



# Technical Service Information

## FORD 4R100 "PWM" AND "NON-PWM" PUMP DIFFERENCES

**CHANGE:** Beginning at the start of production in 1999, the 4R100 transmission was offered with two different torque converter clutch application strategies. A "PWM" (Pulse Width Modulated) version, was added in V-10 gas powered vehicles and all diesel, and a "NON-PWM" version, offered in all other gas powered vehicles. This required two different solenoid packs as well as two different pump assemblies.

**REASON:** For smooth converter apply on V-10 gas and diesel engine models.

### PARTS AFFECTED:

#### (1) PUMP ASSEMBLY:

- The pump cover assembly had the rear of the Converter Clutch Valve bore enlarged approximately .070" to accommodate the enlarged land of the Converter Clutch Valve as shown in Figure 3. A .036" orifice and an air bleed were added to the TCC Solenoid signal passage as shown in Figure 2.
- The Converter Clutch Control Valve's rear spool was enlarged approximately .070." There was also a bushing and valve added to the end of the valve train as shown in Figure 3. A hole was added to the pump cover to connect the Converter Clutch Control Valve Bushing to Converter Regulator Valve oil, as shown in Figure 2.
- The Converter release orifice in the NON-PWM pump cover, as shown in Figure 1, was removed from the PWM pump cover as shown in Figure 2.

*Refer to Figure 4 for the NON-PWM pump hydraulic circuit.*

*Refer to Figure 5 for the PWM pump hydraulic circuit with all of the hydraulic changes shown.*

#### THE SOLENOID PACK:

- The PWM solenoid pack requires a Pulse Width Modulated torque converter clutch solenoid and
- (2) the NON-PWM solenoid pack requires an on-off torque converter clutch solenoid. *Refer to Figure 6 to identify the differences between the two solenoid packs.*

### INTERCHANGABILITY:

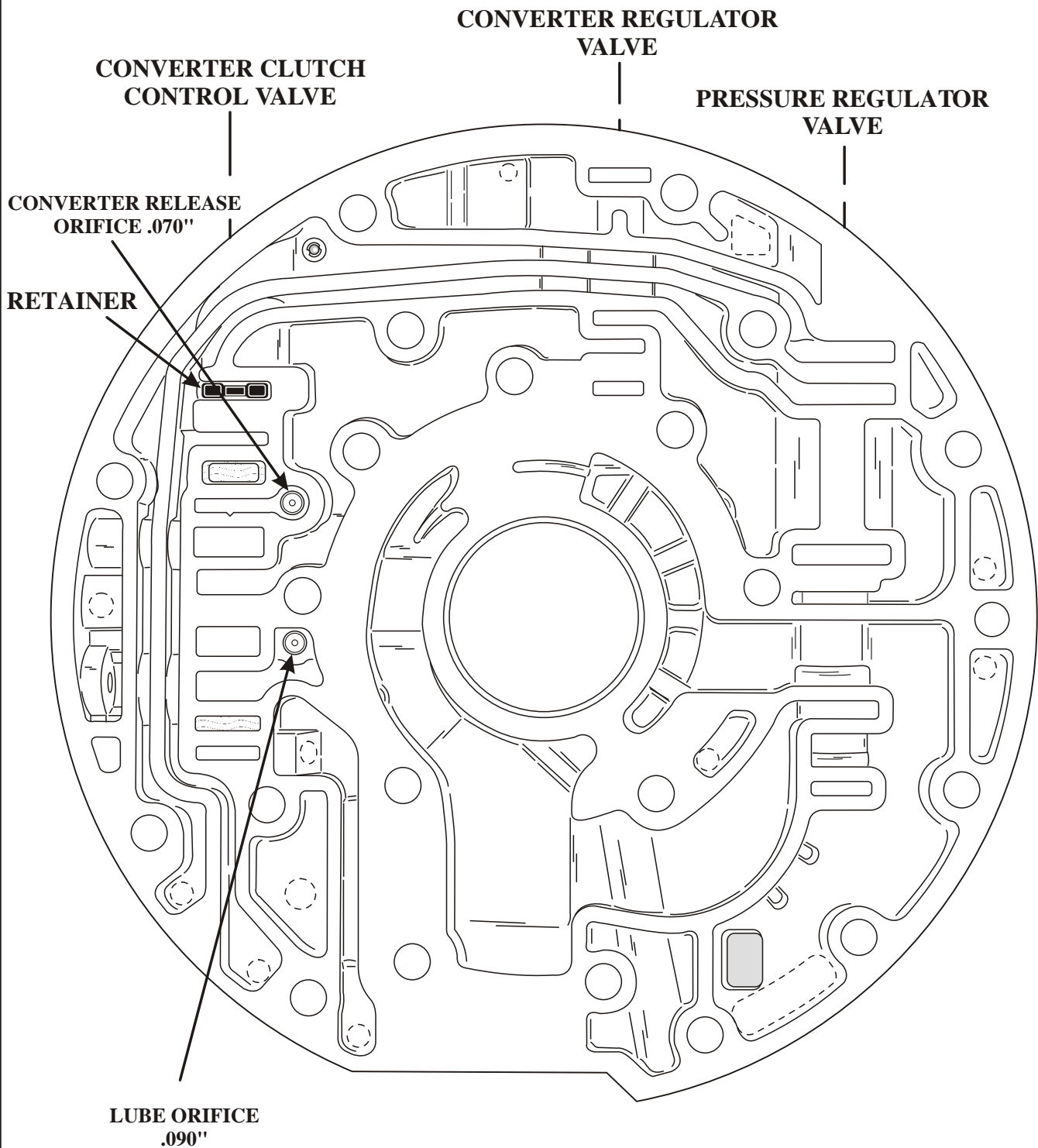
None of the parts listed above are interchangeable from model to model.

