



AS68RC

VARIOUS SHIFT TRANSITION COMPLAINTS

COMPLAINT: Any vehicle equipped with and AS68RC transmission may suddenly experience a variety of shift transition issues affecting the K1 and B1 clutch, or, the B2 and K3 clutch. When the unit is disassembled, there may or may not be evidence of a problem with one or more of these clutch assemblies. It is possible for the TCM to have logged solenoid performance codes as well.

CAUSE: The cause may be due to a broken control valve plunger spring. There are 2 of these springs identified as spring number 345 in figure 1. One is for control valve plunger 1 (# 344 in figure 1), the other is control valve plunger 2 (# 347 in figure 1).

Linear Solenoid A controls the apply of the K1 and B1 clutch in conjunction with control valve plunger 1. If the spring for this control valve plunger has broken, transitions involving the K1 and B1 clutch may be observed (See clutch application chart in figure 2). K1 clutch transitions would include a garage shift into Drive, and/or a downshift into 4th or 3rd from 6th or 5th gear. B1 clutch transitions would include a shift into 2nd and/or 6th gear.

Linear Solenoid B controls the apply of the K3 and B2 clutch in conjunction with control valve plunger 2. If the spring for this control valve plunger has broken, a transitions involving the K3 and B2 clutch may be observed (See clutch application chart in figure 2). K3 clutch transitions would include a garage shift into Reverse, and/or a shift into 3rd and 6th gear. A B2 clutch transition complaint would occur with a downshift into 1st gear.

See figures 3, 4 and 5 for an explanation of how the linear solenoid and control valve plunger work together to control a shift transition using the 2-3 as an example.

CORRECTION: Replace the broken control plunger spring.

SERVICE INFORMATION:

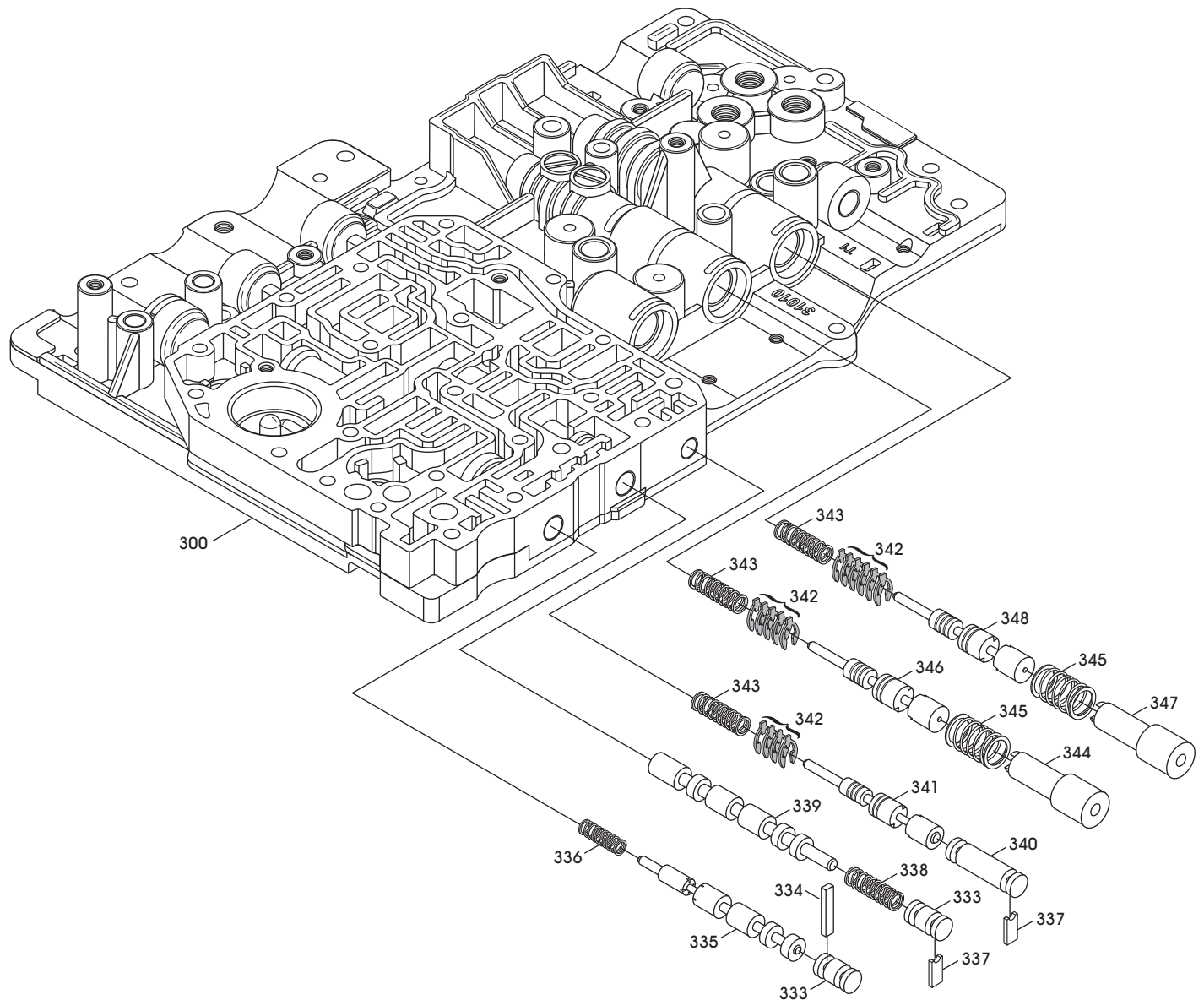
Control plunger springs are not available separately from OE or aftermarket sources at this time. Obtaining a replacement spring will require locating a good one from another valve body.

