris created during break-in. After the initial oil and filter change the change interval is **50000 KM or 30000 Miles** for the CVT. You must retain proof of servicing. A good idea is to keep the service records with your warranty registration.

Registering your warranty

You must register your warranty. If you are an installing shop fax, email or mail the warranty registration to NAPC Attn. warranty Dept. Keep a copy of the warranty registration for your records. Having this information will speed up the warranty process should warranty work be needed. If you are installing the transmission yourself complete the warranty certificate and Fax, mail or email a copy into NAPC Attn. Warranty Dept. Give the filled-out warranty certificate to the customer and advise them that this certificate must be presented to get warranty work. It is advisable to keep the warranty certificate in the vehicle along with records of service. No warranty work will be authorized until the information from the warranty registration is provided.

Troubleshooting/Diagnostics

The first step in diagnosing any drivability problem is verifying the customers complaint with a test drive under conditions that problem reportedly occurred. Before entering self-diagnostics, perform a careful and complete visual inspection fluid level and leak check. Most transmission control problems result from mechanical breakdowns or poor electrical connections. Input signals from sensors are sent to Powertrain Control Module (PCM). The PCM can determine when time and conditions are right for a shift or converter clutch application. The PCM can also determine line pressure needed to optimize shift feel. **You must ensure all inputs are in perfect working order.**

Always start diagnostics and testing with a battery, charging system and ground check.

Battery and charging

The first thing to do is check the battery voltage before you even start the engine. The battery voltage with the engine off should be around 12.6 volts. This is the measurement across the battery posts. Once you start the engine, charging system and battery voltage should be about 14.0 volts. Many vehicles have solenoid codes and engine performance issues with low battery voltage. The vehicle may start just fine and you can't tell the battery has low voltage unless you measured it with a meter.

Ground check:

Connect the negative lead of the meter to the negative side of the battery, and the positive lead to the engine ground. With the engine running, you should have less than 0.1 volts. Now move the lead from the engine and test the transmission case. You should have the same reading. Move the lead from the transmission to the body ground. The engine, transmission and body should all have less than 0.1 volts. If one is higher than the other, you need to inspect the wire and mounting condition.

Some examples of things that can cause no ratio change and no lockup:

1. Shorted third brake lights or brake lights not functioning properly can cause no ratio change and or no lockup. The top mount third brake light on the Nissan SUVs are notorious for water intrusion and shorting out. **(Check it)**
2. Wheel speed sensor signals being out 3mph wheel to wheel even with no codes present can cause no ratio change and or no lockup. A dirty reluctor wheel and that's all it takes to cause transmission issues. Wheel speed sensor codes may not appear, but they still have problems.
3. Pull speed sensor out of hub and check for metal from a failing wheel bearing.
4. New CV axles that have been changed without exciter ring for speed sensor causing no ratio change.
5. Different size tires can cause no ratio change or no lockup. **(Check tire size and inflation)**
6. Bad battery or alternator can cause no ratio change and or no lockup. **(Check the battery and charging system)**
7. Blown fuses in engine bay fuse box and in all the fuse box locations can cause no ratio change and or no lockup (fuse boxes behind glove box, under dash, behind floor kick panels)
8. Steering wheel angle and yaw or "g" sensor in Nissans misaligned or reading improperly can cause intermittent problems. **(You can usually reset these with your scanner set to functional tests)**