### SERVICE INFORMATION:

"NON-PWM" Pump assy. (with "Cast Iron" coast clutch drum).....	F81Z-7A103-AA
"NON-PWM" Pump assy. (with "Stamped Steel" coast clutch drum).....	F81Z-7A103-BA
"PWM" Pump assy. (with "Stamped Steel" coast clutch drum).....	F81Z-7A103-CA
"NON-PWM" Solenoid Pack.....	F81Z-7G391-BA
"PWM" Solenoid Pack.....	F81Z-7G391-AB

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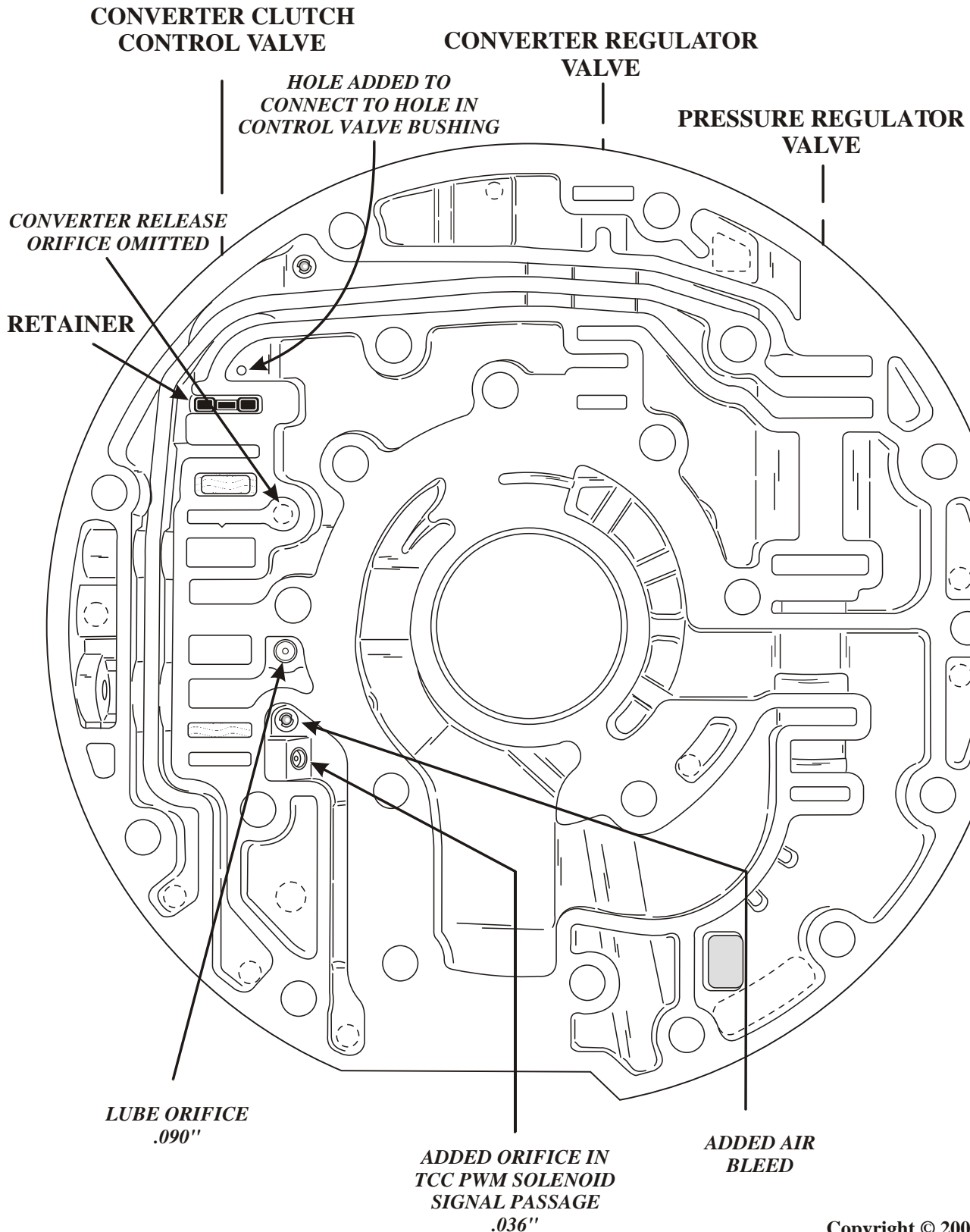
## 4R100 "NON-PWM" PUMP COVER ASSEMBLY