A special thank you to Rolando Farradas at Rainbow Transmissions, Hialeah, FL.

Technical Service Information

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LOWER VALVE BODY EXPLODED VIEW



- 300 LOWER VALVE BODY CASTING.
- 333 VALVE TRAIN BORE PLUG (2 REQUIRED).
- 334 LOCK-UP CONTROL VALVE BORE PLUG RETAINER.
- 335 LOCK-UP CONTROL VALVE.
- 336 LOCK-UP CONTROL VALVE SPRING (PINK).
- 337 BORE PLUG RETAINERS (2 REQUIRED).
- 338 SHIFT VALVE NUMBER 4 SPRING (BLUE).
- 339 SHIFT VALVE NUMBER 4.
- 340 CONTROL VALVE NUMBER 3 BORE PLUG.
- 341 CONTROL VALVE NUMBER 3, K1 AND K3, (LARGE DIA. = .440").
- 342 CONTROL VALVE CLIPS (CALIBRATES SPRING PRESSURE).
- 343 CONTROL VALVE SPRING (3 REQUIRED) (YELLOW).
- 344 CONTROL VALVE NUMBER 1 PLUNGER (LARGE DIA. = .668").
- 345 CONTROL VALVE PLUNGER SPRING (2 REQUIRED) (BLUE).
- 346 CONTROL VALVE NUMBER 1, K1, K2 AND B3, (LARGE DIA. = .471").
- 347 CONTROL VALVE NUMBER 2 PLUNGER (LARGE DIA. = .648").
- 348 CONTROL VALVE NUMBER 2, K3 AND B2, (LARGE DIA. = .431").

LOWER VALVE BODY SPRING SPECIFICATIONS

SPRING NUMBER 336
Free Length = 1.230"
Spring Diameter = .319"
Wire Diameter = .030"
Approx Coils = 12 (PINK)

SPRING NUMBER 343 (3)
Free Length = 1.334"
Spring Diameter = .361"
Wire Diameter = .033"
Approx Coils = 11 (YELLOW)

SPRING NUMBER 338
Free Length = 1.585"
Spring Diameter = .434"
Wire Diameter = .034"
Approx Coils = 9 (BLUE)