Fault codes Nissan, Chrysler, Mitsubishi

CODE	DESCRIPTION
P0219	Engine Overspeed
P0562	Battery Voltage Low
P0563	Battery Voltage High
P0751	Brake Switch I Performance
P0602	Vehicle Information Data Reception Failure
P0610	Vehicle Option Mismatch
P0613	EEPROM Failure
P0641	Sensor Power Supply Circuit
P0703	Stoptlight Switch Malfunction (Nissan & Mitsubishi)
P0705	Malfunction of Transmission Range Switch (Nissan & Mitsubishi)
P0707	Inhibitor Switch Circuit Low (No Signal)
P0708	Inhibitor Switch Circuit High (Multiple Signal)
P0710	Fluid Temperature Sensor Electrical Malfunction (Nissan & Mitsubishi)
P0711	Fluid Temperature Sensor Performance
P0712	Fluid Temperature Sensor Circuit Low
P0713	Fluid Temperature Sensor Circuit High
P0715	Primary Pulley Speed Sensor Malfunction (Nissan & Mitsubishi)
P0716	Primary Speed Sensor Performance
P0717	Primary Speed Sensor Circuit (No Signal)
P0720	Secondary Pulley Speed Sensor Malfunction (Nissan & Mitsubishi)
P0721	Secondary Speed Sensor Performance
P0722	Secondary Speed Sensor Circuit (No Signal)
P0725	No/Low ERPM from ECM to TCM over CAN

P0730	Incorrect Gear Ratio (Belt Damage - Stepper Motor Performance)
P0740	Lock-up Solenoid Malfunction (Nissan & Mitsubishi)
P0741	Lock-up Solenoid Performance
P0744	A/7' TCC S/V Function (Lock-up) (Nissan)
P0745	Line Pressure Solenoid Circuit Fault
P0746	Line Pressure Solenoid Performance
P0776	Secondary Pressure Solenoid Stuck (Offside)
P0777	Secondary Pressure Solenoid Stuck (On Side)
P0778	Secondary Pressure Solenoid Circuit Fault
P0815	Paddle Shift Up Switch Malfunction (Mitsubishi)
P0816	Paddle Shift Down Switch Malfunction (Mitsubishi)
P0826	Manual Mode Switch System Failure
P0840	Secondary Pressure Sensor Malfunction (Nissan & Mitsubishi)
P0841	Line Pressure Sensor Function Abnormality (Nissan & Mitsubishi)
P0842	Primary Pressure Sensor Circuit Low
P0843	Primary Pressure Sensor Circuit High
P0845	Primary Pressure Sensor Malfunction (Mitsubishi)
P0847	Secondary Pressure Sensor Circuit Low
P0848	Secondary Pressure Sensor Circuit High
P0868	Secondary Pressure Drop
P0882	Power Supply System Low Malfunction (Mitsubishi)
P0883	Power Supply System High Malfunction (Mitsubishi)
P0846	2/4 Clutch Pressure Switch Rationality
P0962	Line Pressure Solenoid Circuit Low
P0963	Line Pressure Solenoid Circuit High
P0966	Secondary Pressure Solenoid Circuit Low
P0967	Secondary Pressure Solenoid Circuit High
P1 61B	Battery Disconnected/TCM Internal
P1637	Memory Back-up Malfunction (Mitsubishi)
P1661	Sensor Ground Open
P1679	Failure of Initializing Calibration
P1 67A	Calibration Mismatch
P1701	TCM Power Supply (Nissan)
P1702	Primary/Secondary Pressure Sensor Performance
P1705	Throttle Position Sensor (Nissan)
P1710	Vehicle Speed Signal Malfunction (Mitsubishi)
P1722	No VSS from ABS over CAN
P1723	Speed Sensor Signal Abnormality (Nissan & Mitsubishi)
P1723	Lock-up/Selection Switching Solenoid Circuit Open/Short (Dodge & Jeep)
P1726	Electric Throttle Control System (Nissan)
P1729	Stepping Motor Circuit Open/Short
P1740	Lockup/Select Switching Solenoid Malfunction (Mitsubishi)
P1745	Monitoring of Percentage Change in Pulley Ratio (Mitsubishi)

