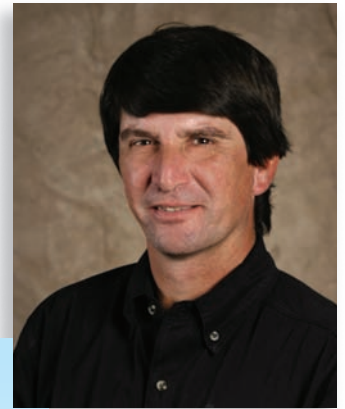


# This 4L30-E is shifting 2-1-4-3!



by Jim Lambos

[The author of this article, Jim Lambos, recently came to ATRA after a career in the military. He was a top-notch technician, and soon proved to be a valuable asset to ATRA.

While training Jim on the Technical Helpline, we became great friends, and it was obvious he was well-liked by others. Jim submitted this article – his first – for editing on December 7th. Later that evening he was killed in an auto accident (see page 158 for more information). I hope this piece, in these few pages of GEARS, can serve as a reminder of his time here. – Larry Frash, Technical Editor]

The 4L30-E has been in existence for over 10 years and is installed in a number of imported vehicles. Produced in Strasbourg, France it, like many other automatics, has had its share of problems. Burnt 1-2 bands, warped adaptor housings, cracked drums and damaged torque converter clutch linings. I have received many calls on the Helpline from frustrated technicians trying to diagnose problems inherent to this unit. Somehow together we always seem to figure it out and get the vehicle down the road. There is however, a problem (actually three) that can be “built” into the unit and can’t be blamed on the transmission itself. Yes! That means someone did something wrong, but don’t worry this is such a simple problem to fix or avoid all together.

Unlike the other General Motors transmissions which use a pair of normally open shift solenoids, the 4L30-E uses one normally open and one normally closed solenoid. It also uses only two shift valves to control all four gears. It is critical that each solenoid

