



INDEX

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**VALVE BODY MAPPING:**

*Refer to Page 47-53 for the Valve Body Mapping text (Passage I.D.)*  
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**OIL CIRCUIT DIAGRAMS:**

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*Refer to Page 63 for Drive 6th Gear*  
*Refer to Page 64 for Drive 7th Gear*  
*Refer to Page 65 for Drive 7th Gear TCC ON*



# Technical Service Information

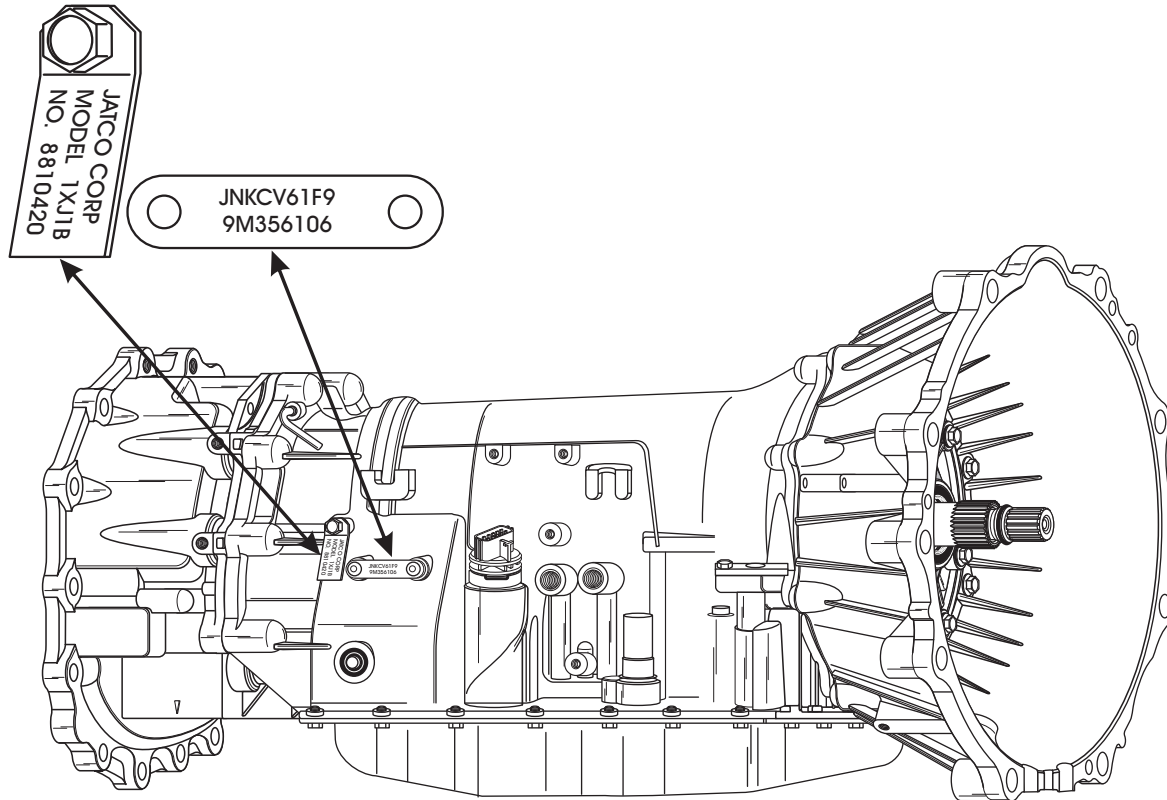
## JATCO JR710E

The JATCO JR710E is manufactured by the Japanese Automatic Transmission Company and has seven forward speeds plus reverse. Fifth gear is one to one, 6th and 7th gear are both overdrive ratios.

We wish to thank ALTO USA for supplying us with the transmission that has made this presentation possible.

This manual will cover theory of operation of the electronic and hydraulic control. It also covers passage identification of the case, valve body and spacer plate. This manual includes hydraulic circuit diagrams for all ranges and a Valve Body Mapping section which is a numbering system for passage Identification and oil flow

### IDENTIFICATION TAG LOCATIONS AND VEHICLE APPLICATIONS



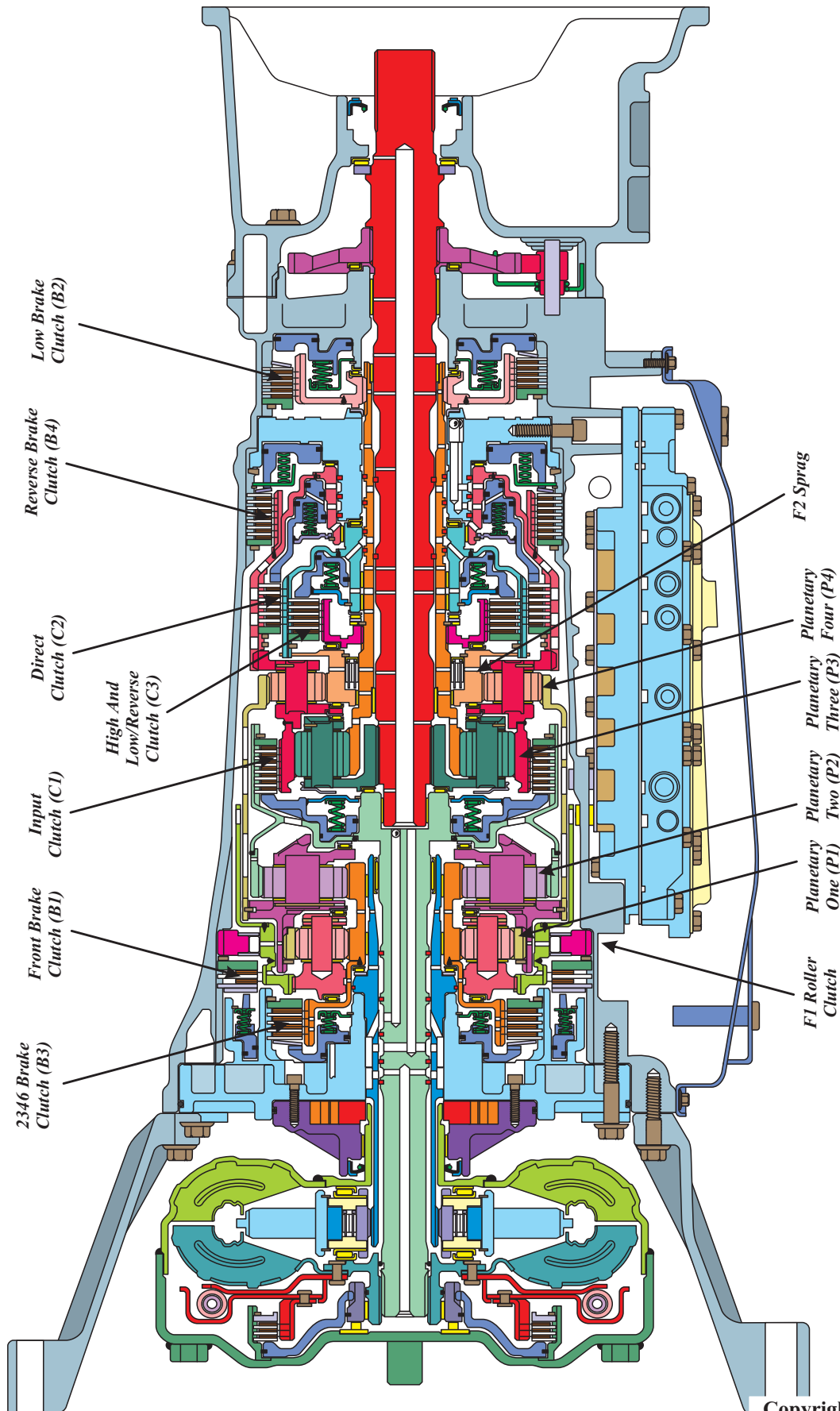
### VEHICLE APPLICATION CHART

VEHICLE	YEAR	ENGINE	COUNTRY	TRANSMISSION
Nissan 370Z (Z34)	2008-Up	3.7L (V6), 5.0L (V8)	USA, CAN,	JR710E (RE7R01A)
Infiniti FX37 SUV	2009-Up	3.7L (V6)	USA, CAN,	JR710E (RE7R01A)
Infiniti FX50 SUV	2009-Up	5.0L, (V8)	USA, CAN,	JR710E (RE7R01A)
Infiniti FX35 SUV	2009-Up	5.9L, (V8)	USA, CAN,	JR710E (RE7R01A)
Infiniti FX30d SUV	2009-Up	3.0L (V6) Turbo Diesel	USA, CAN,	JR710E (RE7R01A)
Infiniti (J50) Sedan EX25	2008-Up		USA, CAN,	JR710E (RE7R01A)
Infiniti (J50) Sedan EX30	2008-Up		USA, CAN,	JR710E (RE7R01A)

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Figure 1

**JR710E (RE7R01A) COMPONENT LOCATION AND IDENTIFICATION**

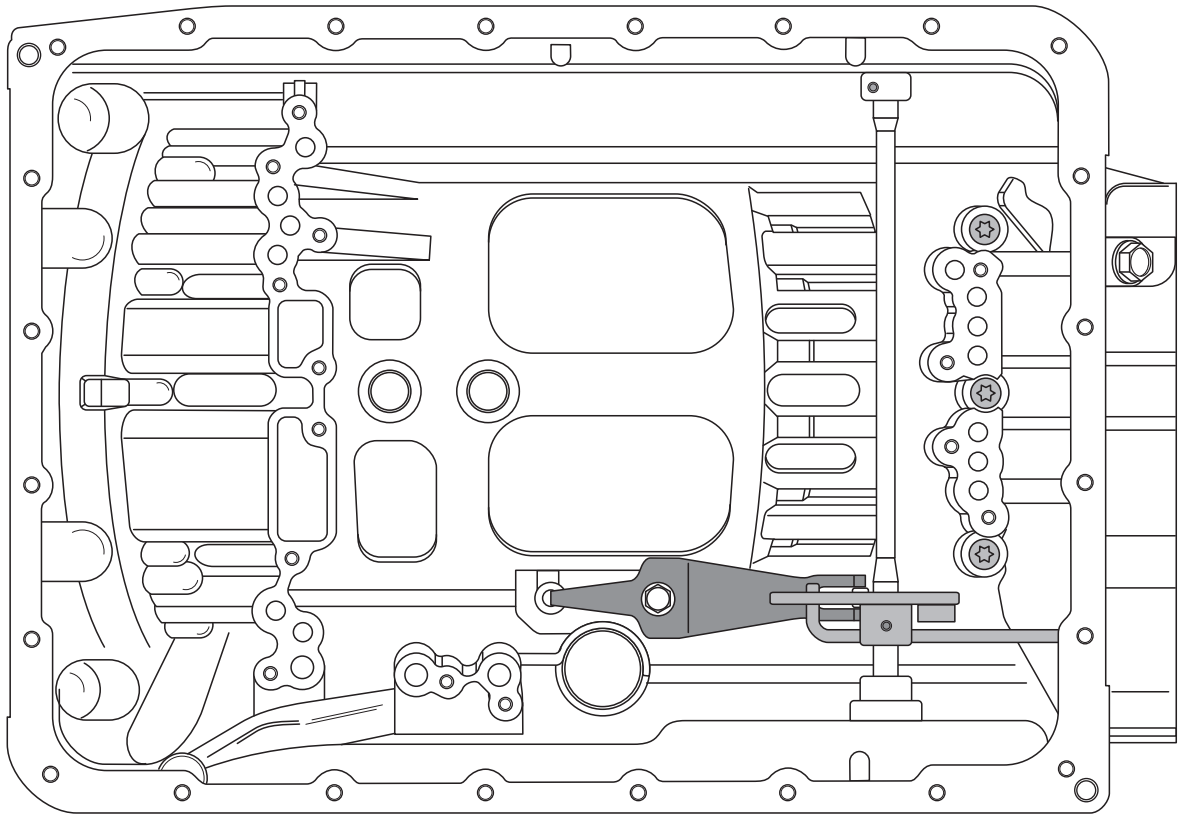


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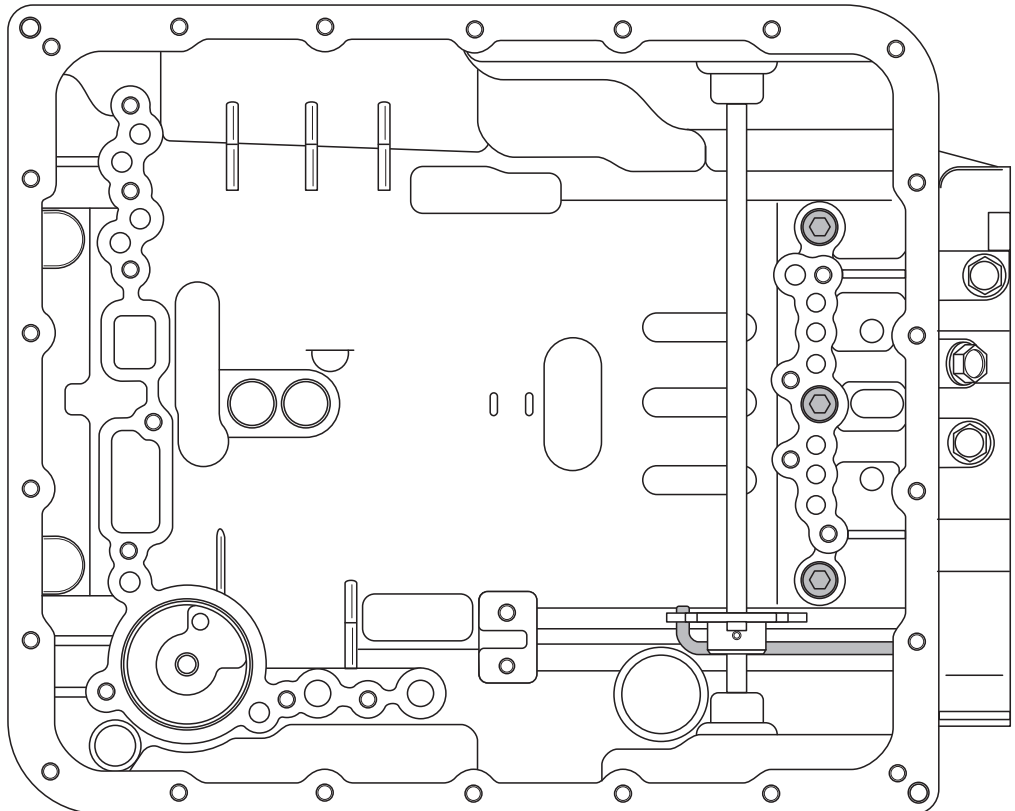
Figure 2

**CASE COMPARISON**

**RE7R01A**



**RE5R05A**



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Figure 3

<b>COMPONENT APPLICATION CHART</b>												
<i>Gear</i>	<i>Front Brake (B1)</i>	<i>Input Clutch (C1)</i>	<i>Direct Clutch (C2)</i>		<i>Hi &amp; LR Clutch (C3)</i>	<i>Low Brake (B2)</i>		<i>2,3,4,6 Brake (B3)</i>	<i>Reverse Brake (B4)</i>	<i>Roller Clutch (F1)</i>	<i>Sprag Clutch (F2)</i>	<i>Gear Ratio (Model Sensitive)</i>
			<i>Front</i>	<i>Rear</i>		<i>Inner</i>	<i>Outer</i>					
<i>Park</i>	<i>On</i>				<i>On</i>							
<i>Reverse</i>	<i>On</i>				<i>On</i>				<i>On</i>	<i>Hold</i>	<i>Hold</i>	<i>See Below</i>
<i>Neutral</i>	<i>On</i>				<i>On</i>							
<i>D-1st</i>	<i>On</i>				<i>On</i>	<i>On</i>	<i>On</i>			<i>Hold</i>	<i>Hold</i>	<i>See Below</i>
<i>D-2nd</i>						<i>On</i>	<i>On</i>	<i>On</i>			<i>Hold</i>	<i>See Below</i>
<i>D-3rd</i>			<i>On</i>	<i>On</i>		<i>On</i>		<i>On</i>				<i>See Below</i>
<i>D-4th</i>			<i>On</i>	<i>On</i>	<i>On</i>			<i>On</i>				<i>See Below</i>
<i>D-5th</i>		<i>On</i>		<i>On</i>	<i>On</i>							<i>See Below</i>
<i>D-6th</i>		<i>On</i>			<i>On</i>			<i>On</i>				<i>See Below</i>
<i>D-7th</i>	<i>On</i>	<i>On</i>			<i>On</i>							<i>See Below</i>
<i>"M"-1st</i>	<i>On</i>				<i>On</i>	<i>On</i>	<i>On</i>			<i>Hold</i>	<i>Hold</i>	<i>See Below</i>

Figure 4

<b>GEAR RATIOS</b>		<b>GEAR RATIOS</b>	
<i>Reverse Gear</i>	3.5384	<i>Reverse Gear</i>	3.8028
<i>1st Gear</i>	4.6837	<i>1st Gear</i>	5.6813
<i>2nd Gear</i>	3.0602	<i>2nd Gear</i>	3.5403
<i>3rd Gear</i>	2.0161	<i>3rd Gear</i>	2.2642
<i>4th Gear</i>	1.3889	<i>4th Gear</i>	1.4717
<i>5th Gear</i>	1.0000	<i>5th Gear</i>	1.0000
<i>6th Gear</i>	0.8560	<i>6th Gear</i>	0.8340
<i>7th Gear</i>	0.7588	<i>7th Gear</i>	0.7363

<b>GEAR RATIOS</b>	
<i>Reverse Gear</i>	4.5702
<i>1st Gear</i>	6.3508
<i>2nd Gear</i>	3.8417
<i>3rd Gear</i>	2.3530
<i>4th Gear</i>	1.5294
<i>5th Gear</i>	1.0000
<i>6th Gear</i>	0.8393
<i>7th Gear</i>	0.7494

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Figure 5

### SOLENOID LOCATION, IDENTIFICATION, AND APPLICATION CHART

Range	Line Pressure Sol "A" PWM (N.V.)	TCC Clutch PWM (N.V.)	Direct Clutch Sol "G" PWM (N.A.)	Front Brake Sol "C" PWM (N.V.)	Input Clutch Sol "B" PWM (N.A.)	High/LR Clutch Sol "D" PWM (N.A.)	Low Brake Sol "E" PWM (N.V.)	2346 Brake Sol "F" PWM (N.V.)	Anti-Interlock Sol "A" On/Off (NC)
<i>Park</i>	0.2-0.6A*	0A	0.6-0.8A	0.6-0.8A	0.6-0.8A	0-.05A	0-.05A	0-.05A	Off
<i>Reverse</i>	0.2-0.6A*	0A	0.6-0.8A	0.6-0.8A	0.6-0.8A	0-.05A	0-.05A	0-.05A	Off
<i>D-1st</i>	0.2-0.6A*	0A	0.6-0.8A	0.6-0.8A	0.6-0.8A	0-.05A	0.6-0.8A	0-.05A	ON
<i>D-2nd</i>	0.2-0.6A*	0.2-0.6A**	0.6-0.8A	0-.05A	0.6-0.8A	0.6-0.8A	0.6-0.8A	0.6-0.8A	ON
<i>D-3rd</i>	0.2-0.6A*	0.2-0.6A**	0-.05A	0-.05A	0.6-0.8A	0.6-0.8A	0.6-0.8A	0.6-0.8A	ON
<i>D-4th</i>	0.2-0.6A*	0.2-0.6A**	0-.05A	0-.05A	0.6-0.8A	0-.05A	0-.05A	0.6-0.8A	Off
<i>D-5th</i>	0.2-0.6A*	0.2-0.6A**	0-.05A	0-.05A	0-.05A	0-.05A	0-.05A	0-.05A	Off
<i>D-6th</i>	0.2-0.6A*	0.8A***	0.6-0.8A	0-.05A	0-.05A	0-.05A	0-.05A	0.6-0.8A	Off
<i>D-7th</i>	0.2-0.6A*	0.8A***	0.6-0.8A	0.6-0.8A	0-.05A	0-.05A	0-.05A	0-.05A	Off

\* = Constantly modulating, based on engine load.  
 \*\* = Slip Lock-Up is Activated.  
 \*\*\* = TCC may be applied, based on engine load, fluid temp, and vehicle speed.

### COMPONENT APPLICATION CHART

Gear	Front Brake (B1)	Input Clutch (C1)	Direct Clutch (C2)		Hi & LR Clutch (C3)	Low Brake (B2)		2,3,4,6 Brake (B3)	Reverse Brake (B4)	Roller Clutch (F1)	Sprag Clutch (F2)	Gear Ratio (Model Sensitive)
			Front	Rear		Inner	Outer					
<i>Park</i>	On*				On*							
<i>Reverse</i>	On				On				On	Hold	Hold	See Fig. 5
<i>Neutral</i>	On*				On*							
<i>D-1st</i>	On				On	On	On			Hold	Hold	See Fig. 5
<i>D-2nd</i>						On	On	On			Hold	See Fig. 5
<i>D-3rd</i>			On	On		On		On				See Fig. 5
<i>D-4th</i>			On	On	On			On				See Fig. 5
<i>D-5th</i>		On		On	On							See Fig. 5
<i>D-6th</i>		On			On			On				See Fig. 5
<i>D-7th</i>	On	On			On							See Fig. 5
<i>"M"-1st</i>	On				On	On	On			Hold	Hold	See Fig. 5

Figure 6

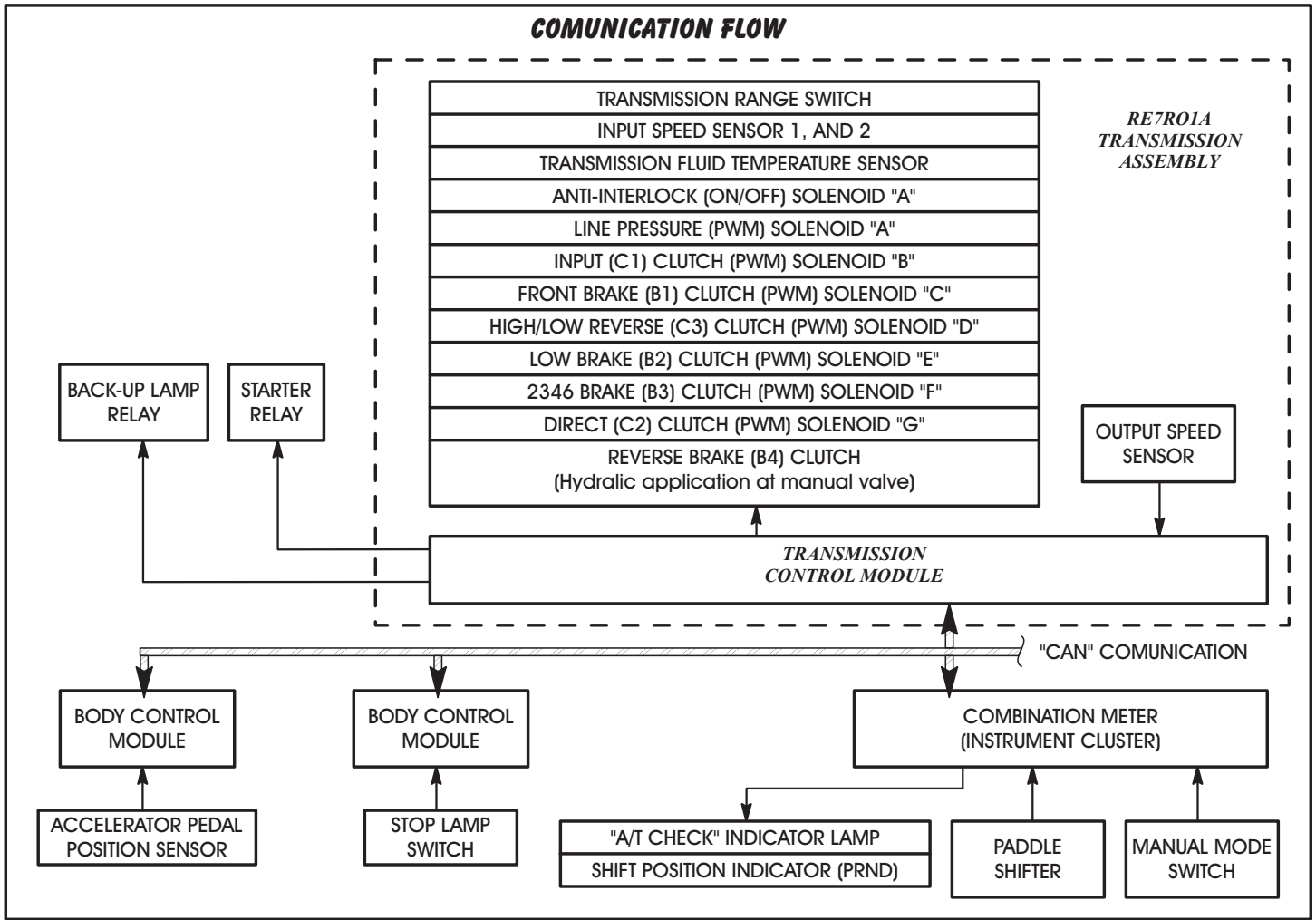
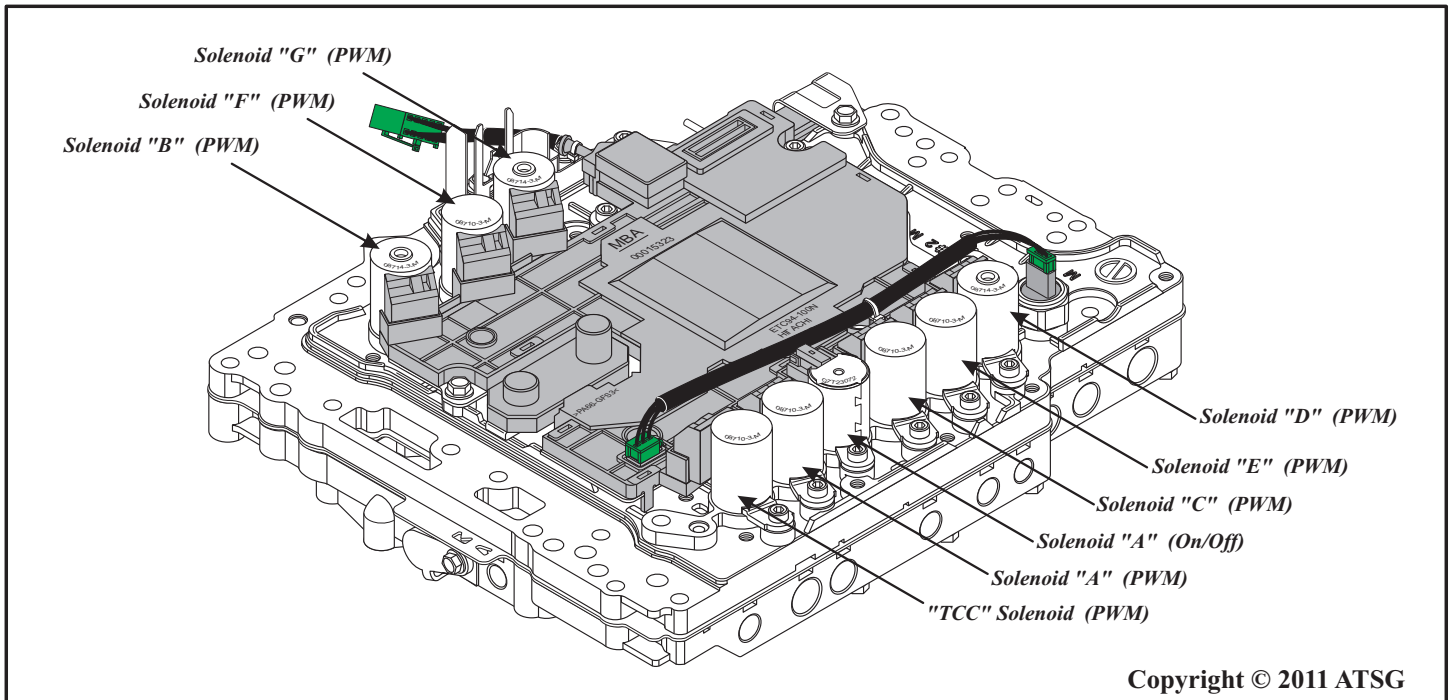


Figure 7



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Figure 8

<b>SOLENOID FUNCTION CHART</b>		
<b>Solenoid "A" (PWM)</b> <i>(Line Pressure Control)</i>	<b>P0745</b>	The line pressure solenoid regulates the oil pump discharge pressure to suit the driving conditions in response to a signal transmitted from the TCM.
<b>Solenoid "B" (PWM)</b> <i>(Input Clutch Pressure Control)</i>	<b>P0775</b>	The input clutch pressure control solenoid controls the input clutch control valve in response to a signal transmitted from the TCM.
<b>Solenoid "C" (PWM)</b> <i>(Front Brake Clutch Pressure Control)</i>	<b>P0795</b>	The front brake clutch pressure control solenoid controls the front brake clutch control valve in response to a signal transmitted from the TCM.
<b>Solenoid "D" (PWM)</b> <i>(High &amp; Low Reverse Clutch Pressure Control)</i>	<b>P2713</b>	The high & low reverse clutch pressure control solenoid controls the high & low reverse clutch control valve in response to a signal transmitted from the TCM.
<b>Solenoid "E" (PWM)</b> <i>(Low Brake Pressure Control)</i>	<b>P2722</b>	The low brake pressure control solenoid controls the low brake control valve in response to a signal transmitted from the TCM.
<b>Solenoid "F" (PWM)</b> <i>(2, 3, 4, 6 Brake Pressure Control)</i>	<b>P2731</b>	The 2346 brake pressure control solenoid controls the 2346 brake control valve in response to a signal transmitted from the TCM.
<b>Solenoid "G" (PWM)</b> <i>(Direct Clutch Pressure Control)</i>	<b>P2807</b>	The direct clutch pressure control solenoid controls the direct clutch control valve in response to a signal transmitted from the TCM.
<b>Shift Solenoid "A" (On/Off)</b> <i>(Anti-Interlock Control)</i>	<b>P0750</b>	The anti-interlock control solenoid prevents the simultaneous application of the input clutch and the low brake clutch.
<b>TCC Solenoid (PWM)</b> <i>(Torque Converter Clutch Control)</i>	<b>P0740</b>	The torque converter clutch solenoid may be activated in 2nd thru 7th gears (manual or automatic) by the TCM in response to signals transmitted from the OSS and APP sensor. Lock-up operation however, is inhibited when fluid temperature is too low.
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Figure 9



### SOLENOID MECHANICAL CHECKS

#### "Normally Applied" Duty Cycle Solenoids

The High & Low Reverse Clutch, Input Clutch, and Direct Clutch, are all "Normally Applied" duty cycle type solenoids (See Figure 10). This means that when the solenoid is OFF (De-energized), the exhaust passage is blocked, and feed oil pressure is allowed through the solenoid to the appropriate components and valves. When the solenoid is ON (Energized), feed oil pressure is blocked, exhaust is now open, and the components and valves are allowed to drain.

**Note:** Resistance specifications for this type of solenoid is 5.0-7.5 Ohms.

#### "Normally Vented" Duty Cycle Solenoids

The Line Pressure, Torque Converter Clutch, Front Brake, Low Clutch and 2346 Brake Solenoids are all "Normally Vented" duty cycle type solenoids (See Figure 11). This means that when the solenoid is OFF (De-energized), the feed oil pressure is blocked, the exhaust passage is open and the components and valves are allowed to drain. When the solenoid is ON (Energized), the feed oil pressure port is opened, the exhaust passage is blocked, and feed oil pressure is allowed through the solenoid to the appropriate components and valves.

**Note:** Resistance specifications for this type of solenoid is 5.0-7.5 Ohms.

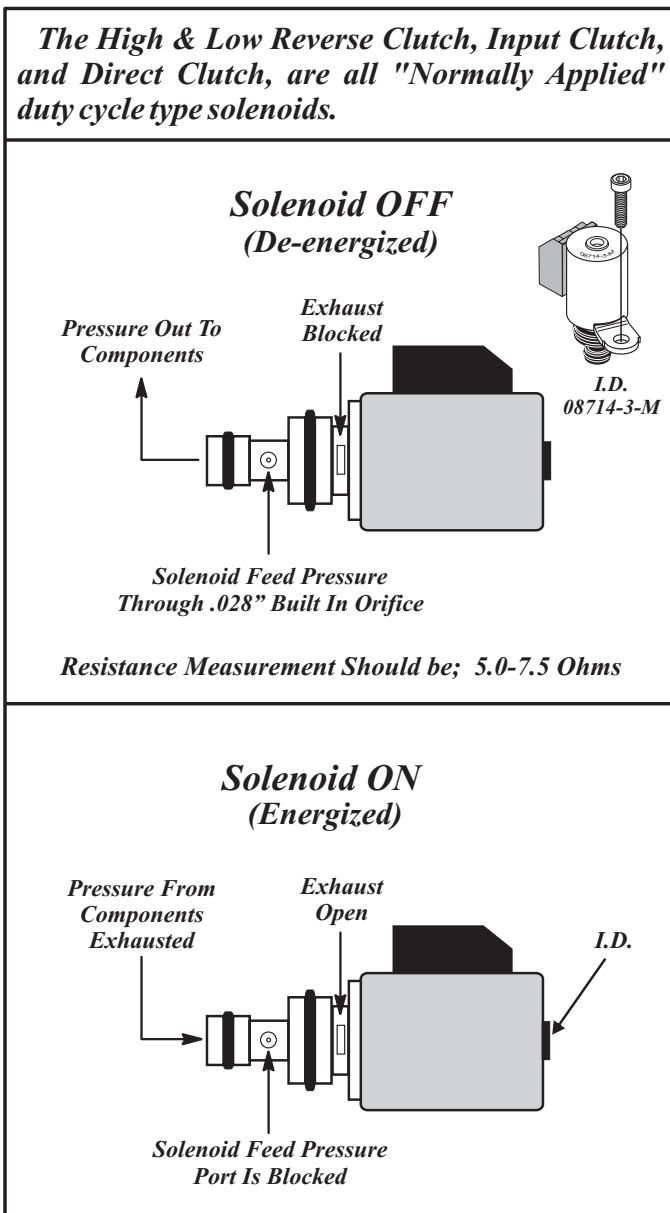


Figure 10

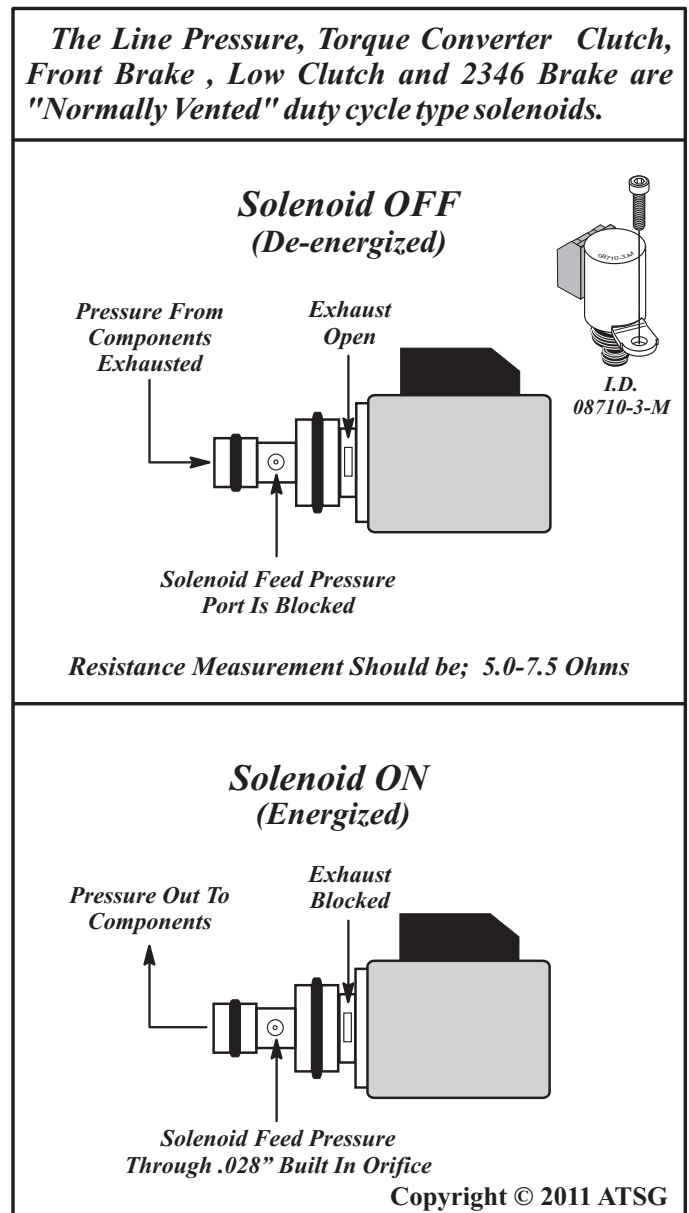


Figure 11

**SOLENOID MECHANICAL CHECKS**

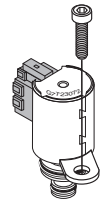
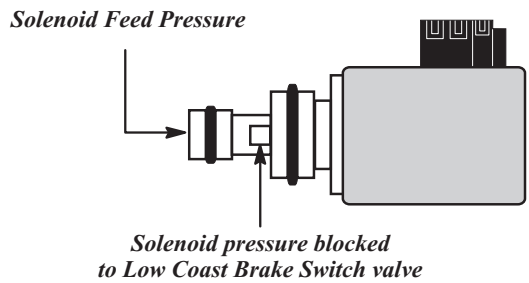
**"Normally Closed" ON/OFF Solenoid**

The Anti-Interlock Solenoid is a "Normally Closed", ON/OFF type solenoid, as shown in Figure 12. This means that when the solenoid is OFF (De-energized), the feed oil pressure is blocked to the Anti-Interlock valve. When the solenoid is ON (Energized), the feed oil pressure is connected to the Anti-Interlock valve.