P1770	Stepping Motor Circuit Open/Short
P1773	Malfunction of ABS (Mitsubishi)
P1777	Stepper Motor Malfunction (Nissan & Mitsubishi)
P1778	Stepping Motor Performance Fault
P1902	Engine System Malfunction (Mitsubishi)
P2769	Lock-up Solenoid Circuit Low
P2770	Lock-up Solenoid Circuit High
U0001	CAN Communication System (Bus OFF)
U0100	CAN Communication System (TCM - ECM)
U0121	CAN Communication System (TCM -ABS module)
U0141	CAN Communication System (TCM - FCM)
U1000	CAN Communication Line (Nissan)
U1010	CAN Transmission Control Module (Nissan)
U1146	ROM-ASSY Lost Communication
U1400	Implausible TPS Signal Received
U1401	Implausible Speed Signal Received
U1407	Implausible Engine Torque Request Received
U140F	Invalid Vehicle Information (ECM)
U1410	Invalid Vehicle Information (FCM/TIPM)
U1412	Implausible Vehicle Speed Signal Received
U1424	Implausible Torque Signal Received
U1425	Implausible Pedal Position Speed Signal Received
U1426	Implausible TCC Slip Request Signal Received
U1428	Received Engine Torque Request Signal Stuck
U1429	Received Engine Torque Signal Stuck

Failsafe operation

When the fail-safe operation occurs, the CVT will not be shifted into the selected driving position. If the vehicle is driven under extreme conditions, such as excessive wheel spinning and subsequent hard braking, the fail-safe system may be activated. The MIL may come on to indicate the fail-safe mode is activated. This will even occur even if the electrical circuits are functioning properly. In this case, turn the ignition to the OFF position and wait for 10 seconds. The vehicle should return to its normal operating condition. When the high fluid temperature protection mode or fail-safe operation occurs, vehicle speed may be gradually reduced. The reduced speed may be lower than other traffic, which could increase the chance of collision. If driving the vehicle under these conditions, it is best to find a safe place on the side of the road and allow the transmission to return to normal operation or be towed back to the shop for diagnostics and repairs.

Electrical testing

These transmissions are positively driven. They receive a positive signal from the computer to activate the solenoid. Nissan and Mitsubishi have the solenoids grounded at the valve body where Chrysler uses pin #6 for ground.

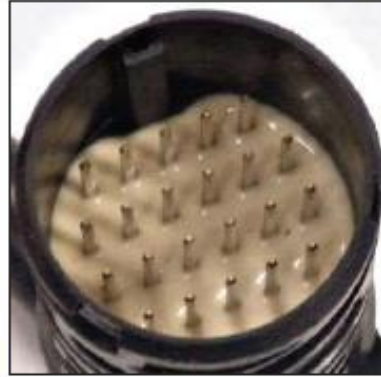
Use the chart below to do resistance checks on solenoids