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Figure 1

## 4R100 "PWM" PUMP COVER ASSEMBLY

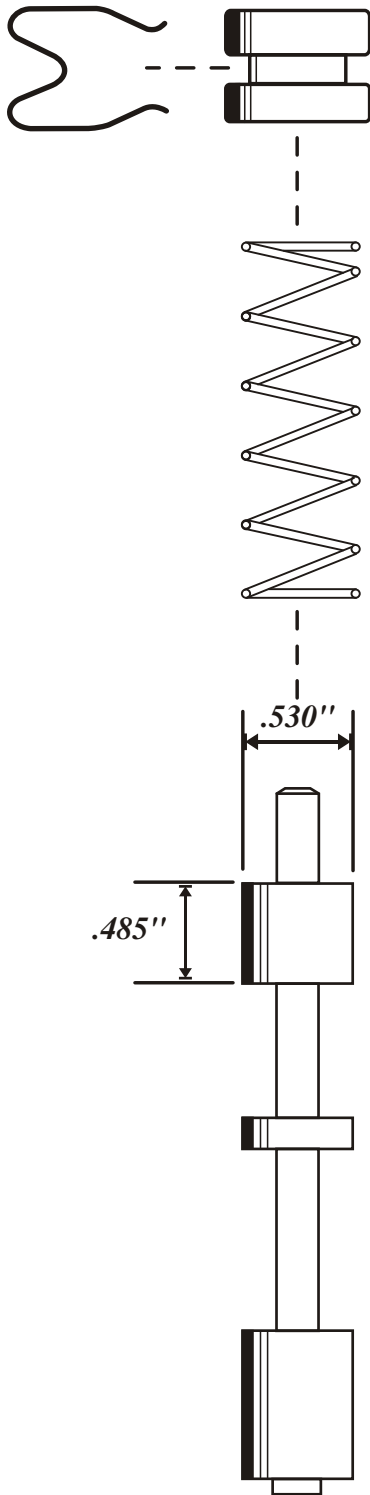


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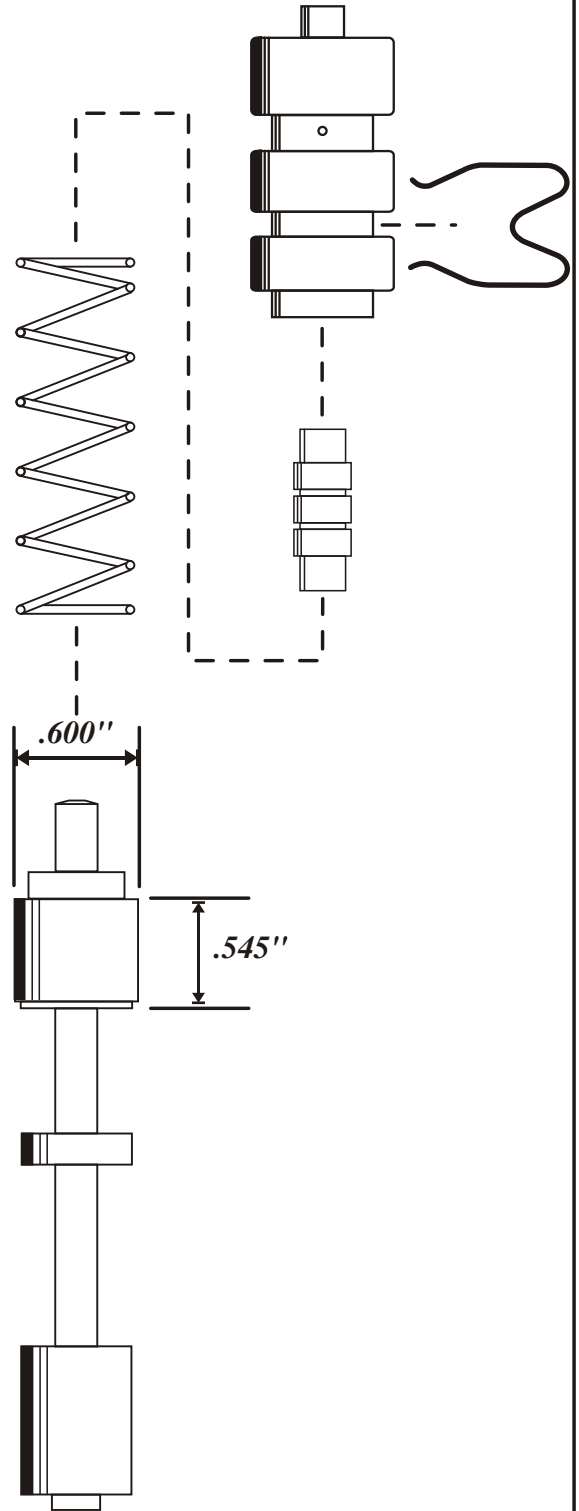
Figure 2

## CONVERTER CLUTCH CONTROL VALVE

"NON-PWM"



"PWM"

