62TE Update
Front Wheel Drive 6 Speed

Presented by:
Mike Souza
ATRA Senior Research Technician
Welcome To Today’s Presentation

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Why Six-Speed?
The 62TE transaxle offers distinct advantages over four-speed transaxles. Providing additional ratios offers quicker acceleration due to shorter shift intervals and the ability to maintain an engine’s optimal RPM range, providing the highest efficiency. This translates into increased fuel economy.
The 62TE is the new generation of FWD/AWD Transaxles in production for Dodge/Chrysler. The concept has been around for many years but has been introduced in the 2007 Model Year.

These models include: “JS” Seabring, Seabring Convertible, and Avenger with the 3.5L V6 “CS” Pacifica with the 4.0L V6.

The concept was to take a proven reliable 41TE (4 speed) and split the transfer/pinion drive with an underdrive/direct clutch to drive a double ratio to the final drive.

Although this is classified as a 6 speed fwd transaxle, there are 7 forward speeds due to the addition of a 4th gear prime ratio that is used during a 6-4 kickdown.

This prevents a double swap of components allowing for a smooth kickdown.
The 62TE transaxle is identified by a bar code label (1) that is fixed to the transaxle or the “PK” number (2).

1. Traceability
2. Supplier Code
3. Component Code
4. Build Day (Julian Date)
5. Build Year
7. Build Sequence
8. Last Three Part Number Digits
9. Revision Level
10. Transmission Part Number
11. Part Number Prefix
62TE Three Speed Sensors

ISS
The ISS has been relocated to the top of the case, and like the 41TE, continues to read turbine speed from the input clutch hub.

TSS
The 40/41TE OSS has been relocated to the rear of the case (backside) and renamed the TSS. It continues to read rotation of the front annulus/rear carrier assembly.

OSS
The OSS is located at the rear of the case and is unique to the 62TE. It reads the rotation of the underdrive compounder output carrier.
The are two different metals used to control and signal the module both solenoid command and circuit monitors. Pressure Switches are GOLD pins and Solenoids are TIN pins.

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Assignment</th>
<th>Plating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LP RTN GRND</td>
<td>Gold</td>
</tr>
<tr>
<td>2</td>
<td>LR Solenoid</td>
<td>Tin</td>
</tr>
<tr>
<td>3</td>
<td>VFS EMCC +</td>
<td>Tin</td>
</tr>
<tr>
<td>4</td>
<td>LP +5V</td>
<td>Gold</td>
</tr>
<tr>
<td>5</td>
<td>C1</td>
<td>Tin</td>
</tr>
<tr>
<td>6</td>
<td>LP Signal</td>
<td>Gold</td>
</tr>
<tr>
<td>7</td>
<td>UD Solenoid</td>
<td>Tin</td>
</tr>
<tr>
<td>8</td>
<td>C2</td>
<td>Tin</td>
</tr>
<tr>
<td>9</td>
<td>C3</td>
<td>Tin</td>
</tr>
<tr>
<td>10</td>
<td>Common Bus Bar</td>
<td>Tin</td>
</tr>
<tr>
<td>11</td>
<td>OD PS</td>
<td>Gold</td>
</tr>
<tr>
<td>12</td>
<td>VFS VLP +</td>
<td>Tin</td>
</tr>
<tr>
<td>13</td>
<td>C4</td>
<td>Tin</td>
</tr>
<tr>
<td>14</td>
<td>2/4 PS</td>
<td>Gold</td>
</tr>
<tr>
<td>15</td>
<td>DR PS</td>
<td>Gold</td>
</tr>
<tr>
<td>16</td>
<td>LR PS</td>
<td>Gold</td>
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<tr>
<td>17</td>
<td>LC Solenoid</td>
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<tr>
<td>18</td>
<td>LC PS</td>
<td>Gold</td>
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<tr>
<td>19</td>
<td>OD Solenoid</td>
<td>Tin</td>
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<tr>
<td>20</td>
<td>DR Solenoid</td>
<td>Tin</td>
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<tr>
<td>21</td>
<td>2/4 Solenoid</td>
<td>Tin</td>
</tr>
<tr>
<td>22</td>
<td>Thermistor Sense</td>
<td>Tin</td>
</tr>
<tr>
<td>23</td>
<td>Thermistor Ground</td>
<td>Tin</td>
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</table>
# 62TE Pressure Switch Status

<table>
<thead>
<tr>
<th>Gear Position</th>
<th>L/R Switch</th>
<th>2/4 Switch</th>
<th>OD Switch</th>
<th>LC Switch</th>
<th>DC Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
</tr>
<tr>
<td>Park/Neutral</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
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<tr>
<td>First Gear</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
</tr>
<tr>
<td>First Gear-Coast</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
</tr>
<tr>
<td>Second Gear</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
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<tr>
<td>Third Gear</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
<td>OP</td>
</tr>
<tr>
<td>Third Gear-Coast</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
</tr>
<tr>
<td>Fourth Gear</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
<td>OP</td>
</tr>
<tr>
<td>Fourth Prime Gear</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
</tr>
<tr>
<td>Fourth Gear-Coast</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
<td>CL</td>
<td>OP</td>
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<tr>
<td>Fifth Gear</td>
<td>OP</td>
<td>OP</td>
<td>CL</td>
<td>OP</td>
<td>CL</td>
</tr>
<tr>
<td>Sixth Gear</td>
<td>OP</td>
<td>CL</td>
<td>CL</td>
<td>OP</td>
<td>CL</td>
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</tbody>
</table>
Other Changes from the 41TE to the 62TE