JF010 JF011E shown below
JF010/11E

Electrical Testing

Chrysler/Mitsubishi

1 2 3 4 5
 6 7 8 9 10 11
 12 13 14 15 16 17
 18 19 20 21 22



Nissan

2 3 12 13 20
 22 23 6 7 8 9
 4 5 14 15 1 17
 25 19 18 11 16

Chrysler

PCS 1 and 6
 SPSC 2 and 6
 LCS 3 and 6
 LSS 4 and 6

Mitsubishi

1 and Case Ground
 2 and Case Ground
 3 and Case Ground
 4 and Case Ground

2 and Case Ground
 3 and Case Ground
 12 and Case Ground
 13 and Case Ground

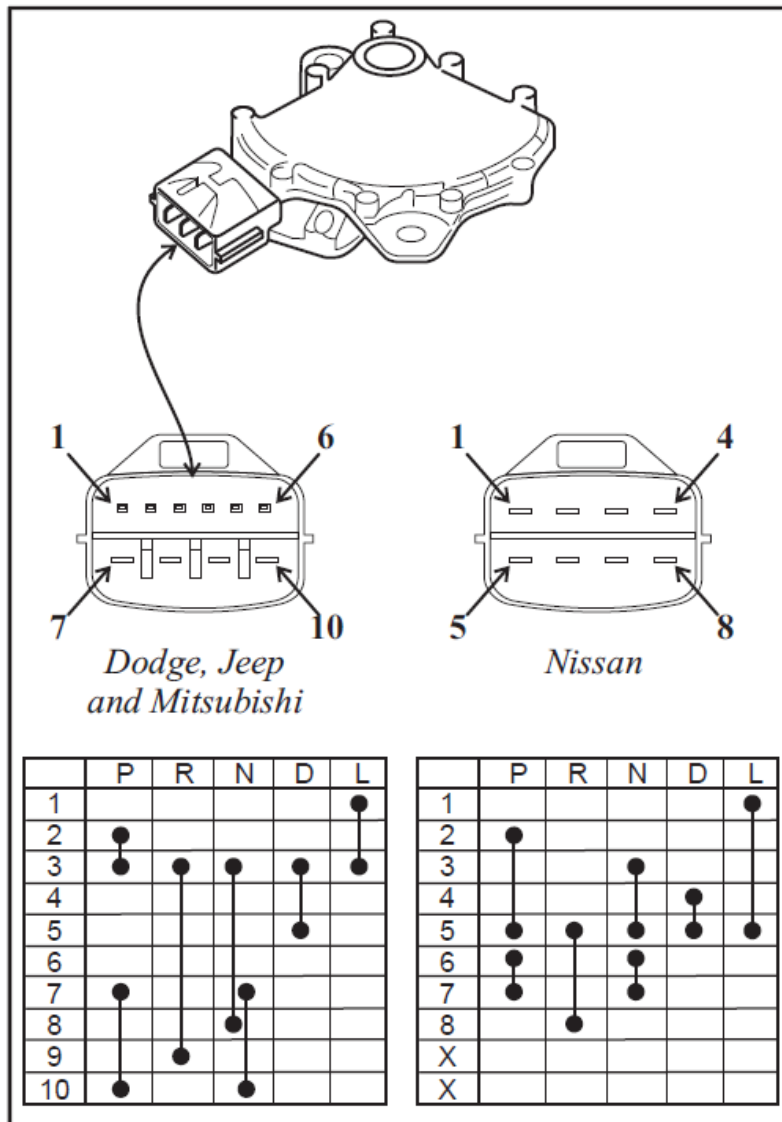
Terminal	Terminal	Description	Resistance	Wire Color	Wire Color
Chrysler	Nissan			Chrysler	Nissan
1	2	Pressure Control Solenoid PWM	3-9 ohms	DG/LB	RD/YL
2	3	Secondary Pressure Control Solenoid PWM (SPCS)	3-9 ohms	YL/DB	WT/BK
3	12	Lockup Control Solenoid PWM (LCS)	3-9 ohms	YL/LB	GRN or BLU/WT
4	13	Lockup Select Solenoid (LSS)	10-15 ohms	YL/GY	BLU/BK or BLU/WT
5	20	5-Volt Supply	-	PK/LB	BLU/OR
6	Case	Ground	-	BK	-
7	23	Secondary Pressure Signal	0.7-3.5 Volts	PK/LB	PPL/WT
8	8	Motor C	10-20 ohms	LB/YL	RD
9	6	Motor A	10-20 ohms	YL/OR	GRN/RD
10	7	Motor B	10-20 ohms	YL/WT	OR/BLU
11	9	Motor D	10-20 ohms	TN/YL	RD/GRN
16	1	ROM Chip Select	-	YL/LB	BLU/RD
17	17	Transmission Temperature	5k ohms at 75	RD/WT	PPL
18	19	Primary Pressure Signal	0.7-3.5 Volts	DG/YL	WT/RD
19		Sensor Ground	-	DG/VT	-
21	11	ROM	-	DG/BRN	GRN/WT
22	16	ROM	-	GY/YL	BRN/RD3

Range Sensors

System voltage is supplied to one of the PNP Switch (TRS) terminals which is used to be directed to the TCM depending on the gear selection made. For Dodge, Jeep and Mitsubishi it is terminal 3. Nissan it is terminal 5. **The continuity check chart shown below** shows not only how to inspect the switch with an ohm meter, it also reveals how electrical checks can be made of the switch in the vehicle. For example: Voltage supply to the switch and signal voltage to the TCM should never be lost while the ignition is on and/or engine is running.