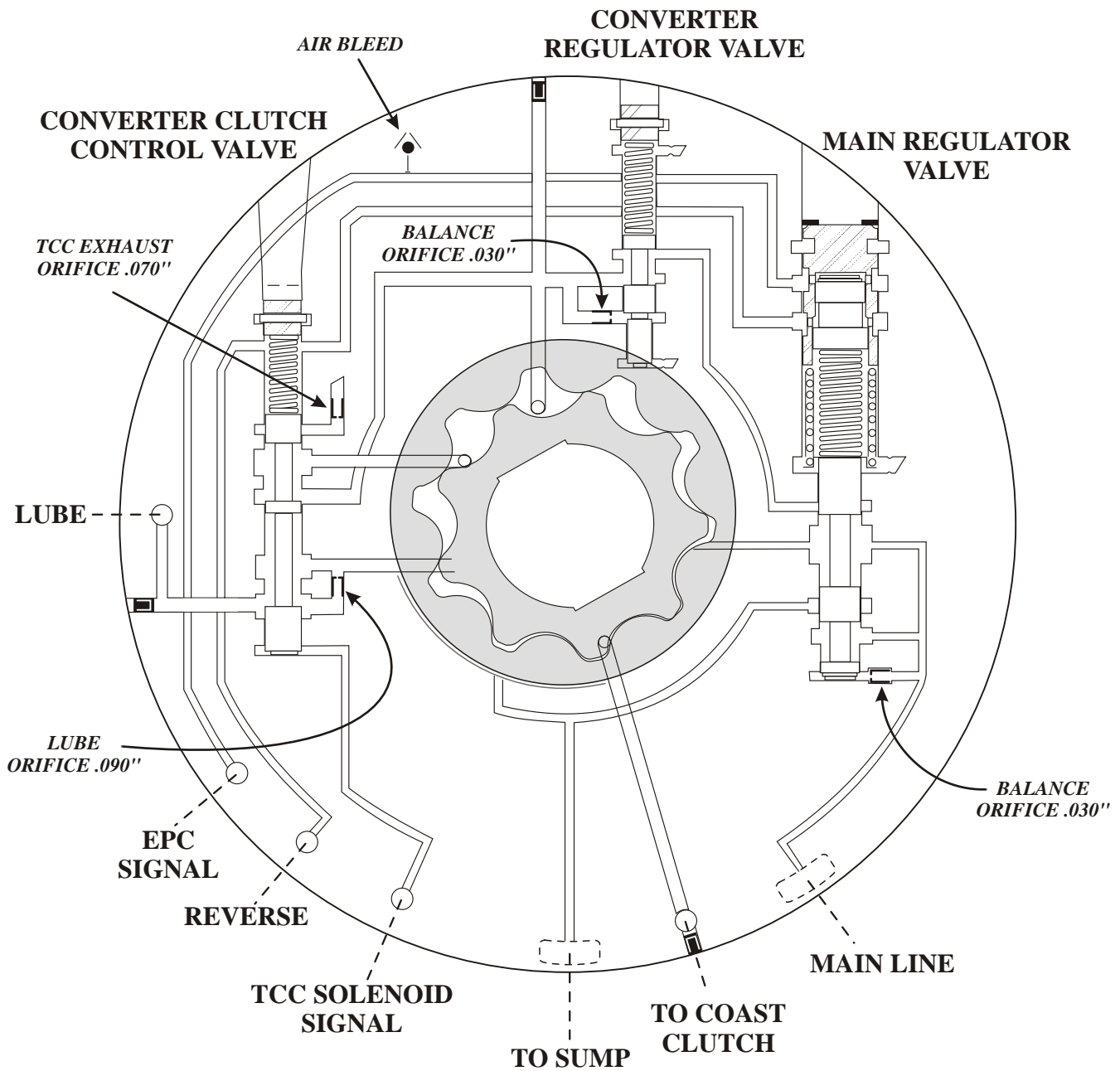


*THE DIAMETER AND THE LENGTH OF THE SPOOL ON THE VALVE LAND SHOWN ABOVE, WERE INCREASED ON PWM VERSIONS. THE BORE IN THE PUMP WAS ALSO ENLARGED APPROXIMATELY .070" TO ACCOMMODATE THE CHANGES IN THE DIAMETER OF THE VALVE*

