



4L60/65/70E

PUMP & INPUT SHAFT USAGE

COMPLAINT: Diagnostic Trouble Codes P0716 and P0717 may be stored, no torque converter fill, burnt frictions in the input drum, planetary gear set destruction or TCC application problems.

CAUSE: Incorrect interchangeability practices of pump covers and input shafts.

CORRECTION: At the start of production for the 2006 model year an Input Speed Sensor was added to some 4L60/65/70E transmissions. This necessitated changes to the pump cover and input shaft. The ISS signal is an input to the control module (PCM or TCM) that will be used to better monitor and control line pressure, shift patterns, torque converter clutch slip speed and gear ratios. This component will allow the 4L60/65/70-E transmissions to enable use of computer instructions (algorithm) related to shift energy, and abuse torque management and provide much improved diagnostic capabilities.

The new turbine input shaft speed sensor was gradually phased into production and certain design level criteria had to be followed. The following information is intended to provide a general outline of the stages involved to implement the use of the ISS.

(1) In model years 1997 to early 2005, the 4L60E series transmissions utilized a pump cover with no provisions for an ISS, the input shaft sealing ring grooves had not changed and there was no speed sensor rotor. The pump cover used the 1st design internal stator shaft sleeve and the 1st design boost valve which is 1.664" with a boost valve sleeve of 1.910" in length as well as two springs that went on the TCC apply valve, (Refer to Figure 1).

(2) Effective February 1st, 2005, the oil pump cover now uses a new design TCC valve with a single spring, (Refer to Figure 2).

(3) Effective March 7th, 2005, the oil pump cover now uses a more compact boost valve and sleeve. The snap ring groove location for the boost sleeve is now situated 2.57" from the bottom of the bore compared to 2.68" for the previous design. The bore length for the boost sleeve and snap ring has been reduced by approximately 0.110", also seen in Figure 2.

(4) After July 16th, 2005, the pump cover casting was modified in order to situate the ISS connector. This modification removed metal directly below the PR valve and boost sleeve bore and extended a cast wall inward. The internal TCC release passage was also modified at this time. The ISS mounting holes are not yet machined into the oil pump cover, (Refer to Figure 3).

Oil pump cover changes also affected the stator shaft and stator shaft sleeve so as to relocate with oil passages within the oil pump cover.

At the same time, the turbine shaft oil seal ring grooves were moved inboard towards the rear of the unit approximately 0.190"(in.) to produce an area with which to manufacture 15 rotor teeth, this can also be seen in Figure 3.



Technical Service Information

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CORRECTION

continued: (4) Late in 2005 and early in the 2006 model year, some pre ISS models may still not have the ISS mounting holes machined into the cover. This will be evident as a smooth un-machined surface without the ISS mounting holes. For non ISS models, an ISS hole plug will be used in place of the ISS assembly, (Refer to Figure 4).

As ISS models were introduced, later in the 2006 model year, the machining took place and the input speed sensor (ISS) was added, (Refer to Figure 5), the presence of the ISS also necessitated a new internal wire harness to accommodate the ISS and software changes to the PCM provided code capability for ISS malfunctions.

On Non-ISS models that have a functional ISS hole in the pump cover, the rubber plug with an o-ring seal must be installed. Failure to do so will result in no converter charge and the vehicle will not move.

If an input shaft is used without the speed rotor, and the pump cover has an ISS, codes P0716 or P0717 will be stored which could cause TCC slip and gear ratio calculation errors.

If the pump cover and input shaft are mismatched, severe friction and geartrain damage will occur in a short period of time.

NOTE: When parts are modified and are phased into production in order to prepare for the change, it is imperative that the correct replacement parts are used. The parts you may find in a particular transmission may not coincide exactly with the published phase in time periods. The dates provided are for general purposes to assist in easier intensification of parts.

A very special thanks to Paul Tinges from Hardparts For Transmissions for his hospitality in supplying the parts that made this bulletin possible.