JF011 Shown

JF009E RE0F08A CVT1 and JF0010E 09A/B CVT3 have internal Range sensors



CVT ROM REPLACEMENT

The ROM contains data specific for the vehicle.

PROBLEM: After exchanging a complete transmission (CVT) or valve body assembly, the vehicle does not change ratios and code P167A Calibration Mismatch is stored in memory.

CAUSE: Mounted on the valve body is an electrical component called an ROM.

This ROM contains calibration information pertaining to vehicle (*tire size, engine size, if it has Autostick or not, etc.*) which must match with the TCM.

If an ROM from a different vehicle is used a P167A may set

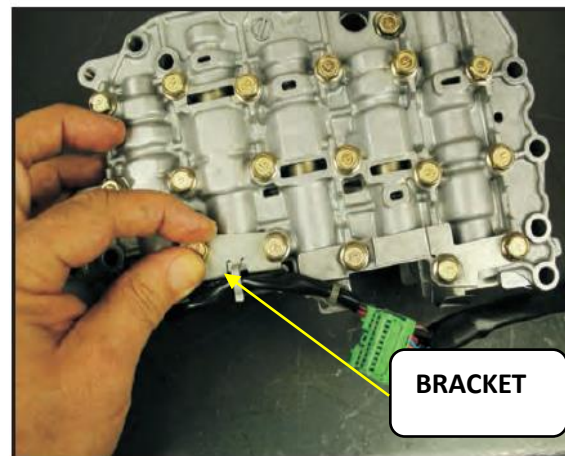
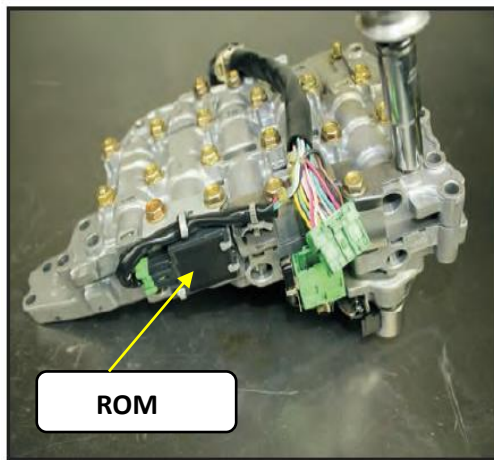
During the initial ignition on, the Transmission Control Module (TCM) receives the calibrated data from the ROM assembly inside the transmission and stores this information in the ROM of the TCM. At every ignition on, the TCM compares the stored data in the EEPROM to the transmitted data from the ROM in the transmission. If the calibration data does not match the DTC may set and the MIL will illuminate after one failure.

NOTE: If you are unable to or unsuccessful at initializing the TCM as discussed earlier in this document an alternative to initialization is replacing the EEROM/ROM with the one from the original transmission.

To alleviate this the ROM must be replaced with the original.

STYLE 1

See instructions below (**Valve body removal not required**)



1. Remove the oil pan
2. Remove the bracket and unplug the ROM and install original ROM on the replacement trans.
3. Using a 10mm socket (figure 43), torque all valve body bolts down to approximately 6.5 Nm (57-60 in lbs)
4. Replace pan and torque bolts to 8 Nm (6 ft. lbs.).

