



AUDI/PORCHE/SAAB/VOLVO/VW

AISIN 09G, 09D, TF80, AW 55-50SN WITH VARIOUS SHIFT COMPLAINTS

COMPLAINT: Before or after overhaul, vehicles equipped with Aisin transmissions may exhibit various shift complaints such as harsh 2-3, 3-5 and N-R, or a harsh N-D and 5-4, or a harsh 3-4 and/or coast downshift clunks.

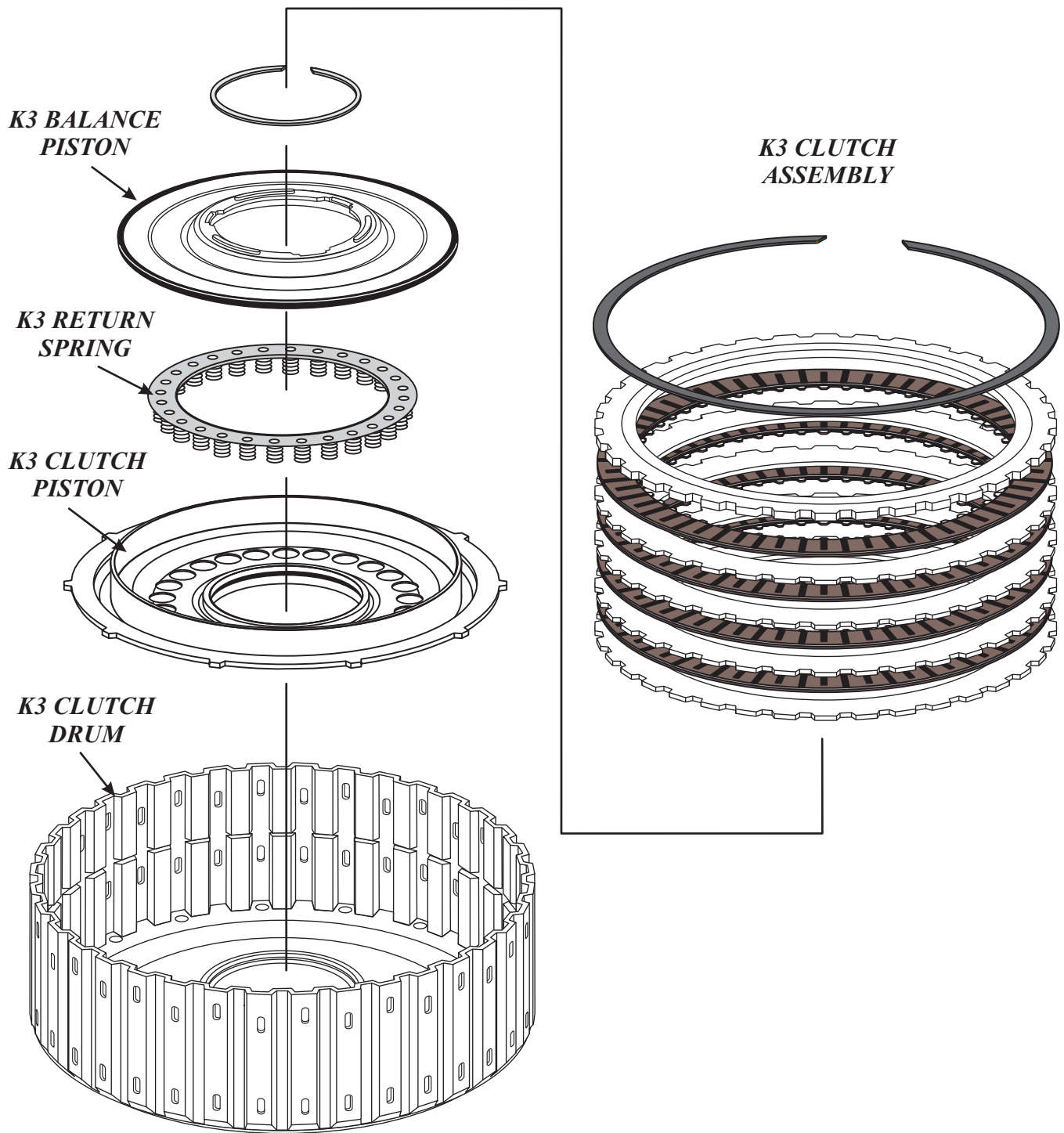
CAUSE: The cause may be a loss of lube pressure due to worn pressure regulator valve bores (primary/secondary), worn bushings, excessive end play and/or failed bonded balance pistons. The K1, K2 and K3 clutch assemblies are equipped with these bonded counter balance pistons. Using K3 as an example from an 09G transmission (figures 1 and 2), the balance piston function is to hold "counter" or "back" pressure on the K3 apply piston. The balance piston is fed from the lube circuit, and its purpose is to provide a small amount of pressure to assist the release of the K3 clutch. It also acts as an accumulator during application of the K3 clutch (figures 3 and 4). The bonded piston has three notches where the retaining snap ring is located allowing a controlled leak of this pressure, and when the bonded rubber is worn this will allow a larger volume of pressure loss which can cause the harsh applications. The K1 can cause a harsh N-D and 5-4 shift, the K2 can cause a harsh 3-4 shift and the K3 can cause a harsh 2-3, 3-5 and N-R shift.