**Note:** Resistance specifications for this type of solenoid is 24-30 Ohms.

*The Low Coast Brake is a "Normally Closed", ON/OFF type solenoid.*

**Solenoid OFF  
 (De-energized)**



I.D.  
 G7T23072

*Resistance Measurement Should be; actual 28 ohms, range is 24-30 ohms.*

**Solenoid ON  
 (Energized)**

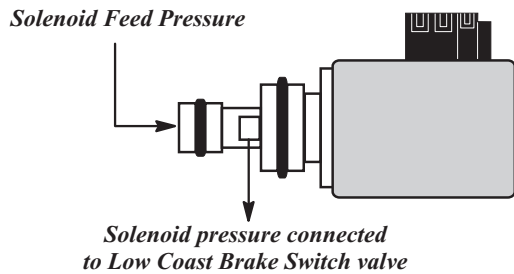
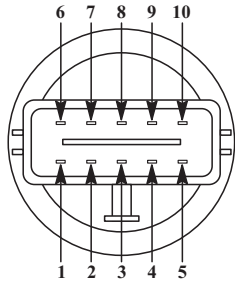
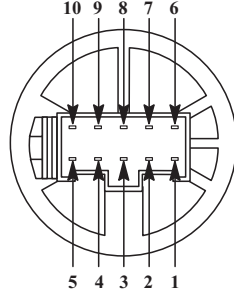


Figure 12

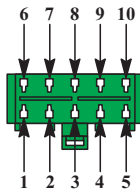
### TCM CONNECTOR TERMINAL IDENTIFICATION AND FUNCTION



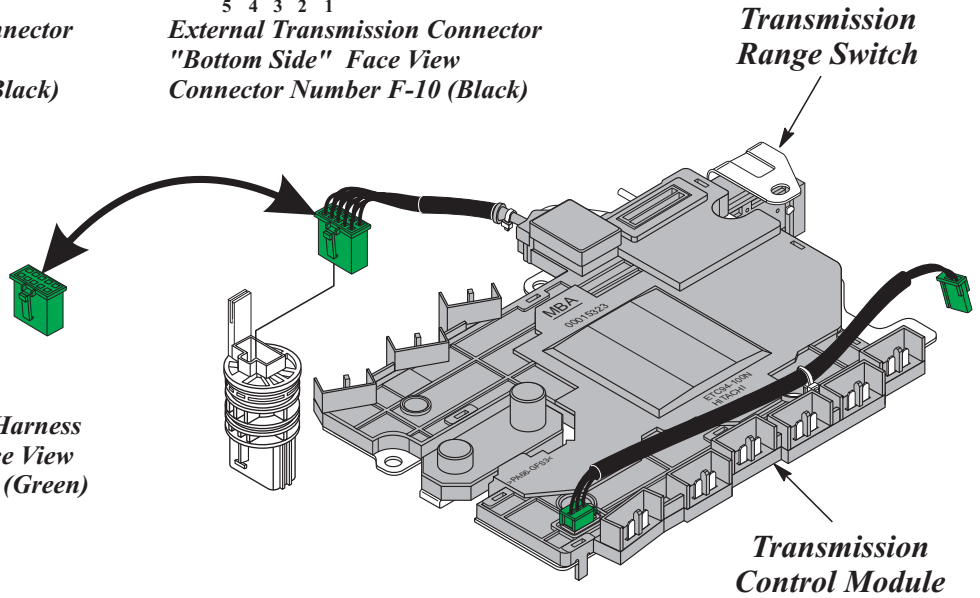
*External Transmission Connector  
"Top Side" Face View  
Connector Number F-10 (Black)*



*External Transmission Connector  
"Bottom Side" Face View  
Connector Number F-10 (Black)*



*Internal Transmission Harness  
"Female" Coupler Face View  
Connector Number F-9 (Green)*



*Transmission Control Module*

Term No.	Function	Condition		Value (Approx)
1	Ignition Power Supply In	Ignition Switch On		Battery Voltage
		Ignition Switch Off		0 Volts
2	Battery Power Supply In (Memory Back-Up)	Always On		Battery Voltage
3	CAN-H			
4	K-Line			
5	Ground Supply 2	Always Grounded		0 Volts
6	Ignition Power Supply In	Ignition Switch On		Battery Voltage
		Ignition Switch Off		0 Volts
7	Back-Up Lamp Relay	Ignition "On"	Selector In "R"	0 Volts
			Selector Other Than "R"	Battery Voltage
8	CAN-L			
9	Starter Relay	Ignition "On"	Selector In "P" Or "N"	Battery Voltage
			Selector Other Than "P" Or "N"	0 Volts
10	Ground Supply 1	Always Grounded		0 Volts

Figure 13

### ELECTRONIC COMPONENTS (CONT'D)

#### Output Shaft (Revolution) Sensor

The Output Shaft (Revolution) Sensor is a Hall Effect type sensor, as shown in Figure 14. It is located in the rear housing of the transmission, as shown in Figure 15. The output shaft sensor obtains its reading off of the park gear, and generates a VSS signal that is used by the TCM to assist in determining shift scheduling.

DTC P0720 is set when the TCM doesn't receive a proper voltage signal from the sensor while driving. This code can also be set when the ignition switch is turned "ON", and an improper signal is received from the Vehicle Speed Sensor MTR before the vehicle begins moving.

The Vehicle Speed Sensor MTR signal is sent from the instrument cluster/combination meter to the TCM by way of CAN bus signal through the CAN communication line. The instrument cluster receives its vehicle speed information through the CAN communication line via the ABS system from the Wheel Speed Sensors.

In the event of a Output/Revolution Shaft Sensor malfunction, the TCM will utilize the MTR signal for Vehicle Speed Input.

The Output Shaft (Revolution) Sensor connector plugs into the Park/Neutral Position Switch, as shown in Figure 14.

#### "Bench Testing"

##### Output Shaft (Revolution) Sensor

- (1) Remove the tail housing or transfer case from the transmission, and the transmission oil pan.
- (2) Unplug the Green Connector from the P/N Position Switch.
- (3) Run 12 volts from a battery, to the Red Wire (Pin 3) of the Green Connector.
- (4) Run a jumper lead from the Black Wire (Pin 1) of the Green Connector to battery ground.
- (5) Using a DVOM or Graphing Meter, place the Red lead of the meter to the White Wire (Pin 2) of the Green Connector, place the Black lead of the meter to the Black Wire (Pin 1) of the Green Connector.
- (6) Rotate output shaft slowly and you should see the meter toggle from voltage to infinite as the lugs on the park gear pass in front of the Output/Revolution Sensor Pick-up. Refer to Figure 14 and 15.

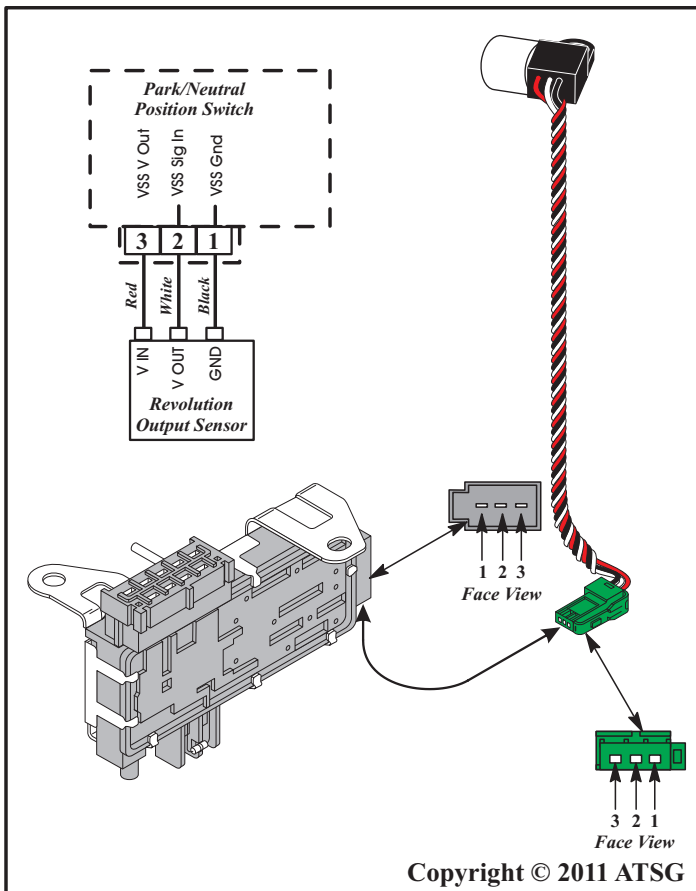


Figure 14

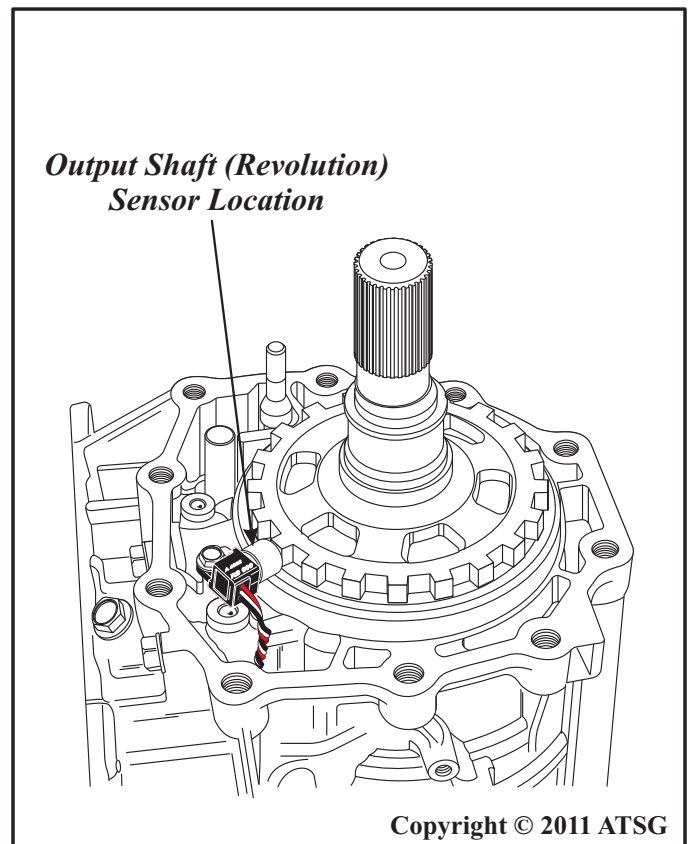
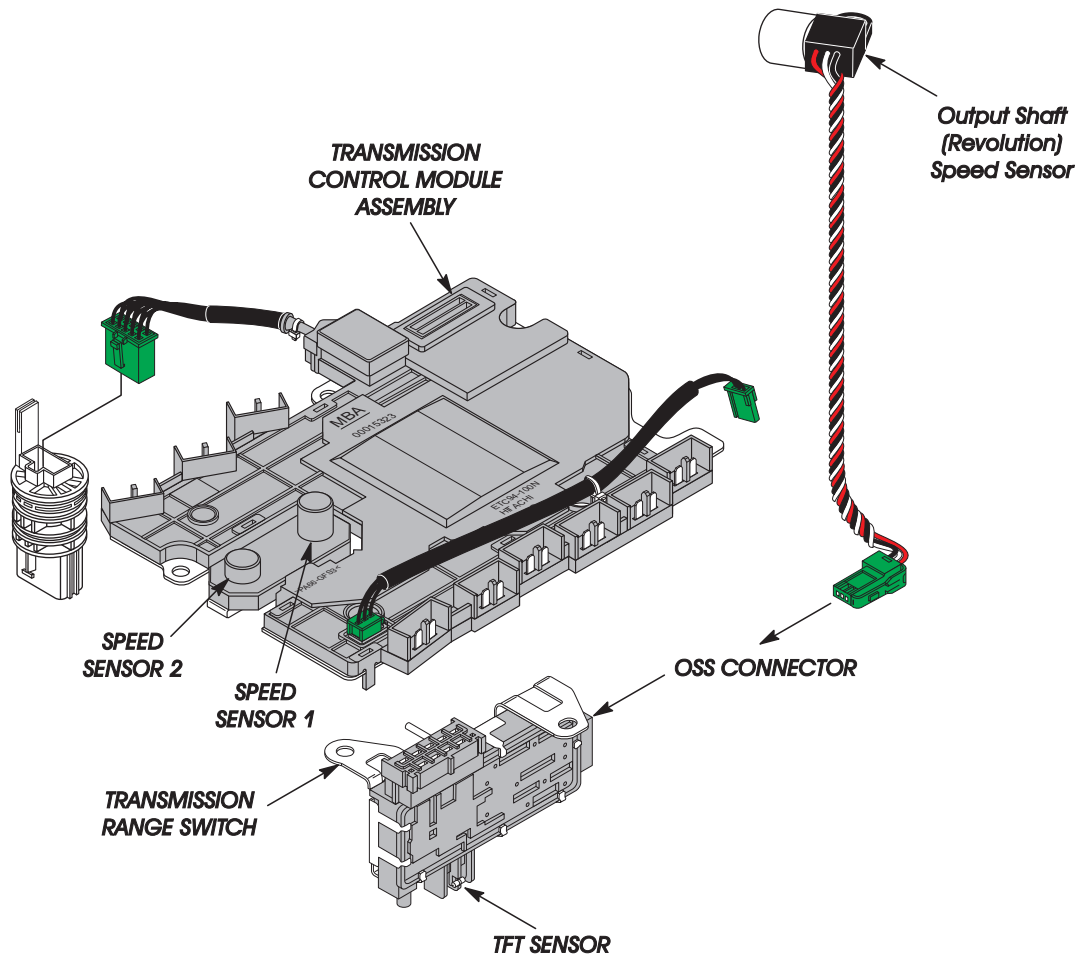


Figure 15

**INTERNAL ELECTRONIC COMPONENTS**



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Figure 16

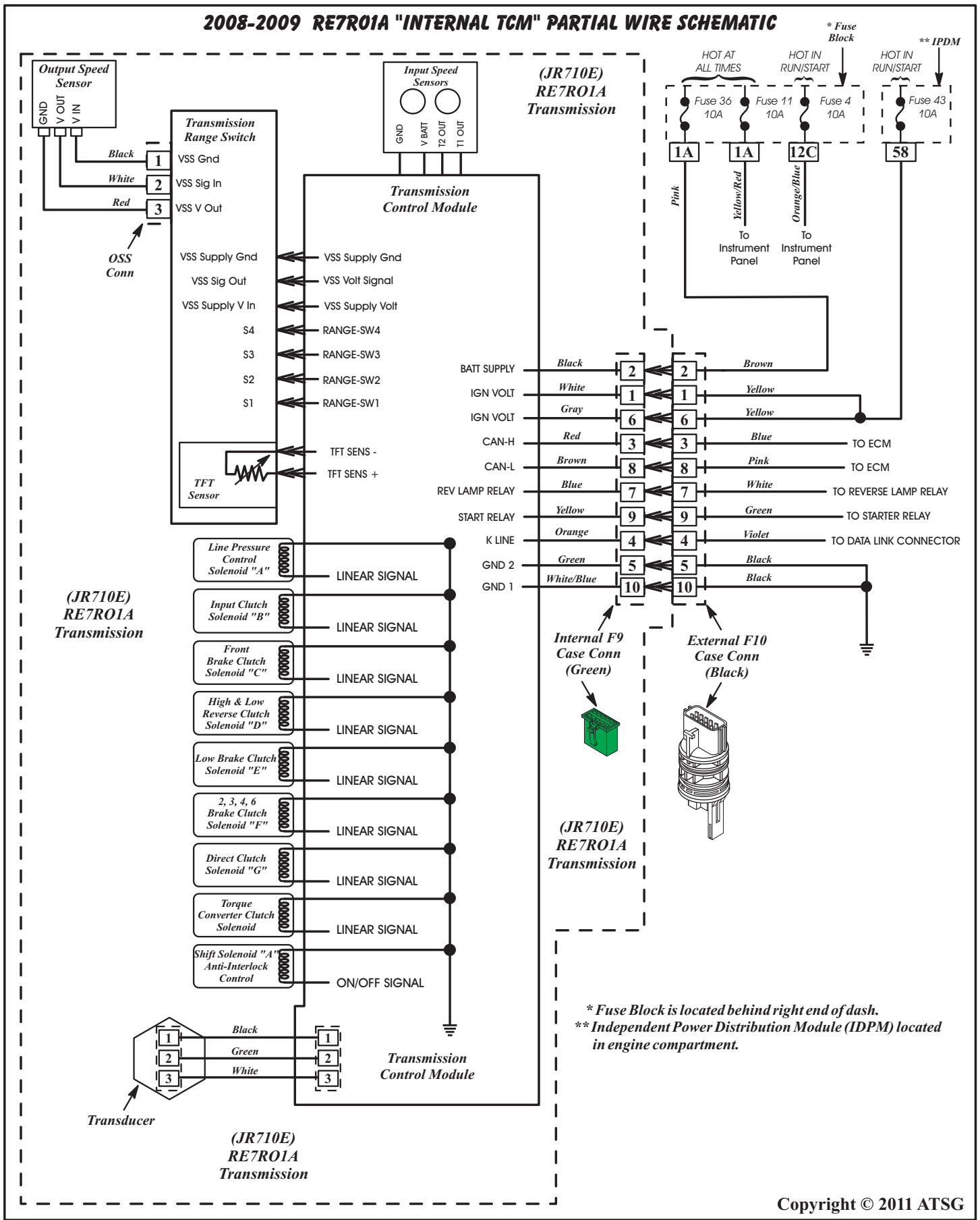


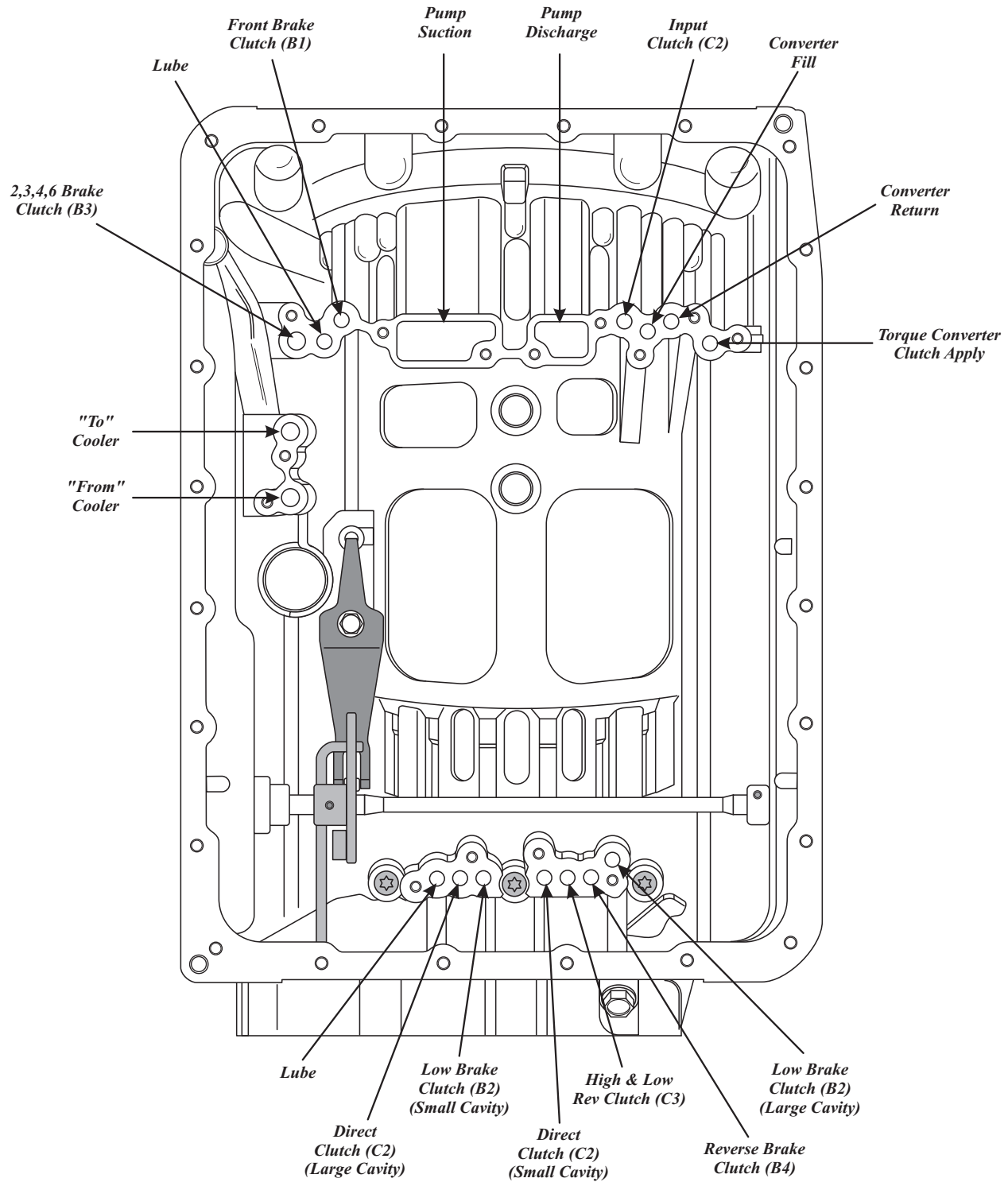
Figure 17

<b>RE7R01A DIAGNOSTIC TROUBLE CODE (DTC) DESCRIPTION</b>	
<b>TCM DTC</b>	<b>DESCRIPTION</b>
<i>P0615</i>	<i>Starter Relay Circuit</i>
<i>P0705</i>	<i>Park/Neutral Position Switch Circuit</i>
<i>P0710</i>	<i>Transmission Fluid Temperature Sensor Circuit</i>
<i>P0717</i>	<i>Input Speed Sensor Circuit (Could be 1 or 2))</i>
<i>P0720</i>	<i>Output (Revolution) Speed Sensor Circuit (Transmission)</i>
<i>P0725</i>	<i>Engine Speed Sensor Circuit</i>
<i>P0729</i>	<i>6th Gear Ratio Error</i>
<i>P0730</i>	<i>Incorrect Gear Ratio</i>
<i>P0731</i>	<i>1st Gear Ratio Error</i>
<i>P0732</i>	<i>2nd Gear Ratio Error</i>
<i>P0733</i>	<i>3rd Gear Ratio Error</i>
<i>P0734</i>	<i>4th Gear Ratio Error</i>
<i>P0735</i>	<i>5th Gear Ratio Error</i>
<i>P0740</i>	<i>Torque Converter Clutch Solenoid Circuit</i>
<i>P0744</i>	<i>Torque Converter Clutch Function (Electrical or Mechanical)</i>
<i>P0745</i>	<i>Line Pressure Solenoid A Circuit</i>
<i>P0750</i>	<i>Interlock Shift Solenoid A Circuit (Anti-Interlock Control)</i>
<i>P0755</i>	<i>Pressure Control Solenoid B Circuit (Input Clutch Pressure Control)</i>
<i>P0780</i>	<i>Shift Error (Electrical or Mechanical)</i>
<i>P0795</i>	<i>Pressure Control Solenoid C Circuit (Front Brake Clutch Pressure Control)</i>
<i>P1705</i>	<i>Throttle Position Sensor or APP Circuit</i>
<i>P1721</i>	<i>Output (Revolution) Speed Sensor Circuit (Vehicle Speed)</i>
<i>P1730</i>	<i>OSS detects deceleration of 12 km/h (7 MPH) or more for 1 sec (Electrical or Mechanical)</i>
<i>P1734</i>	<i>7th Gear Ratio Error</i>
<i>P1815</i>	<i>Manual Mode Switch Circuit</i>
<i>P2713</i>	<i>Pressure Control Solenoid D Circuit (High &amp; Low/Reverse Clutch Pressure Control)</i>
<i>P2722</i>	<i>Pressure Control Solenoid E Circuit (Low Brake Clutch Pressure Control)</i>
<i>P2731</i>	<i>Pressure Control Solenoid F Circuit (2346 Brake Clutch Pressure Control)</i>
<i>P2807</i>	<i>Pressure Control Solenoid G Circuit (Direct Clutch Pressure Control)</i>
<i>U1000</i>	<i>CAN Communication Circuit</i>
<b>NOTE: Scanner is "Required" for DTC Retrieval.</b>	

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Figure 18

**CASE PASSAGE IDENTIFICATION**

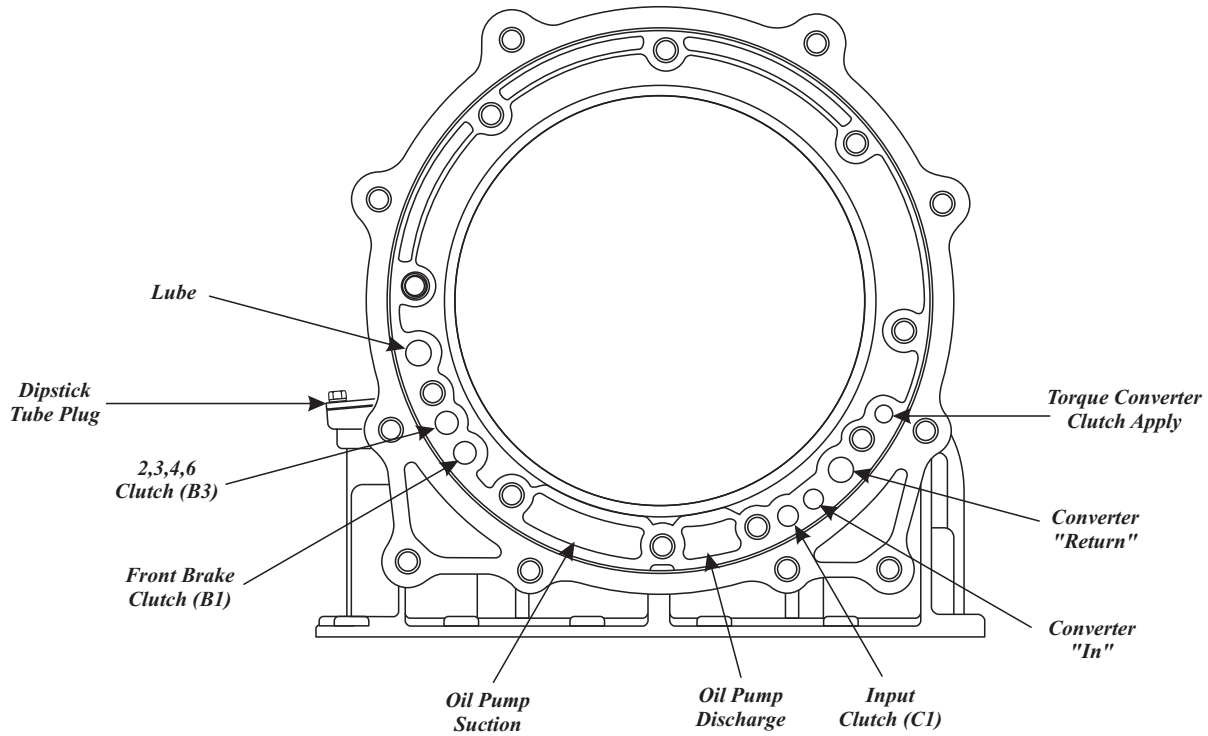


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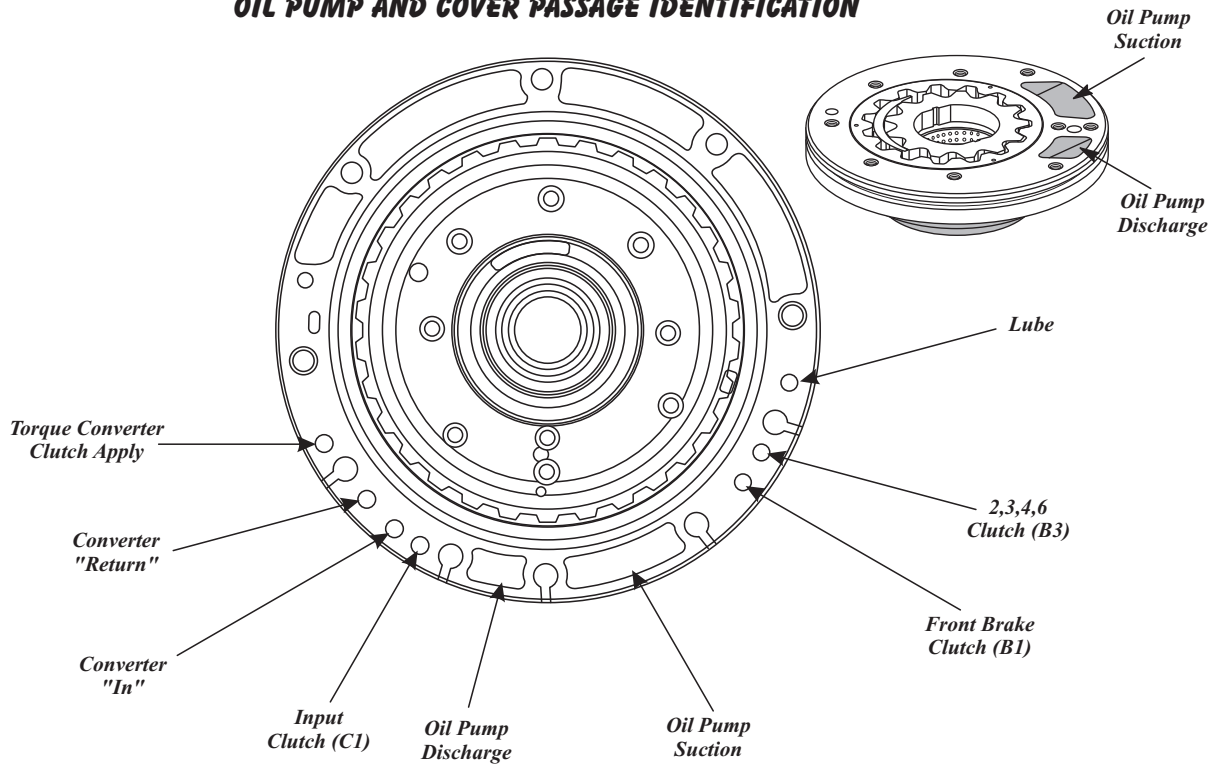
Figure 19



