

**AFL Valve  
& Sleeve Kit**



**Part No.**  
**84596-02K**

- Sleeve
- Valve
- Regulating Spring
- Sleeve Retention Spring

**Tool Kit**

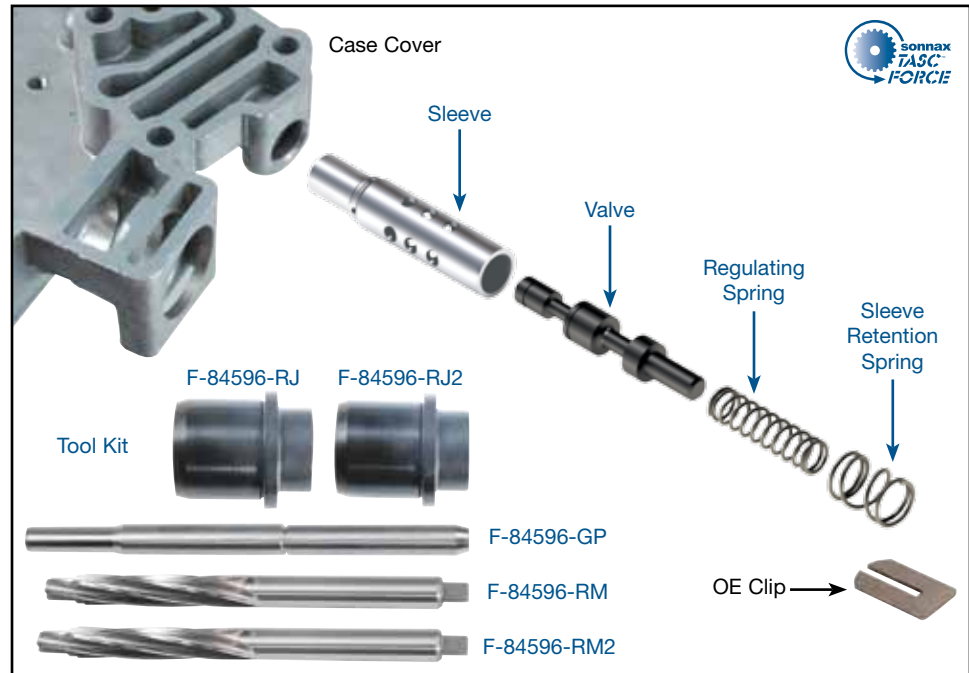


**Part No.**  
**F-84596-TL**

- Reamers (2)
- Reamer Jigs (2)
- Guide Pin

**NOTE:** Sonnax “F-Tool” kits designed to service a specific bore require the VB-FIX, a self-aligning valve body reaming fixture. More information and instructions can be found online at [www.sonnax.com](http://www.sonnax.com).

**GM 4T65-E**



**1. Disassembly**

Remove the OE parts from AFL bore. Retain OE clip for reuse and discard other parts.

**2. Bore Preparation**

- Clean the bore thoroughly in a solvent tank.
- Generously lubricate the bore and reamer with cutting fluid (i.e. Mobilmet S-122, Lubegard<sup>®</sup> Bio-Tap, Tap Magic<sup>™</sup>, etc.). For best results, provide a continuous flow of water-soluble cutting fluid (i.e. Mobilmet S-122) during the reaming process.
- The reamers should be turned using a low RPM, high-torque air drill regulated to a maximum of 200 RPM.
- Examine the bore after cleaning for surface finish, debris and burrs. Flashing and burrs on the exit side of land and in bores must be carefully removed. A small piece of Scotch-Brite<sup>™</sup> material attached to a wire and powered with a drill motor is ideal for the task. Scotch-Brite<sup>™</sup> is a very abrasive material and all residual debris must be cleaned to ensure particles do not migrate or remain imbedded into the surface. Post cleaning involves several progressive steps with solvent on a lint-free rag.