CORRECTION: Most Aisin Seiki transmissions utilize a primary and secondary pressure regulator valve from which lube originates and has its pressure control. Should either one of these valves wear into the bore it can drop lube pressure (figure 5).

Check lube pressure with a pressure gauge. There should be approximately 6 to 10 psi of lube during operating temperature. If pressure runs close to zero psi, these regulator valve bores will need to be inspected. Bushing wear and loose end play can also cause a loss of lube pressure in addition to failed counter balance bonded pistons. All of which will need to be either repaired or replaced restoring circuit integrity.

Refer to figure 6 for the TF80- SC pressure tap locations
Refer to figure 7 for the TF81-SC pressure tap locations
Refer to figure 8 for the TF60-SN pressure tap locations
Refer to figure 9 for the TR60-SN pressure tap locations
Refer to figure 10 for the AW55-50SN pressure tap locations

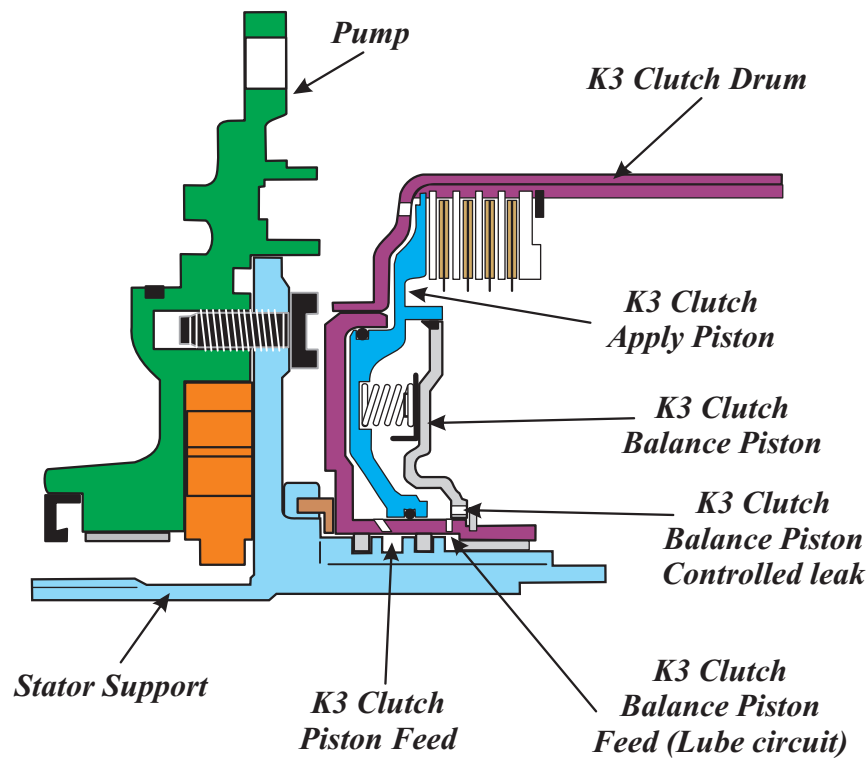
K3 CLUTCH DRUM EXPLODED VIEW



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Figure 1

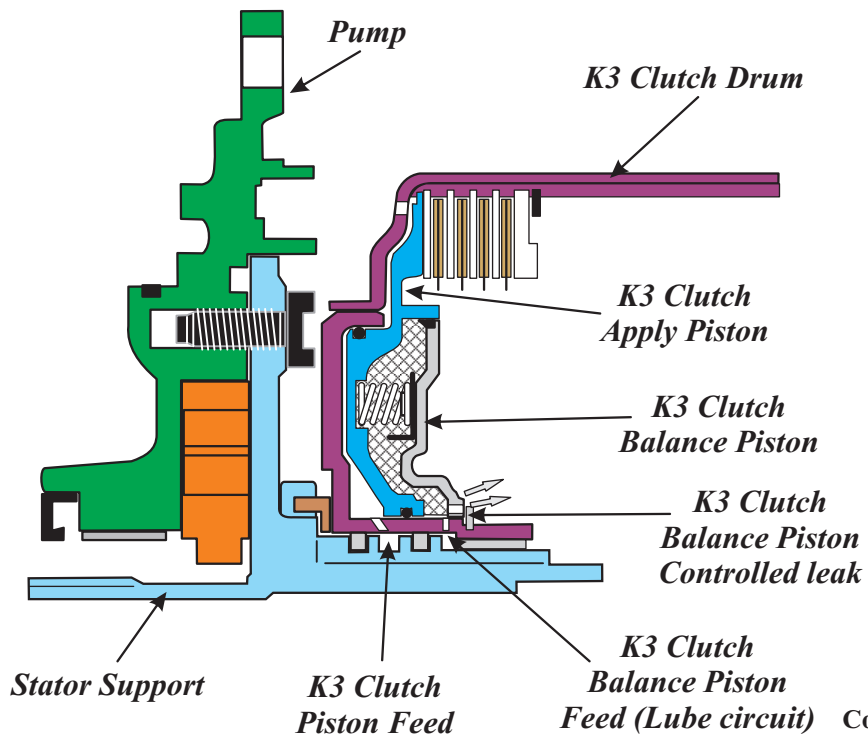
K3 CLUTCH CROSS-SECTIONAL VIEW



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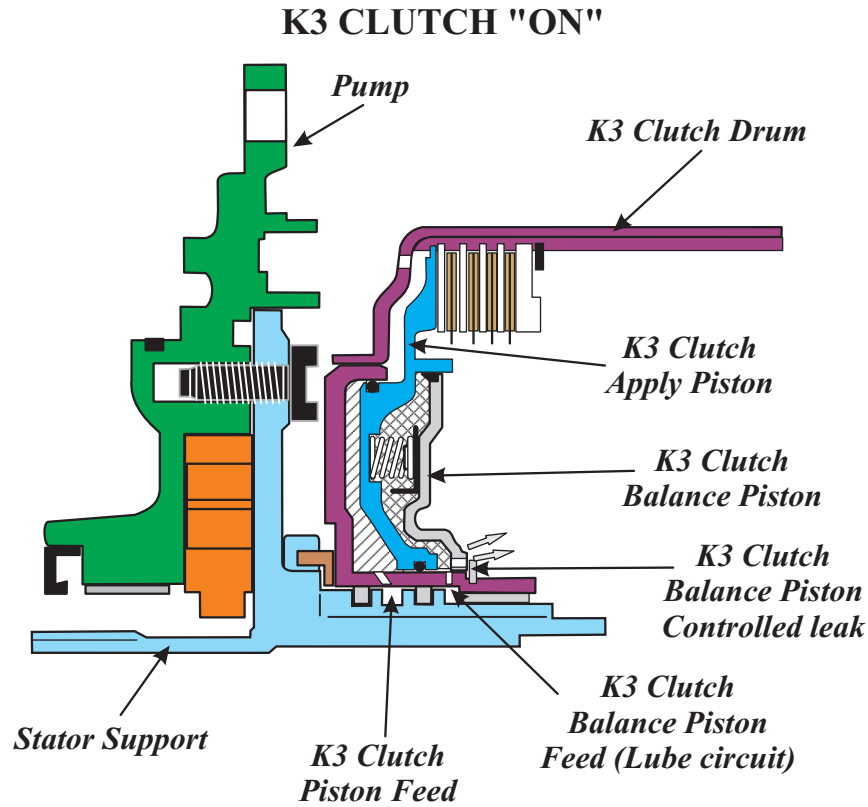
Figure 2