**CASE FRONT PASSAGE IDENTIFICATION**



**OIL PUMP AND COVER PASSAGE IDENTIFICATION**



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Figure 20

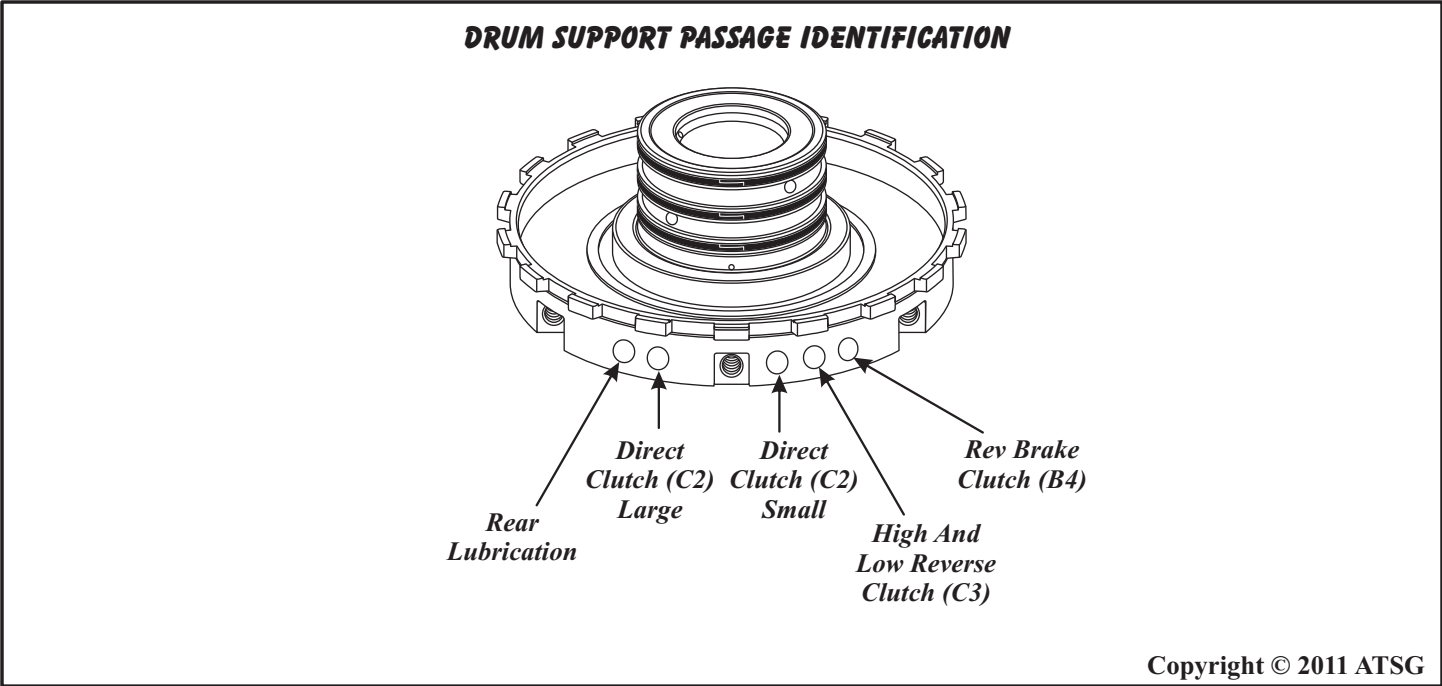


Figure 21

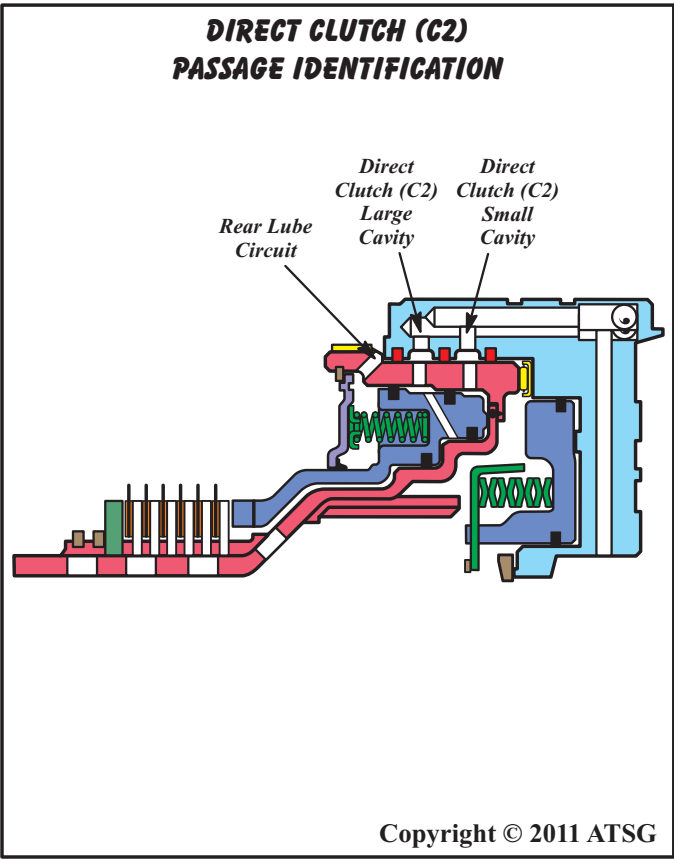


Figure 22

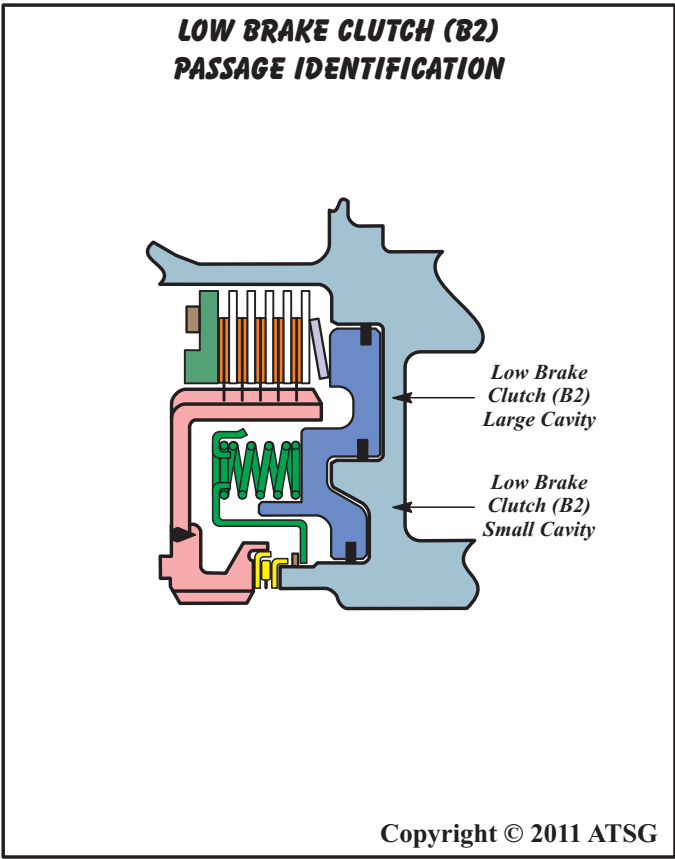
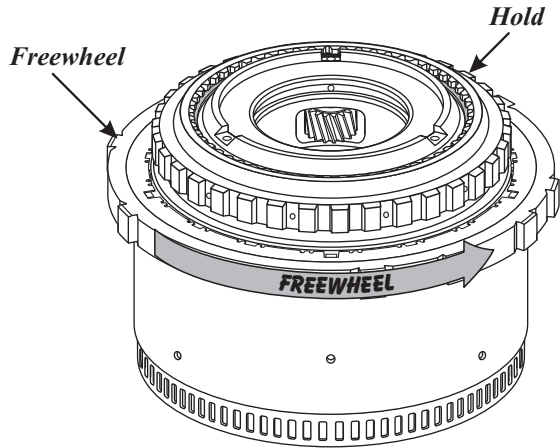


Figure 23

**RE7R01A F1 ROLLER CLUTCH**

**F1 ROLLER CLUTCH OUTER RACE ASSEMBLY SHOULD FREEWHEEL COUNTER-CLOCKWISE AND LOCK CLOCKWISE, WHILE HOLDING FRONT PLANETARY AND DRUM ASSEMBLY**

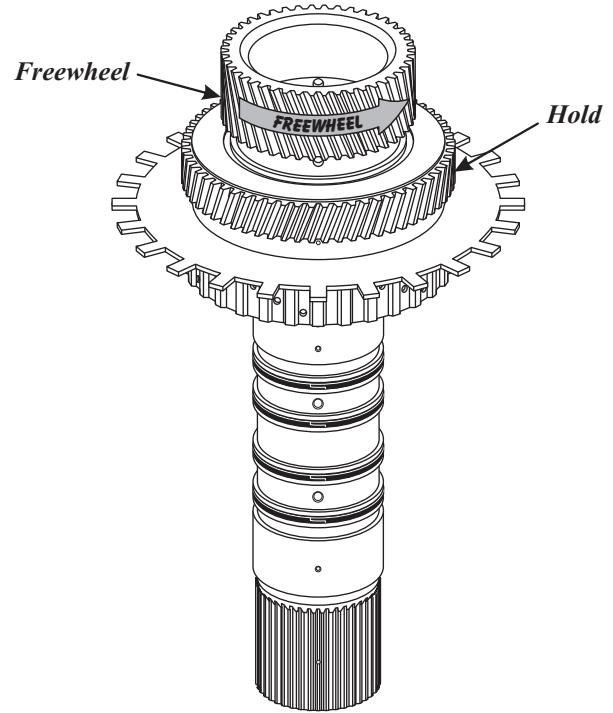


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Figure 24

**RE7R01A F2 SPRAG**

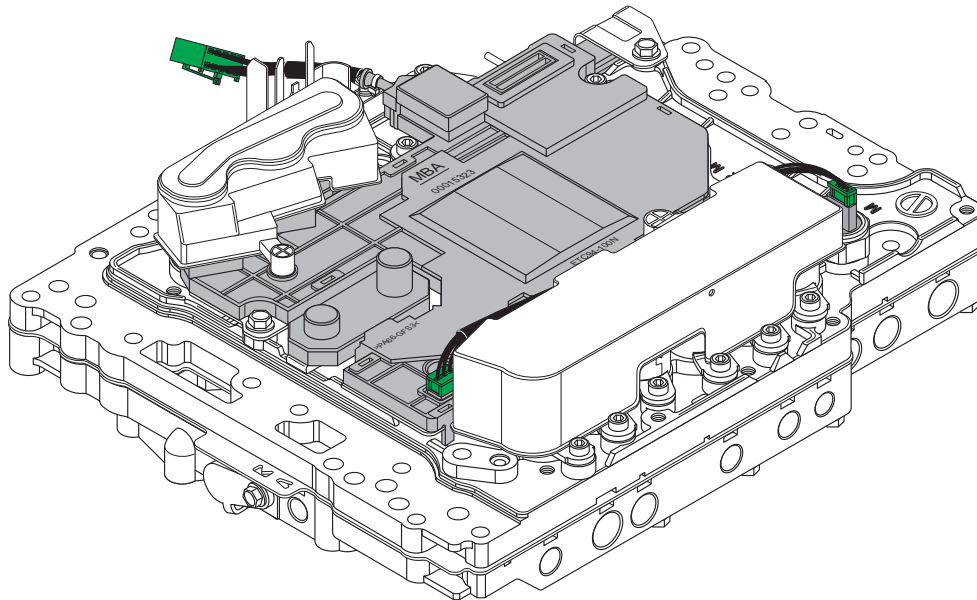
**SMALL SUN GEAR SHOULD FREEWHEEL COUNTER-CLOCKWISE AND LOCK CLOCKWISE WHILE HOLDING THE LARGE SUN GEAR**



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Figure 25

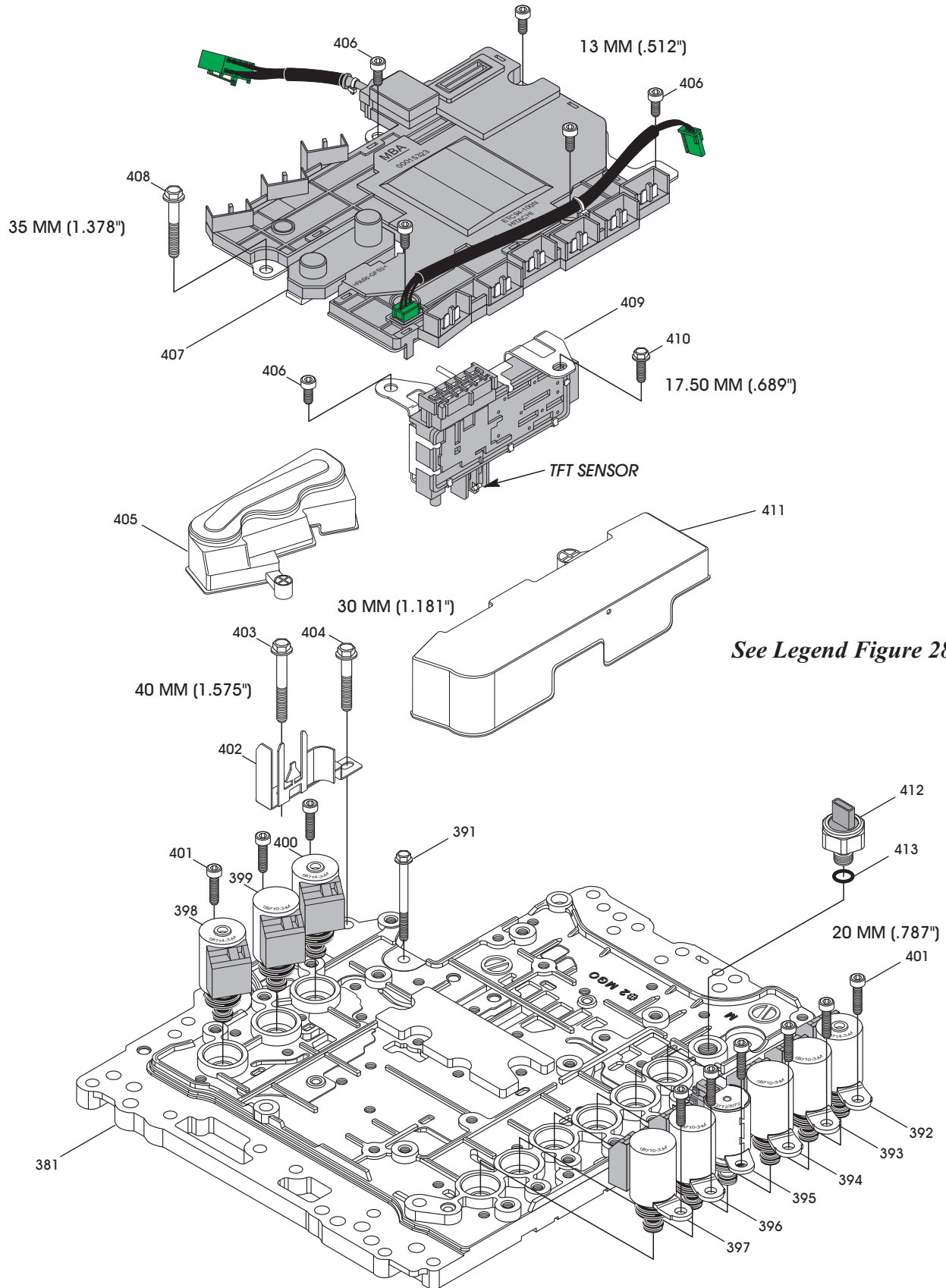
**COMPLETED VALVE BODY**



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Figure 26

### CHANNEL PLATE EXPLODED VIEW, SOLENOID SIDE



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Figure 27

**LEGEND FOR FIGURE 27 AND 29**

- |   |  |
|---|--|
| 380 RETAINING BOLT, 14.5 MM (.571") (2 REQUIRED).               | 402 INTERNAL HARNESS CONNECTOR RETAINING BRACKET.            |
| 381 CHANNEL PLATE CASTING.                                      | 403 RETAINING BOLT, 40 MM (1.575"), (1 REQUIRED HERE).       |
| 382 STEEL CHECK BALL, 7.92 MM (.312") DIAMETER.                 | 404 RETAINING BOLT, 30 MM (1.181), (1 REQUIRED HERE).        |
| 383 CHECK BALL SPRING (BARREL SHAPED).                          | 405 SMALL SOLENOID COVER.                                    |
| 384 STEEL CHECK BALLS, 5.5 MM (.218"), (9 REQUIRED).            | 406 ALLEN HEAD RETAINING BOLT, (13 MM (.512"), (6 REQUIRED). |
| 385 VALVE BODY TO CHANNEL PLATE SPACER PLATE (MODEL SENSITIVE). | 407 TRANSMISSION CONTROL MODULE.                             |
| 386 VALVE BODY SCREENS (5 REQUIRED).                            | 408 RETAINING BOLT, 35 MM (1.378"), (1 REQUIRED HERE).       |
| 387 MANUAL VALVE BODY CASTING.                                  | 409 TRANSMISSION RANGE SWITCH.                               |
| 388 RETAINING BOLTS, 35 MM (1.378"), (2 REQUIRED HERE).         | 410 RETAINING BOLT, 17.5 MM (.689"), (1 REQUIRED HERE).      |
| 389 NUT FOR 61 MM BOLT, NO. 391.                                | 411 LARGE SOLENOID COVER.                                    |
| 390 MANUAL VALVE.   | 412 LINE PRESSURE TRANSDUCER.                                |
| 391 RETAINING BOLT, 61 MM (2.401"), (1 REQUIRED).               | 413 TRANSDUCER "O" RING.                                     |
| 392 HIGH/LOW REVERSE SOLENOID "D" ASSEMBLY (PWM).               | 414 RETAINING BOLT, 50 MM (1.969") (2 REQUIRED).             |
| 393 LOW BRAKE SOLENOID "E" ASSEMBLY (PWM).                      | 415 RETAINING BOLT, 45 MM (1.771") (12 REQUIRED).            |
| 394 FRONT BRAKE SOLENOID "C" ASSEMBLY (PWM).                    | 416 RETAINING BOLT, 43 MM (1.692") (1 REQUIRED).             |
| 395 ANTI-INTERLOCK SOLENOID "A" ASSEMBLY (ON/OFF).              |  |
| 396 LINE PRESSURE SOLENOID "A" ASSEMBLY (PWM).                  |  |
| 397 TORQUE CONVERTER CLUTCH SOLENOID ASSEMBLY (PWM).            |  |
| 398 INPUT CLUTCH SOLENOID "B" ASSEMBLY (PWM).                   |  |
| 399 2346 BRAKE SOLENOID "F" ASSEMBLY (PWM).                     |  |
| 400 DIRECT CLUTCH SOLENOID "G" ASSEMBLY (PWM).                  |  |
| 401 ALLEN HEAD RETAINING BOLT, 20 MM (.787"), (9 REQUIRED).     |  |

*Note: Valve names were assigned by  
ATSG, based on their function*

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Figure 28

**CHANNEL PLATE EXPLODED VIEW, SPACER PLATE SIDE**

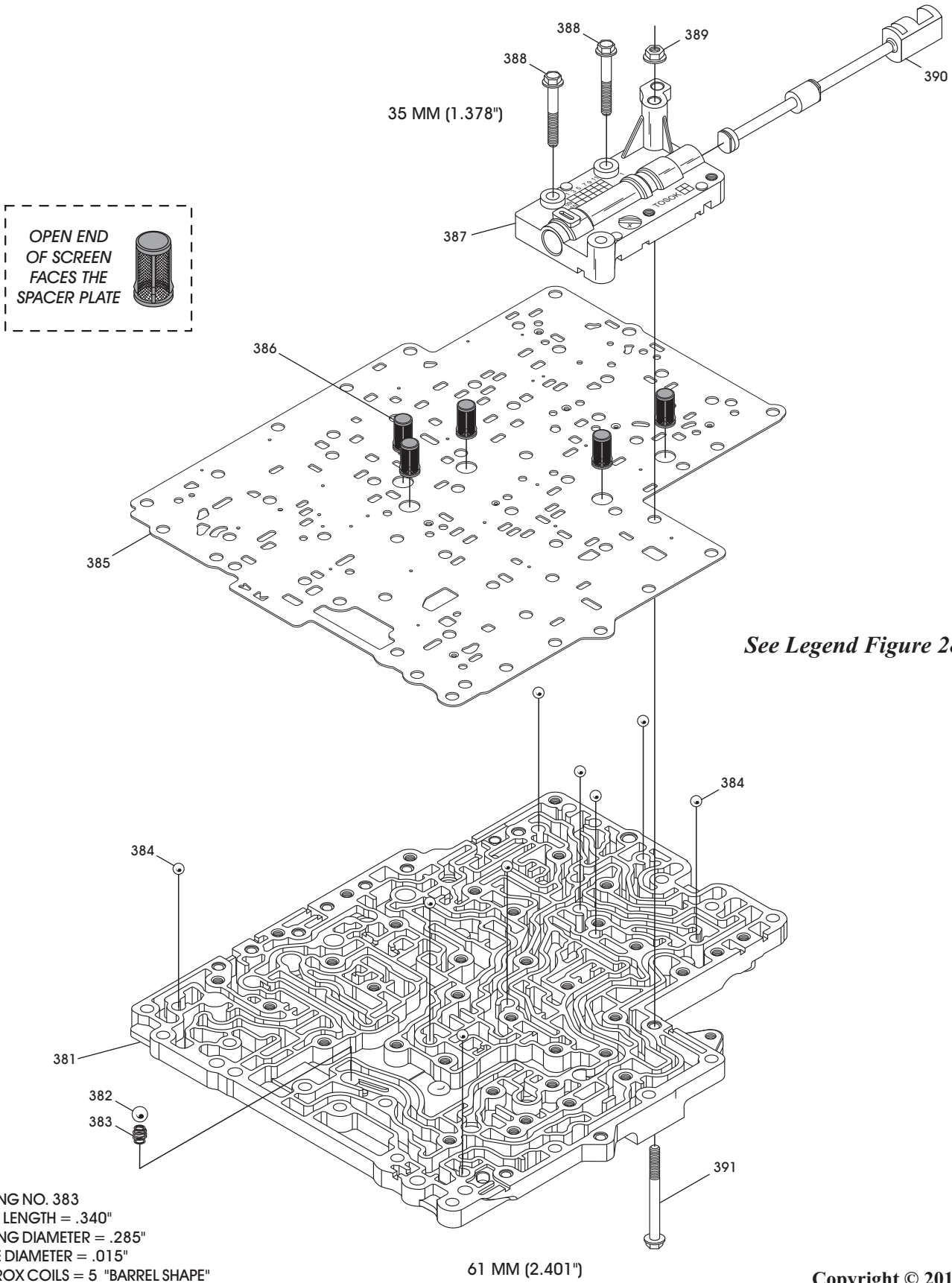
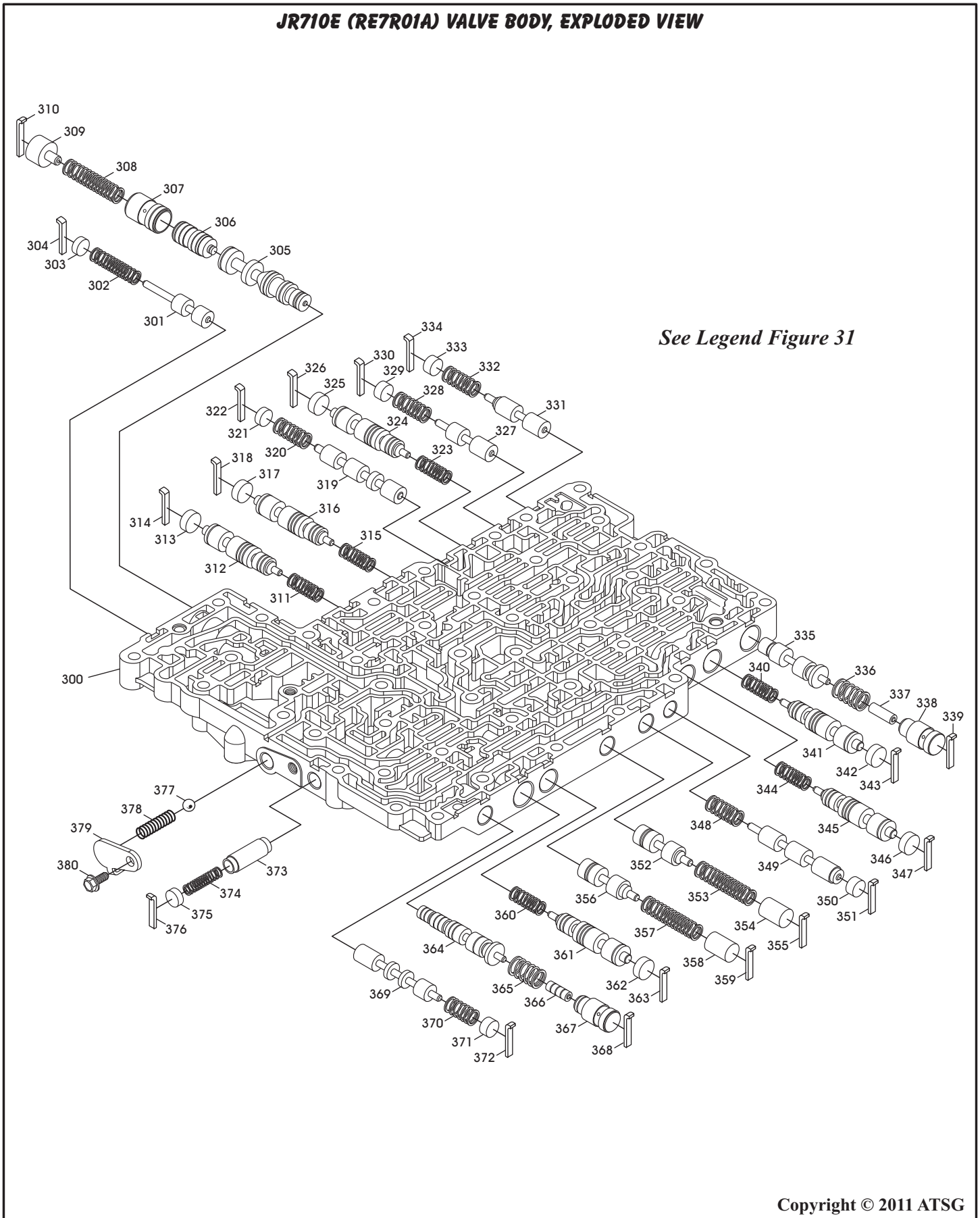


Figure 29

**JR710E (RE7R01A) VALVE BODY, EXPLODED VIEW**

*See Legend Figure 31*



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Figure 30

### LEGEND FOR FIGURE 30

- |   |   |
|---|---|
| <p>300 VALVE BODY CASTING.<br/>         301 TORQUE CONVERTER REGULATOR VALVE.<br/>         302 TORQUE CONVERTER REGULATOR VALVE SPRING.<br/>         303 TORQUE CONVERTER REGULATOR VALVE BORE PLUG.<br/>         304 TORQUE CONVERTER REGULATOR VALVE RETAINER.<br/>         305 PRIMARY PRESSURE REGULATOR VALVE.<br/>         306 PRIMARY PRESSURE REGULATOR BOOST VALVE.<br/>         307 PRIMARY PRESSURE REGULATOR BOOST VALVE SLEEVE.<br/>         308 PRIMARY PRESSURE REGULATOR SPRING.<br/>         309 PRIMARY PRESSURE REGULATOR VALVE BORE PLUG.<br/>         310 PRIMARY PRESSURE REGULATOR BORE PLUG RETAINER.<br/>         311 2346 CLUTCH REGULATOR VALVE SPRING.<br/>         312 2346 CLUTCH REGULATOR VALVE.<br/>         313 2346 CLUTCH REGULATOR VALVE BORE PLUG.<br/>         314 2346 CLUTCH REGULATOR VALVE RETAINER.<br/>         315 INPUT CLUTCH REGULATOR VALVE SPRING.<br/>         316 INPUT CLUTCH REGULATOR VALVE.<br/>         317 INPUT CLUTCH REGULATOR VALVE BORE PLUG.<br/>         318 INPUT CLUTCH REGULATOR VALVE RETAINER.<br/>         319 DIRECT/REVERSE BRAKE SEQUENCE VALVE.<br/>         320 DIRECT/REVERSE BRAKE SEQUENCE VALVE SPRING.<br/>         321 DIRECT/REVERSE BRAKE SEQUENCE VALVE BORE PLUG.<br/>         322 DIRECT/REVERSE BRAKE SEQUENCE VALVE RETAINER.<br/>         323 DIRECT CLUTCH REGULATOR VALVE SPRING.<br/>         324 DIRECT CLUTCH REGULATOR VALVE.<br/>         325 DIRECT CLUTCH REGULATOR VALVE BORE PLUG.<br/>         326 DIRECT CLUTCH REGULATOR VALVE RETAINER.<br/>         327 REVERSE BRAKE CONTROL VALVE.<br/>         328 REVERSE BRAKE CONTROL VALVE SPRING.<br/>         329 REVERSE BRAKE CONTROL VALVE BORE PLUG.<br/>         330 REVERSE BRAKE CONTROL VALVE RETAINER.<br/>         331 DIRECT CLUTCH PISTON SWITCH VALVE.<br/>         332 DIRECT CLUTCH PISTON SWITCH VALVE SPRING.<br/>         333 DIRECT CLUTCH PISTON SWITCH VALVE BORE PLUG.<br/>         334 DIRECT CLUTCH PISTON SWITCH VALVE RETAINER.<br/>         335 LOW BRAKE PISTON SWITCH VALVE.<br/>         336 LOW BRAKE PISTON SWITCH VALVE SPRING.<br/>         337 LOW BRAKE PISTON SWITCH VALVE SPRING BOOST VALVE.<br/>         338 LOW BRAKE PISTON SWITCH VALVE SPRING BOOST VALVE SLEEVE.<br/>         339 LOW BRAKE PISTON SWITCH VALVE SPRING RETAINER.</p> | <p>340 HIGH LOW/REVERSE CLUTCH REGULATOR VALVE SPRING.<br/>         341 HIGH LOW/REVERSE CLUTCH REGULATOR VALVE.<br/>         342 HIGH LOW/REVERSE CLUTCH REGULATOR VALVE BORE PLUG.<br/>         343 HIGH LOW/REVERSE CLUTCH REGULATOR VALVE RETAINER.<br/>         344 HIGH LOW/REVERSE CLUTCH REGULATOR VALVE SPRING.<br/>         345 LOW BRAKE CLUTCH REGULATOR VALVE.<br/>         346 LOW BRAKE CLUTCH REGULATOR VALVE BORE PLUG.<br/>         347 LOW BRAKE CLUTCH REGULATOR VALVE RETAINER.<br/>         348 LOW BRAKE SPRING.<br/>         349 ANTI-INTERLOCK CONTROL VALVE.<br/>         350 ANTI-INTERLOCK CONTROL VALVE BORE PLUG.<br/>         351 ANTI-INTERLOCK CONTROL VALVE RETAINER.<br/>         352 PILOT "A" VALVE.<br/>         353 PILOT "A" VALVE SPRING.<br/>         354 PILOT "A" VALVE BORE PLUG.<br/>         355 PILOT "A" VALVE RETAINER.<br/>         356 PILOT "B" VALVE.<br/>         357 PILOT "B" VALVE SPRING.<br/>         358 PILOT "B" VALVE BORE PLUG.<br/>         359 PILOT "B" VALVE RETAINER.<br/>         360 FRONT BRAKE CLUTCH REGULATOR VALVE SPRING.<br/>         361 FRONT BRAKE CLUTCH REGULATOR VALVE.<br/>         362 FRONT BRAKE CLUTCH REGULATOR VALVE BORE PLUG.<br/>         363 FRONT BRAKE CLUTCH REGULATOR VALVE RETAINER.<br/>         364 TCC CONTROL VALVE.<br/>         365 TCC CONTROL VALVE SPRING.<br/>         366 TCC CONTROL VALVE BOOST VALVE.<br/>         367 TCC CONTROL VALVE BOOST VALVE SLEEVE.<br/>         368 TCC CONTROL VALVE RETAINER.<br/>         369 TORQUE CONVERTER LUBRICATION SWITCH VALVE.<br/>         370 TORQUE CONVERTER LUBRICATION SWITCH VALVE SPRING.<br/>         371 TORQUE CONVERTER LUBRICATION SWITCH VALVE BORE PLUG.<br/>         372 TORQUE CONVERTER LUBRICATION SWITCH VALVE RETAINER.<br/>         373 TCC SOLENOID ACCUMULATOR VALVE.<br/>         374 TCC SOLENOID ACCUMULATOR VALVE SPRING.<br/>         375 TCC SOLENOID ACCUMULATOR VALVE BORE PLUG.<br/>         376 TCC SOLENOID ACCUMULATOR VALVE RETAINER.<br/>         377 LINE PRESSURE "BLOW-OFF" BALL, 7.92 MM (.312").<br/>         378 LINE PRESSURE "BLOW-OFF" BALL SPRING.<br/>         379 LINE PRESSURE "BLOW-OFF" BALL RETAINER.<br/>         380 RETAINING BOLT, 14.5 MM (.571") (2 REQUIRED).<br/>         415 RETAINING BOLT, 45 MM (1.771") (12 REQUIRED).</p> |
|---|---|

*Note: Valve names were assigned by  
ATSG, based on their function*

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Figure 31

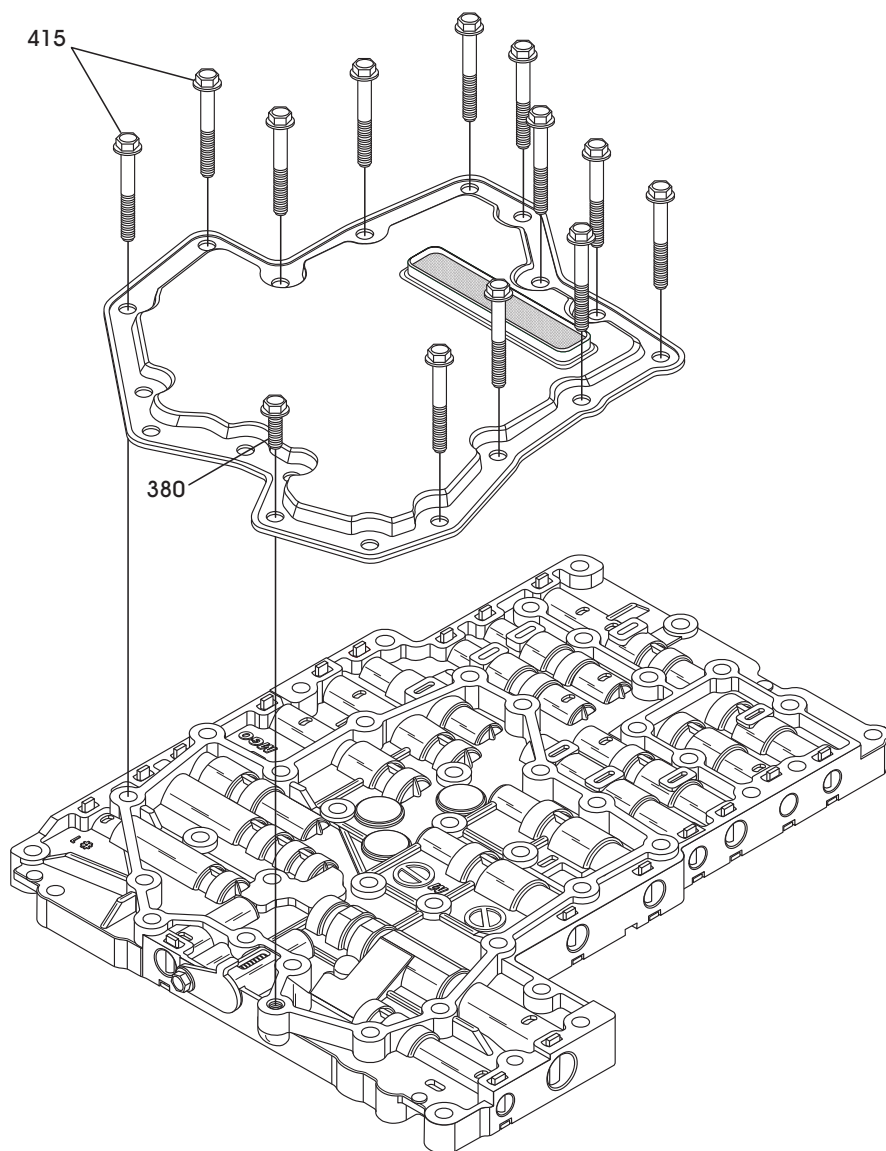


### **JR710E (RE7R01A) SPRING SPECIFICATIONS**

SPRING NO. 302 FREE LENGTH = 1.428" SPRING DIAMETER = .354" WIRE DIAMETER = .055" APPROX COILS = 13	SPRING NO. 308 FREE LENGTH = 1.818" SPRING DIAMETER = .431" WIRE DIAMETER = .055" APPROX COILS = 15	SPRING NO. 311 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10	SPRING NO. 315 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10	SPRING NO. 320 FREE LENGTH = .830" SPRING DIAMETER = .352" WIRE DIAMETER = .031" APPROX COILS = 7
SPRING NO. 323 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10	SPRING NO. 328 FREE LENGTH = .830" SPRING DIAMETER = .352" WIRE DIAMETER = .031" APPROX COILS = 7	SPRING NO. 332 FREE LENGTH = .844" SPRING DIAMETER = .338" WIRE DIAMETER = .031" APPROX COILS = 8	SPRING NO. 336 FREE LENGTH = .849" SPRING DIAMETER = .550" WIRE DIAMETER = .035" APPROX COILS = 6	SPRING NO. 340 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10
SPRING NO. 344 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10	SPRING NO. 348 FREE LENGTH = .830" SPRING DIAMETER = .352" WIRE DIAMETER = .031" APPROX COILS = 7	SPRING NO. 353 FREE LENGTH = 1.725" SPRING DIAMETER = .425" WIRE DIAMETER = .055" APPROX COILS = 14	SPRING NO. 357 FREE LENGTH = 1.725" SPRING DIAMETER = .425" WIRE DIAMETER = .055" APPROX COILS = 14	SPRING NO. 360 FREE LENGTH = .905" SPRING DIAMETER = .375" WIRE DIAMETER = .035" APPROX COILS = 10
SPRING NO. 365 FREE LENGTH = .805" SPRING DIAMETER = .550" WIRE DIAMETER = .036" APPROX COILS = 6	SPRING NO. 370 FREE LENGTH = .765" SPRING DIAMETER = .391" WIRE DIAMETER = .031" APPROX COILS = 7	SPRING NO. 374 FREE LENGTH = 1.046" SPRING DIAMETER = .251" WIRE DIAMETER = .043" APPROX COILS = 16	SPRING NO. 378 FREE LENGTH = 1.340" SPRING DIAMETER = .354" WIRE DIAMETER = .055" APPROX COILS = 13	