• RFE-style solenoid/pressure switch assembly with 23-way connector
• Electronically Modulated Converter Clutch (EMCC) Variable Force
• Solenoid (VFS)
• Line Pressure (LP) VFS
• Line Pressure sensor
• Transaxle Range Sensor (TRS)
Other Changes from the 41TE to the 62TE

- Low clutch switch valve
- New blocker valve (Direct Clutch Switch)
  Prevents simultaneous application of the DC and LC
Other Changes from the 41TE to the 62TE

The 62TE valve body has nine (9) check balls (used for plugs) and four used in the hydraulic shift control circuit:

- The 9 check balls used for plugs are non-removable.
- Some valve bodies do not have the U/D check ball #2.
Other Changes from the 41TE to the 62TE

• Three additional oil transfer tubes which supply the UD compounding assembly
This 6 speed transaxle is basically a 41TE with some additional components referred to as the Underdrive (UD) Compounder Assembly.

Underdrive (UD) Compounder Assembly:

- Low Clutch (LC)
- Direct Clutch (DC)
- Overrunning Clutch (ORC)
- Planetary gear set
The underdrive compounder assembly has two modes of operation: Direct and Reduction.

The 2-3, 3-2, and 4-2 shifts require a “Double Swap” shift. This occurs when two elements are turned off while two different elements are engaged.

The clutch-to-clutch synchronization takes place within 40 - 70 milliseconds, producing a smooth shift. If the underdrive compounder assembly shifts too early (in relation to the shifts taking place in the main centerline), a shudder or harsh shift results.

If the underdrive assembly shifts to late, the driver experiences a “Double Bump” sensation.

To avoid a double swap shift in a 6-4 downshift, the transaxle shifts into 4th prime, which requires the deactivation of the OD clutch and the simultaneous application of the UD clutch.
A freewheel (sprag) is used to provide this nonsynchronous clutch apply and release sequence.

The sprag holds in first, third and fourth providing a smoother 1-2, 2-1, 4-5 and 5-4 shift.

<table>
<thead>
<tr>
<th>GEAR</th>
<th>RATIO</th>
<th>UD</th>
<th>OD</th>
<th>R</th>
<th>2-4</th>
<th>L-R</th>
<th>LC</th>
<th>DC</th>
<th>ORC</th>
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<tr>
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<td></td>
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<td>2.842</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td>A</td>
<td>DC</td>
<td>H</td>
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<tr>
<td>3 *</td>
<td>2.284</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td>A</td>
<td>DC</td>
<td>H</td>
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<td>4 P</td>
<td>1.573</td>
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<td></td>
<td></td>
<td></td>
<td>A</td>
<td>A</td>
<td>DC</td>
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<td>4</td>
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<td>A</td>
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<td></td>
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<td>A</td>
<td>A</td>
<td>DC</td>
<td>H</td>
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<td>5</td>
<td>1</td>
<td>A</td>
<td>A</td>
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<td>A</td>
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<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

- A = Applied
- H = Holding
- * = Limp-in Mode
- ^ = Applied in coast only
- P = Prime

Same Ratios carried over from the 41TE
Power Flow

62TE 1st Gear

1. UD Clutch (Driving)
2. L/R Clutch (Holding)
3. Low Clutch (Holding in Coast)
Power Flow

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UD Clutch (Driving)</td>
</tr>
<tr>
<td>2</td>
<td>L-R Clutch (Holding)</td>
</tr>
<tr>
<td>3</td>
<td>Direct Clutch (Driving)</td>
</tr>
</tbody>
</table>
Power Flow

62TE 3rd Gear

1. UD Clutch (Driving)
2. 2-4 Clutch (Holding)
3. Low Clutch (Holding in Coast)
   ORC (Holding)

your source for engineered solutions
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>UD Clutch (Driving)</td>
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<tr>
<td>2</td>
<td>2-4 Clutch (Holding)</td>
</tr>
<tr>
<td>3</td>
<td>Direct Clutch (Driving)</td>
</tr>
</tbody>
</table>
### Power Flow

**62TE 4th Gear**

<table>
<thead>
<tr>
<th></th>
<th>Clutch (Driving)</th>
<th></th>
<th>Clutch (Holding)</th>
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<tbody>
<tr>
<td>1</td>
<td>UD Clutch</td>
<td>3</td>
<td>Low Clutch</td>
</tr>
<tr>
<td>2</td>
<td>OD Clutch</td>
<td></td>
<td>ORC</td>
</tr>
</tbody>
</table>

**Diagram:**

- Arrow 1: UD Clutch (Driving)
- Arrow 2: OD Clutch (Driving)
- Arrow 3: Low Clutch (Holding)
- Arrow 4: ORC (Holding)
Power Flow

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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UD Clutch (Driving)</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>OD Clutch (Driving)</td>
<td></td>
</tr>
</tbody>
</table>
Compounder Assembly Removal

Remove the valve body & feed tubes before removing compounder assembly.