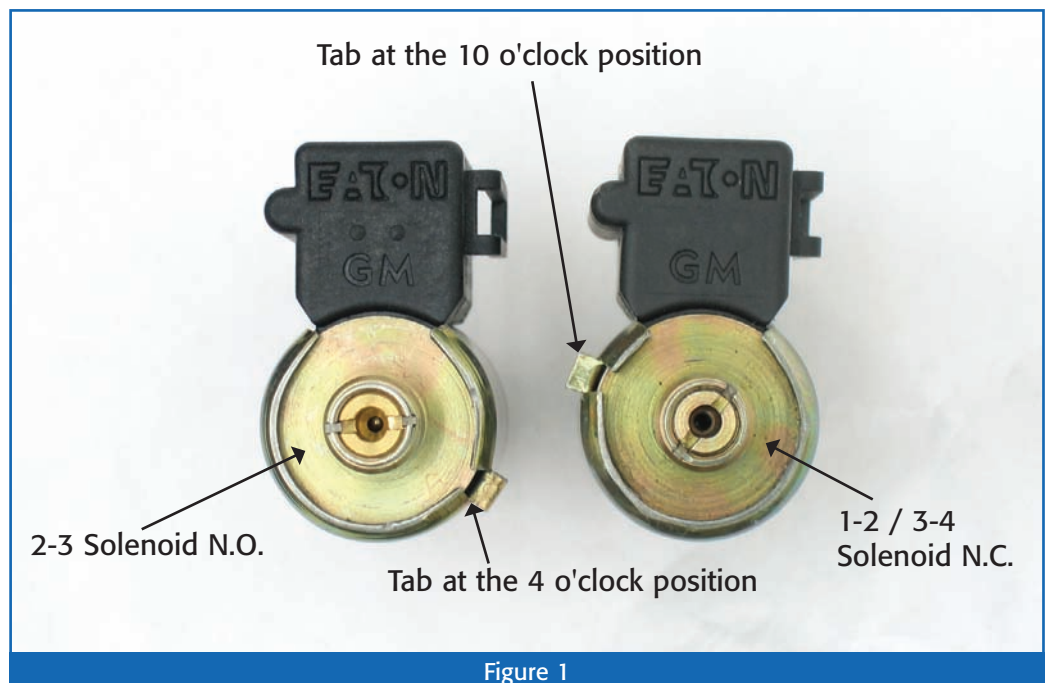


Figure 1

is in its proper place. Although there are tabs on the solenoids to ensure proper installation (figure 1) these tabs can be easily bent allowing them to be installed incorrectly. When installed correctly the tabs will face each other (figure 2). It is almost impossible to tell the two solenoids apart other than by the alignment tabs, the normally closed 1-2/3-4 solenoid has its tab at 10 o'clock and the normally open 2-3 solenoid is at the 4 o'clock position

(figure 1). Blowing into the solenoids does not work because the normally open 2-3 has a spring loaded ball in it and it could easily test out to be a normally closed type. The only sure test is on a solenoid dyno, if you have one.

Since these solenoids are practically identical in appearance it is very easy to mix them up or end up with two of the same types on your valve body. This can end up with three different, almost comical shift patterns. Obviously if a

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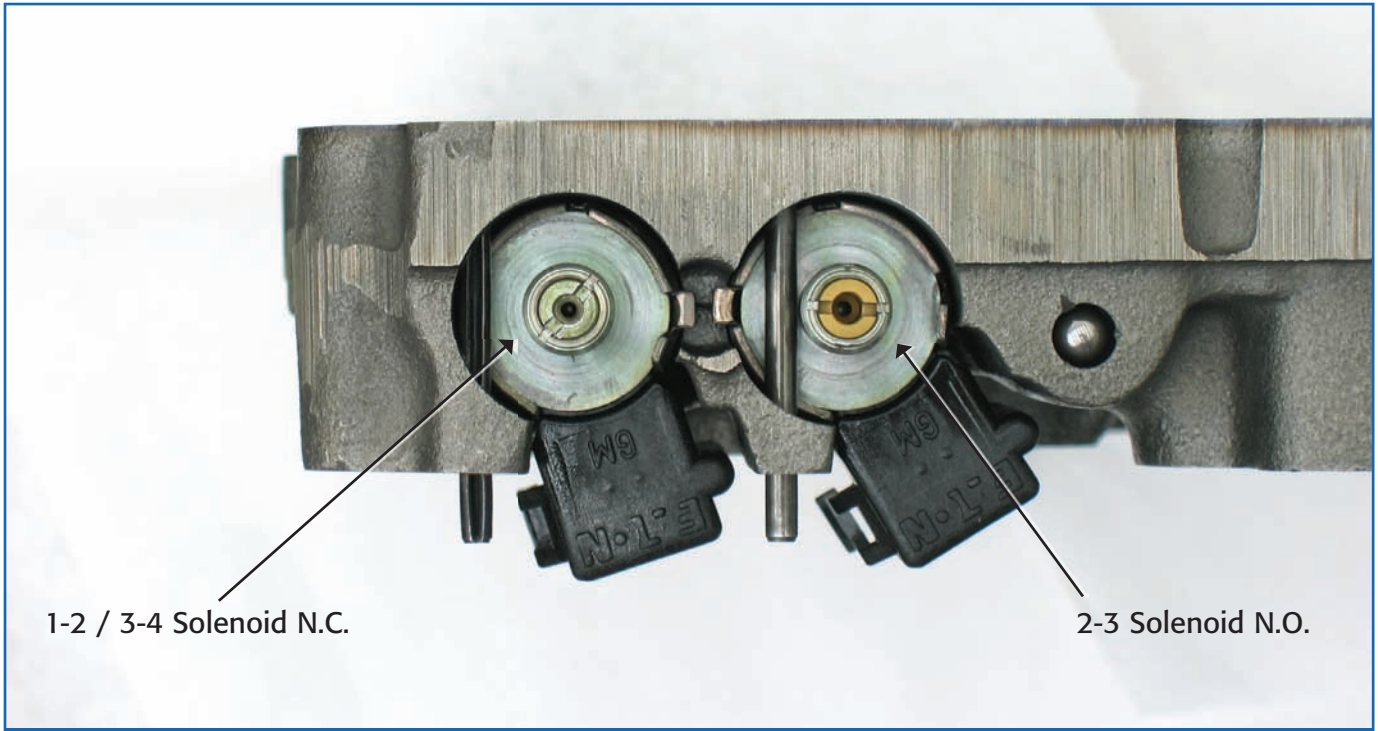