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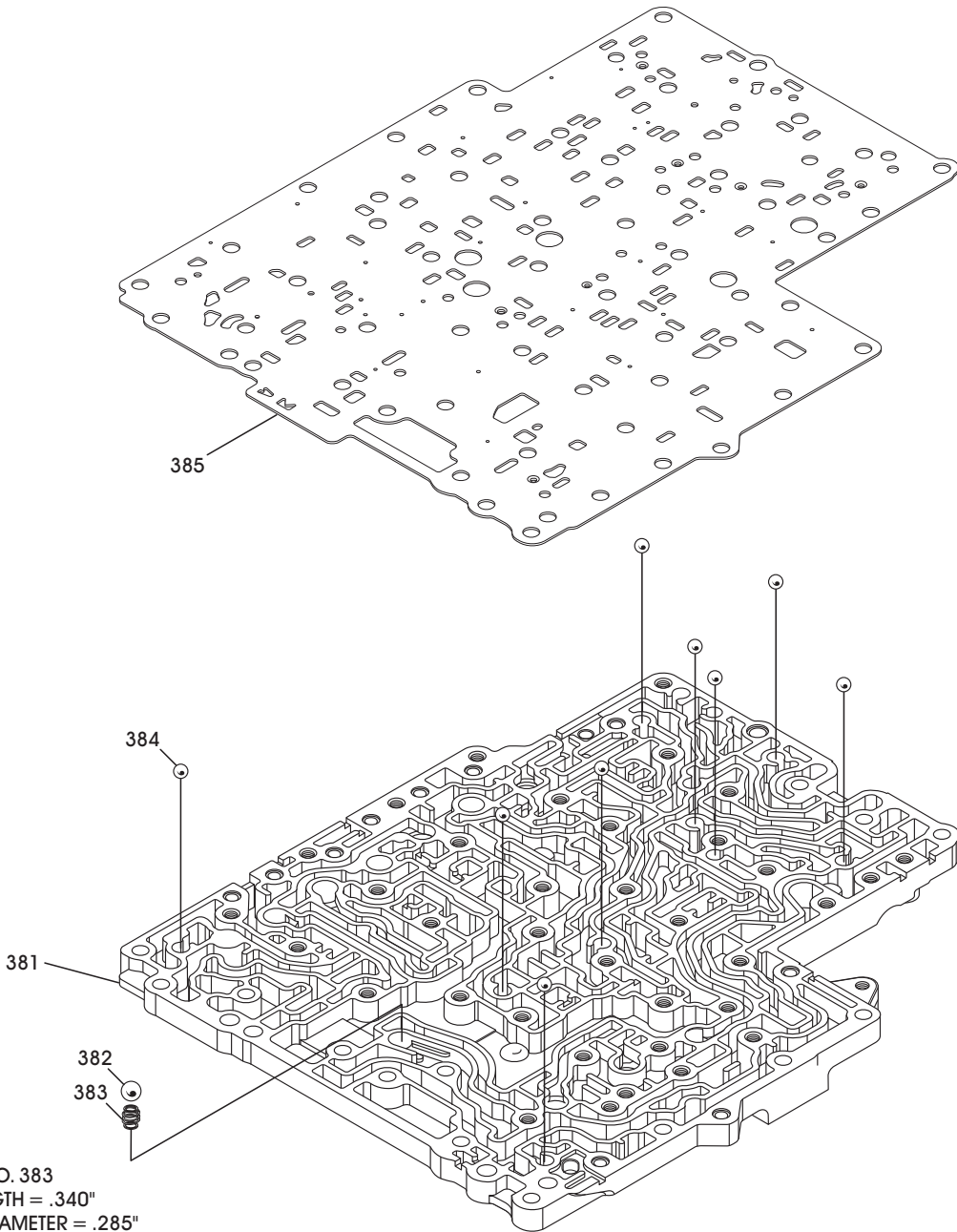
Figure 32



380 RETAINING BOLT, 14.5 MM (.572") (1 REQUIRED HERE).  
415 RETAINING BOLT, 45 MM (1.771") (12 REQUIRED).

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Figure 33



SPRING NO. 383  
 FREE LENGTH = .340"  
 SPRING DIAMETER = .285"  
 WIRE DIAMETER = .015"  
 APPROX COILS = 5 "BARREL SHAPE"

- 381 CHANNEL PLATE CASTING.
- 382 DRAIN BACK STEEL CHECK BALL, 7.92 MM (.312") DIAMETER.
- 383 CHECK BALL SPRING (BARREL SHAPED).
- 384 STEEL CHECK BALLS, 5.5 MM (.218"), (9 REQUIRED).
- 385 VALVE BODY TO CHANNEL PLATE SPACER PLATE (MODEL SENSITIVE).

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Figure 34

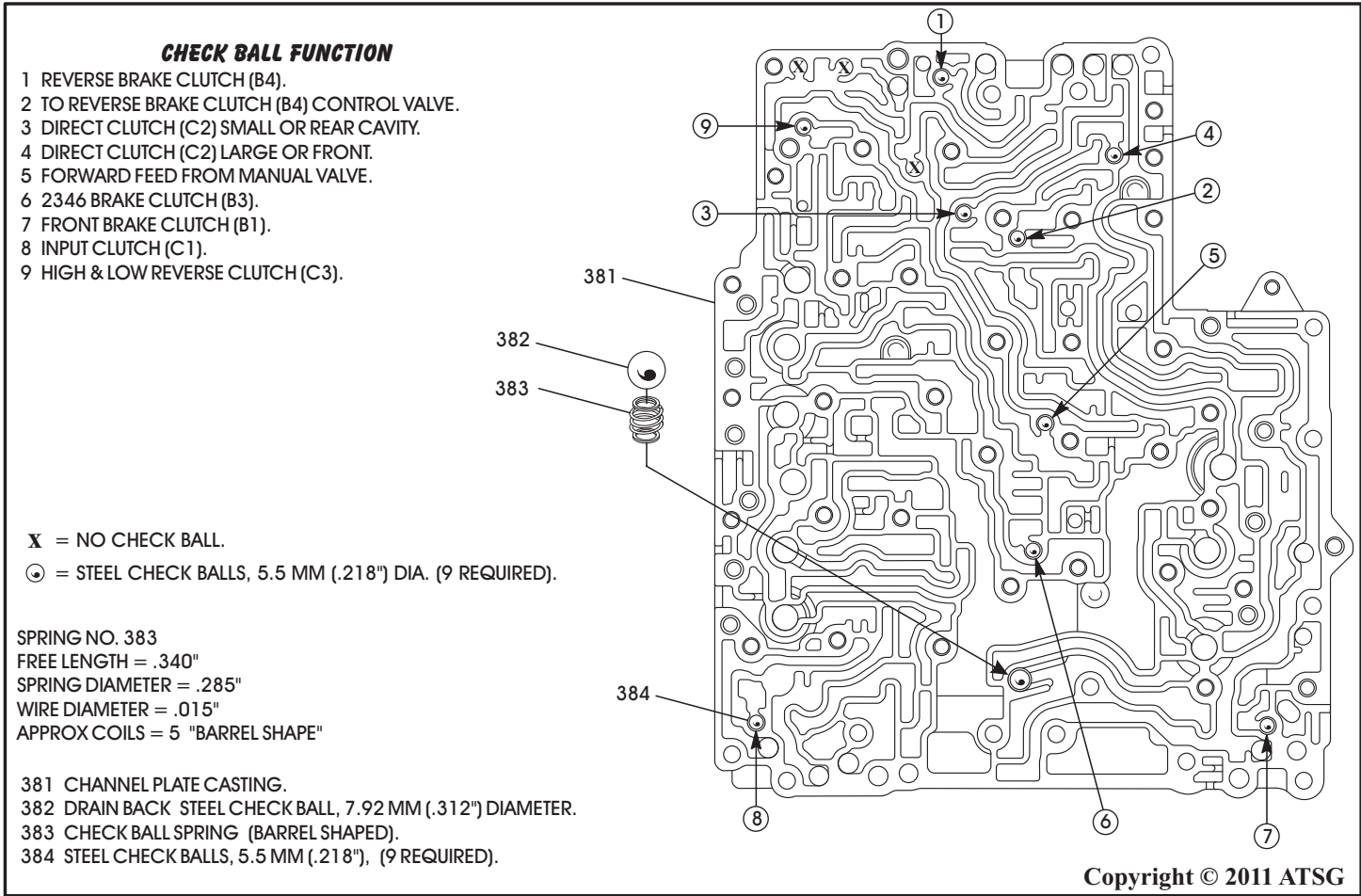


Figure 35

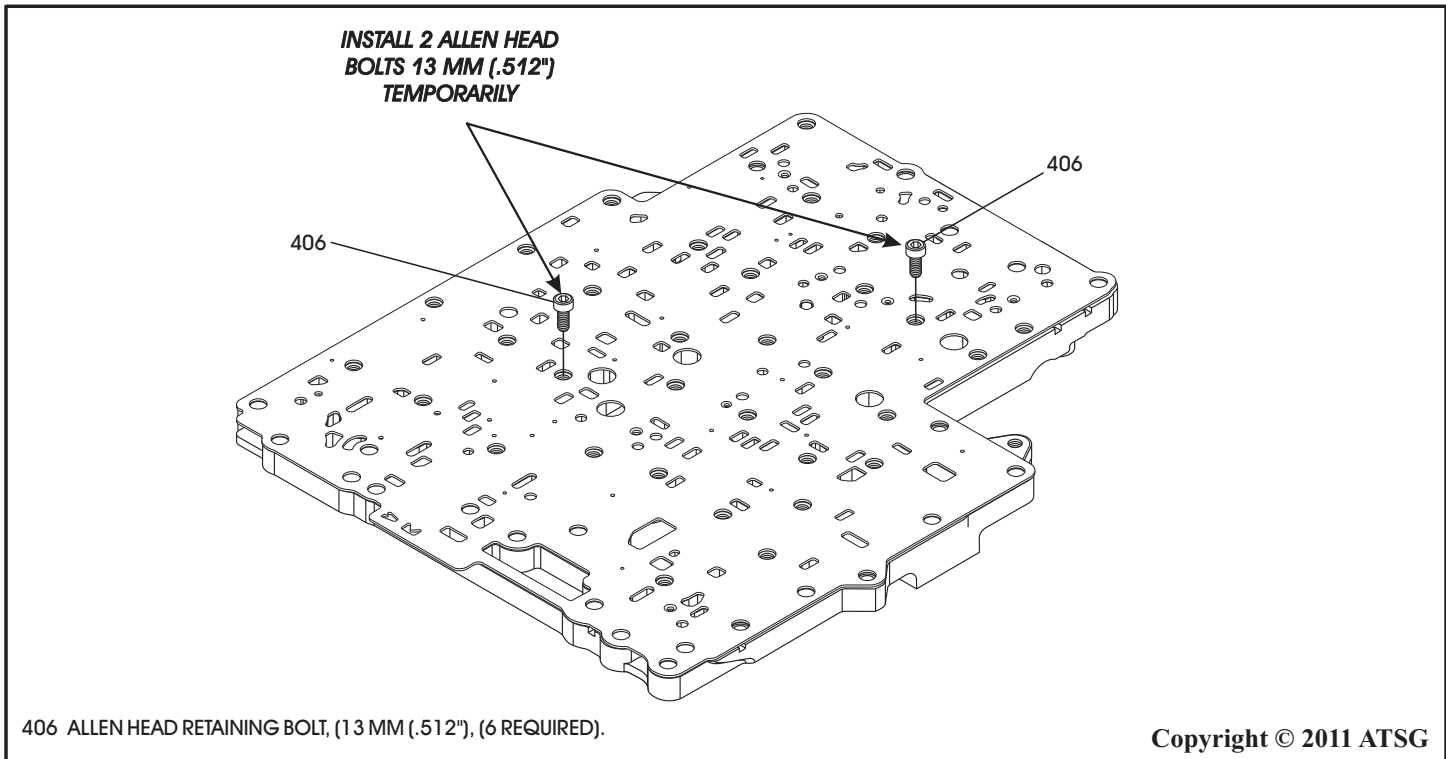
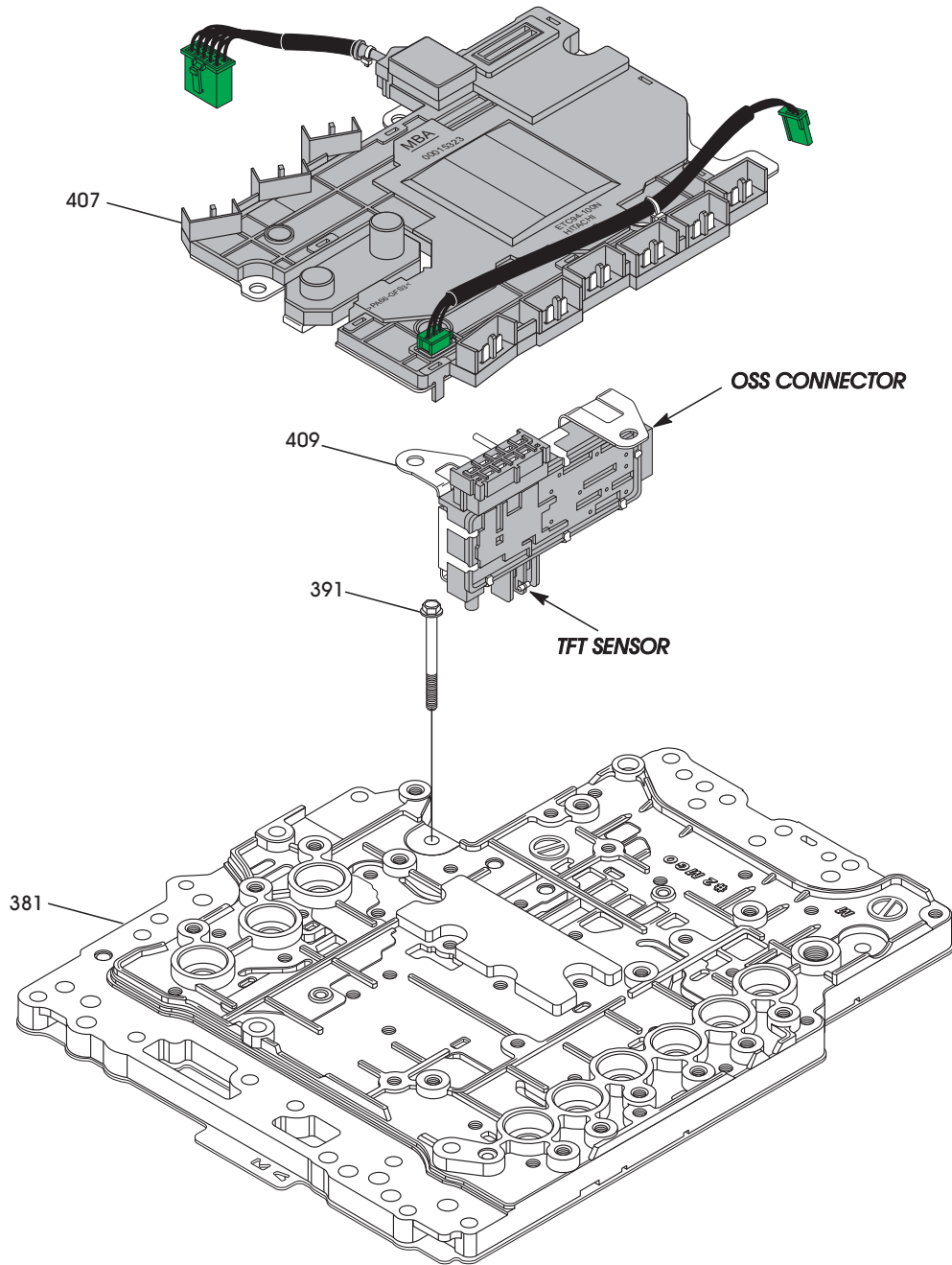


Figure 36



- 381 CHANNEL PLATE AND SPACER PLATE.
- 391 RETAINING BOLT, 61 MM (2.401"), (1 REQUIRED).
- 407 TRANSMISSION CONTROL MODULE.
- 409 TRANSMISSION RANGE SWITCH.

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Figure 37

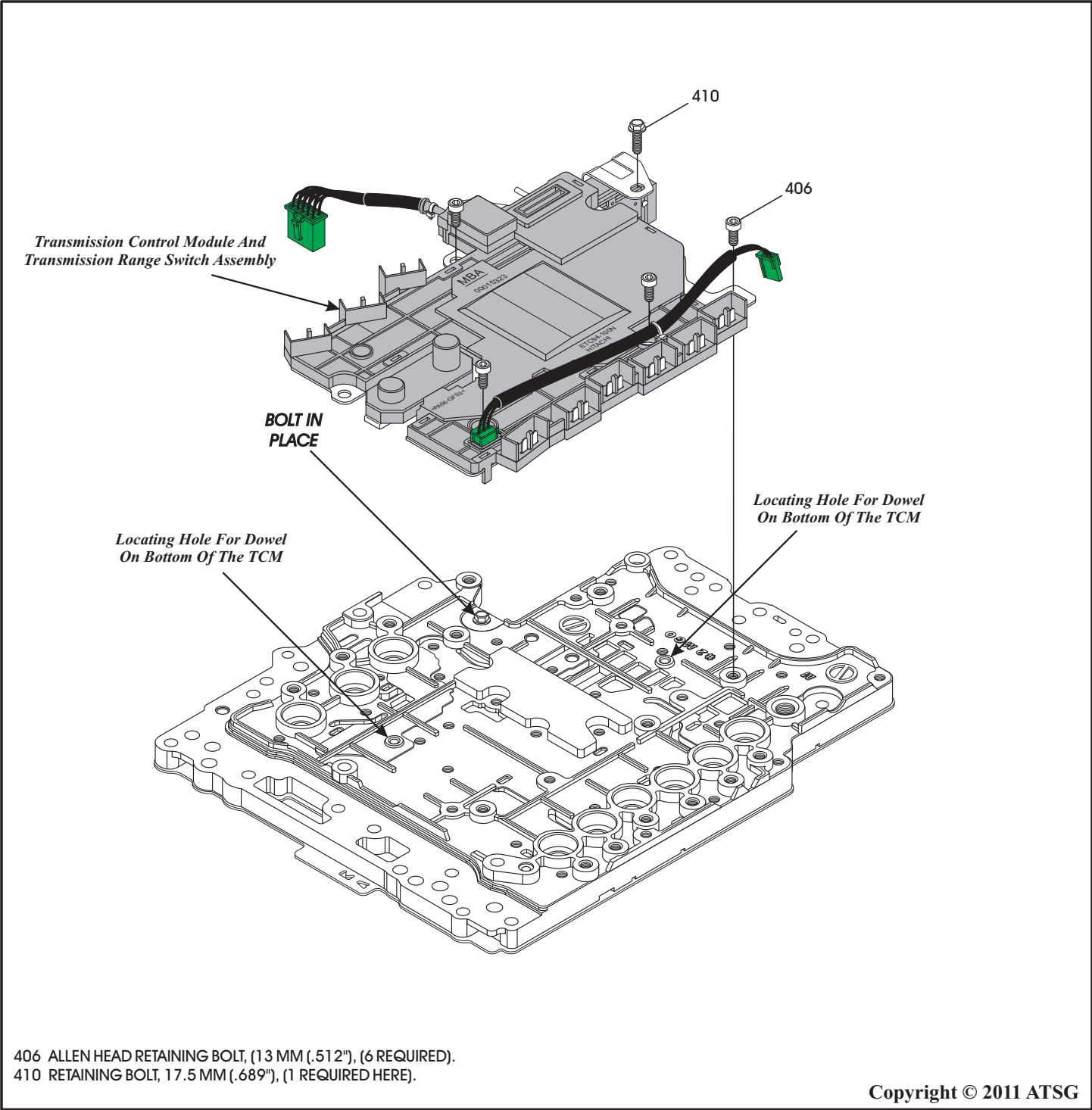


Figure 38

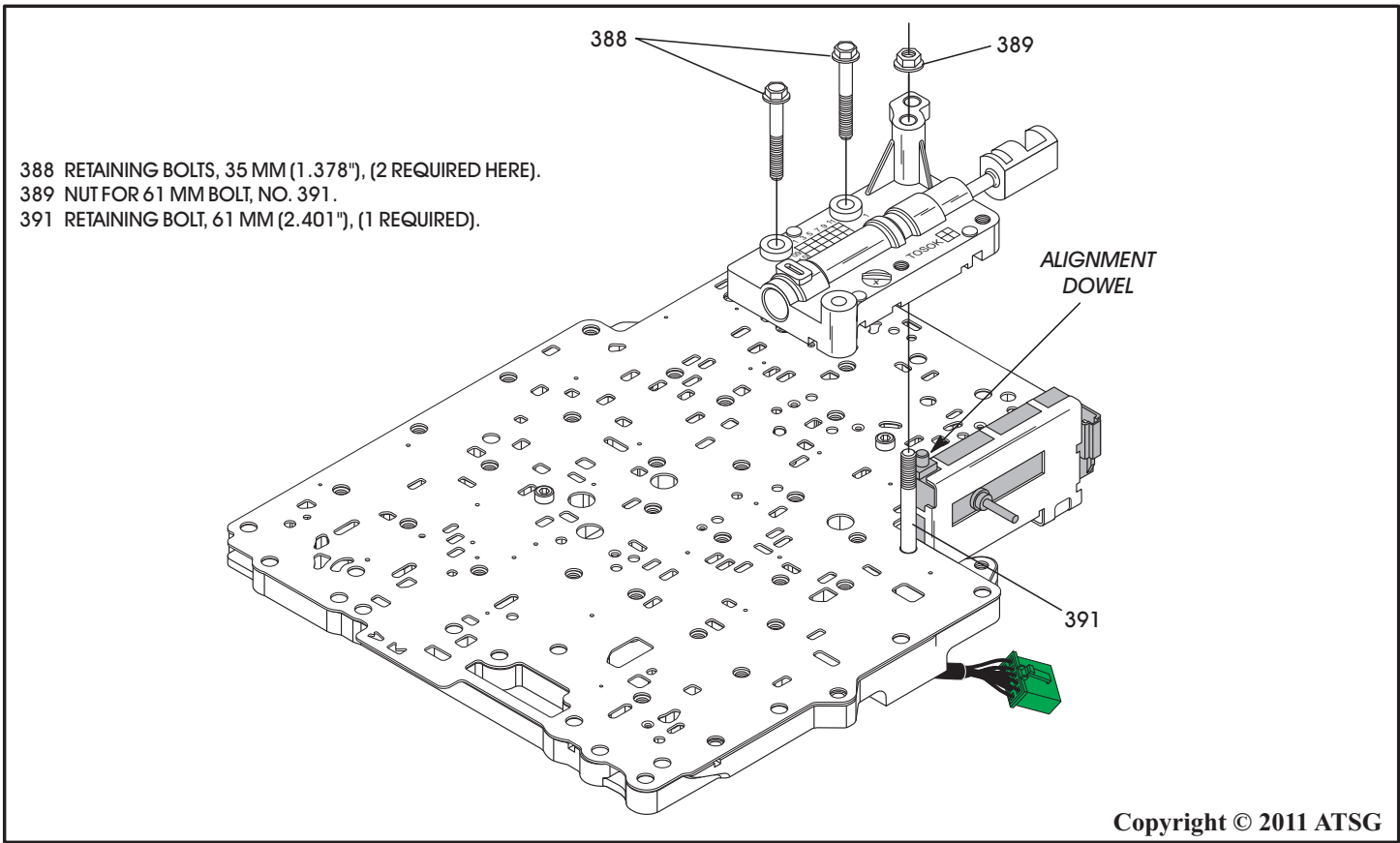


Figure 39

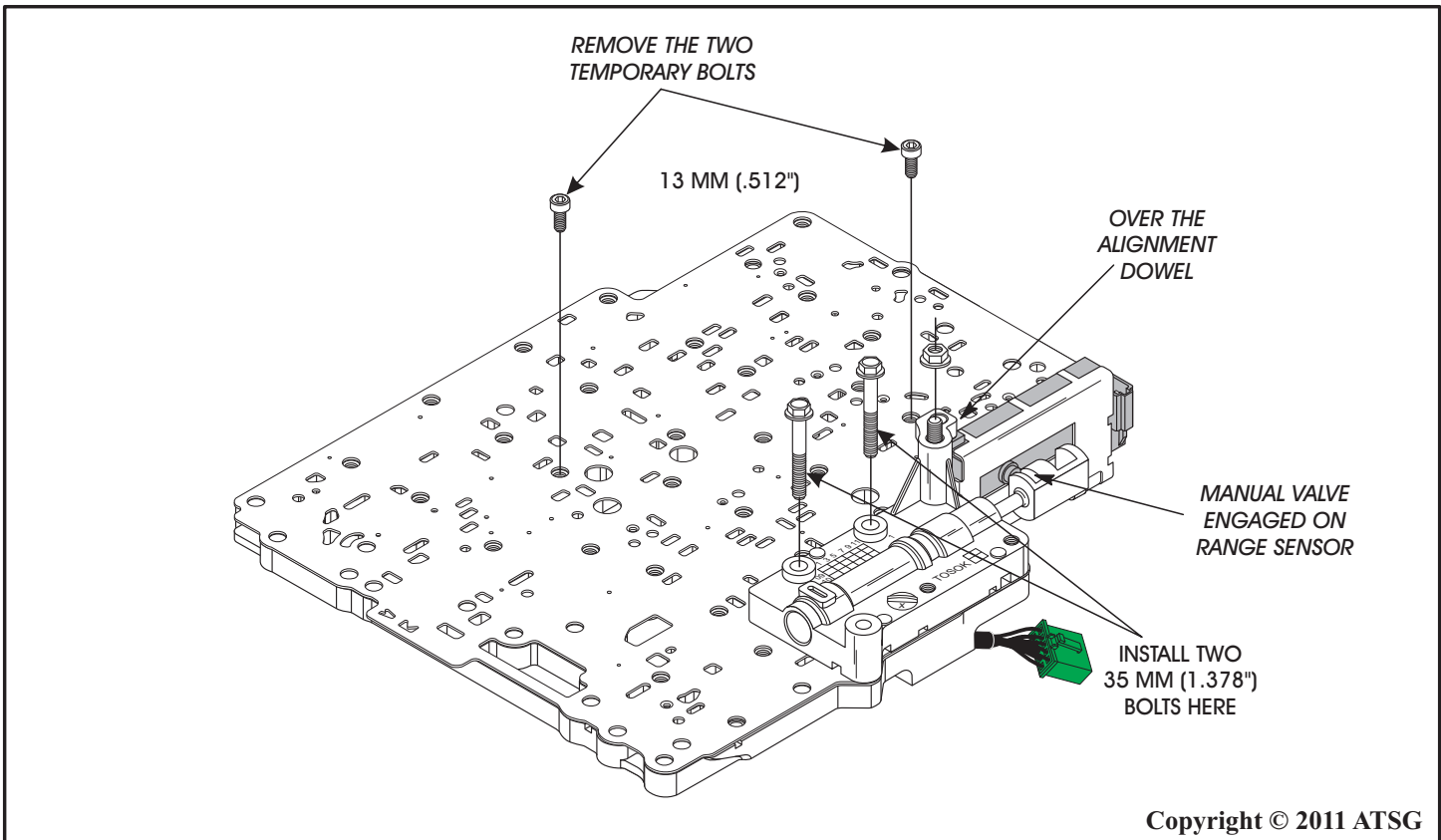
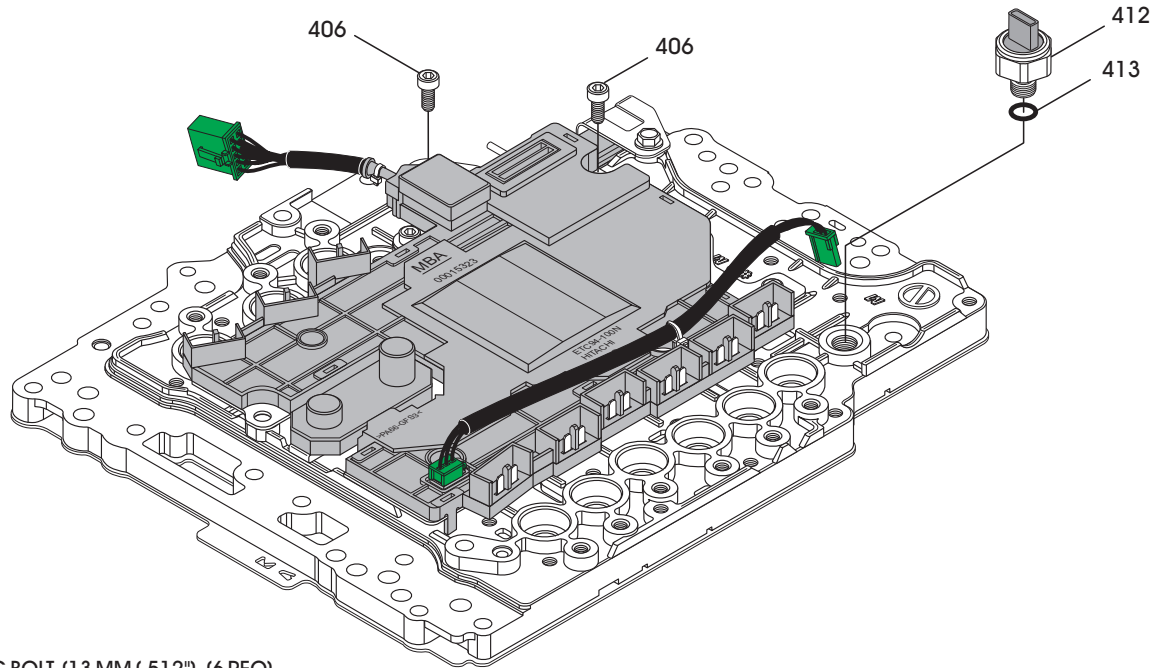


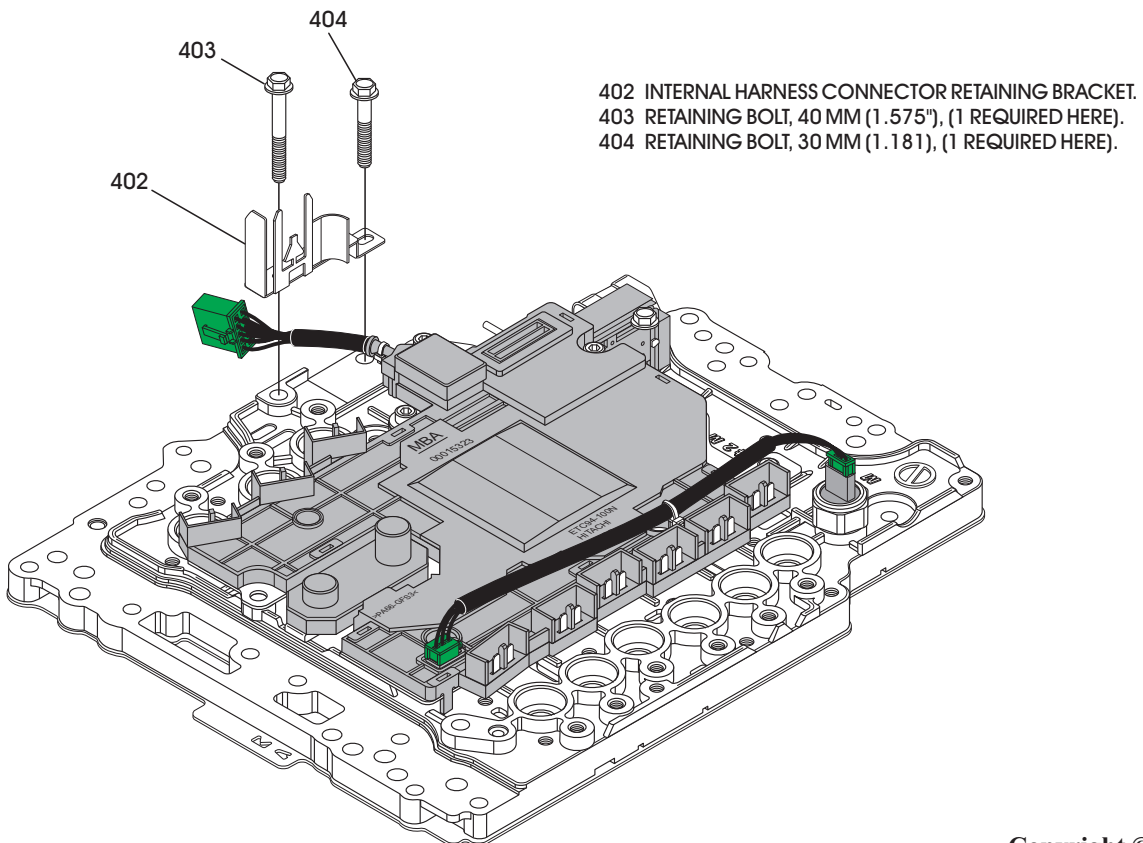
Figure 40



- 406 ALLEN HEAD RETAINING BOLT, (13 MM (.512"), (6 REQ).
- 412 PRESSURE TRANSDUCER (IN THE HIGH/LOW REVERSE CIRCUIT).
- 413 TRANSDUCER "O" RING.