Remove snap ring (no need to remove all the bolts).
Compounder Assembly Removal

The O.E. tool or similar makes removal of the Compounder Assembly a much easier job.

Only remove bolts needed to install tool

Miller Tool #9908
Main Compounder Components

- Planetary Assembly
- Direct Clutch
- Over-run Clutch Assembly (Sprag)
- Low Clutch
Component Disassembly

Remove the Planetary Gear set.

There is an Adjustable Shim between the Sun Gear & Planet.
Component Disassembly

Using two small picks or scribes remove the Retainer Clip

2 small picks

Retaining Clip

3 Tabs
Component Disassembly

Using two small picks or scribes remove the Split Bearing.

Check the “Split” Roller Bearing for wear or damage.

Then Remove the Direct Clutch assembly.
Direct Clutch Disassembly - Reassembly

1: Remove Tapered Snap ring
2: Remove Selectable Plate
3: Remove #1 thrust bearing, hub, and #2 thrust bearing
4: Remove single sided frictions
5: Compress Balance piston with tool #8250 and remove snap ring
6: Remove Piston

ASSEMBLE (Reverse Procedure)
Direct Clutch Endplay

Measure with clutch hub removed

Measure clutch clearance using 30 psi of air pressure through compounder feed hole.
Clearance is 0.037” to 0.056”
Low Clutch Disassembly - Reassembly

1: Remove Transfer Shaft
2: Remove Sprag, Snap Ring, Reaction Plate and Clutch Plates
3: Remove Clutches and Steels
4: Compress Return spring with tool #9725
5: Remove Piston

ASSEMBLE (Reverse Procedure)
Low Clutch Endplay

Measure clutch clearance using 30 psi of air pressure through compounder feed hole.

Clearance is: 0.048-0.76mm (.018-.029 in)
Underdrive “One-Way Clutch”

The inner race has offset splines, the outer race has the ID groove (faces down when installed correctly). The outer race should rotate counterclockwise when all is together correctly.
Scarf Cut Sealing Rings

Check the Scarf Cut Sealing Rings for wear and damage. Replace as needed.
Common Problem

Direct Clutch Piston De-lamination (split rubber seal). Some pistons with minimal damage may air check well.
The 62TE Torque Converter is what they call as “Squished Design”. This change had to happen do to space availability.
Torque Converter

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Turbine</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Transmission Case</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Impeller</td>
<td>6</td>
</tr>
</tbody>
</table>
The 62TE Front Pump is also called “squished design” due to the limited space. Side by side the changes are obvious.
62TE Front Pump Assembly

When assembling the front pump it is important to note that the pump gears now have assemble dots. These dots must face up when assembling.

The side of the gears with the greater chamfer on the end of the teeth goes into the pump pocket first (facing down).
62TE Front Pump Assembly

Face to gear clearance is 0.0008 - 0.0018 in. Check with plastic gauge!

Outer gear and pocket
0.0079 - 0.0035 in.

Outer gear and crescent
0.0023 - 0.0035 in.

Inner gear and crescent
0.0036 - 0.0151 in.
Cooler Bypass Valve

The cooler bypass valve is a high risk area. It is a good idea to replace the valve with a NEW VALVE when doing a repair on the transmission.
Most Common Failure

Low Clutch Sealing Ring Grooves

Sealing Ring Grooves
Most common failure
Ring Land Wear
Underdrive
Compounder
Low Clutch Drum

Approx. 0.005” Clearance

Normal
Badly Worn

Most common failure
Ring Land Wear
Underdrive
Compounder
Low Clutch Drum
Extreme Wear

Most common failure
Ring Land Wear
Underdrive
Compounder
Low Clutch Drum

100% Failure Rate

Available in aftermarket with steel insert
New Failure On The Technical Hotline

Underdrive Compounder
Direct Clutch Housing

A common problem is the snap ring groove is worn

DTC’s P0792, P0735, No Line Rise, Slips 1-2
Most Common Code DTC P2764, TCC Stuck “ON”

Replace the TCC solenoid Part #5169313AA.

Line Pressure Transducer

Solenoid Block

Line Pressure Solenoid
Most Common Builder Error

If the seal is installed upside down it will block the 2/4 clutch circuit and result in a loss of 3rd in limp mode, 4th or 6th. Install the seal with the slot facing up as shown.

“First Time Builder Error”

<table>
<thead>
<tr>
<th></th>
<th>UD Accumulator</th>
<th></th>
<th>LC Accumulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2/4 Accumulator</td>
<td>5</td>
<td>DC Accumulator</td>
</tr>
<tr>
<td>2</td>
<td>LR Accumulator</td>
<td>6</td>
<td>OD Accumulator</td>
</tr>
<tr>
<td>3</td>
<td>2/4 Clutch Oil Supply Seal</td>
<td>7</td>
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</tbody>
</table>
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