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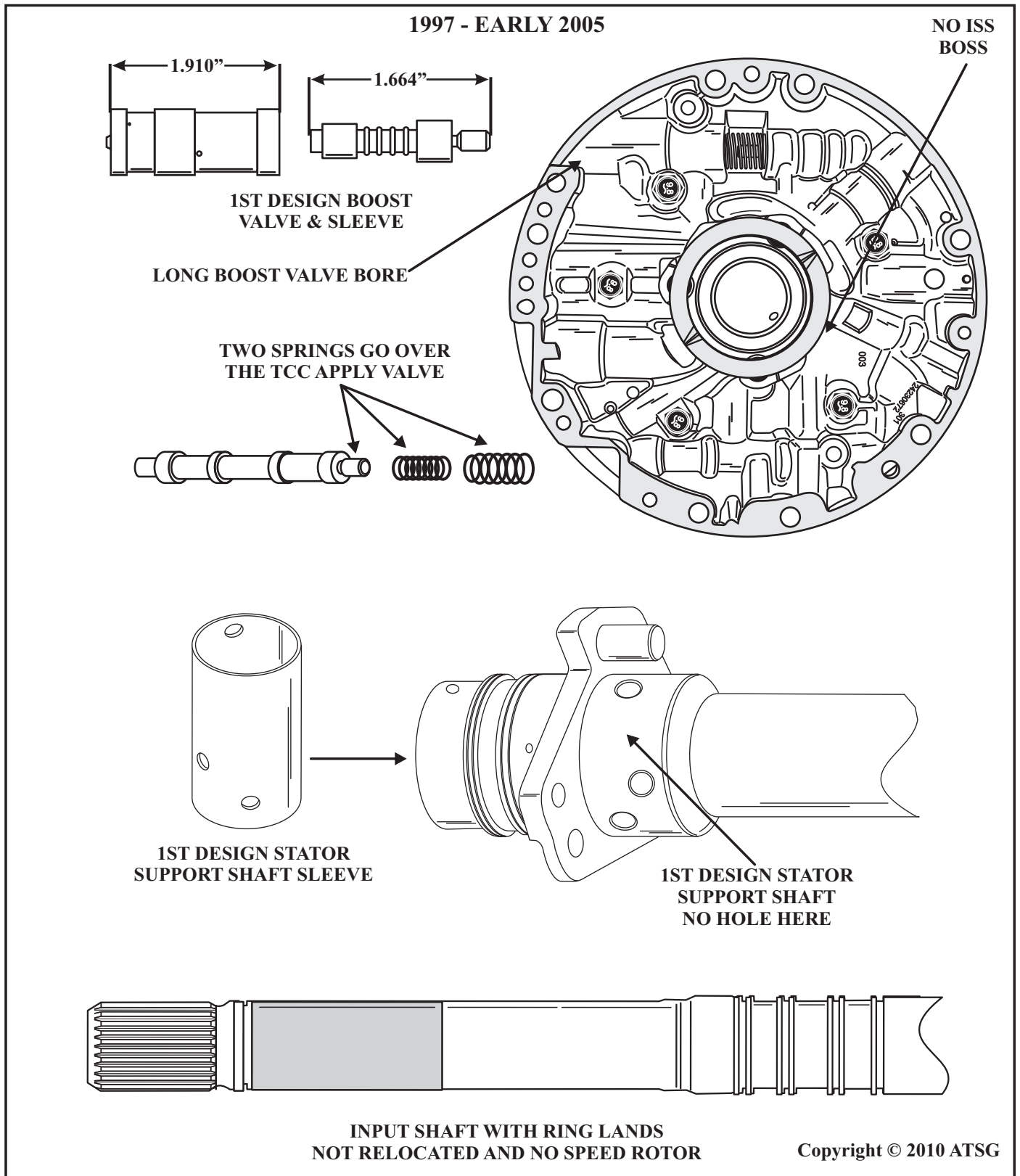
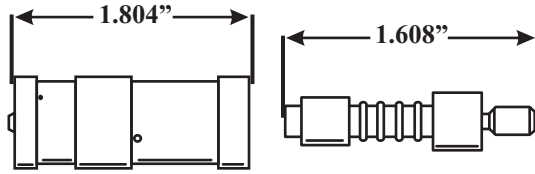