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Figure 41

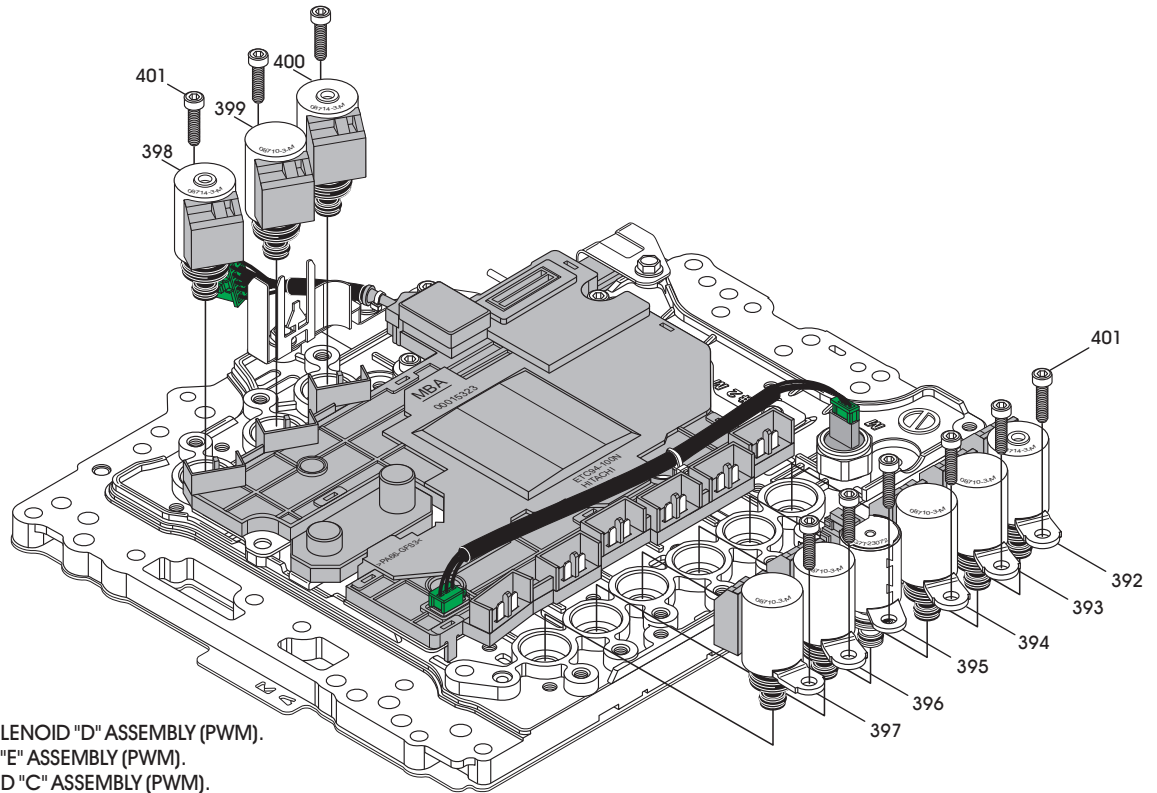


- 402 INTERNAL HARNESS CONNECTOR RETAINING BRACKET.
- 403 RETAINING BOLT, 40 MM (1.575"), (1 REQUIRED HERE).
- 404 RETAINING BOLT, 30 MM (1.181), (1 REQUIRED HERE).

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Figure 42

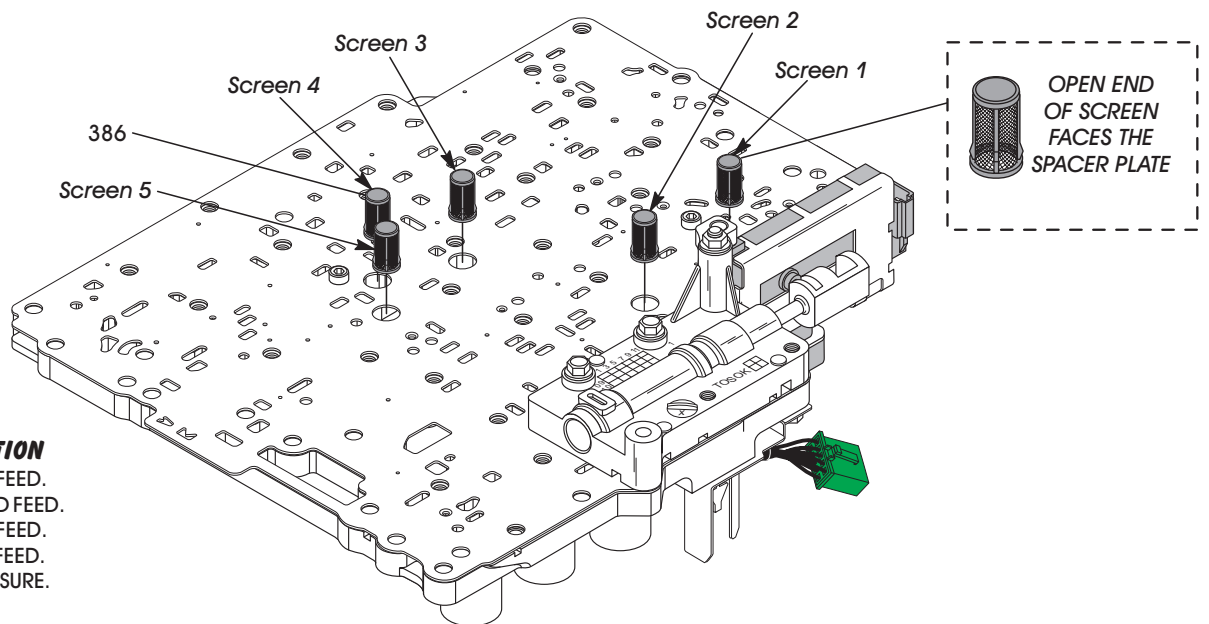




- 392 HIGH/LOW REVERSE SOLENOID "D" ASSEMBLY (PWM).
- 393 LOW BRAKE SOLENOID "E" ASSEMBLY (PWM).
- 394 FRONT BRAKE SOLENOID "C" ASSEMBLY (PWM).
- 395 ANTI-INTERLOCK SOLENOID "A" ASSEMBLY (ON/OFF).
- 396 LINE PRESSURE SOLENOID "A" ASSEMBLY (PWM).
- 397 TORQUE CONVERTER CLUTCH SOLENOID ASSEMBLY (PWM).
- 398 INPUT CLUTCH SOLENOID "B" ASSEMBLY (PWM).
- 399 2346 BRAKE SOLENOID "F" ASSEMBLY (PWM).
- 400 DIRECT CLUTCH SOLENOID "G" ASSEMBLY (PWM).
- 401 ALLEN HEAD RETAINING BOLT, 20 MM (.787"), (9 REQUIRED).

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Figure 43



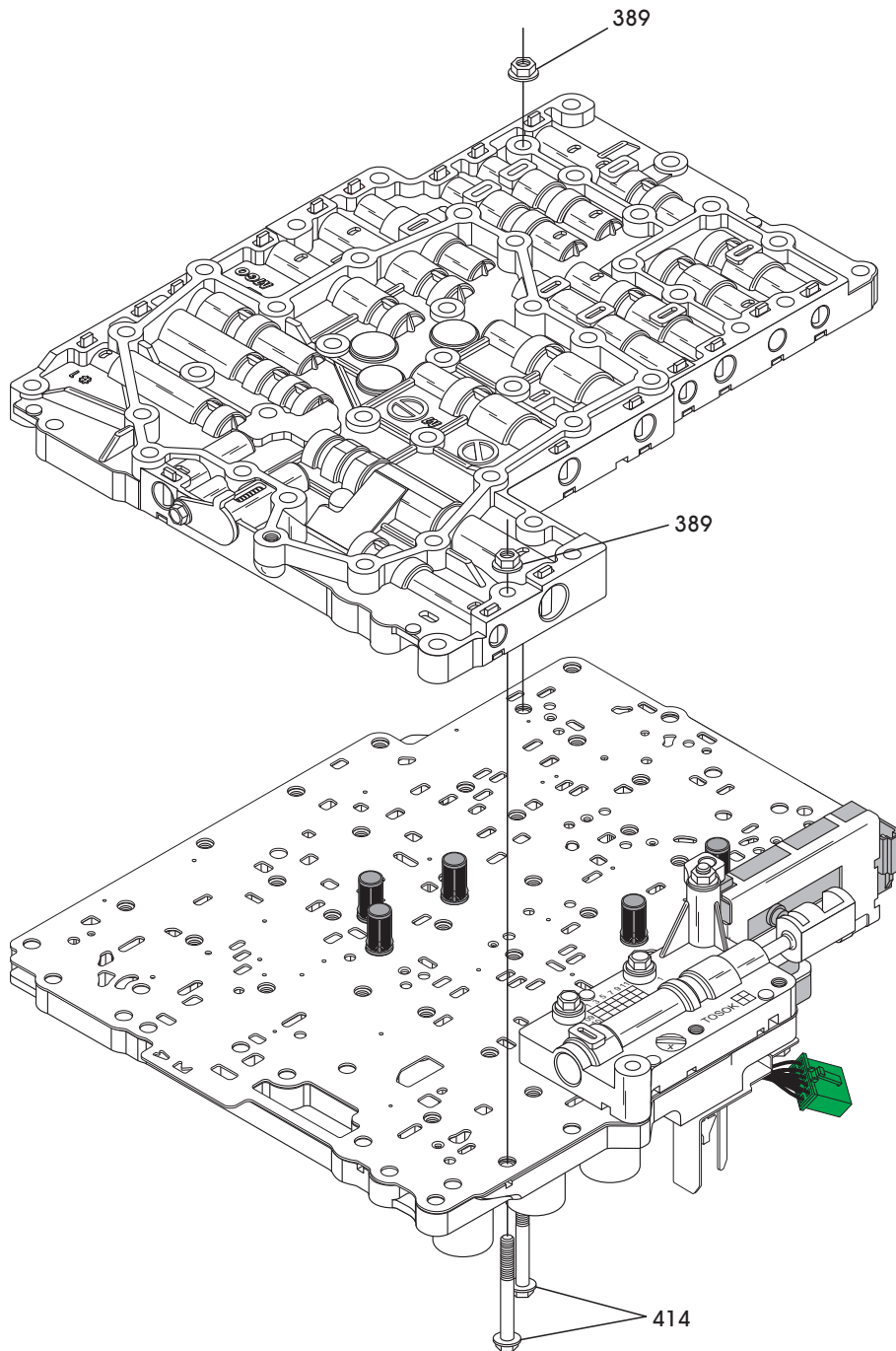
**SCREEN FUNCTION**

- SCREEN 1 = REVERSE FEED.
- SCREEN 2 = FORWARD FEED.
- SCREEN 3 = PILOT "A" FEED.
- SCREEN 4 = PILOT "B" FEED.
- SCREEN 5 = LINE PRESSURE.

386 VALVE BODY SCREENS (5 REQUIRED).

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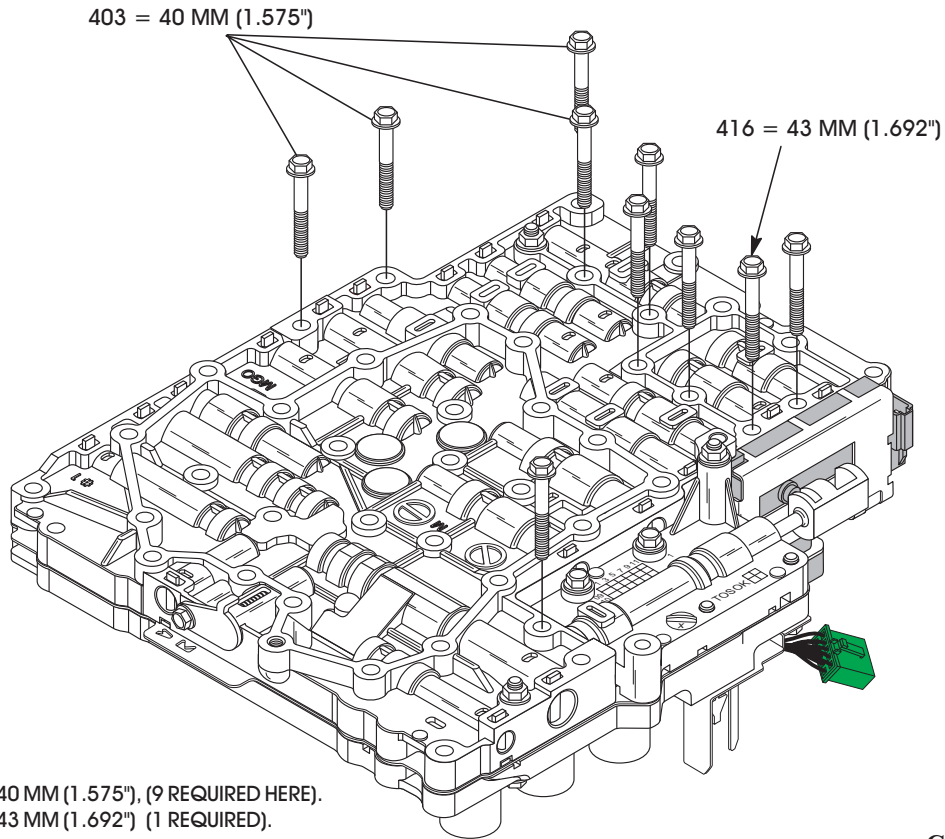
Figure 44



389 RETAINING NUT FOR 50 MM BOLTS, (2 REQUIRED HERE).  
 414 RETAINING BOLT, 50 MM (1.969") (2 REQUIRED).

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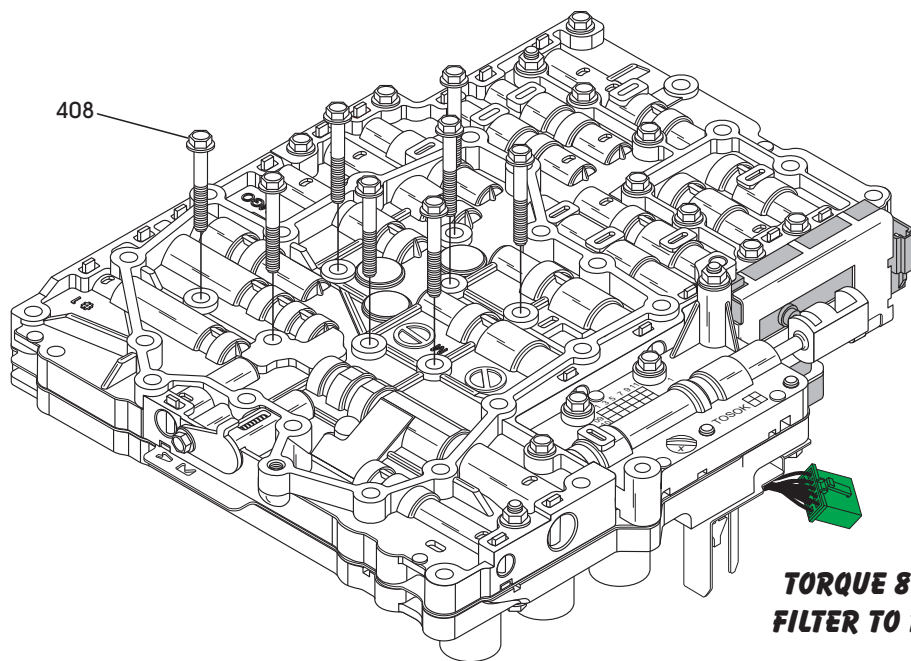
Figure 45



403 RETAINING BOLT, 40 MM (1.575"), (9 REQUIRED HERE).  
 416 RETAINING BOLT, 43 MM (1.692") (1 REQUIRED).

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Figure 46



408 RETAINING BOLT, 35 MM (1.378"), (8 REQUIRED HERE).

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Figure 47

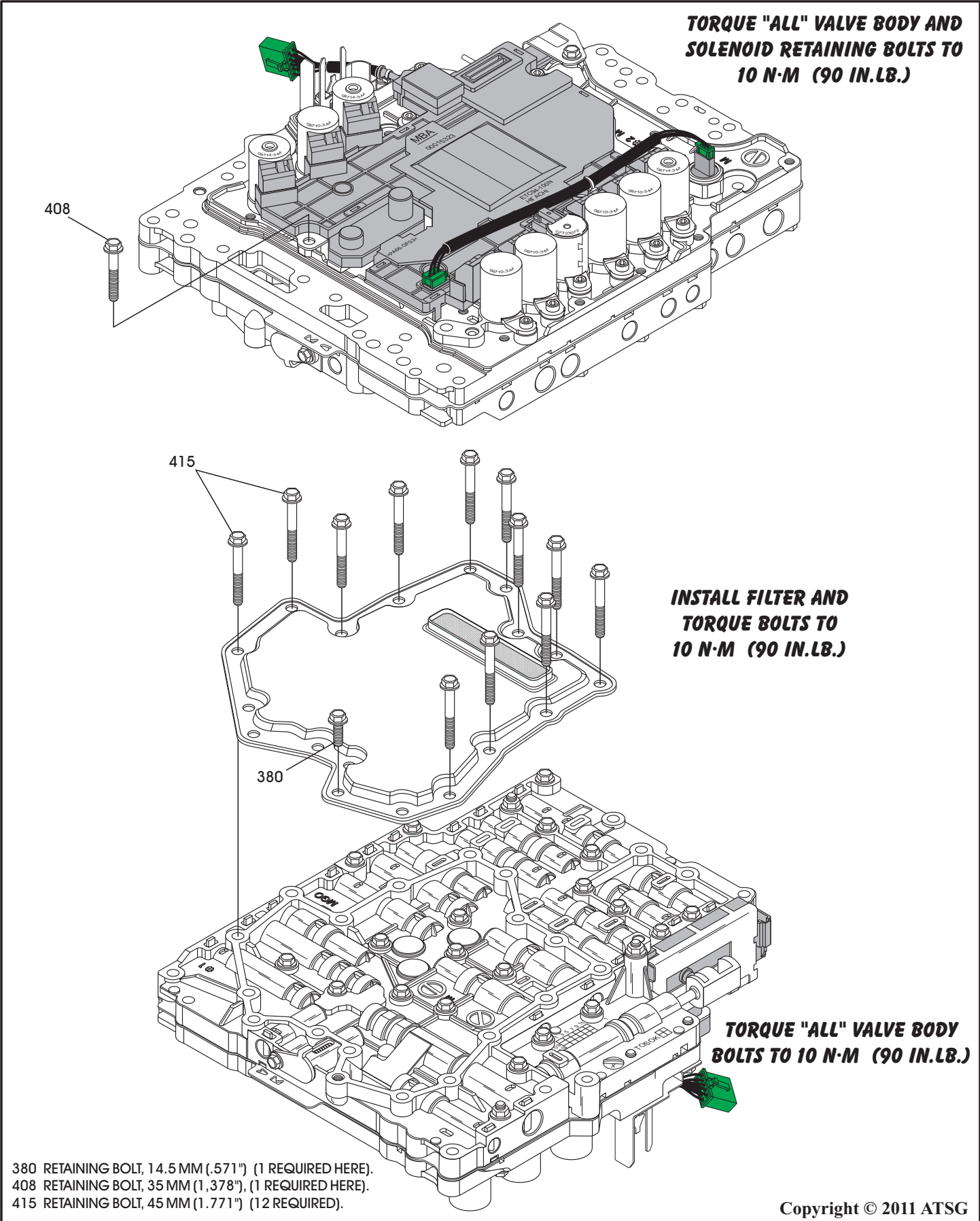
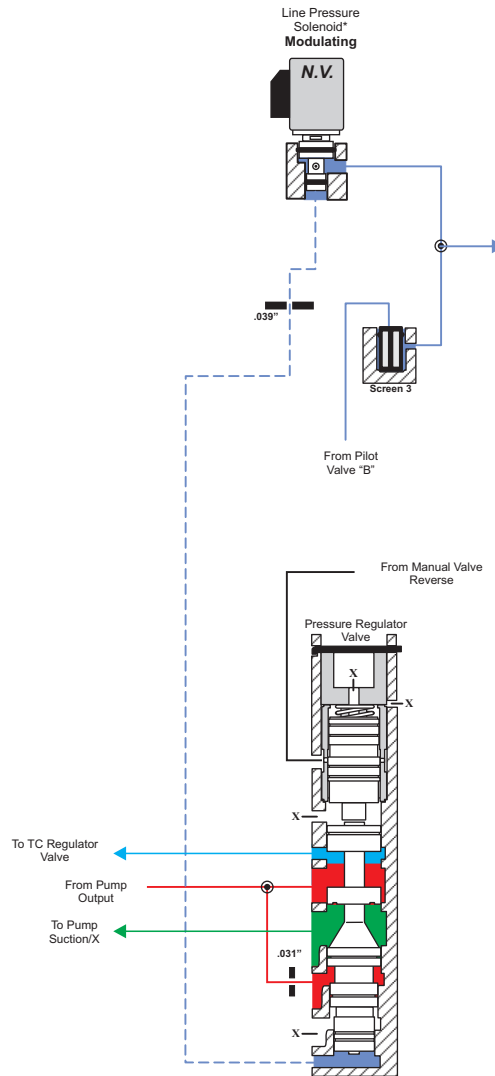


Figure 48

LINE PRESSURE SOLENOID THEORY OF OPERATION

Scanner PID  
**Line Pressure Solenoid**  
**Amperage**  
**0.2-0.6A**  
*(Based on Engine Load)*



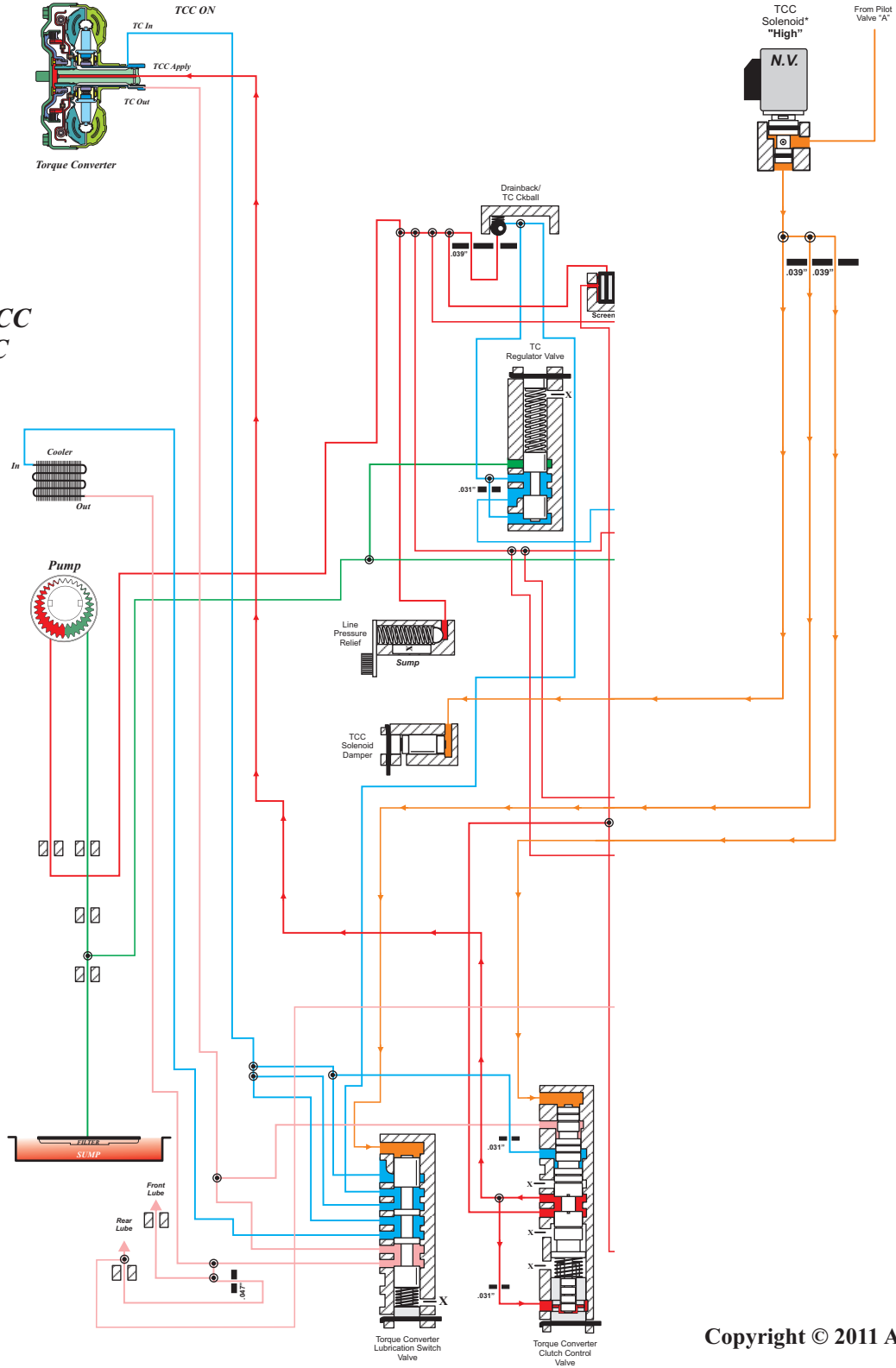
*The Line Pressure solenoid is a Normally Vented solenoid. The Solenoid is fed solenoid pressure from Pilot Valve "B." When the solenoid is energized it allows solenoid feed to pass thru it to the first land of the Pressure Regulator Valve, which reduces line pressure. When the solenoid is at a "Low" Duty cycle, the Line Pressure will be High. When the solenoid is at a "High" Duty cycle the Line Pressure will be Low.*

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Figure 49

### TORQUE CONVERTER CLUTCH SOLENOID THEORY OF OPERATION

Scanner PID  
**TCC Solenoid**  
**Amperage**  
 0.2-0.6A = Slip TCC  
 0.8A = Full TCC



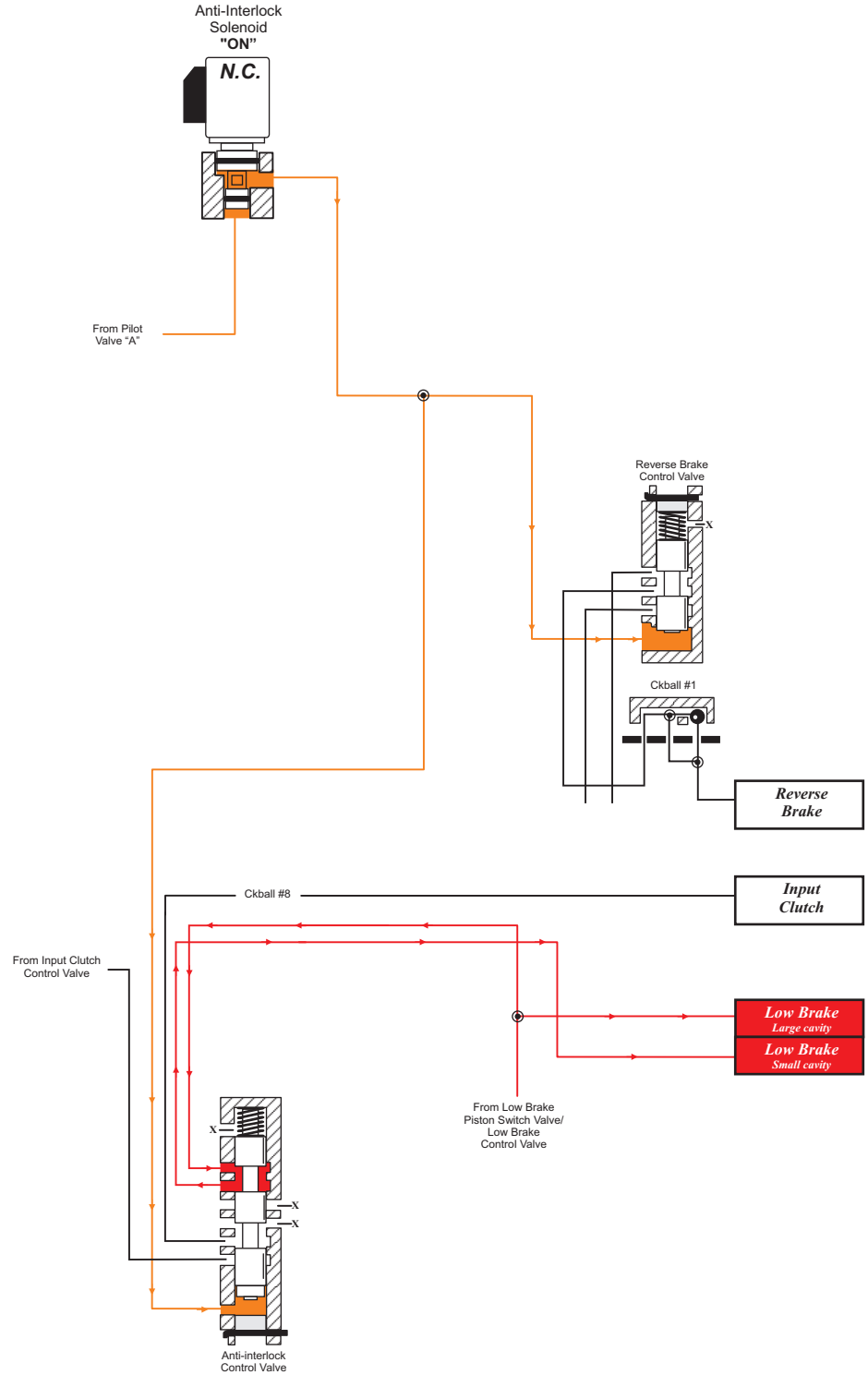
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*The Torque Converter Clutch solenoid is a Normally Vented solenoid. The Solenoid is fed solenoid pressure from Pilot Valve "A." When the solenoid is energized it allows solenoid feed to pass thru it to the first land of the Torque Converter Lubrication Switch Valve and the Torque Converter Clutch Control Valve, stroking them, which optimizes atf cooling and connects line pressure to the TCC Apply Piston, Applying the Clutch, thru a passage in the Torque Converter Clutch Control Valve. The TCC can be partially and fully applied based on amperage.*

Figure 50

ANTI-INTERLOCK SOLENOID THEORY OF OPERATION

Scanner PID  
**Anti-Interlock Solenoid**  
**ON- 1st, 2nd and 3rd gears**  
**OFF 4th, 5th, 6th and 7th.**  
**May be used as a Reverse**  
**Inhibit feature.**



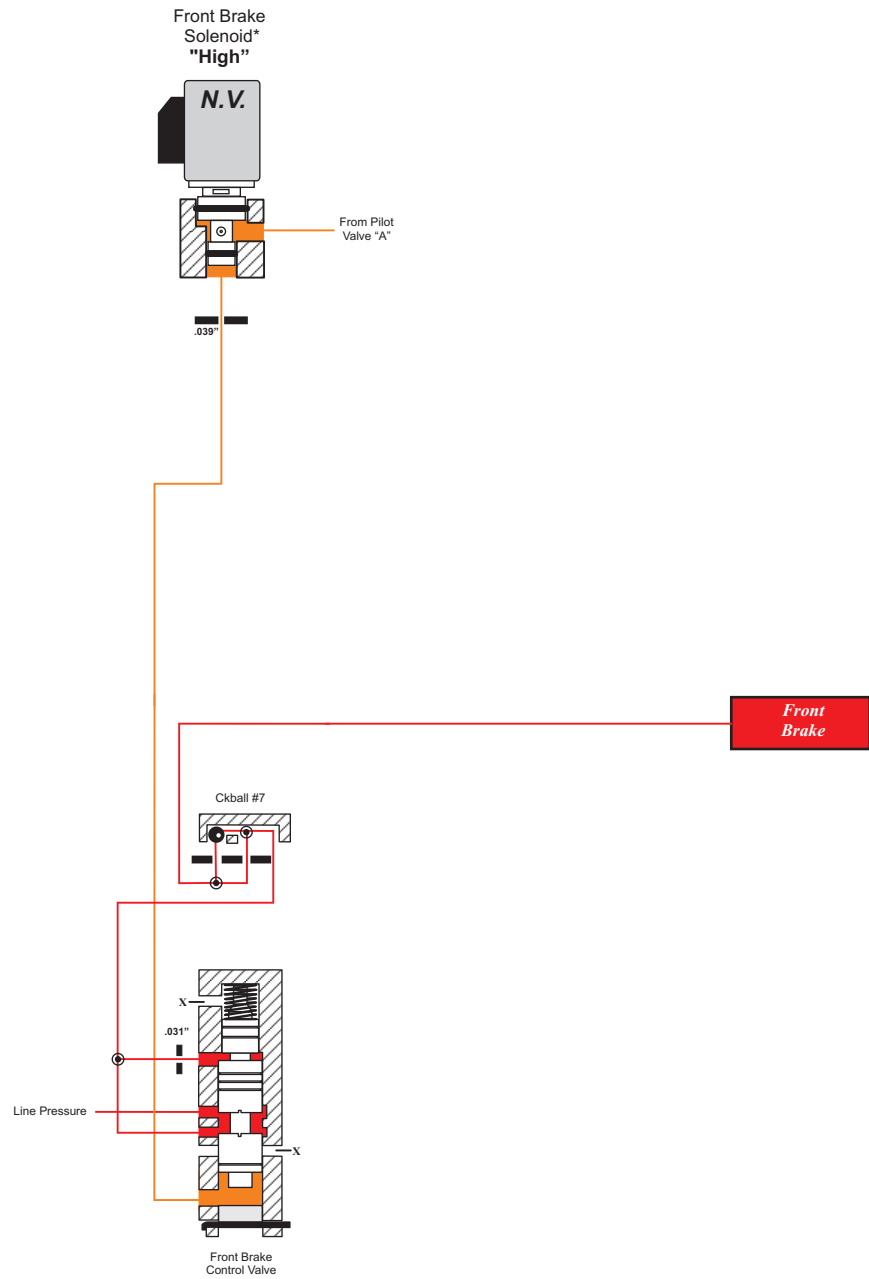
*The Anti-Interlock Solenoid is a Normally Closed Solenoid, and is fed by Pilot Valve "A". Solenoid output is connected to the first land of the Anti-Interlock Control Valve and the first land of the Reverse Brake Control Valve. When the solenoid is ON in the Drive ranges 1st, 2nd and 3rd gear, solenoid output pressure strokes the Anti-Interlock Control Valve allowing a connection for the Low Brake. Solenoid Output pressure also strokes the Reverse Brake Control Valve which prevents application of Reverse when driving forward. When the solenoid is OFF the Anti-Interlock Control valve is not stroked which allows connection to the Input Clutch, in 5th, 6th and 7th gear. The Solenoid is basically used to prevent a bind-up between the Low Brake and Input Clutch, and it is used for Reverse Inhibit.*

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Figure 51

### FRONT BRAKE SOLENOID THEORY OF OPERATION

Scanner PID  
**Front Brake Solenoid**  
**Amperage**  
*0-0.A = Front Brake OFF*  
*0.6-0.8A = Front Brake ON*