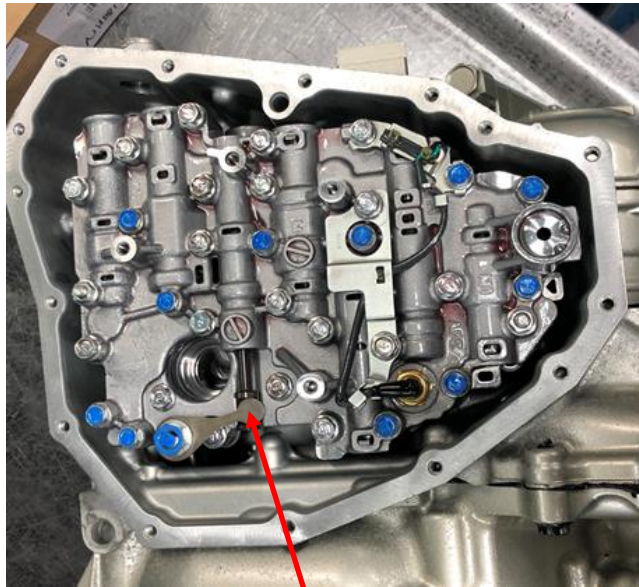
Style 2

Vale Body Removal Required

Remove filter attaching bolts. (Marked in Red)

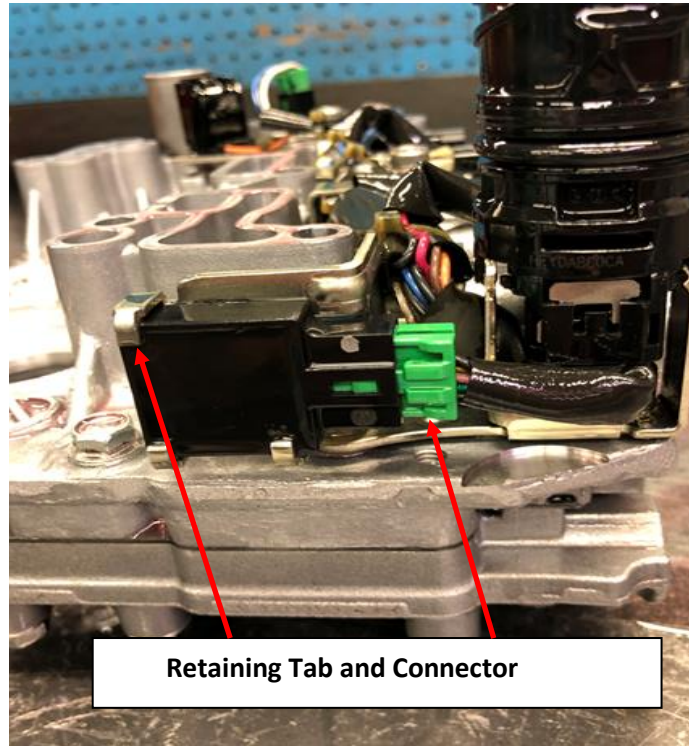


Remove Valve body attaching bolts. (Marked in blue)



Note Manual Valve

Top side of Valve Body



1. Remove the ROM connector
2. Bend the top mounting tab and remove ROM
3. RE install original ROM and plug in connector
4. Bend mounting tab to secure ROM
5. Re install Valve body on case paying attention to manual valve position
6. Torque VB bolts and filter attaching bolts to 60 in lbs
7. Reinstall pan and torque to 6 Ft Lbs

AUXILIARY COOLER

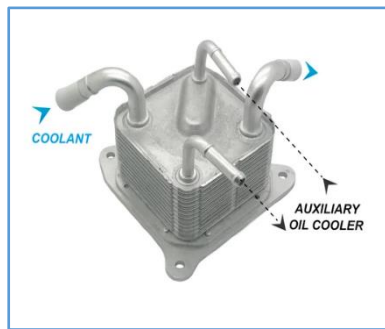
JATCO CVTS ACHIEVE FAST CVT HEATING, WITH LOWER FUEL CONSUMPTION EVEN FOR DRIVING SHORT DISTANCES BY USING A CVT WARMER.