K3 CLUTCH "OFF"



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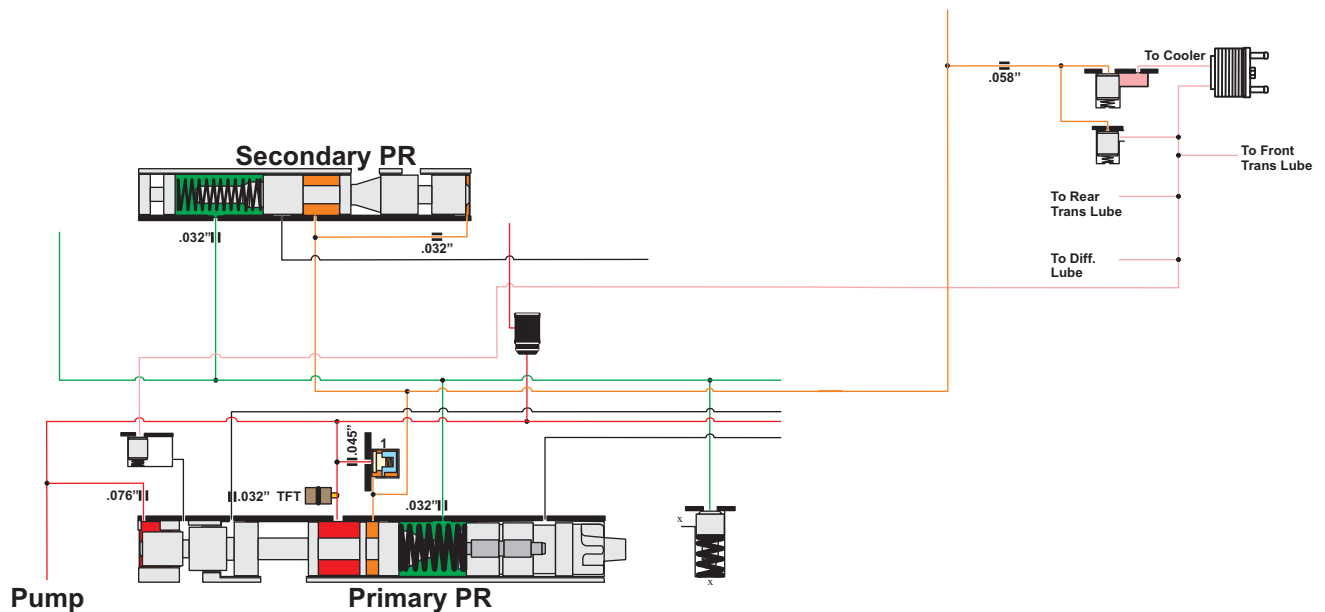
Figure 3