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Figure 3

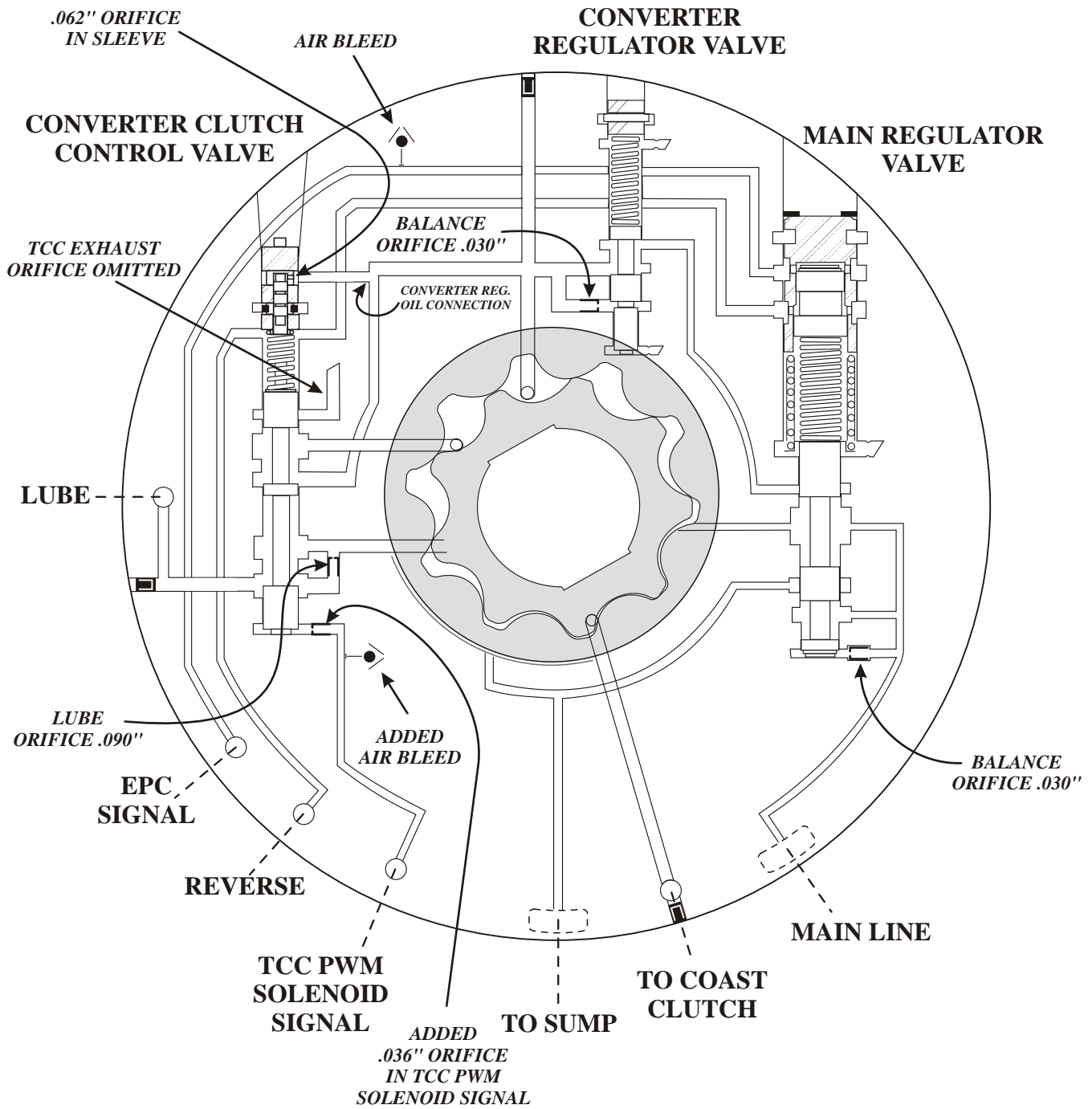
## 4R100 "NON-PWM" PUMP HYDRAULIC CIRCUIT