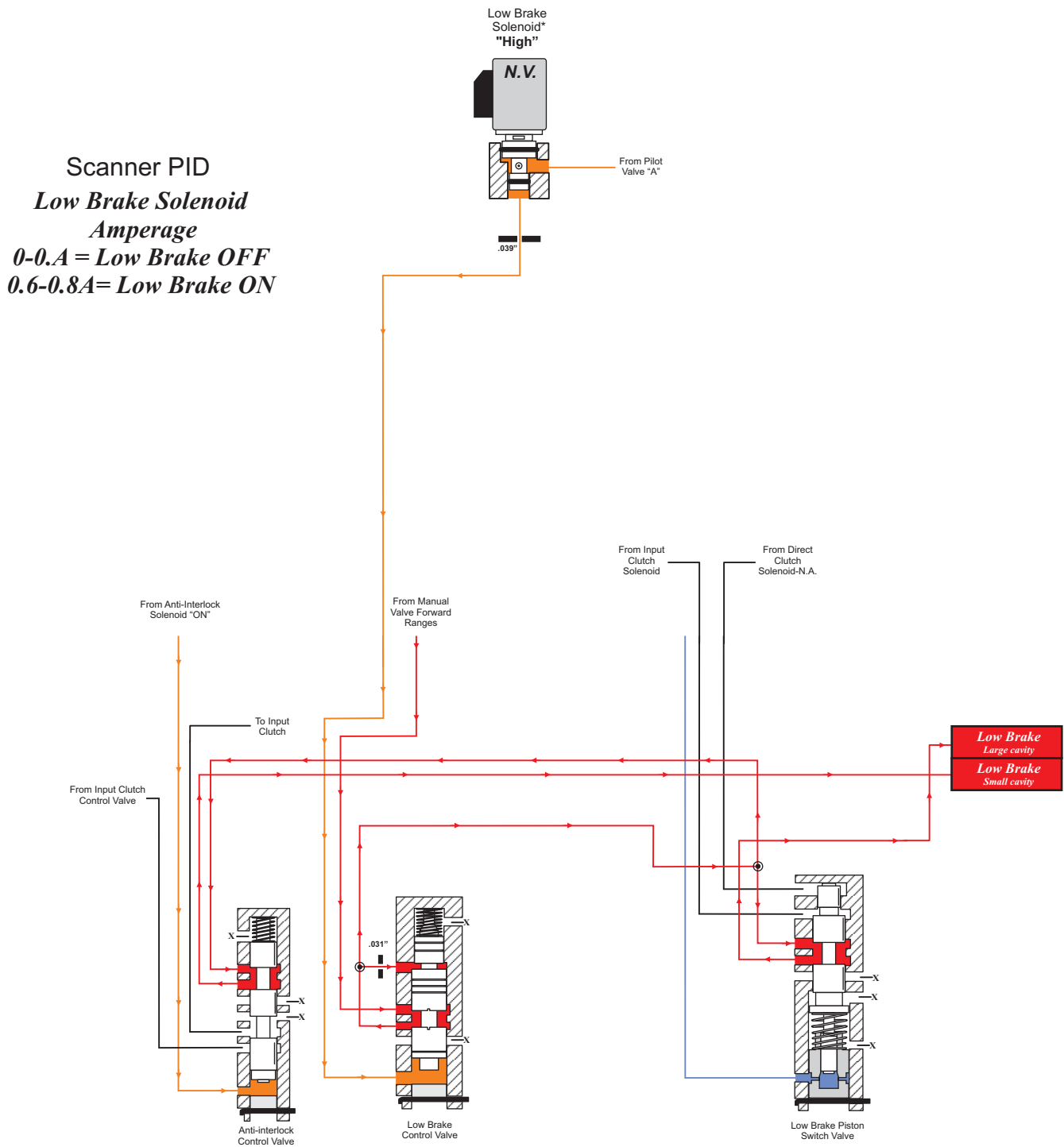


*The Front Brake Solenoid is a Normally Vented Solenoid. The solenoid is fed by Pilot Valve "A."*  
*When the solenoid amperage is low the Front Brake is not applied.*  
*When the solenoid amperage is high, solenoid output strokes the Front Brake Control Valve, which connects line pressure to the Front Brake.*

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### LOW BRAKE SOLENOID THEORY OF OPERATION



*The Low Brake Solenoid is a Normally Vented Solenoid. The solenoid is fed by Pilot Valve "A."*  
*When the solenoid amperage is low the Low Brake is not applied.*

*When the solenoid amperage is high, solenoid output strokes the Low Brake Control Valve, which connects line pressure to the Low Brake.*

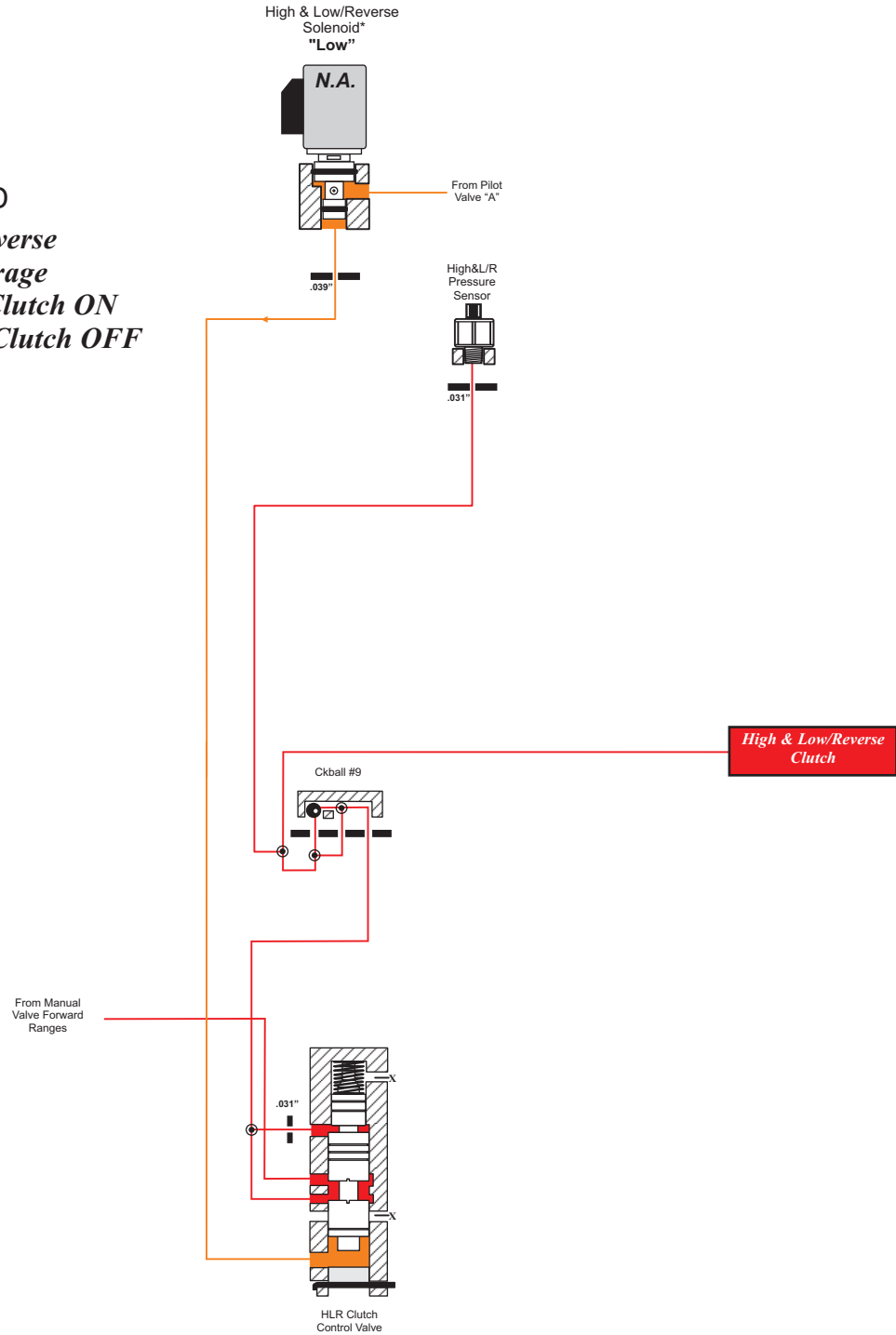
**NOTE:** *The Anti-Interlock Solenoid is ON when the Low Brake is applied in 1st, 2nd and 3rd gears. The Low Brake piston Switch Valve controls the Low Brake Large Cavity. The Direct Clutch Solenoid controls the Low Brake Piston Switch valve and the Large Cavity is released, when the solenoid turns OFF in 3rd Gear.*

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Figure 53

### HIGH & LOW/REVERSE SOLENOID THEORY OF OPERATION

Scanner PID  
**High & Low/Reverse Solenoid Amperage**  
 0-0.4 = High & L/R Clutch ON  
 0.6-0.8A = High & L/R Clutch OFF



*The High & Low/Reverse Solenoid is a Normally Applied Solenoid. The solenoid is fed by Pilot Valve "A."  
 When the solenoid amperage is High the High & Low/Reverse Clutch is not applied.  
 When the solenoid amperage is Low, solenoid output strokes the High & Low/Reverse Control Valve, which connects line pressure from the Manual Valve "D" ranges, to the High & Low/Reverse Clutch.*

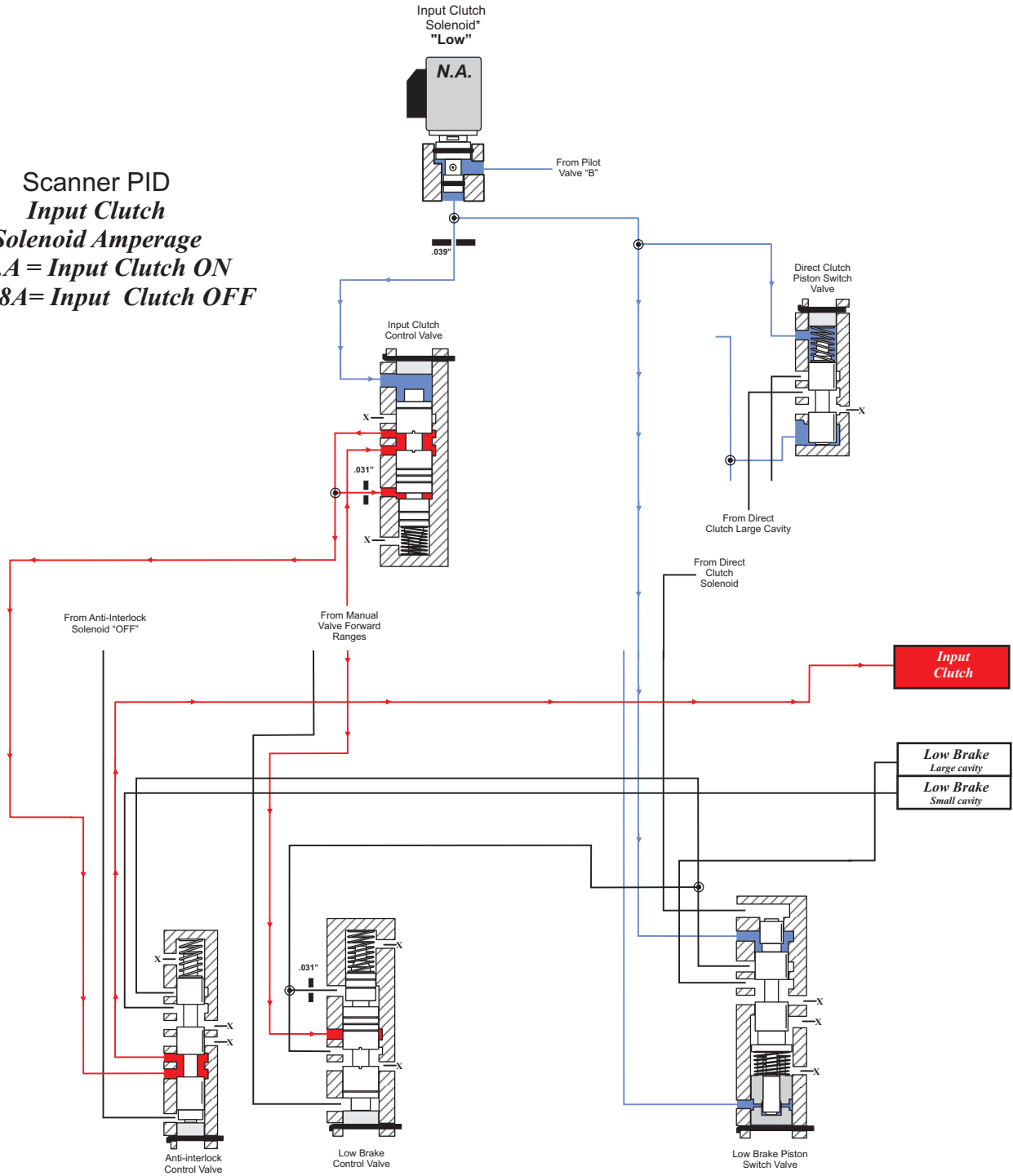
**NOTE:** The High & Low/Reverse Clutch is connected to a pressure sensor as shown above. The actual pressure reading will be available for all gears other than 2nd and 3rd gear as the H-LR Clutch is OFF.

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Figure 54

### INPUT CLUTCH SOLENOID THEORY OF OPERATION

Scanner PID  
**Input Clutch**  
**Solenoid Amperage**  
*0-0.A = Input Clutch ON*  
*0.6-0.8A = Input Clutch OFF*



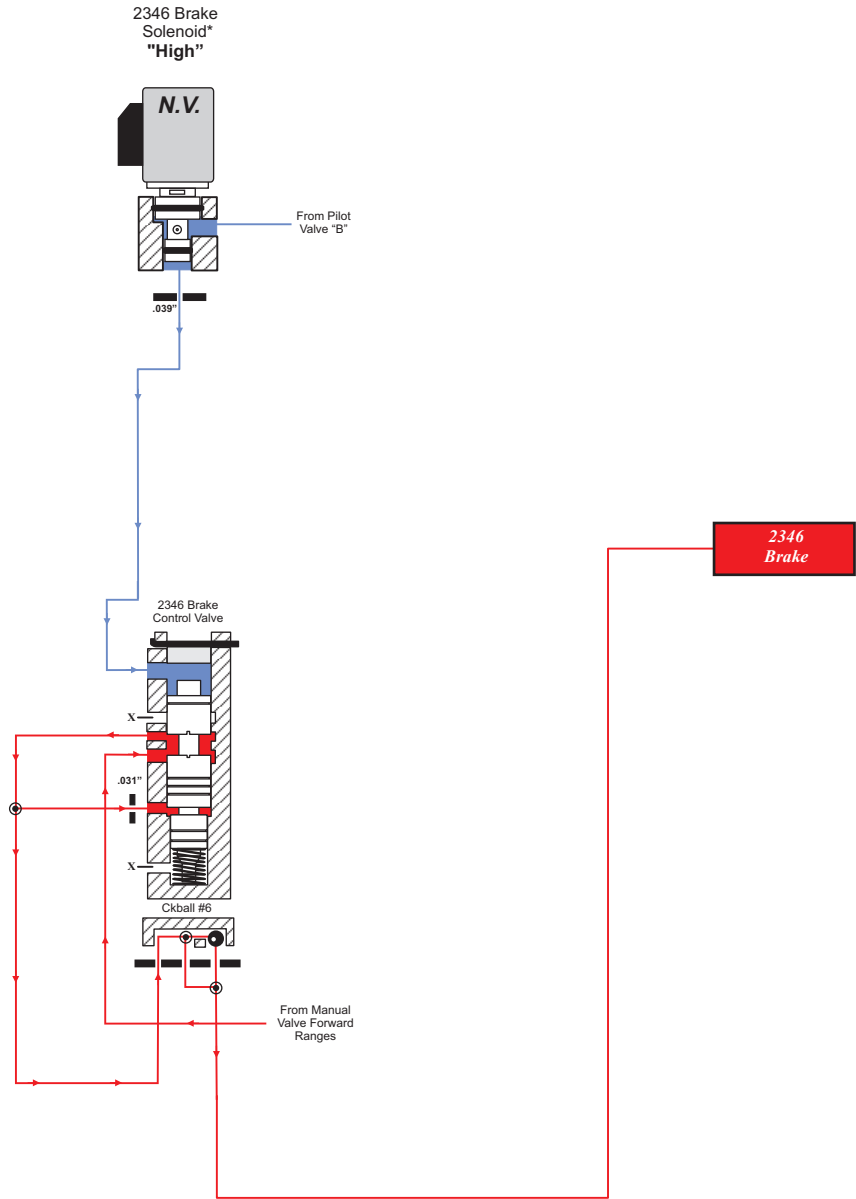
*The Input Clutch Solenoid is a Normally Applied Solenoid. The solenoid is fed by Pilot Valve "B."*  
*When the solenoid amperage is High the Input Clutch is not applied.*  
*When the solenoid amperage is Low, solenoid output strokes the Input Control Valve, which connects line pressure from the Manual Valve "D" ranges, to the Input Clutch, passage fed to the Anti-Interlock Control Valve. This valve is Controlled by the Anti-Interlock Solenoid which is OFF when the Input Clutch is applied.*  
**NOTE:** *The Input Clutch Solenoid output is connected to the Direct Clutch Piston Switch Valve which controls the exhaust for the Direct Clutch Large Cavity, and the Low Brake Piston Switch Valve which controls the Low Brake Large Cavity exhaust.*

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Figure 55

2346 BRAKE SOLENOID THEORY OF OPERATION

Scanner PID  
 2346 Brake Solenoid  
 Amperage  
 0-0.4 = 2346 Brake OFF  
 0.6-0.8A = 2346 Brake ON



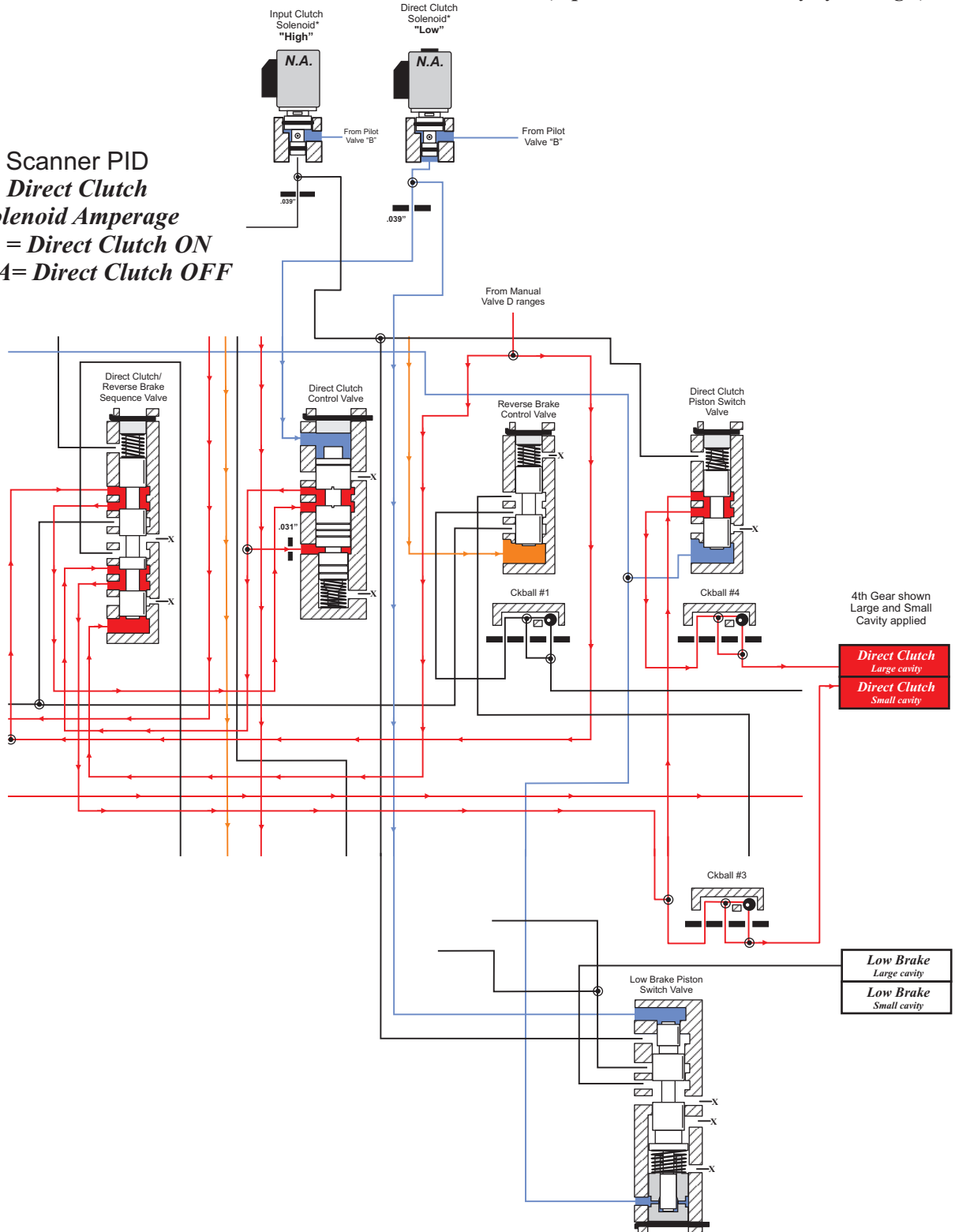
*The 2346 Brake Solenoid is a Normally Vented Solenoid. The solenoid is fed by Pilot Valve "B."  
 When the solenoid amperage is low the 2346 Brake is not applied.  
 When the solenoid amperage is high, solenoid output strokes the 2346 Brake Control Valve, which connects line pressure from the Manual Valve "D" ranges, to the 2346 Brake.*

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Figure 56

### DIRECT CLUTCH SOLENOID THEORY OF OPERATION (*Input Clutch Solenoid duty cycle High*)

Scanner PID  
**Direct Clutch Solenoid Amperage**  
 0-0.A = Direct Clutch ON  
 0.6-0.8A = Direct Clutch OFF



**Direct Clutch Large cavity**  
**Direct Clutch Small cavity**

**Low Brake Large cavity**  
**Low Brake Small cavity**

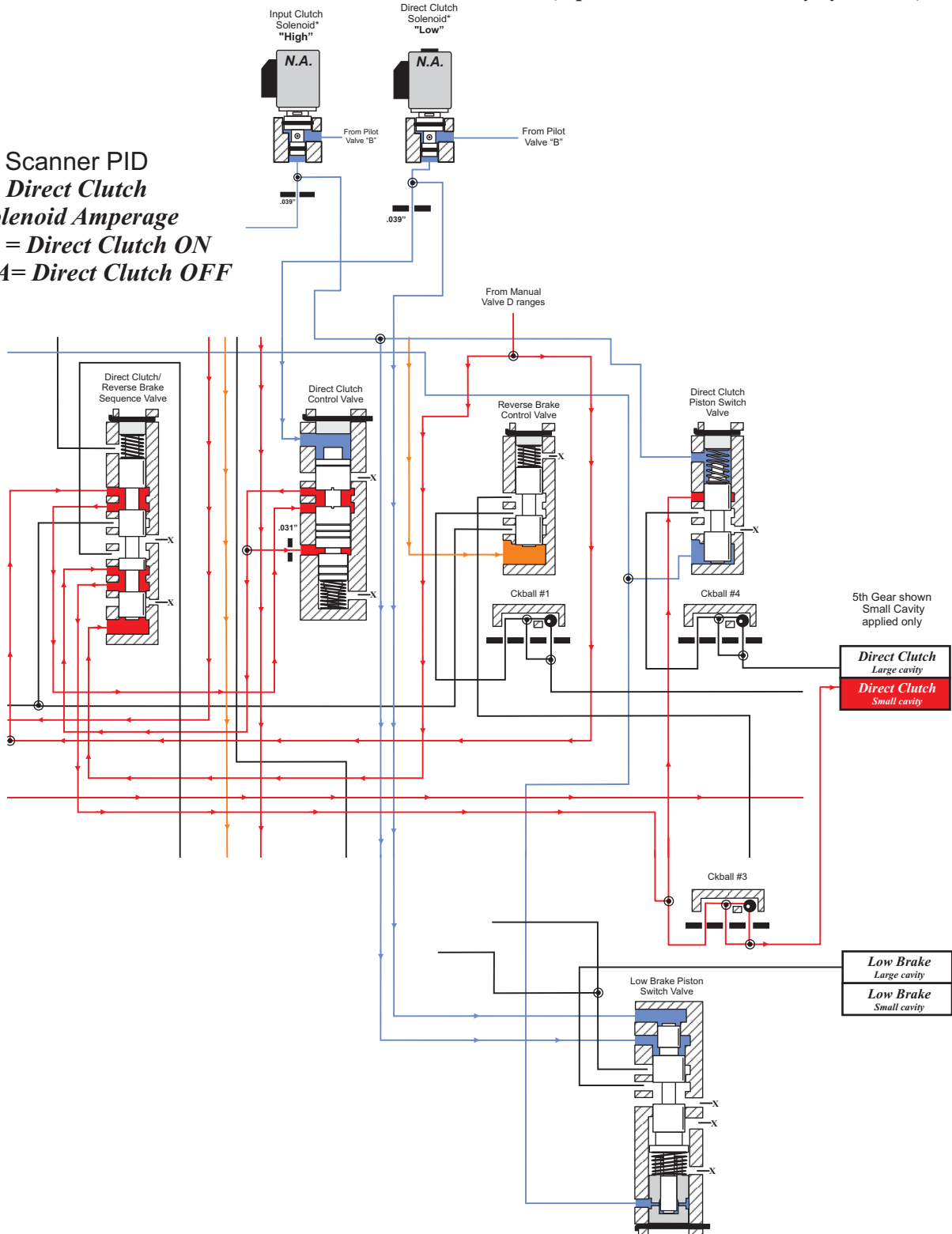
*The Direct Clutch Solenoid is a Normally Applied Solenoid. The solenoid is fed by Pilot Valve "A." When the solenoid amperage is High the Direct Clutch is not applied. When the solenoid amperage is Low, solenoid output strokes the Direct Clutch Control Valve, which connects line pressure from the Manual Valve "D" ranges, to the Direct Clutch. Solenoid output is also connected to the first land of the Low Brake Piston Switch Valve, which releases the Low Brake Large cavity. NOTE: The Direct Clutch oil circuit is connected to the Direct Clutch/Reverse Brake Sequence Valve, which is stroked by Line pressure from the Manual Valve in the D ranges. The Direct Clutch Large Cavity is controlled by the Input Clutch Solenoid.*

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Figure 57

### DIRECT CLUTCH SOLENOID THEORY OF OPERATION (Input Clutch Solenoid duty cycle Low)

Scanner PID  
**Direct Clutch Solenoid Amperage**  
*0-0.A = Direct Clutch ON*  
*0.6-0.8A = Direct Clutch OFF*



Direct Clutch Large cavity  
 Direct Clutch Small cavity

Low Brake Large cavity  
 Low Brake Small cavity

*The Direct Clutch Solenoid is a Normally Applied Solenoid. The solenoid is fed by Pilot Valve "A." When the solenoid amperage is High the Direct Clutch is not applied. When the solenoid amperage is Low, solenoid output strokes the Direct Clutch Control Valve, which connects line pressure from the Manual Valve "D" ranges, to the Direct Clutch. Solenoid output is also connected to the first land of the Low Brake Piston Switch Valve, which releases the Low Brake Large cavity. NOTE: The Direct Clutch oil circuit is connected to the Direct Clutch/Reverse Brake Sequence Valve, which is stroked by Line pressure from the Manual Valve in the D ranges. The Direct Clutch Large Cavity is controlled by the Input Clutch Solenoid.*

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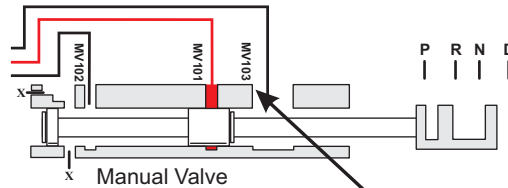
Figure 58



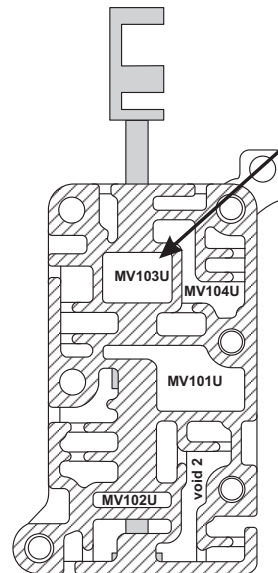
# Technical Service Information

## VALVE BODY MAPPING JR710E

PARTIAL HYDRAULIC  
SCHEMATIC FOR  
THE MANUAL VALVE



**MV100U**  
MANUAL VALVE BODY UPPER



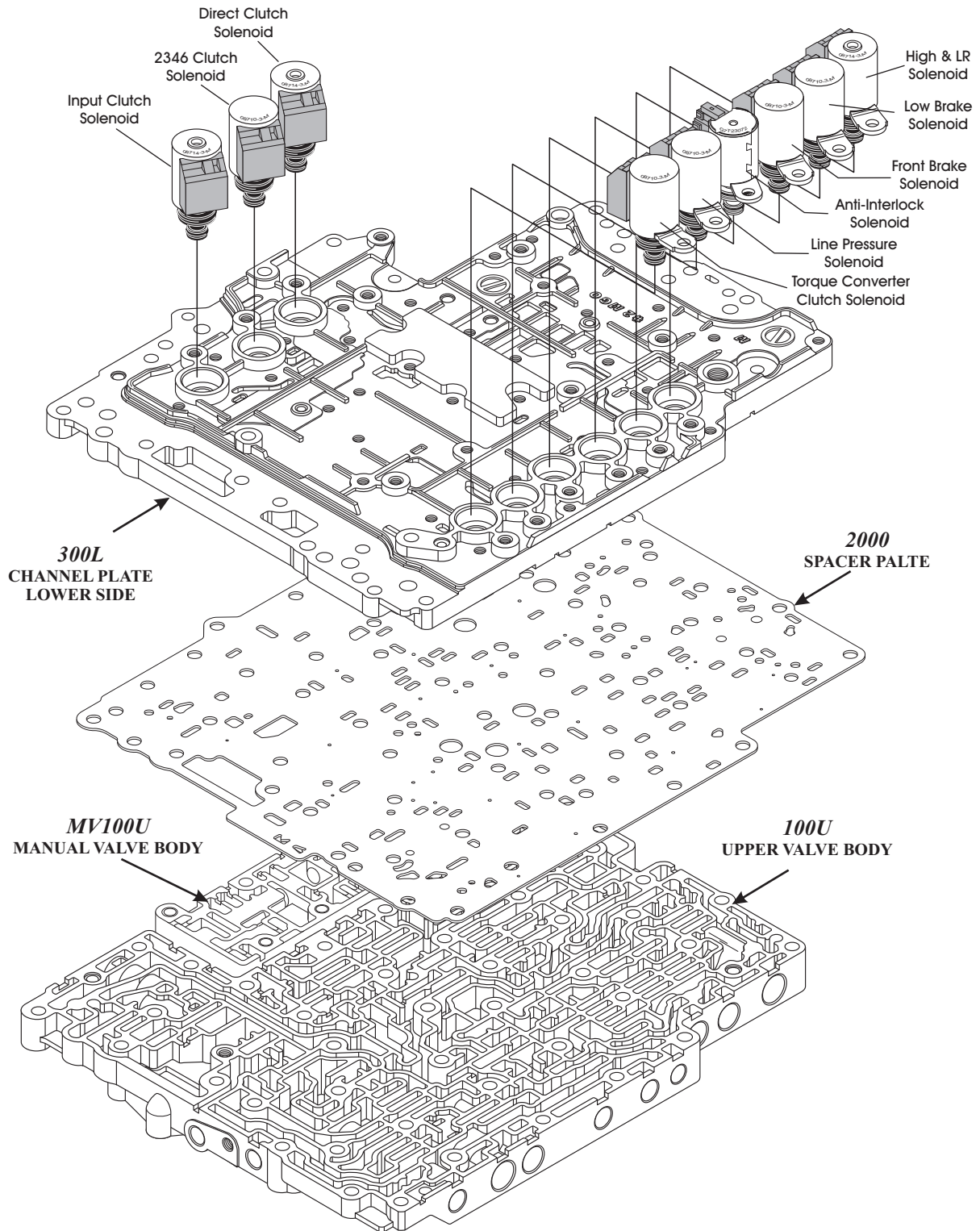
MV103U

### HOW TO USE THIS MANUAL:

All castings and spacer plates have been numbered so they can be identified in an oil circuit diagram. **Example:** MV103U passage is located in the Manual Valve body Upper (MV100U series). This passage can now be located in the partial oil circuit diagram shown above. Spacer plate orifice sizes and locations are also identified in the oil circuit diagram labeled Valve body Mapping.