Figure 1

4L60/65/70E

PUMP & INPUT SHAFT USAGE

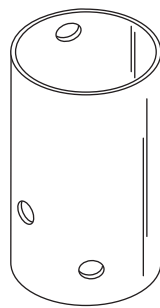
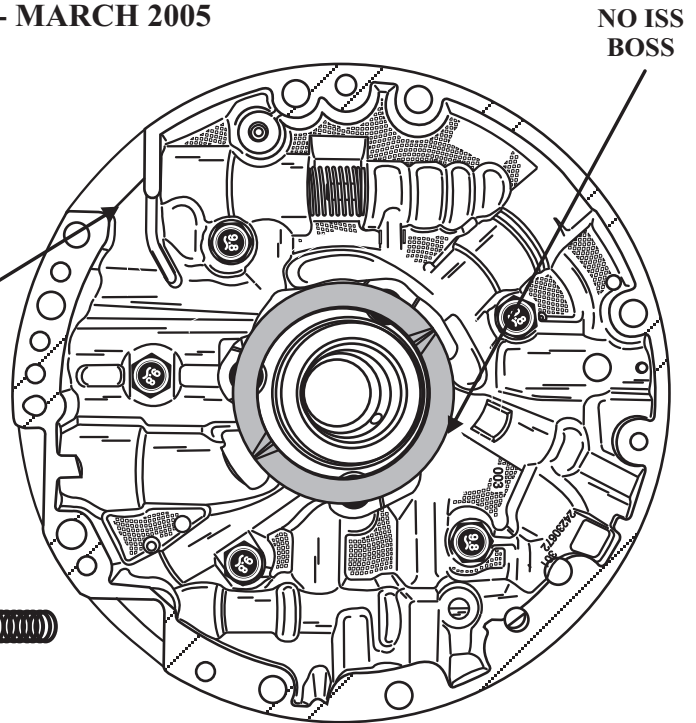
FEBRUARY - MARCH 2005



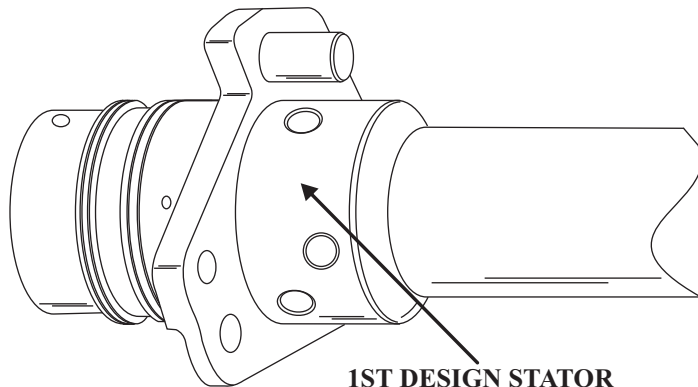
2ND DESIGN BOOST
VALVE & SLEEVE

THE BOOST VALVE BORE
HAS BEEN SHORTENED .106"

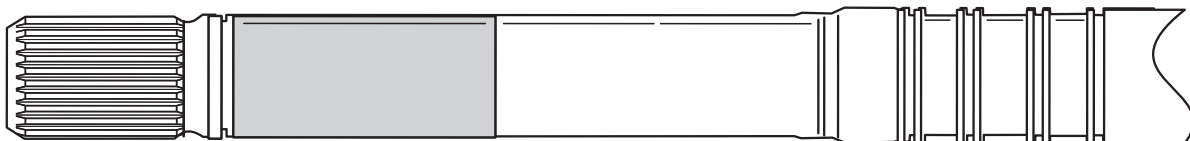
ONE SPRING GOES INTO
THE TCC APPLY VALVE