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Figure 4

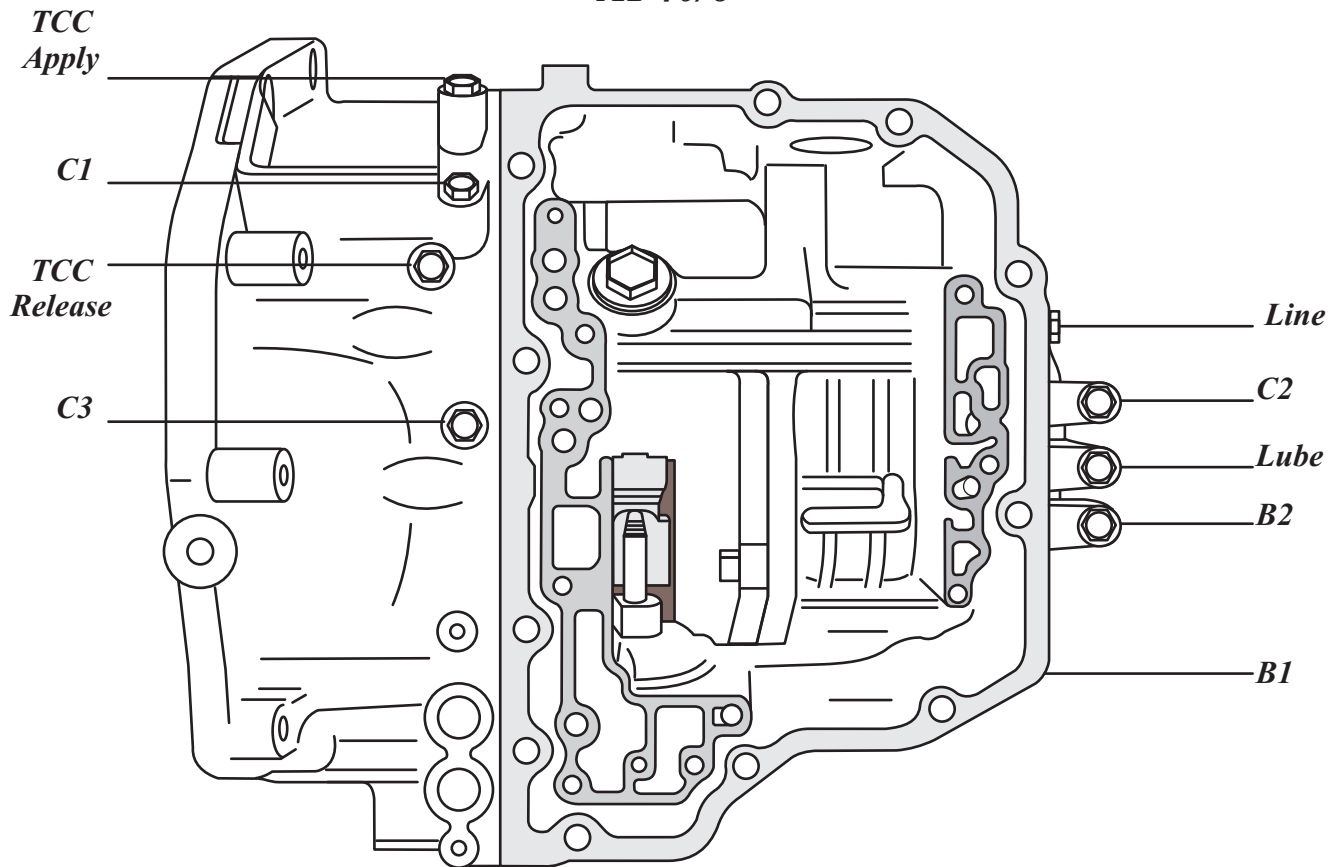
09G LUBE CIRCUIT



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Figure 5