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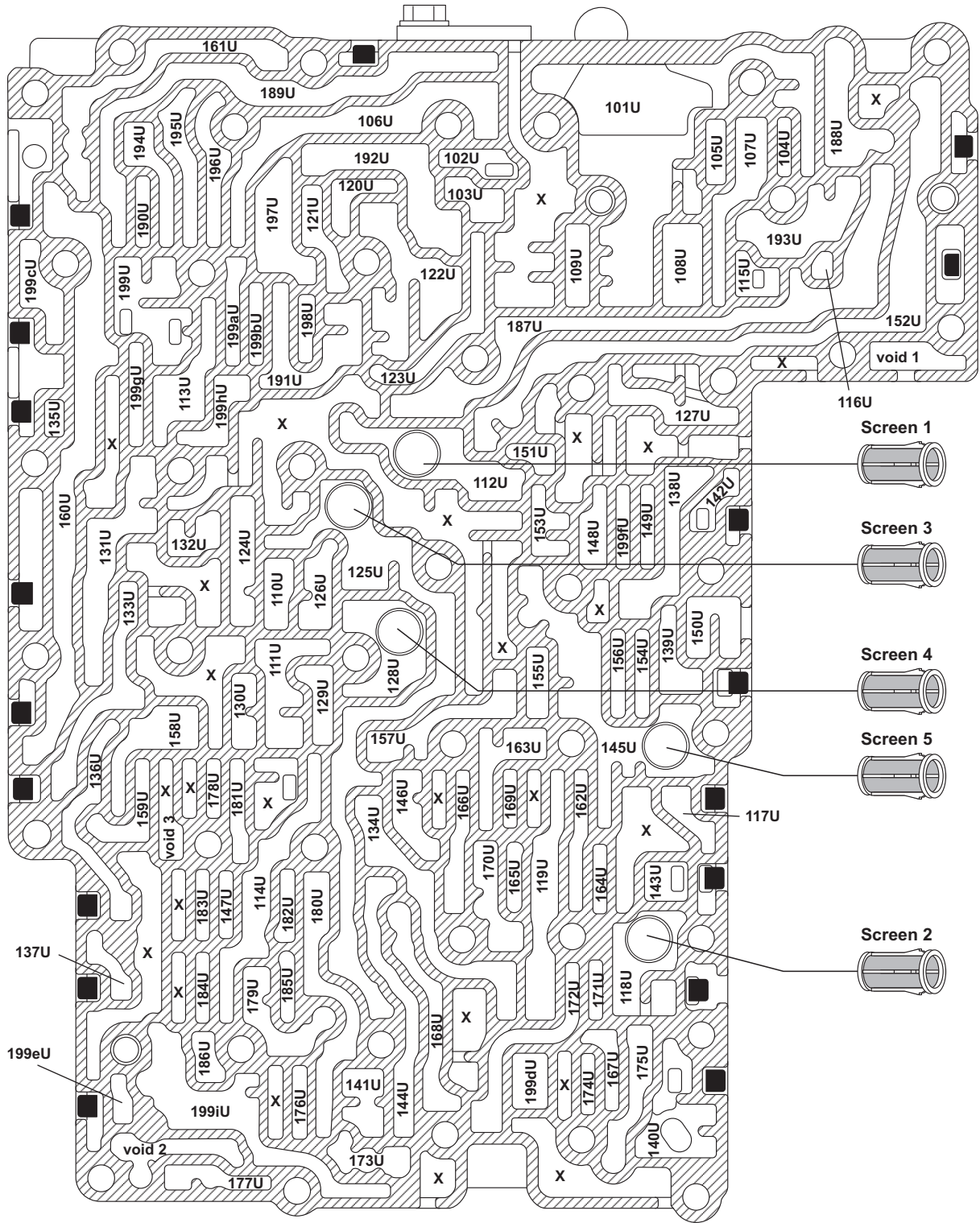
**JR710E VALVE BODY  
 CASTING AND SOLENOID I.D.**



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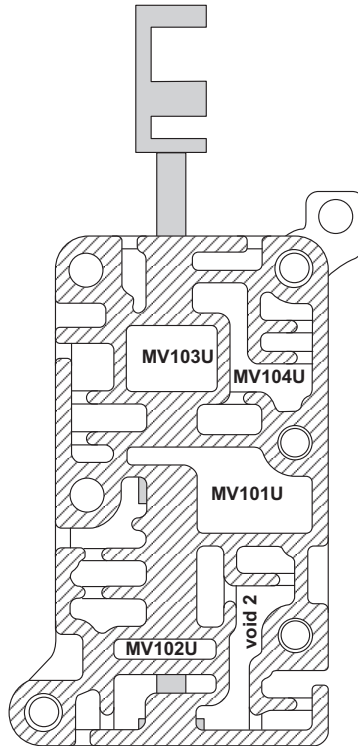


# 100U UPPER VALVE BODY



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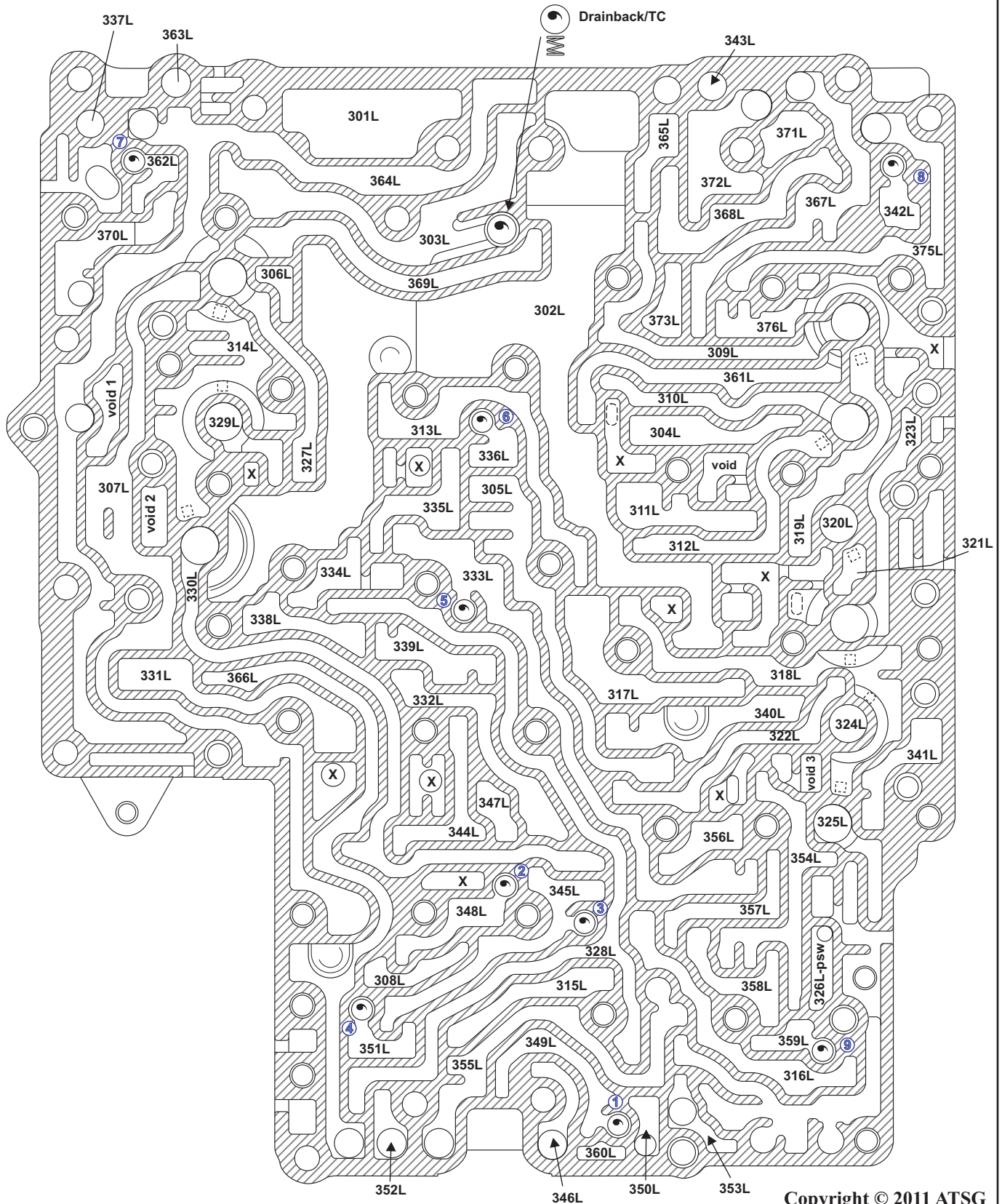
*MV100U*  
MANUAL VALVE BODY UPPER



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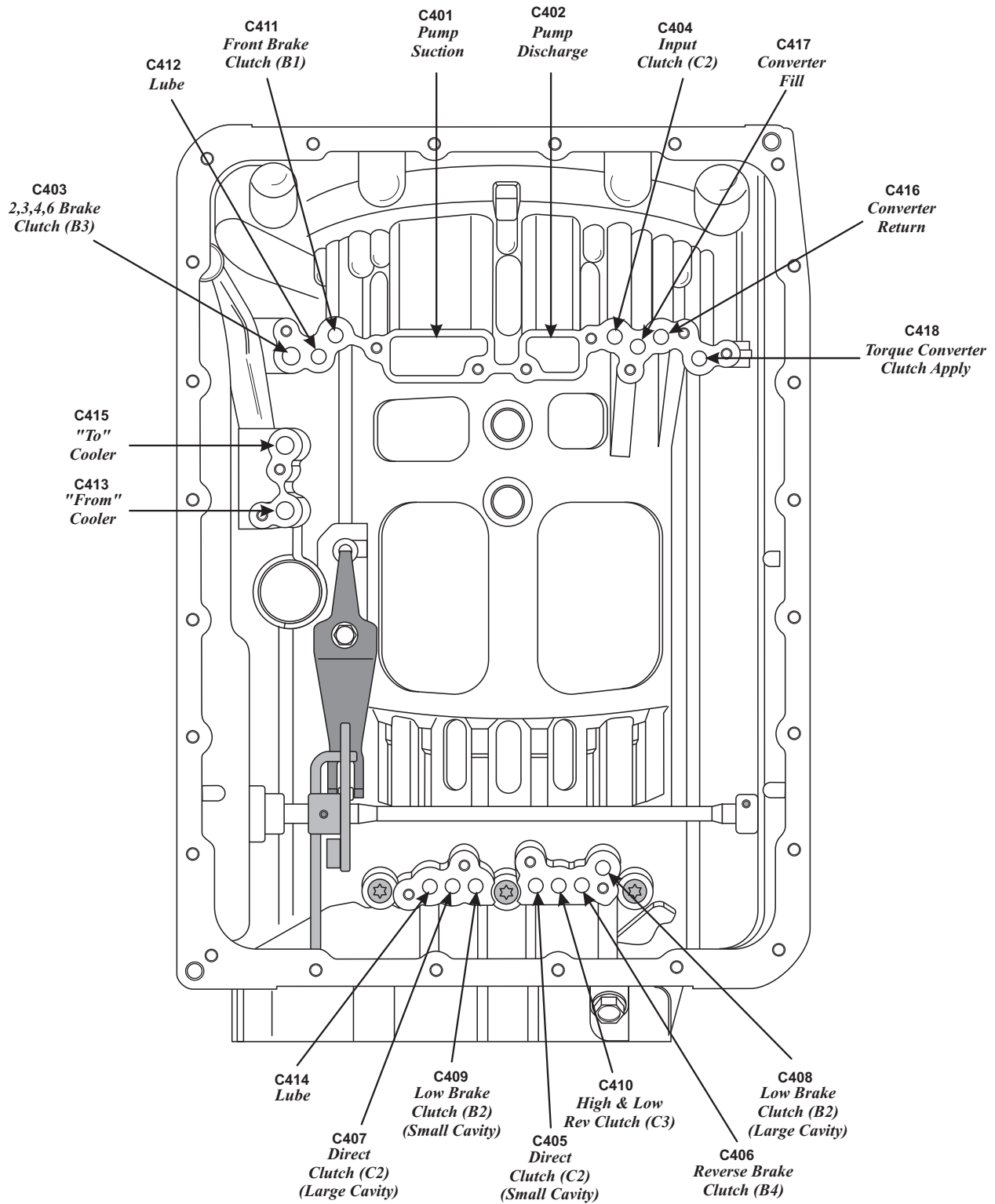


### 300L CHANNEL PLATE LOWER SIDE



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### C400 CASE PASSAGES



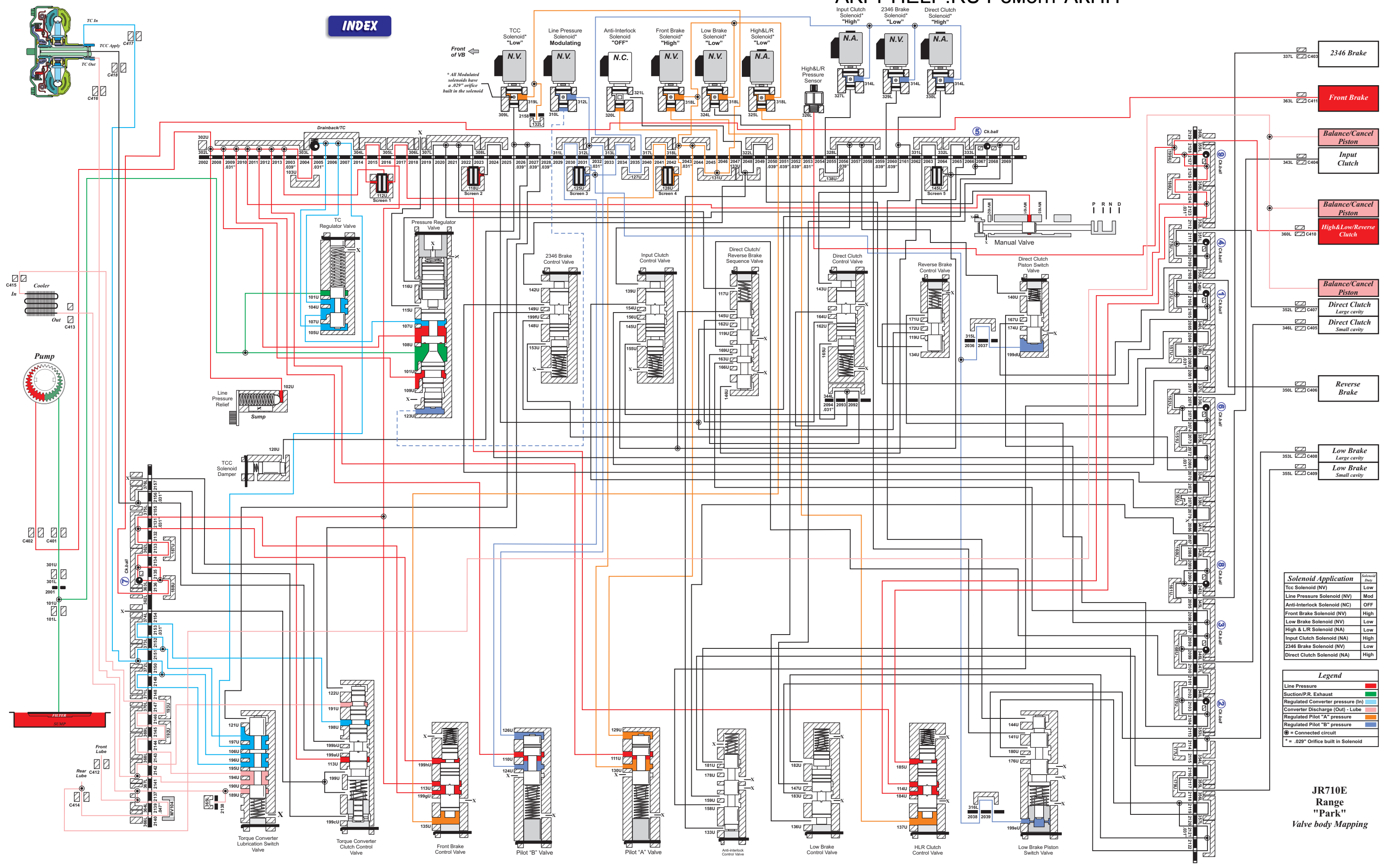
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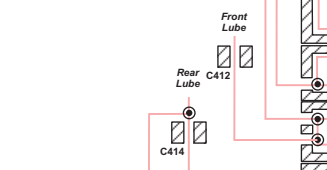
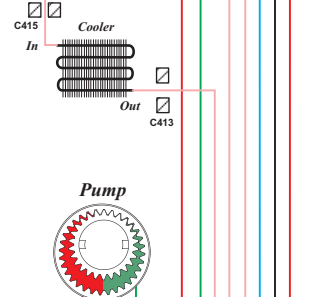
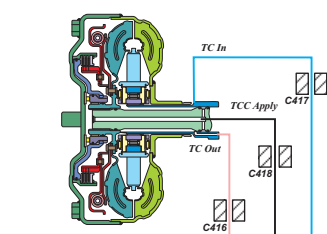
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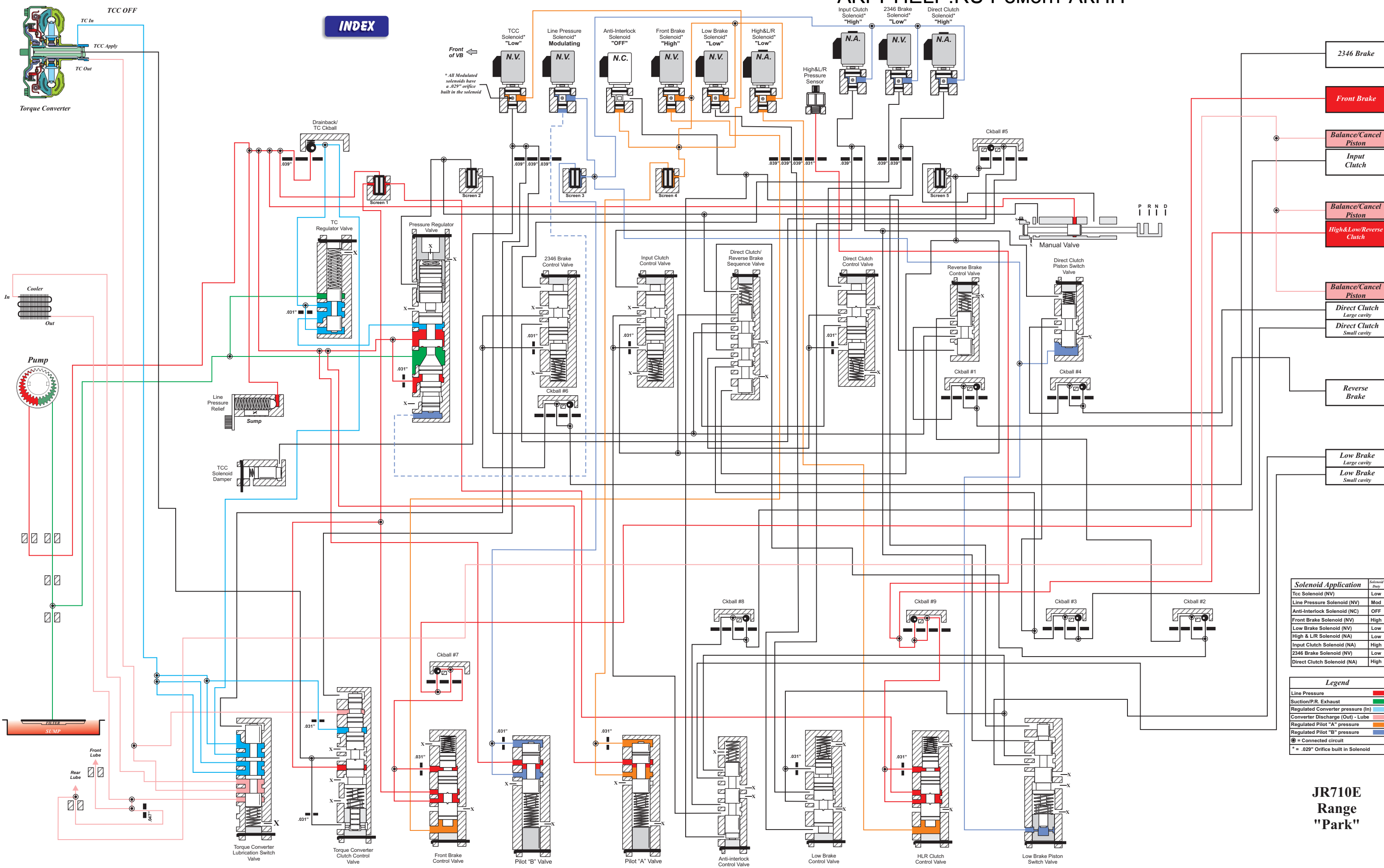
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Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Light Blue
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
Range  
"Park"  
Valve body Mapping



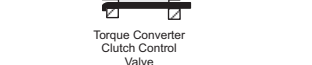
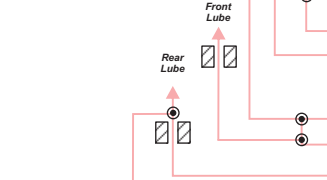
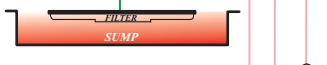
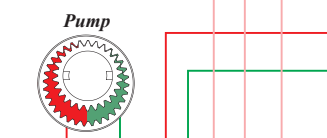
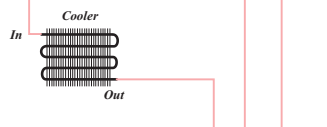
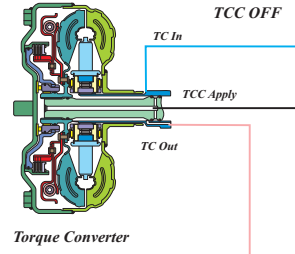
**INDEX**



Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	<span style="color:red">■</span>
Suction/P.R. Exhaust	<span style="color:blue">■</span>
Regulated Converter pressure (In)	<span style="color:green">■</span>
Converter Discharge (Out) - Lube	<span style="color:orange">■</span>
Regulated Pilot "A" pressure	<span style="color:yellow">■</span>
Regulated Pilot "B" pressure	<span style="color:purple">■</span>
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E  
Range  
"Park"**



2346 Brake

Front Brake

Balance/Cancel Piston  
Input Clutch

Balance/Cancel Piston  
High&Low Reverse Clutch

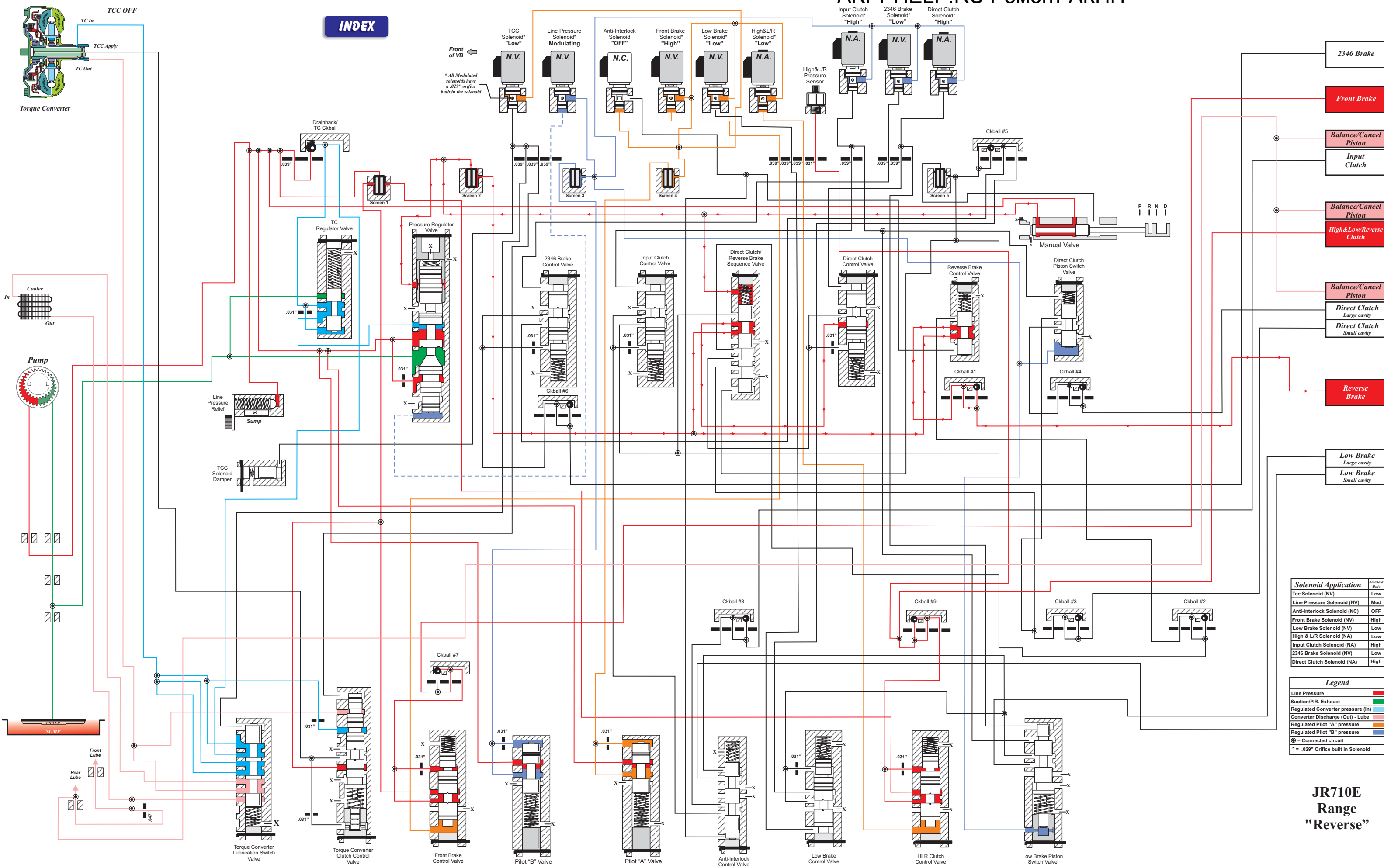
Balance/Cancel Piston  
Direct Clutch Large cavity  
Direct Clutch Small cavity

Reverse Brake

Low Brake Large cavity  
Low Brake Small cavity



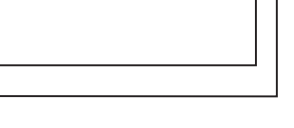
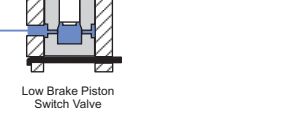
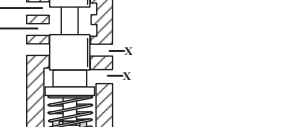
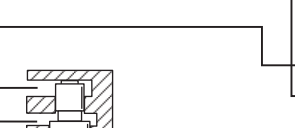
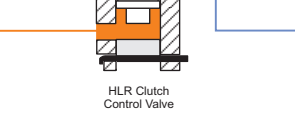
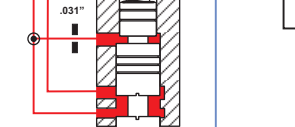
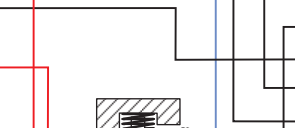
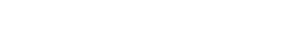
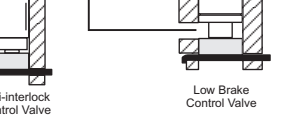
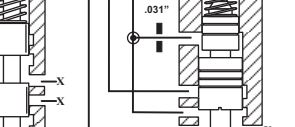
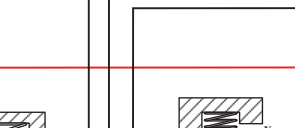
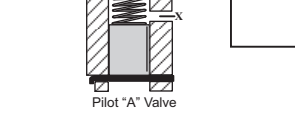
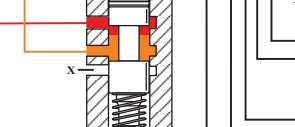
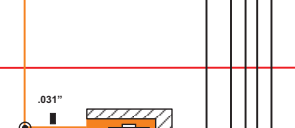
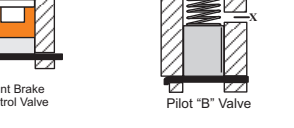
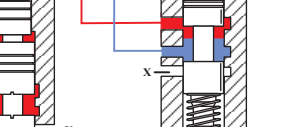
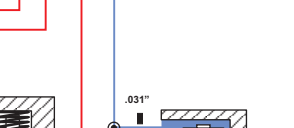
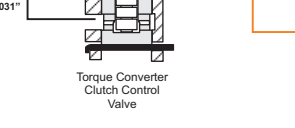
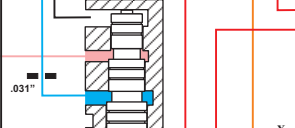
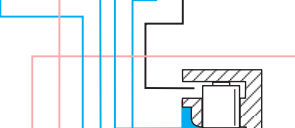
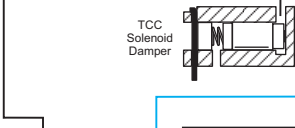
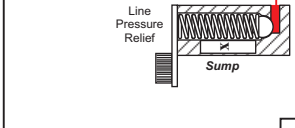
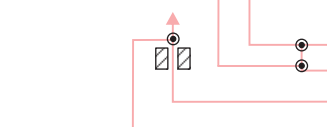
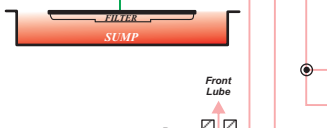
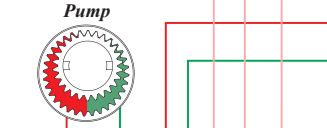
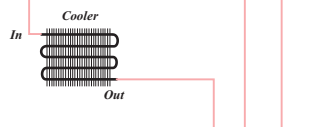
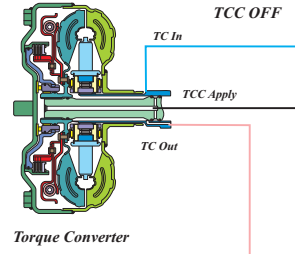
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Solenoid Application	Solenoid Duty
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Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Purple
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

JR710E  
Range  
"Reverse"



2346 Brake

Front Brake

Balance/Cancel Piston  
Input Clutch

Balance/Cancel Piston  
High&Low Reverse Clutch

Balance/Cancel Piston  
Direct Clutch Large cavity  
Direct Clutch Small cavity

Reverse Brake

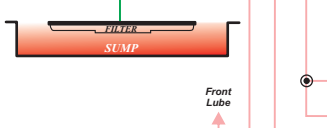
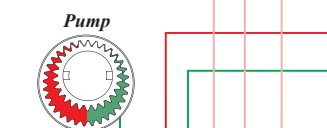
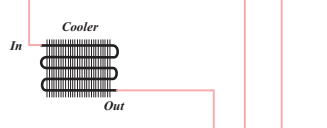
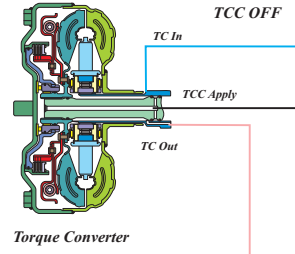
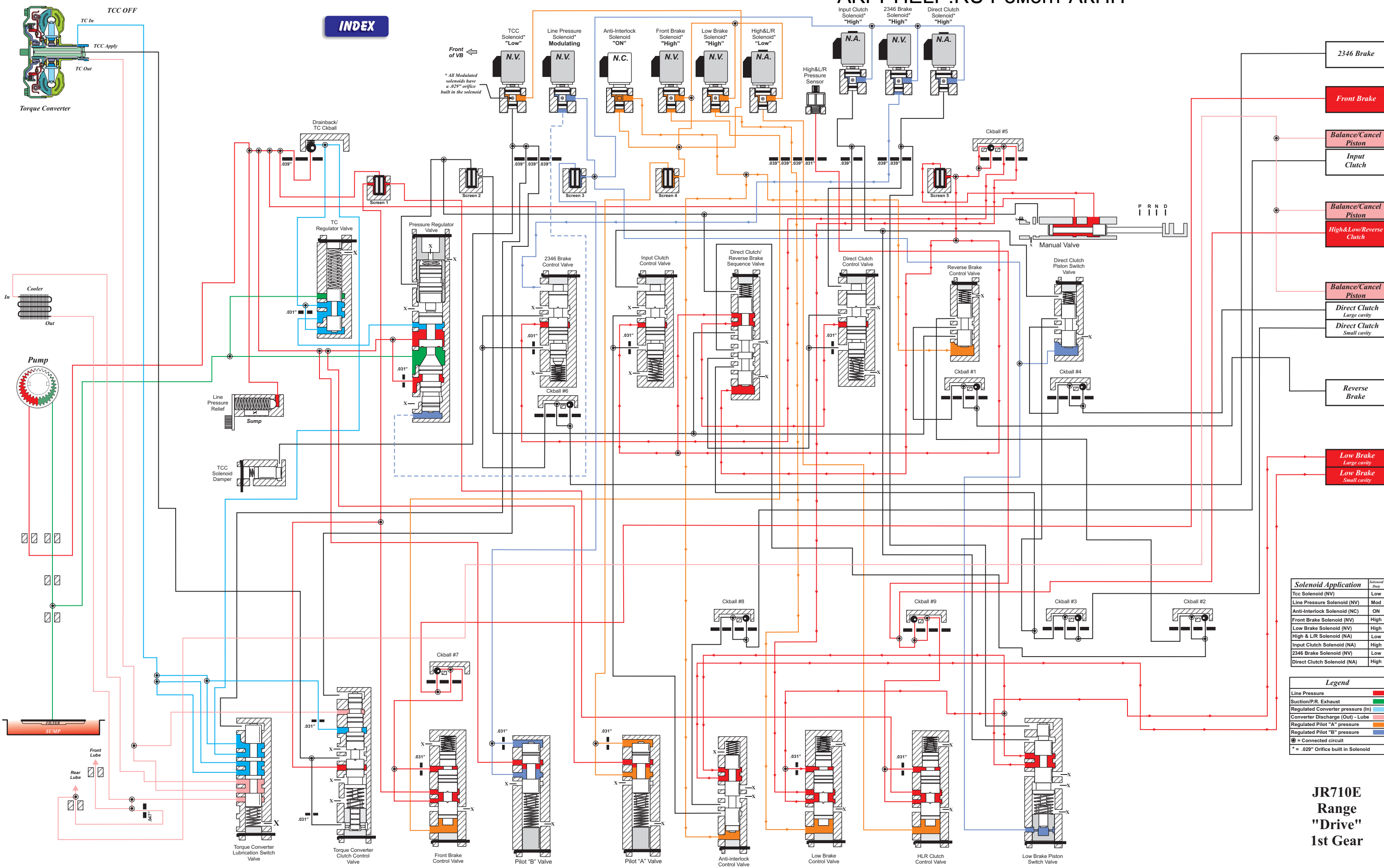
Low Brake Large cavity  
Low Brake Small cavity

Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Purple
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

JR710E  
Range  
"Reverse"

**INDEX**



Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Regulated Converter pressure (In)	Regulated
Converter Discharge (Out) - Lube	Regulated
Regulated Pilot "A" pressure	Regulated
Regulated Pilot "B" pressure	Regulated
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