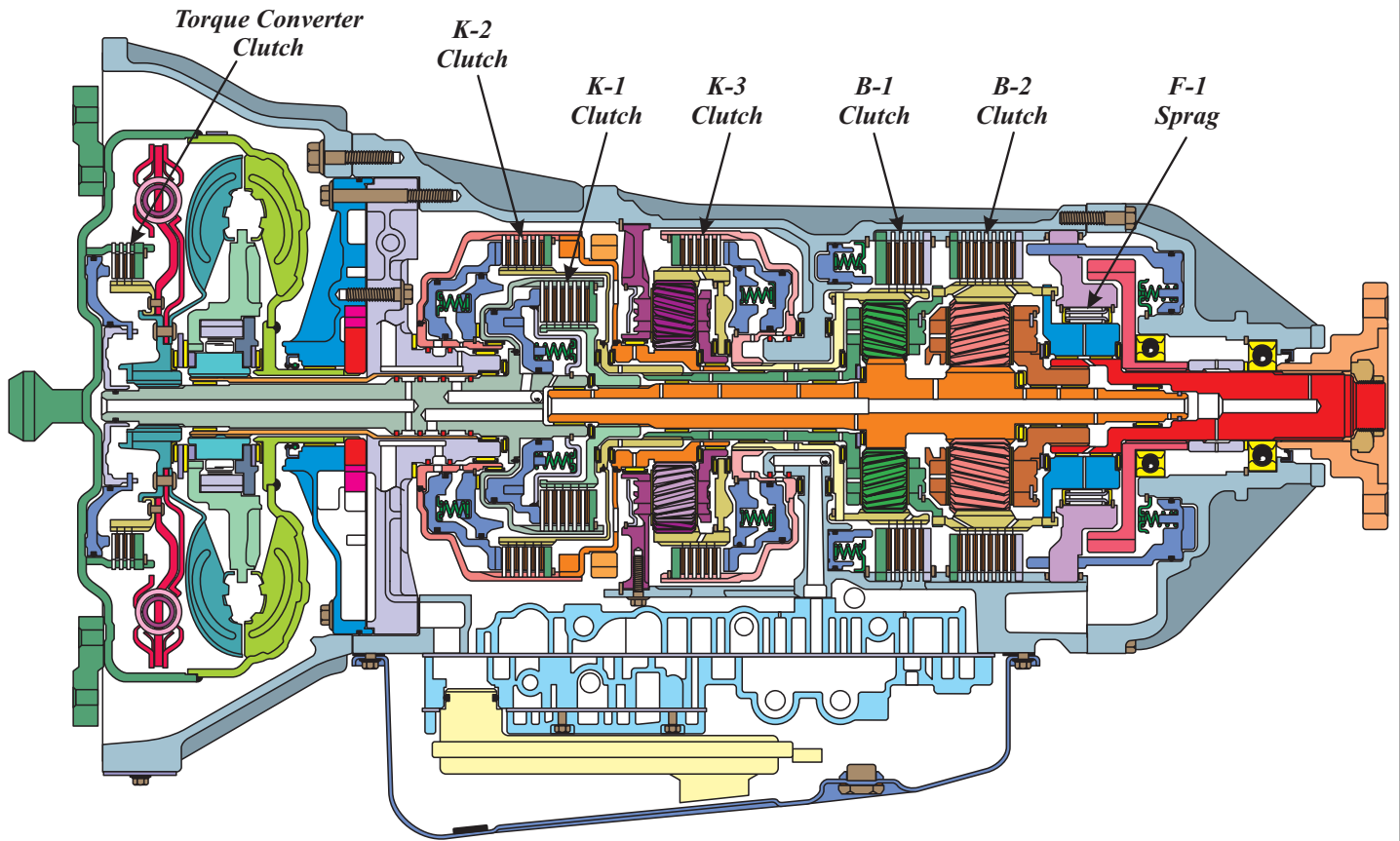
SPRING NUMBER 345 (2)
Free Length = .925"
Spring Diameter = .582"
Wire Diameter = .037"
Approx Coils = 5 (BLUE)

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Figure 1

VARIOUS SHIFT TRANSITION COMPLAINTS

AS68RC INTERNAL COMPONENT IDENTIFICATION AND LOCATION



COMPONENT APPLICATION CHART

RANGE	K-1 Clutch	K-2 Clutch	K-3 Clutch	B-1 Clutch	B-2 Clutch		F-1 Sprag		Torq Conv Clutch	Gear Ratio
Park					On					
Reverse			On		On					3.54
Neutral					On					
"D"-1st	On				On		Hold			3.74
"D"-2nd	On			On					Applied*	2.00
"D"-3rd	On		On						Applied*	1.34
"D"-4th	On	On							Applied*	1.00
"D"-5th		On	On						Applied*	0.77
"D"-6th		On		On					Applied*	0.63

* TCC is available in 2nd thru 6th gear, based on throttle position, fluid temp and vehicle speed.