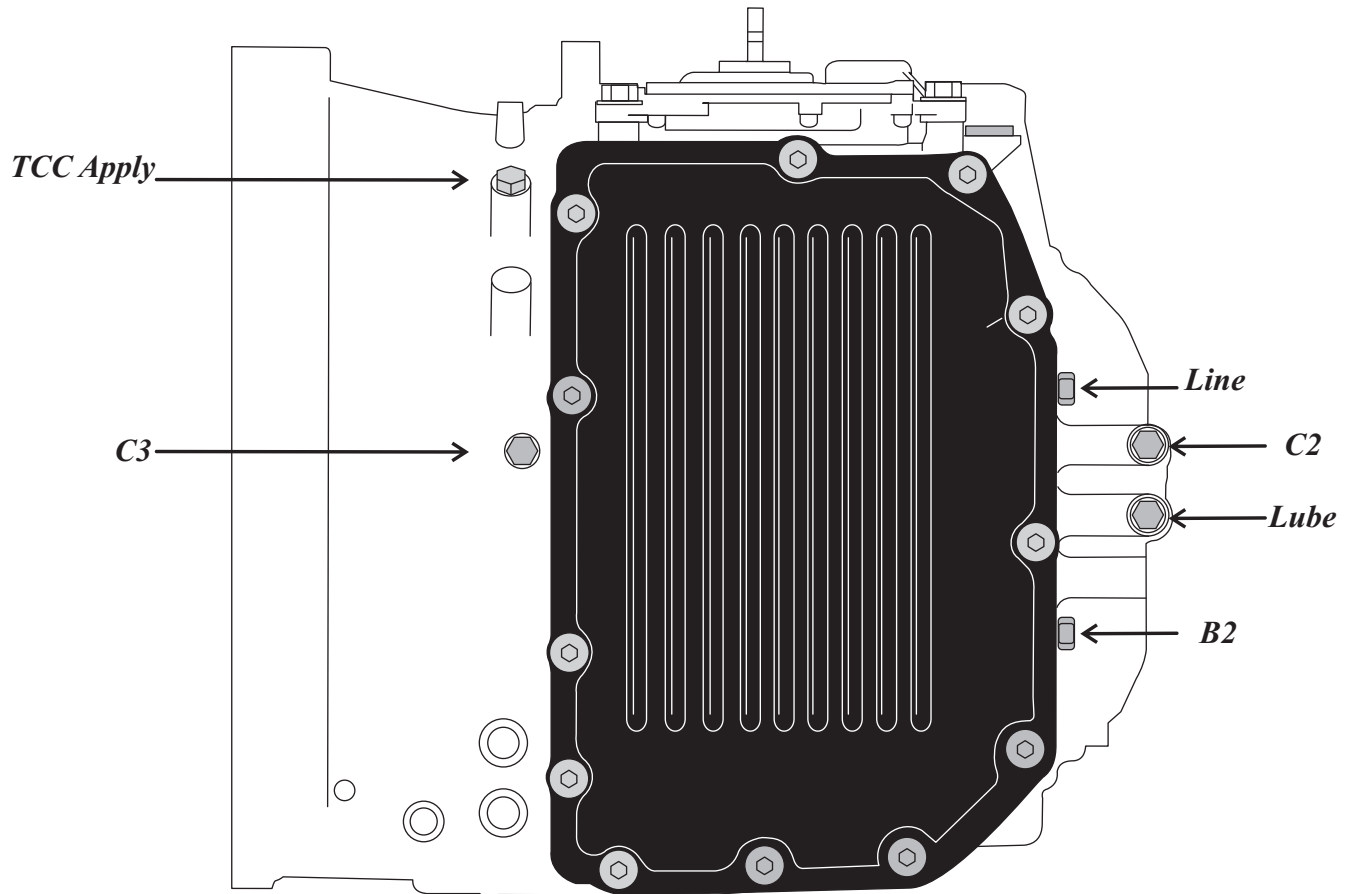
TF80-SC
AM6
AF40
TF-80
AF40/6



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Figure 6

***TF81-SC
AF21
AW6A-EL***