1ST DESIGN STATOR
SUPPORT SHAFT SLEEVE



1ST DESIGN STATOR
SUPPORT SHAFT
NO HOLE HERE



INPUT SHAFT WITH RING LANDS
NOT RELOCATED AND NO SPEED ROTOR

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Figure 2

4L60/65/70E

PUMP & INPUT SHAFT USAGE

JULY 2005

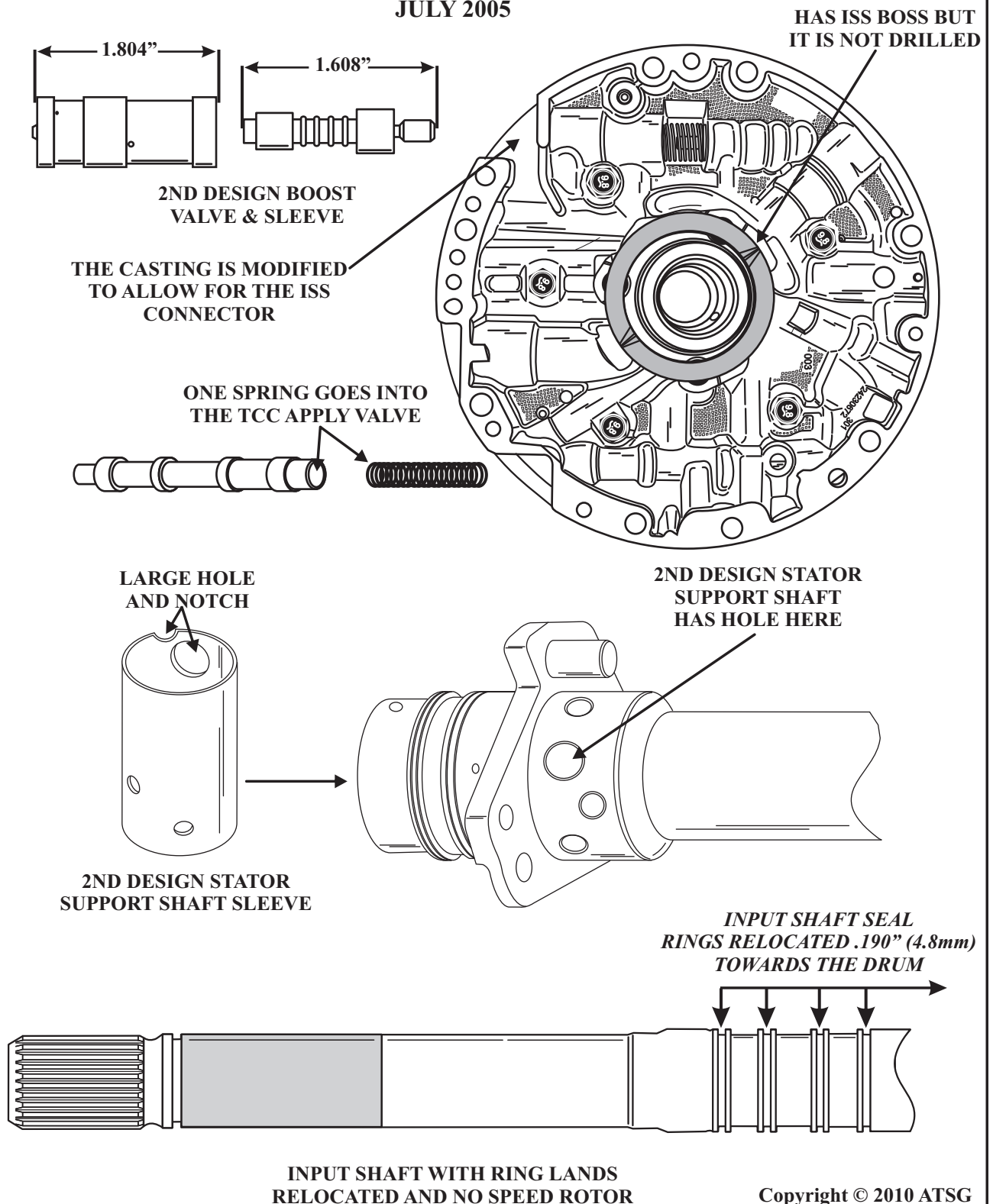


Figure 3

4L60/65/70E