Oil is essential for the proper function of a CVT. A shared feature of all types of oils and fats is that oil viscosity is higher at low temperature, such as during an engine cold start. If oil viscosity is high, the engine cannot run smoothly, placing a strain on the engine. The CVT Oil Warmer quickly heats CVT oil to an appropriate temperature, immediately improving fuel efficiency. This is particularly helpful in colder regions or for short drives. An engine that combusts fuel internally finishes heating comparatively quickly, but transmission, with friction heat from driving as its main heat source, takes more time to warm up. The CVT Oil Warmer heats up the transmission, creating a state where the vehicle can run efficiently quickly. The CVT Oil Warmer utilizes engine cooling water and quickly increases the temperature of the CVT oil until it reaches an appropriate heat. As a result, it reduces the time when the oil is at low temperature, placing a great burden on the engine.

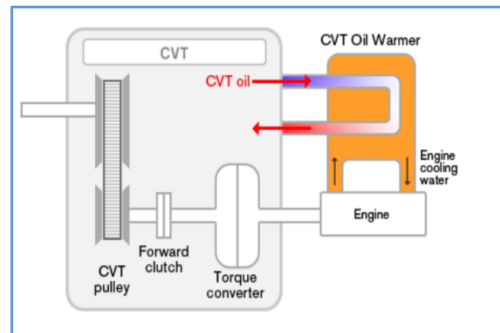
These warmers do not provide much protection from Transmission overheating and resulting default mode. **Some NAPC CVTs are equipped with Warmers that have ports for connection to an included auxiliary cooler.**

1. Follow the instructions included with the cooler and make connections to the two small ports on the warmer.
2. Tighten connections and check for leaks after road-testing.

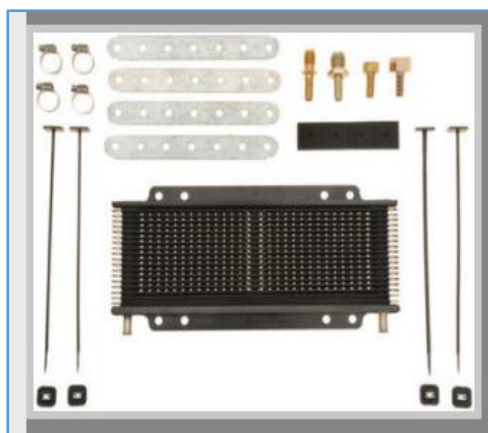
CVT warmer with ports for Auxiliary cooler



2 port CVT warmer Operation



Auxiliary cooler and hardware





NAPC WARRANTY COVERAGE

12 MONTH/20,000 KM / 12,000 MI WARRANTY COVERAGE

NAPC warrants to the original buyer that CVT units purchased shall be covered from defects in material and/or workmanship for a period of **12 Months /20,000Km/12,000Mi**. This applies to all NAPC CVT Transmissions, NAPC reserves the right to determine the course of action regarding repair and/or replacement of all warrantable units.

Work done under the warranty does not extend the life of the same. This Warranty is VOID for any units purchased through anyone that is NOT an Authorized Dealer of NAPC Products or if this unit is purchased through a private sale, change of ownership or through any Internet sales/auction websites.

NAPC will not be responsible for and the warranty does not cover:

1. Lost profits, sales, or income
2. Towing charges
3. Lift, dock, or storage fees
4. Telephone calls
5. Substitute transportation, lodging, etc.
6. Unauthorized repairs

This warranty does not cover damage, caused by the following, for CVT Transmissions:

1. Vehicles that are towing more than maximum allowable weight
2. Transmission coolers that are not replaced as required
3. Wrong fluid use
4. Shifter linkages not inspected, adjusted, or replaced as required
5. Case breakage
6. Shaft breakage

To qualify for warranty, you must follow all installation instructions.

REMOVE & REINSTALL PAYOUTS

All payouts must be preauthorized before any work is done. No further warranty will be granted or paid unless authorized!

All claim labour rates are set at \$75.00 per hour based on Chilton or Mitchel Labour Guide. Fluid is covered but no claim for specialty fluid is allowed. There are no exceptions to this rule. As well there will be no additional costs paid for shop materials or external coolers and flushing. All warranty claims must be preauthorized. A diagnosis time of 1 hour @ \$75.00 is allowed.