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Figure 7

TF860-SN

09G

09M

09K

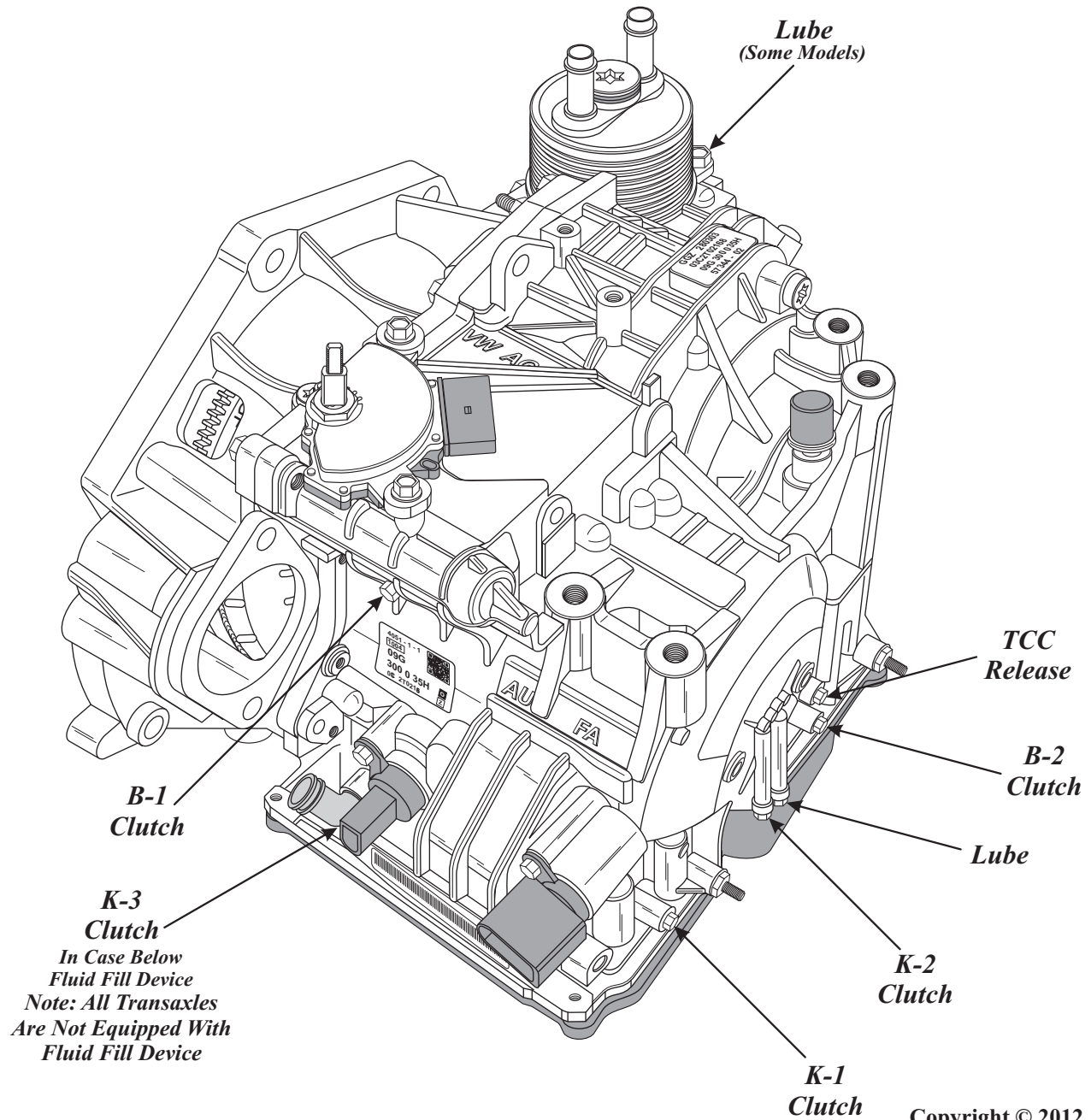
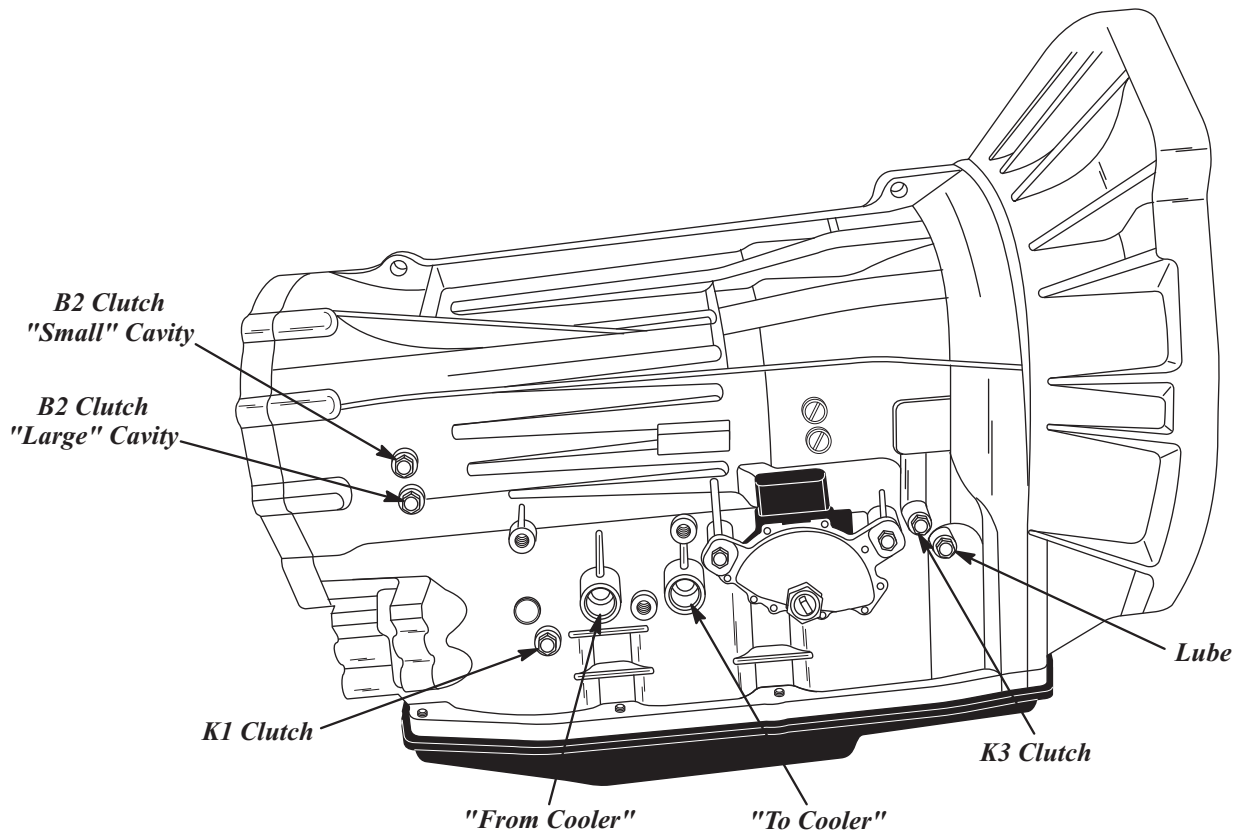