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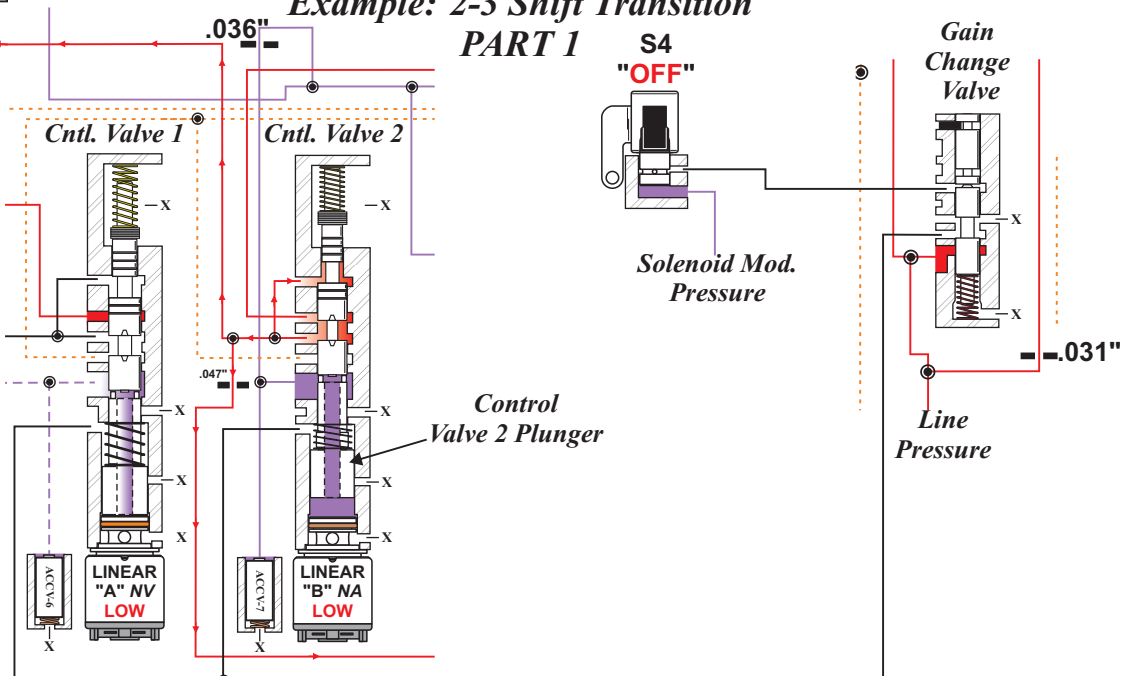
Figure 2

K-3 Clutch Apply

Solenoid 4 Function

Example: 2-3 Shift Transition

PART 1



Summary:

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Linear "B" Solenoid duty cycle is commanded Low by the TCM, which is controlling the apply of the K-3 Clutch thru Control Valve 2, during the 2-3 shift transition. The Large Spool of Control Valve 2 Plunger allows better control of K-3 Apply pressure, by Linear "B". S4 is OFF at this time.