Figure 2

Commanded Gear	1-2/3-4 Solenoid	2-3 Solenoid
1 <sup>st</sup>	Off	On
2 <sup>nd</sup>	On	On
3 <sup>rd</sup>	On	Off
4 <sup>th</sup>	Off	Off

Fig 3

Commanded Gear	1-2/3-4 Solenoid N.C.	2-3 Solenoid N.O.	Resulting Gear
1 <sup>st</sup>	Off (closed)	On (closed)	1 <sup>st</sup>
2 <sup>nd</sup>	On (open)	On (closed)	2 <sup>nd</sup>
3 <sup>rd</sup>	On (open)	Off (open)	3 <sup>rd</sup>
4 <sup>th</sup>	Off (closed)	Off (open)	4 <sup>th</sup>

Fig 4

Commanded Gear	1-2/3-4 Solenoid N.O.	2-3 Solenoid N.C.	Resulting Gear
1 <sup>st</sup>	Off (open)	On (open)	3 <sup>rd</sup>
2 <sup>nd</sup>	On (closed)	On (open)	4 <sup>th</sup>
3 <sup>rd</sup>	On (closed)	Off (closed)	1 <sup>st</sup>
4 <sup>th</sup>	Off (open)	Off (closed)	2 <sup>nd</sup>

Fig 5

Commanded Gear	1-2/3-4 Solenoid N.C.	2-3 Solenoid N.C.	Resulting Gear
1 <sup>st</sup>	Off (closed)	On (open)	4 <sup>th</sup>
2 <sup>nd</sup>	On (open)	On (open)	3 <sup>rd</sup>
3 <sup>rd</sup>	On (open)	Off (closed)	2 <sup>nd</sup>
4 <sup>th</sup>	Off (closed)	Off (closed)	1 <sup>st</sup>

Fig 6

Commanded Gear	1-2/3-4 Solenoid N.O.	2-3 Solenoid N.O.	Resulting Gear
1 <sup>st</sup>	Off (open)	On (closed)	2 <sup>nd</sup>
2 <sup>nd</sup>	On (closed)	On (closed)	1 <sup>st</sup>
3 <sup>rd</sup>	On (closed)	Off (open)	4 <sup>th</sup>
4 <sup>th</sup>	Off (open)	Off (open)	3 <sup>rd</sup>

Fig 7

solenoid is normally closed it is open when energized and a normally open solenoid is closed when it is energized. If installed incorrectly either one will do just the opposite you would want them to. When the normally closed 1-2/3-4 solenoid is on it is open, allowing fluid pressure to act on the shift valve, the normally open 2-3 solenoid provides pressure to its shift valve when off (figure 3).

The way it's supposed to work is shown in (figure 4). The computer will command the solenoids on and off as it should no matter if the solenoids are installed correctly or not. If you happen to swap the solenoids you'll end up with a 3-4-1-2 pattern (figure 5). If you should use two normally closed solenoids the result would be kind of cool but not very good for fuel economy; the unit will shift 4-3-2-1 (figure 6). And finally if two normally open solenoids are installed your 4L30-E will shift 2-1-4-3! So if after rebuild or solenoid replacement you end up with the wrong shift pattern, use these charts to diagnose and correct the solenoid mis-match, and get that 4L30-E to shift 1-2-3-4 and out the door!





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