Figure 8

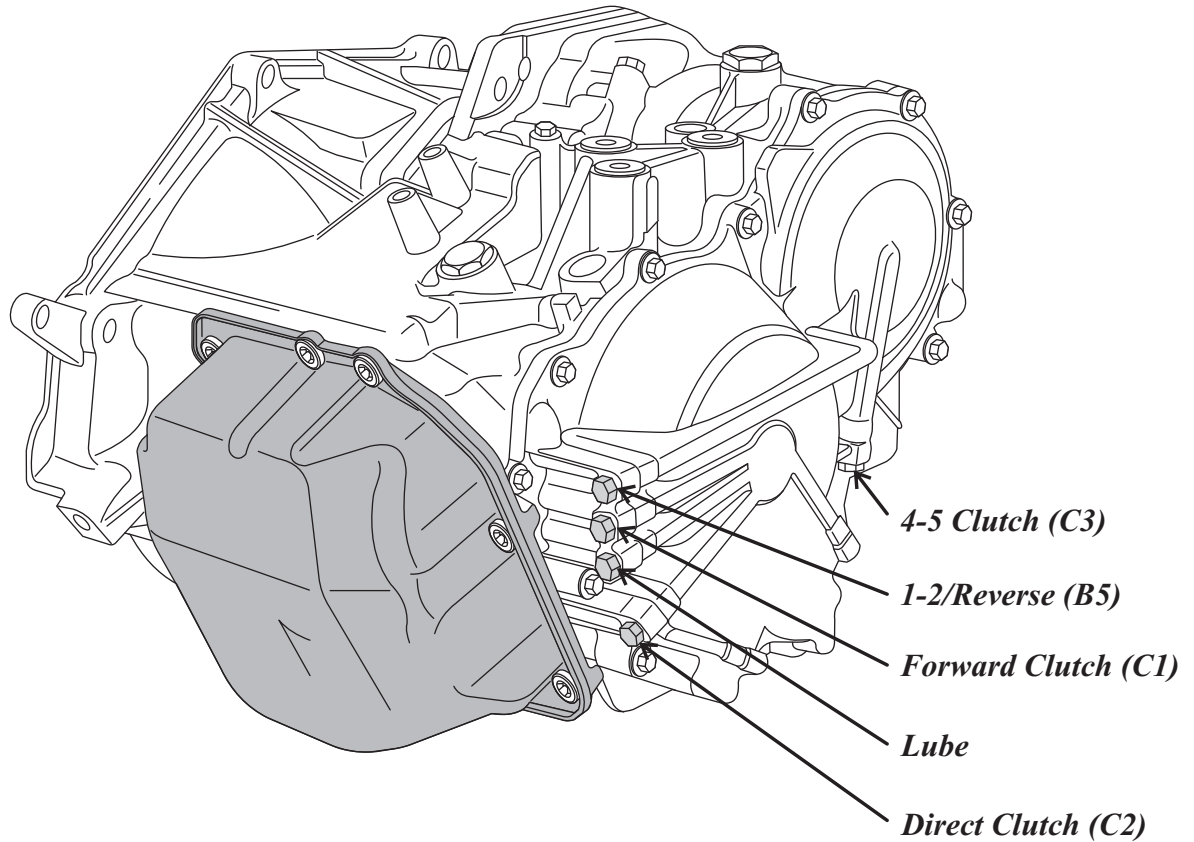
TR860-SN 09D



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Figure 9

***AW55-50SN
RE5F22A
AF23/33-5***



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Figure 10