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Figure 4

## 4R100 "PWM" PUMP HYDRAULIC CIRCUIT



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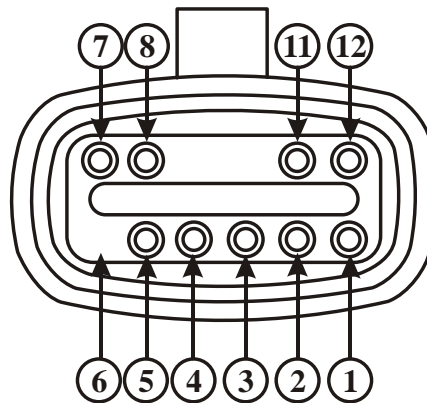
Figure 5

## FORD 4R100

### SOLENOID RESISTANCE CHARTS

<i>Solenoid Resistance Chart</i>		
<i>Solenoid</i>	<i>Solenoid Body Pin Numbers</i>	<i>Resistance</i>
<i>Shift Solenoid "B" (2)</i>	<i>1 and 2</i>	<i>20-30 Ohms</i>
<i>Shift Solenoid "A" (1)</i>	<i>1 and 3</i>	<i>20-30 Ohms</i>
<i>TCC Solenoid, On-Off (NON-PWM)</i>	<i>1 and 4</i>	<i>20-30 Ohms</i>
<i>TCC Solenoid, Diesel &amp; V10 (PWM)</i>	<i>1 and 4</i>	<i>10-20 Ohms</i>
<i>Coast Clutch Solenoid</i>	<i>1 and 5</i>	<i>20-30 Ohms</i>
<i>Electronic Pressure Control Solenoid</i>	<i>11 and 12</i>	<i>3.0-5.0 Ohms</i>
<i>Transmission Fluid Temp Sensor</i>	<i>7 and 8</i>	<i>Variable</i>

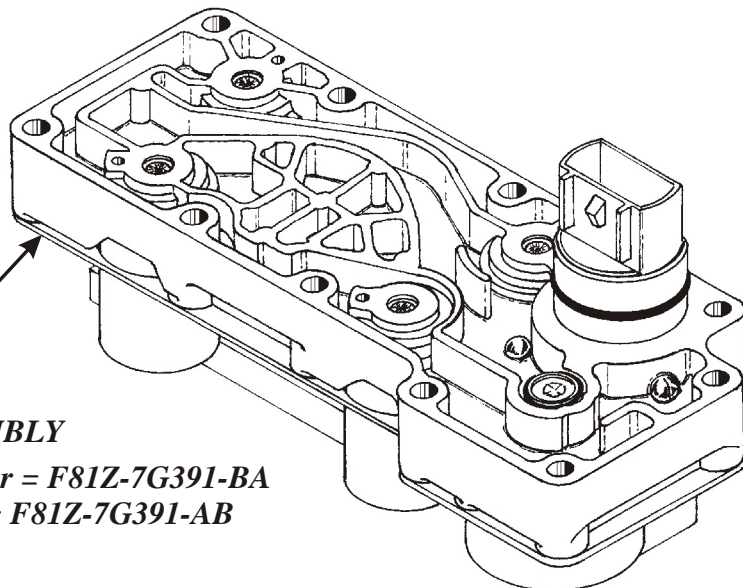
### SOLENOID BODY CONNECTOR



### SOLENOID ASSEMBLY

"NON-PWM" versions - Part Number = F81Z-7G391-BA

"PWM" versions ----- Part Number = F81Z-7G391-AB



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Figure 6