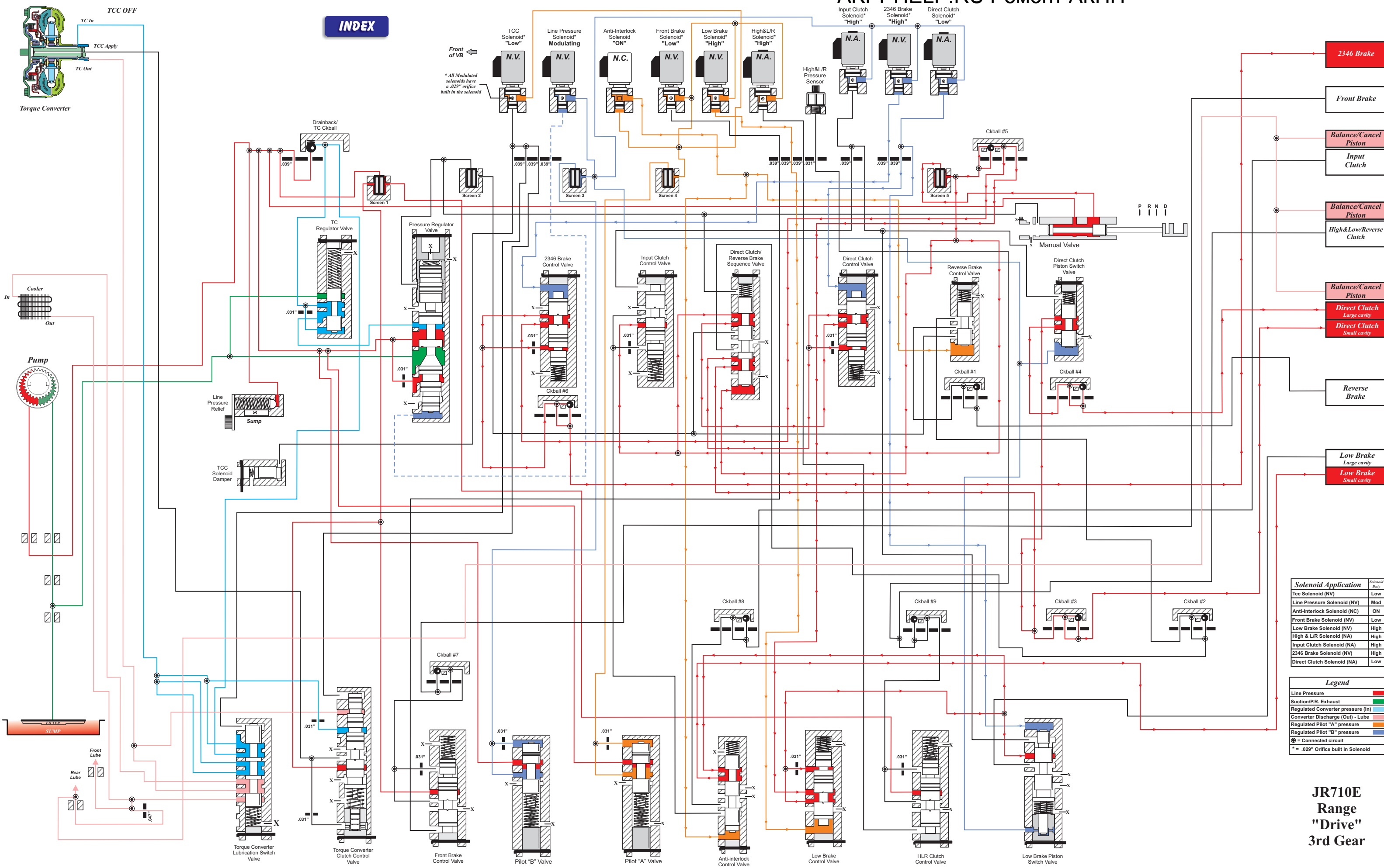
Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Green
Regulated Converter pressure (In)	Blue
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Purple
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
Range  
"Drive"  
1st Gear

- 2346 Brake
- Front Brake
- Balance/Cancel Piston
- Input Clutch
- Balance/Cancel Piston
- High&Low Reverse Clutch
- Balance/Cancel Piston
- Direct Clutch Large cavity
- Direct Clutch Small cavity
- Reverse Brake
- Low Brake Large cavity
- Low Brake Small cavity



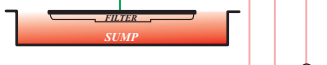
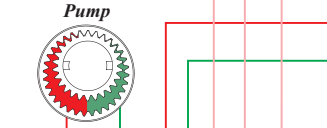
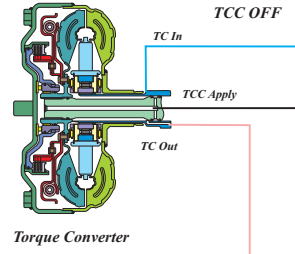
**INDEX**



Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	ON
Front Brake Solenoid (NV)	Low
Low Brake Solenoid (NV)	High
High & L/R Solenoid (NA)	High
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	High
Direct Clutch Solenoid (NA)	Low

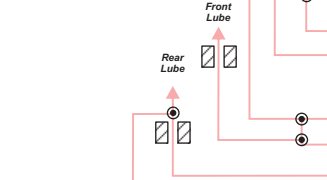
Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Purple
⊗ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E  
Range  
"Drive"  
3rd Gear**



- 2346 Brake
- Front Brake
- Balance/Cancel Piston
- Input Clutch
- Balance/Cancel Piston
- High&Low/Reverse Clutch
- Balance/Cancel Piston
- Direct Clutch Large cavity
- Direct Clutch Small cavity
- Reverse Brake
- Low Brake Large cavity
- Low Brake Small cavity

Front of VB  
\* All Modulated solenoids have a .029" orifice built in the solenoid



Torque Converter Lubrication Switch Valve

Torque Converter Clutch Control Valve

Front Brake Control Valve

Pilot "B" Valve

Pilot "A" Valve

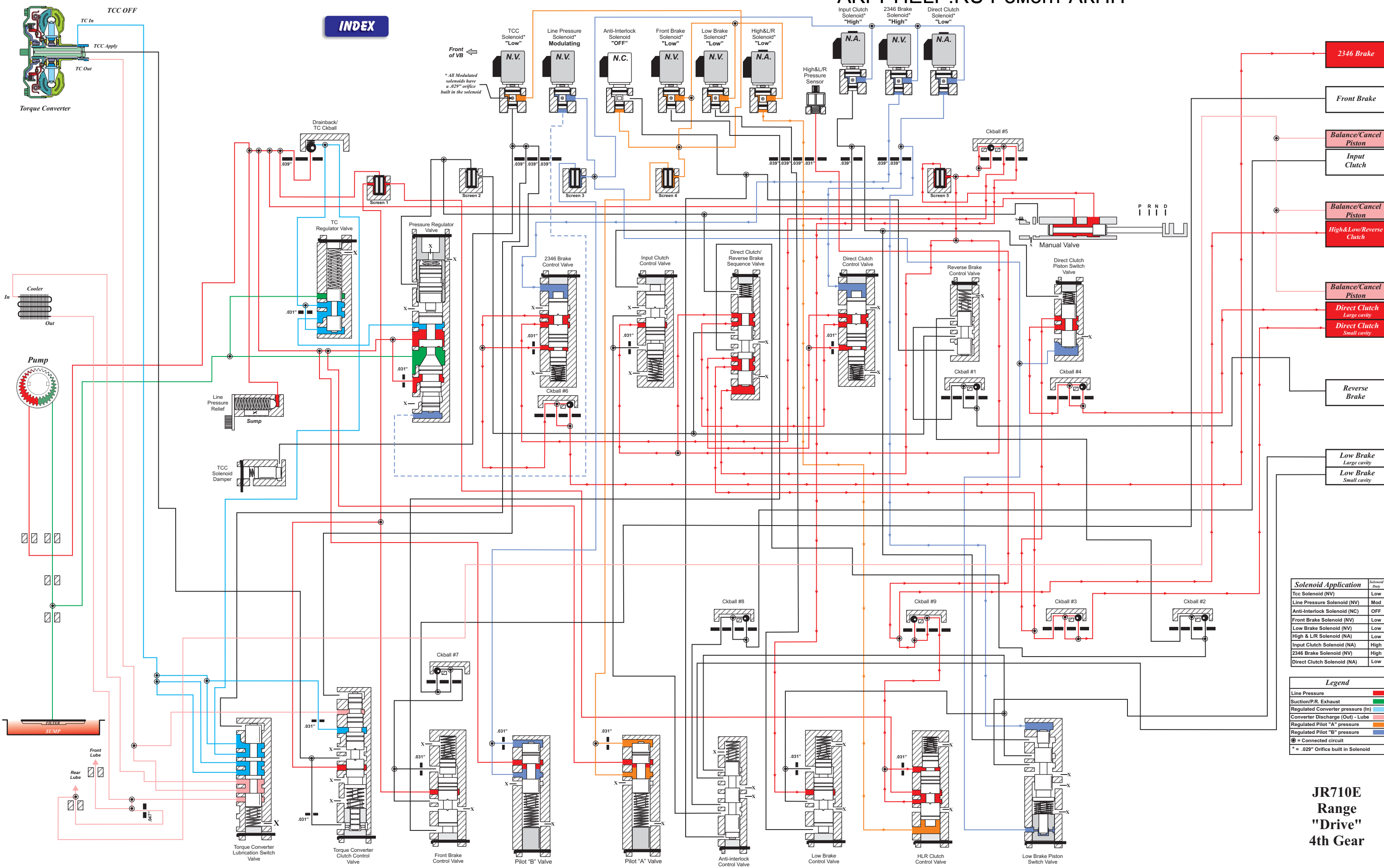
Anti-interlock Control Valve

Low Brake Control Valve

HLR Clutch Control Valve

Low Brake Piston Switch Valve

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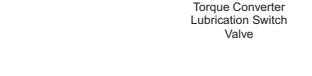
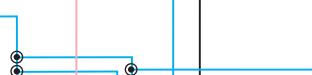
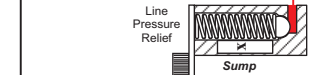
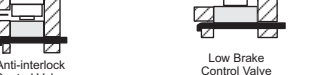
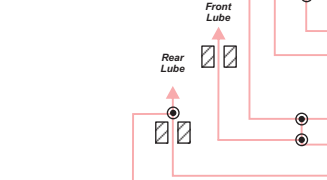
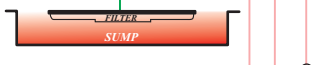
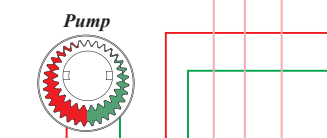
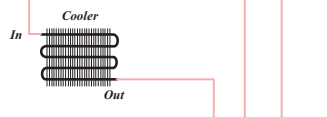
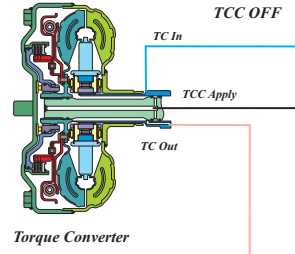


Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	Low
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	High
2346 Brake Solenoid (NV)	High
Direct Clutch Solenoid (NA)	Low

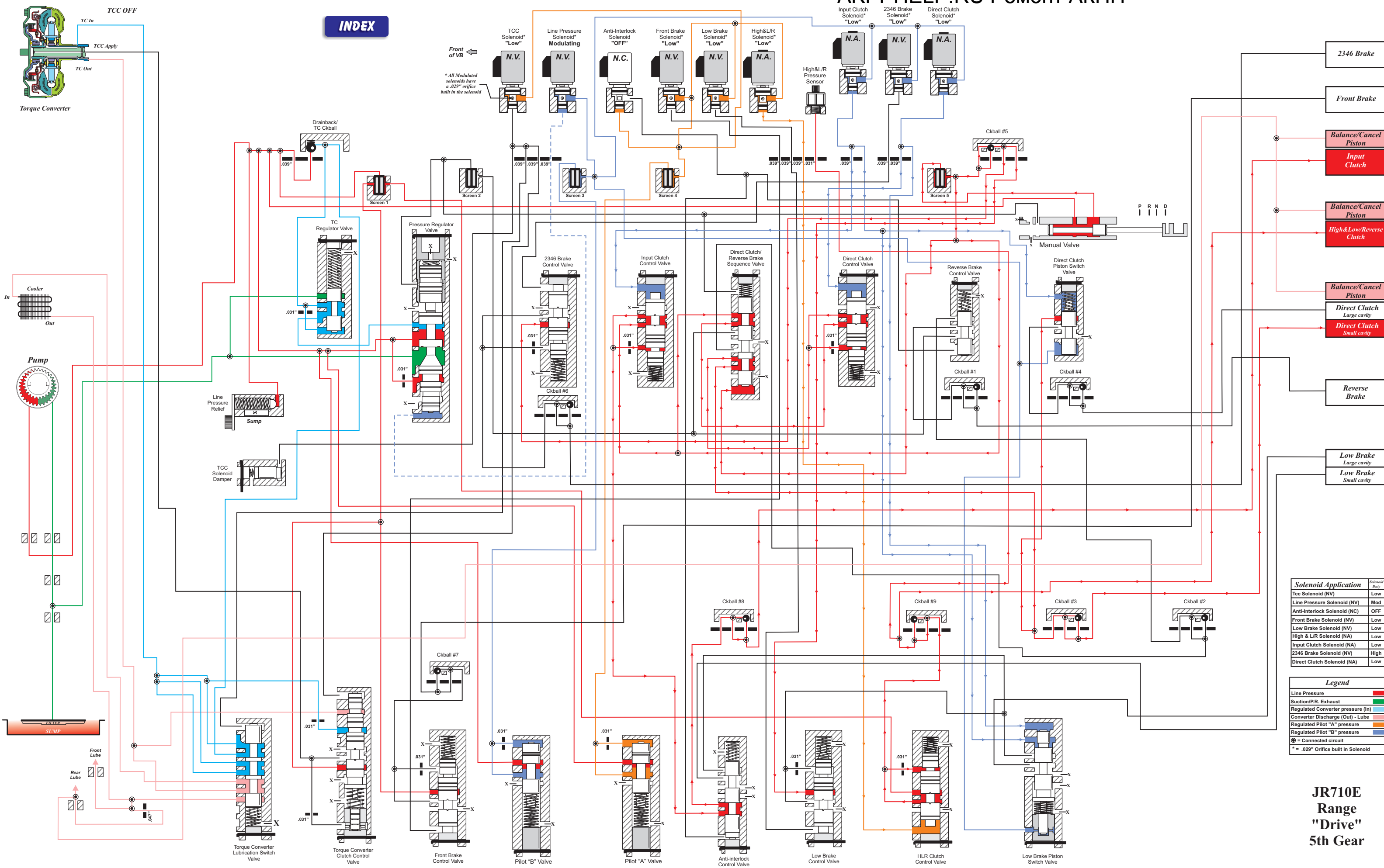
Legend	
Line Pressure	<span style="color:red">■</span>
Suction/P.R. Exhaust	<span style="color:blue">■</span>
Regulated Converter pressure (In)	<span style="color:green">■</span>
Converter Discharge (Out) - Lube	<span style="color:orange">■</span>
Regulated Pilot "A" pressure	<span style="color:yellow">■</span>
Regulated Pilot "B" pressure	<span style="color:purple">■</span>
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
**Range**  
**"Drive"**  
**4th Gear**

- 2346 Brake
- Front Brake
- Balance/Cancel Piston
- Input Clutch
- Balance/Cancel Piston
- High&Low Reverse Clutch
- Balance/Cancel Piston
- Direct Clutch Large cavity
- Direct Clutch Small cavity
- Reverse Brake
- Low Brake Large cavity
- Low Brake Small cavity



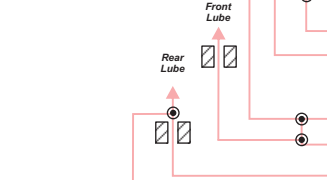
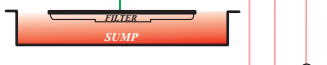
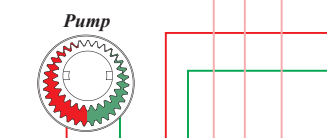
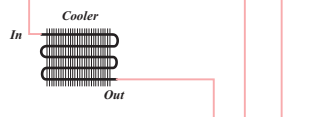
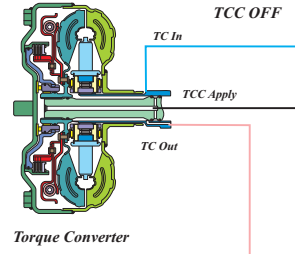
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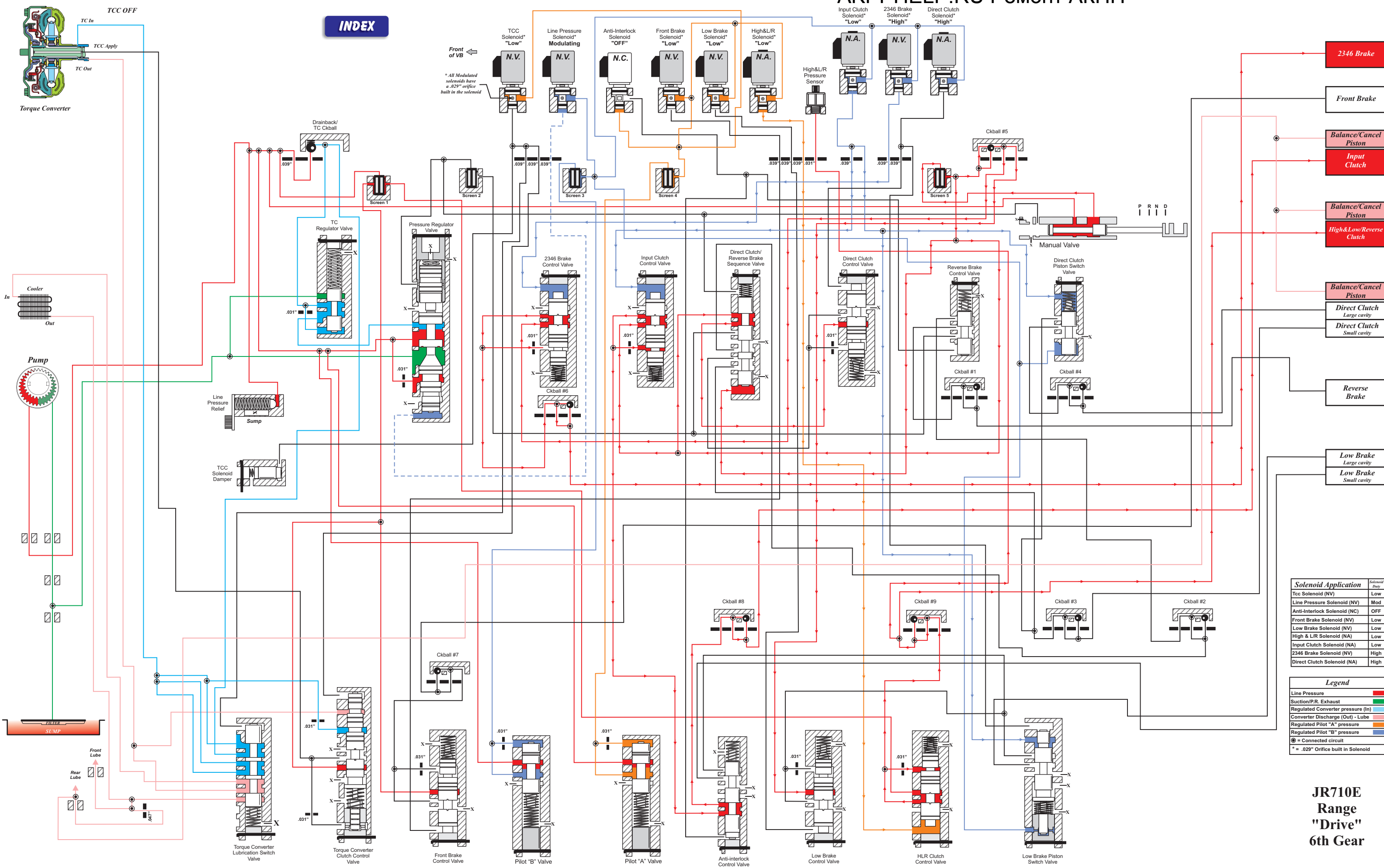
Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	Low
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	Low
2346 Brake Solenoid (NV)	High
Direct Clutch Solenoid (NA)	Low

Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Light Blue
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
**Range**  
**"Drive"**  
**5th Gear**



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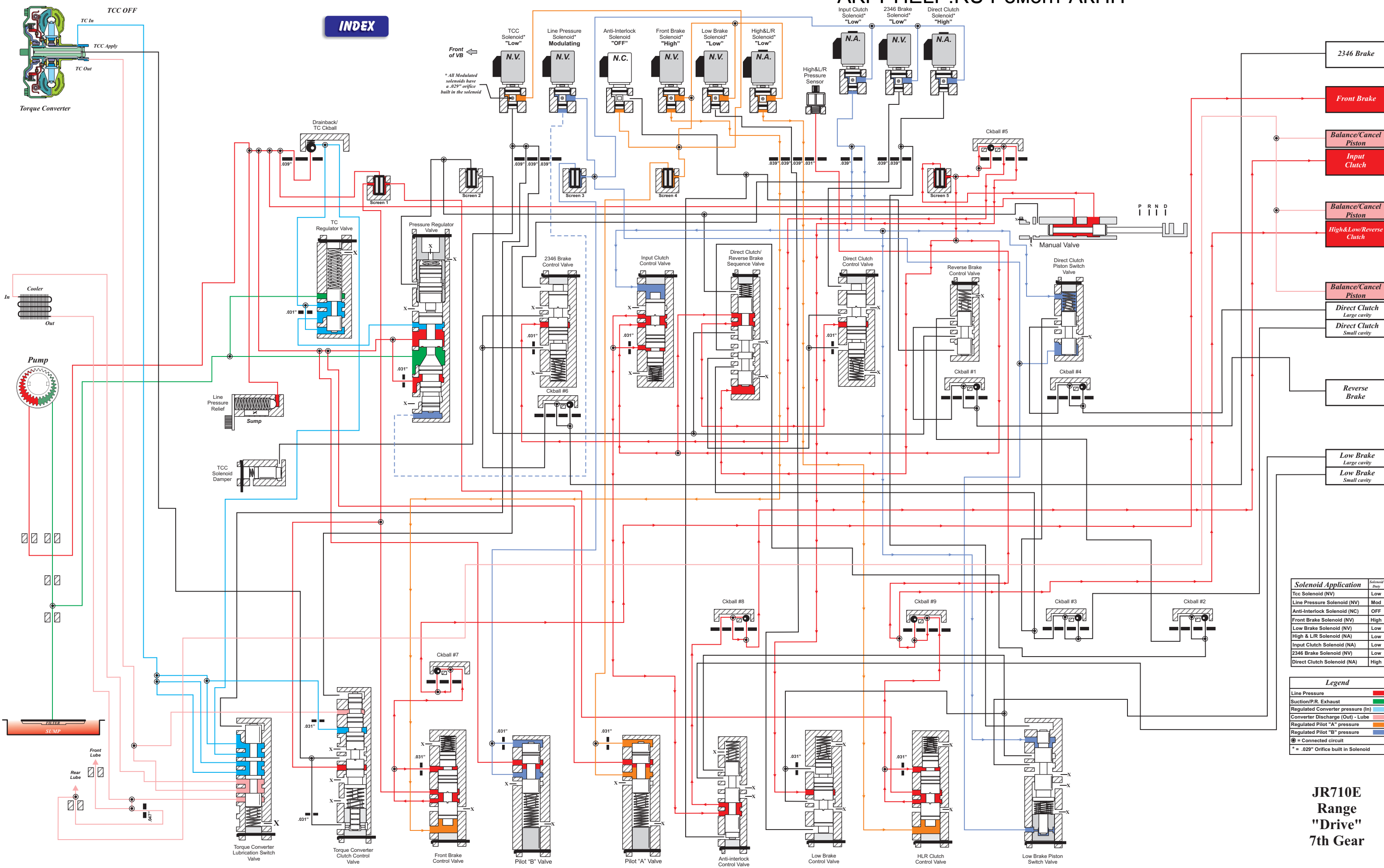


Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	Low
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	Low
2346 Brake Solenoid (NV)	High
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	<span style="color:red">■</span>
Suction/P.R. Exhaust	<span style="color:blue">■</span>
Regulated Converter pressure (In)	<span style="color:green">■</span>
Converter Discharge (Out) - Lube	<span style="color:orange">■</span>
Regulated Pilot "A" pressure	<span style="color:yellow">■</span>
Regulated Pilot "B" pressure	<span style="color:purple">■</span>
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
**Range**  
**"Drive"**  
**6th Gear**

INDEX



Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	Low
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	Low
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

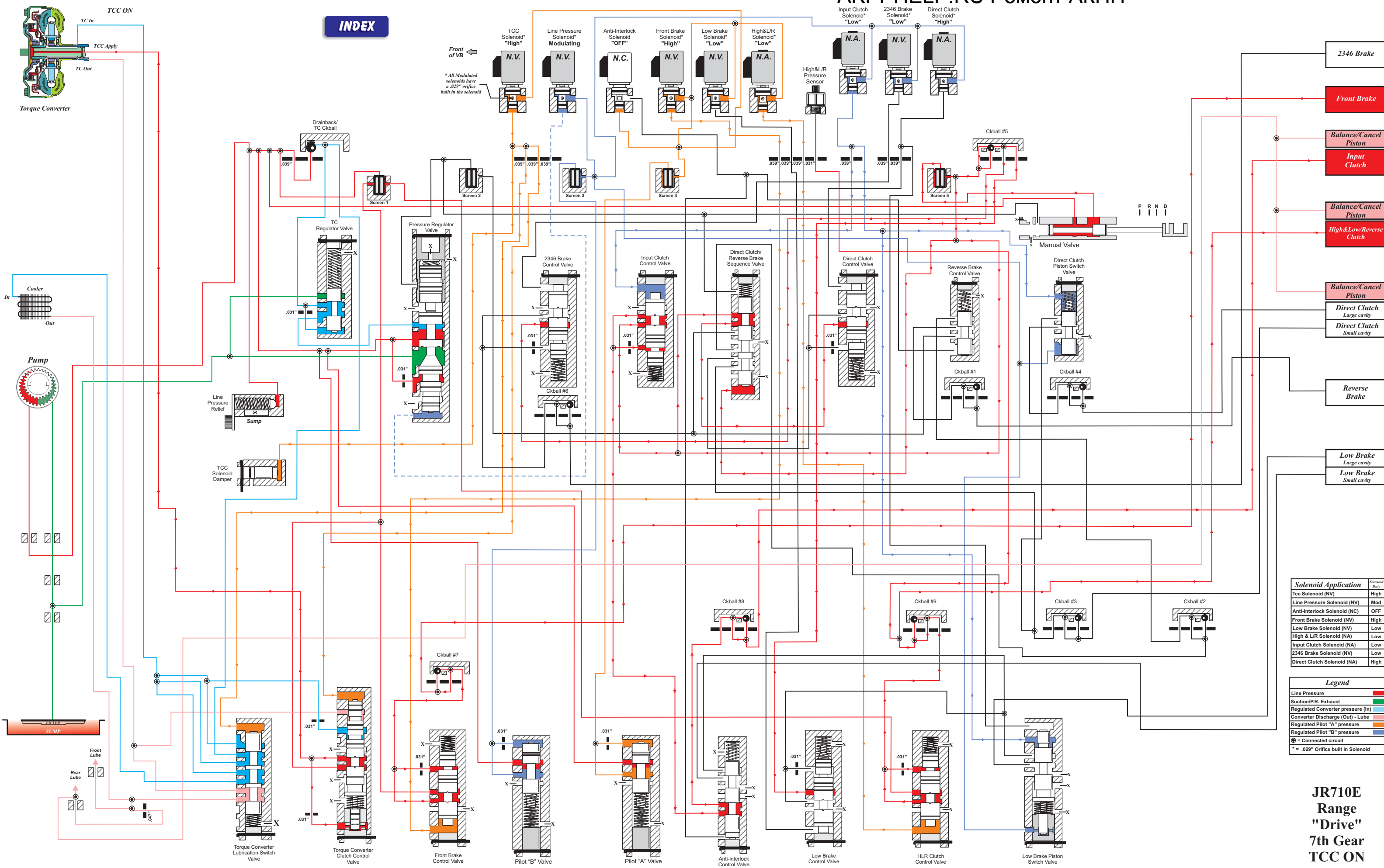
Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Blue
Regulated Converter pressure (In)	Green
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Light Blue
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

- 2346 Brake
- Front Brake
- Balance/Cancel Piston
- Input Clutch
- Balance/Cancel Piston
- High&Low Reverse Clutch
- Balance/Cancel Piston
- Direct Clutch Large cavity
- Direct Clutch Small cavity
- Reverse Brake
- Low Brake Large cavity
- Low Brake Small cavity

JR710E  
Range  
"Drive"  
7th Gear



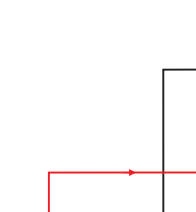
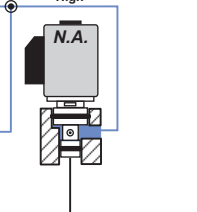
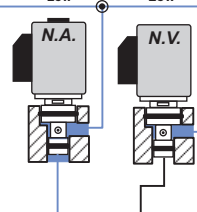
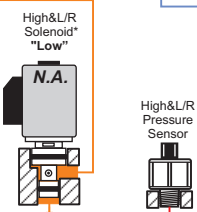
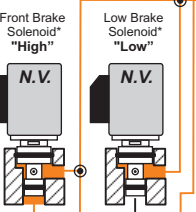
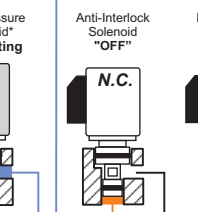
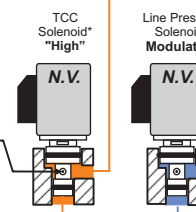
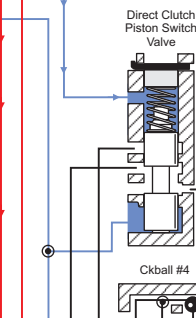
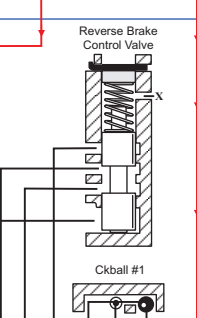
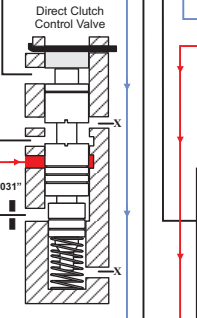
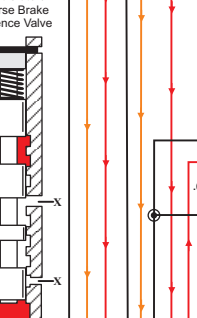
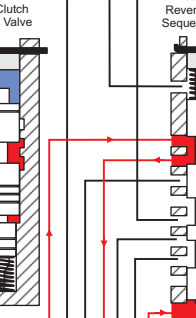
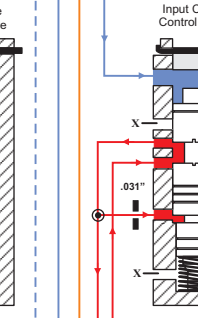
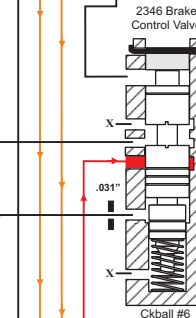
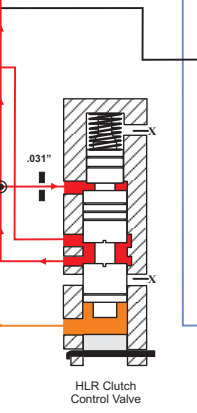
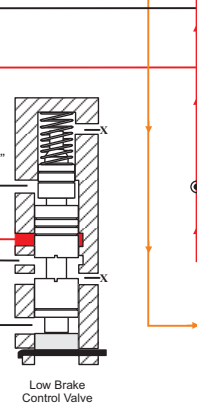
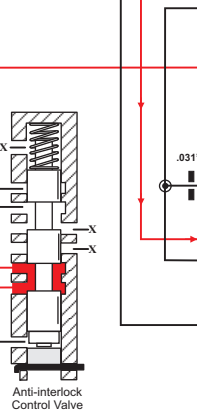
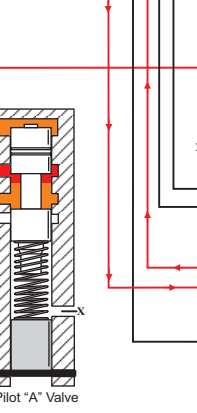
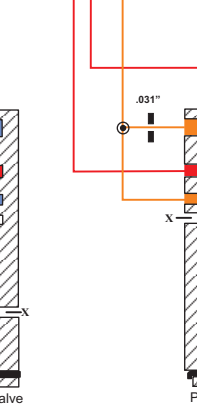
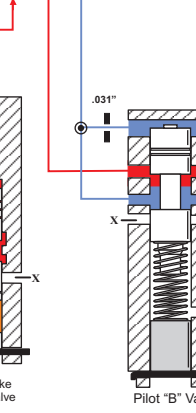
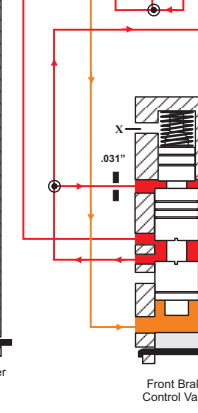
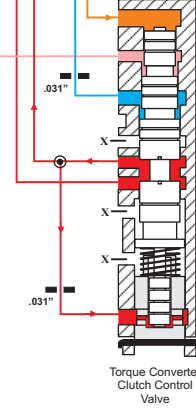
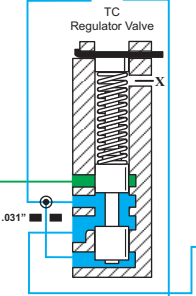
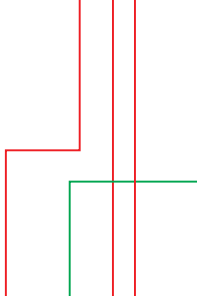
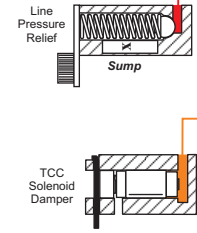
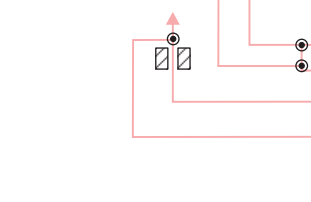
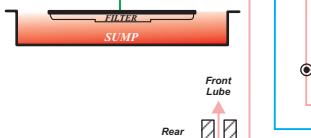
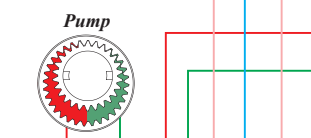
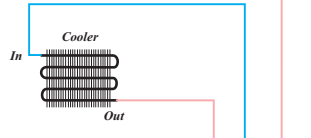
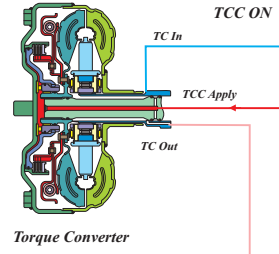
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Solenoid Application	Solenoid Duty
Tcc Solenoid (NV)	High
Line Pressure Solenoid (NV)	Mod
Anti-Interlock Solenoid (NC)	OFF
Front Brake Solenoid (NV)	High
Low Brake Solenoid (NV)	Low
High & L/R Solenoid (NA)	Low
Input Clutch Solenoid (NA)	Low
2346 Brake Solenoid (NV)	Low
Direct Clutch Solenoid (NA)	High

Legend	
Line Pressure	Red
Suction/P.R. Exhaust	Green
Regulated Converter pressure (In)	Blue
Converter Discharge (Out) - Lube	Orange
Regulated Pilot "A" pressure	Yellow
Regulated Pilot "B" pressure	Purple
⊕ = Connected circuit	
* = .029" Orifice built in Solenoid	

**JR710E**  
**Range**  
**"Drive"**  
**7th Gear**  
**TCC ON**



2346 Brake

Front Brake

Balance/Cancel Piston  
Input Clutch

Balance/Cancel Piston  
High&Low Reverse Clutch

Balance/Cancel Piston  
Direct Clutch Large cavity  
Direct Clutch Small cavity

Reverse Brake

Low Brake Large cavity  
Low Brake Small cavity

Front of VB  
\* All Modulated solenoids have a .029" orifice built in the solenoid

P R N D

Ckball #6

Ckball #7

Ckball #8

Ckball #5

Ckball #9

Ckball #2

Screen 1

Screen 2

Screen 3

Screen 4

Screen 5

Ckball #1

Ckball #3

Ckball #4

Ckball #2