PUMP & INPUT SHAFT USAGE

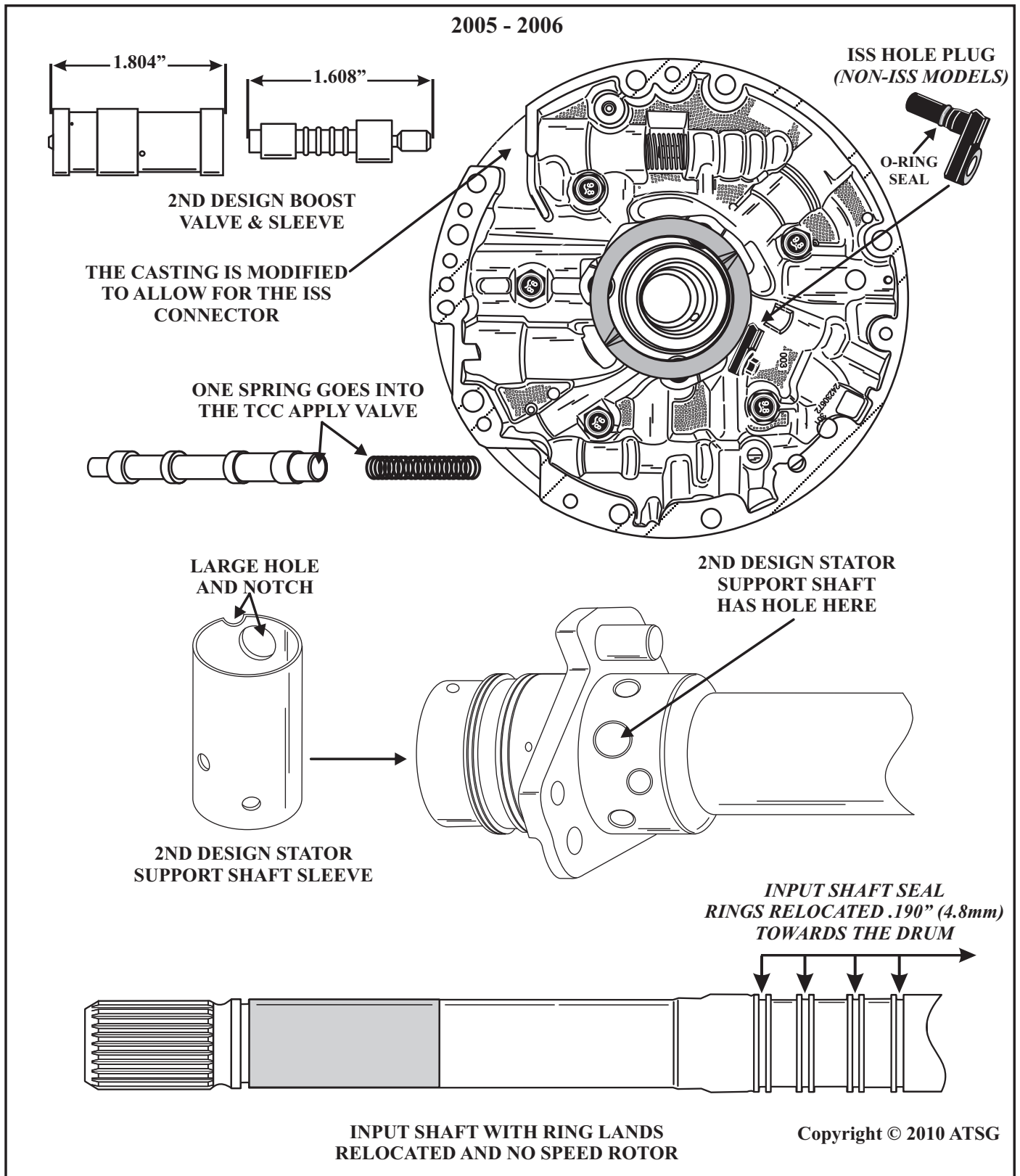


Figure 4

PUMP & INPUT SHAFT USAGE

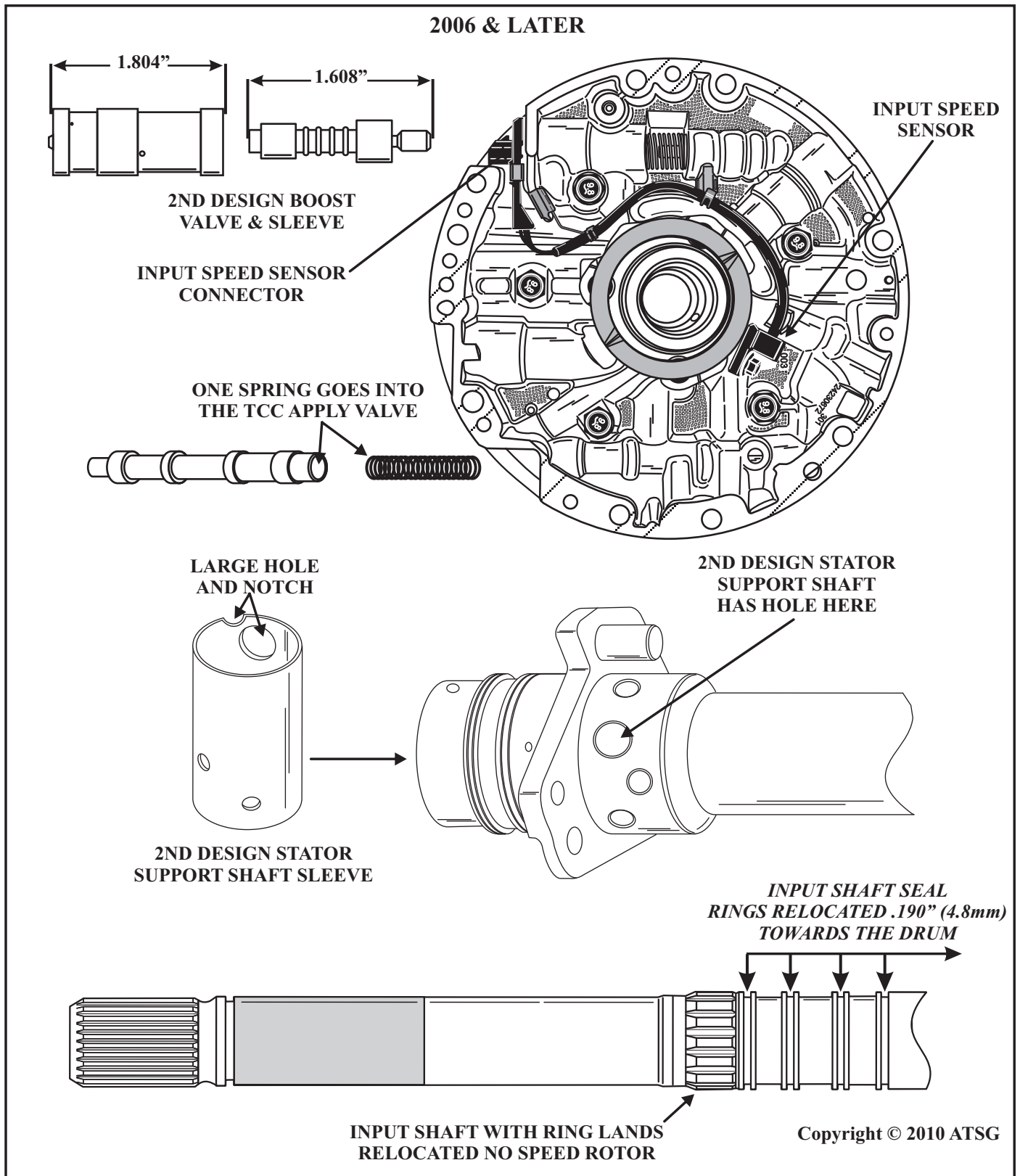


Figure 5