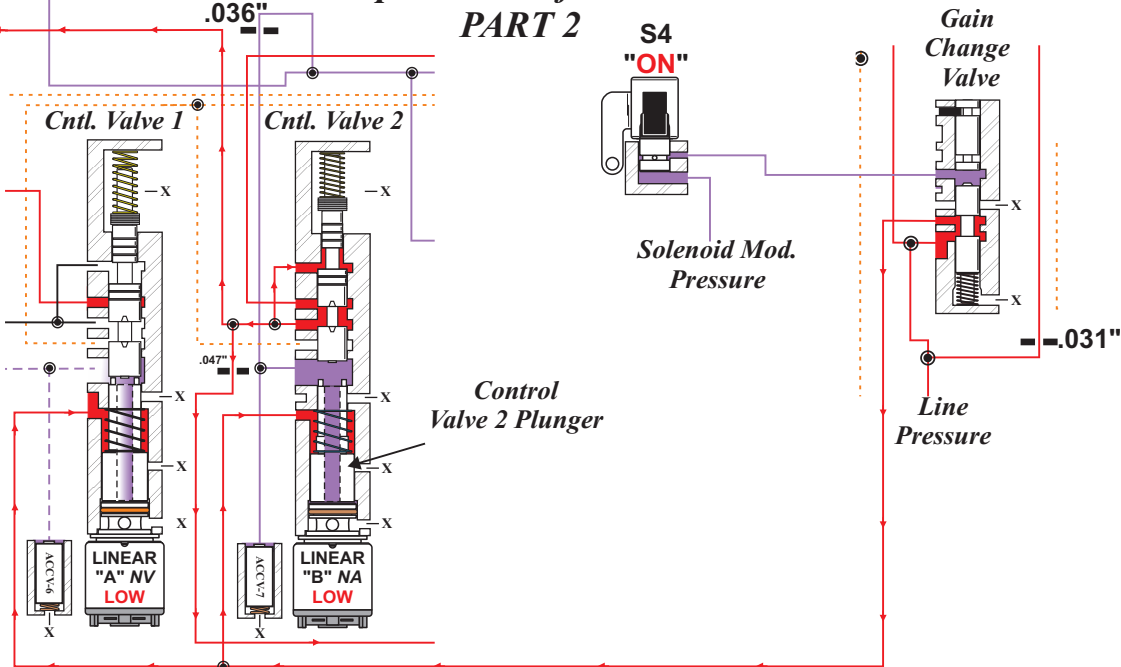
Figure 3

K-3 Clutch Apply

Solenoid 4 Function

Example: 2-3 Shift Transition

PART 2



Summary:

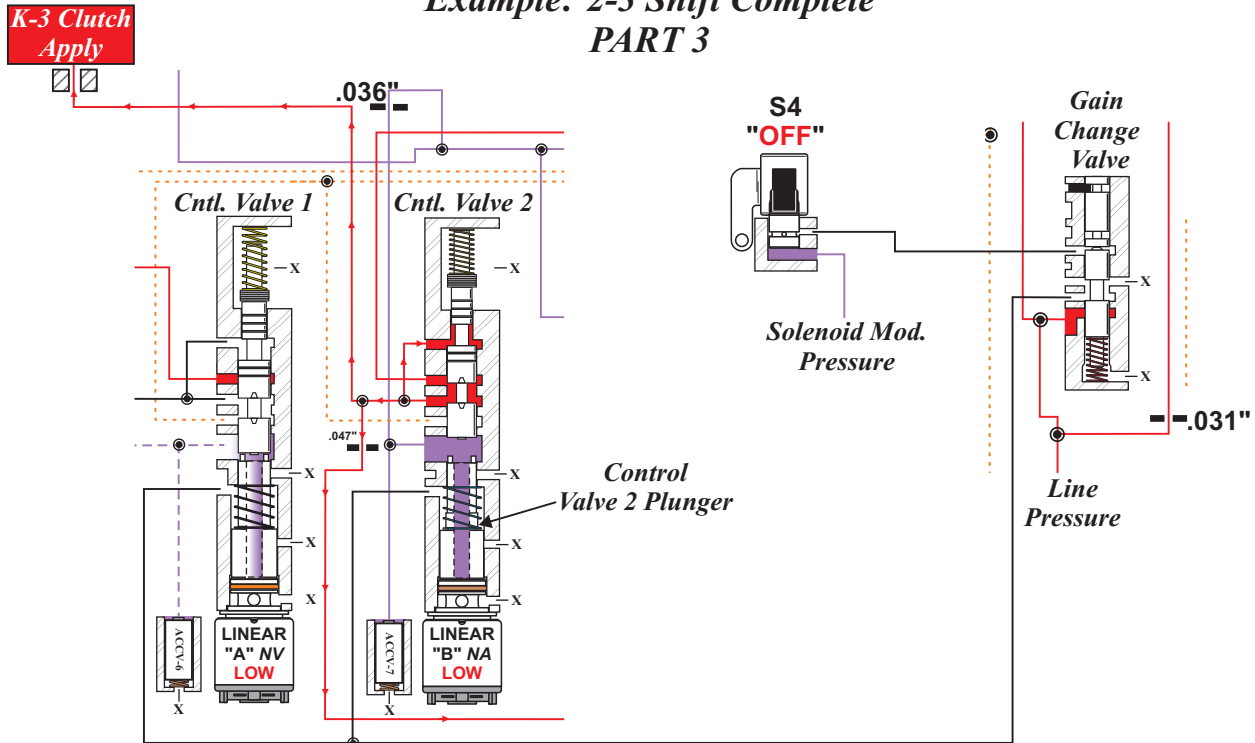
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S4 is turned ON, which strokes the Gain Change Valve, connecting Line pressure to the spring side of the Plunger for Control Valves 1 and 2, pushing the Plungers toward their Linear solenoids, switching K-3 Apply pressure to Line.

Figure 4

VARIOUS SHIFT TRANSITION COMPLAINTS

Solenoid 4 Function *Example: 2-3 Shift Complete* *PART 3*



Summary:

S4 is Turned OFF, Control Valve 2 Plunger is held against Linear "B" Solenoid by it's return spring, and the K-3 Clutch is filled with Line pressure and the 2-3 shift is complete.

Note: Part 1-3 of the 2-3 transition happen in milliseconds.

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Figure 5