CORE RETURN INSTRUCTIONS

Dear Valued NAPC Customer,

To coordinate ALL SHIPMENTS coming back to NAPC, please contact rates@completeshipping.ca, or via phone at **Toll Free 1-855-733-7525** to arrange pickup.

Shipping & Bill of Lading instructions will be provided at time of booking by Complete Shipping Solutions

Please distribute this information to your internal teams responsible for shipping. We thank you for your attention in this matter and we appreciate your business.



Complete Shipping Solutions Inc.

14803-114 Ave NW, 2nd Floor

Edmonton, AB T5M 2Y8

Phone: 780-733-7525 Fax: 780-733-7526

Toll Free: 855-733-7525

 **WARRANTY REGISTRATION FORM**

Purchased by _____ **Contact Name** _____

City/Province _____ **Phone Number** _____

Installation by _____ **Contact name** _____

City/Province _____ **Phone Number** _____

Date of purchase _____

Unit Type _____

Vehicle year, make, model _____

Fluid type installed in unit (Specific brand and type) _____

Install date _____

Vehicle VIN # _____

Vehicle Licence Plate # & Province / State _____

Comments/Notes _____

NAPC/NADP Invoice # _____

Unit Serial Number (Located on Blue tag) _____

Amount of fluid installed (Exact amount) _____

Odometer reading at install _____

PLEASE FILL OUT THIS FORM AT TIME OF INSTALLATION AND MAIL, FAX, OR EMAIL

**NAPC/NADP 12836 - 151 Street Edmonton, Alberta, Canada T5V 1G8, 780.406.6622
or email invoice@napc.ca. Alternatively, you can visit www.napc.ca to register your
NAPC unit.**



Warranty Process & Procedure

Do You Suspect A Problem?

Procedure 1: Initial Phone Call To NAPC

Call **1-780-456-4498** or **1-866-456-4498**

A FIRST Conversation With The Following Information Is Required.

- Tag Number Off Of Transmission
- Symptoms Of A Road Test
- Fault Codes That Come Up From A Scan
- Current Mileage & Installation Mileage



REASONS - Many times a simple phone call to the NAPC tech support line may have a solution to fix the problem at hand.

DO NOT REMOVE THE UNIT OR REPLACE ANY PARTS WITHOUT THIS FIRST PHONE CONVERSATION!

- **ANY STEPS TAKEN WITHOUT PRIOR APPROVAL WILL NOT BE COVERED.**

Procedure 2: NAPC Warranty Department

At This Time, The NAPC Representative Will Determine The Required Action. This Action Will Include Either Repair or Replacement of Unit ALONG With A File Being Opened & Documented Regarding This Situation.

* **REPLACE UNIT:** IF It Has Been Authorized To Replace The Faulty Unit, A New Unit Will BE Sent Out By NAPC OR The Defective Unit Will Need To Be Sent Back To NAPC For Repair. **(A CHARGE FOR THE REPLACEMENT UNIT WILL BE MADE UNTIL THE FAULTY UNIT IS RETURNED.)**

***REPAIR UNIT:** UPON AUTHORIZATION, NAPC Will Sign Off On IN SHOP Repair Of Unit. Parts – May Or May Not Be Required & Will Depend Upon The Specific Situation

ATTENTION UNLESS Authorized By NAPC, No Repairs Will Be Paid Out, Without Following The Above Procedure **THERE WILL BE NO EXCEPTIONS MADE**

INVOICING / LABOR & FLUIDS

- * All Invoices For Repair / Replacement MUST have BOTH Defective Tag Number & The NEW Units Tag Number Present On The Invoice. If An Invoice Does Not Have Either Of The Tag Numbers Present, It Will Be Sent Back.
- * Payment For Warranty Claims Will Follow The INDUSTRY STANDARD Flat Rate System Found In Chilton, Mitchell & Motor Guidelines. As Of August 2012, Industry Standing Rates Have Been Set At \$55/ Plus ATF.