**CAUTIONS AND SUGGESTIONS:**

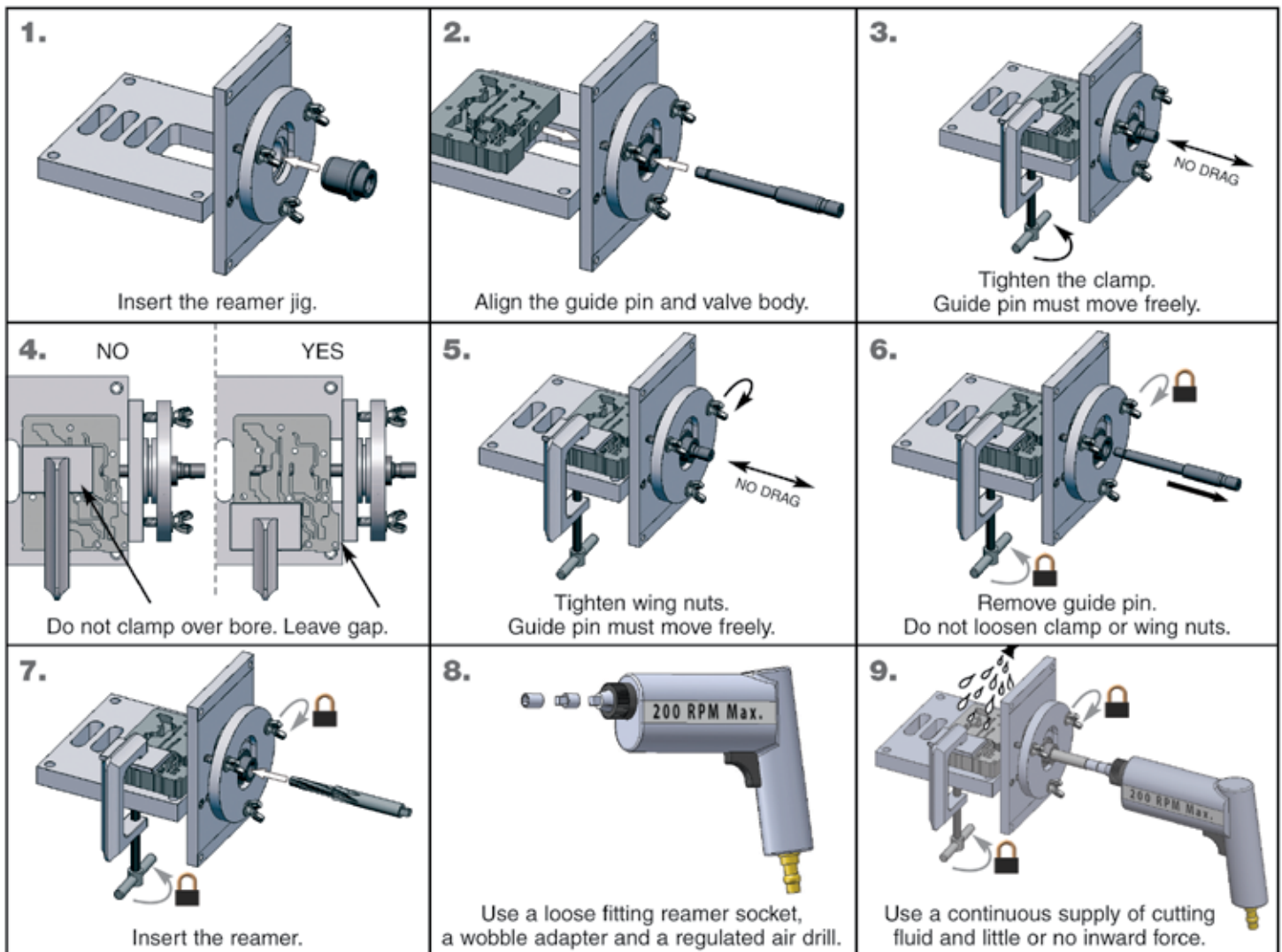
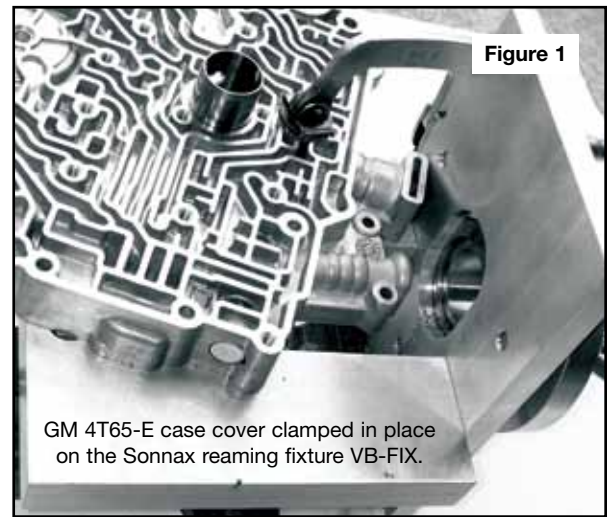
- Turning the reamer backward will dull it prematurely.
- Pushing on the reamer will result in poor surface finish and inadequate and sporadic material removal.
- Never use a crescent wrench, ratchet or pliers to turn the reamer.
- A dull reamer will cut a smaller hole. Reamers can be sharpened, but should only be done by a professional tool sharpener. Actual life of a Sonnax reamer before resharpening or replacing averages 50-70 bores.

### 3. Bore Reaming

Use the **VB-FIX** reaming fixture (**Figure 1**) and the associated "F-Tool" kit **F-84596-TL**, specifically in the order explained below. See page 1 parts lineup for "F-Tool" kit part identification.

**CAUTION:** Do **NOT** loosen wing nuts on the **VB-FIX** reaming fixture or the valve body clamp until both reaming steps have been completed.

- Insert the reamer jig **F-84596-RJ** and use guide pin **F-84596-GP** for steps 1–6 illustrated below.
- With the reamer jig **F-84596-RJ** still in place, use reamer **F-84596-RM** for steps 7–9 illustrated below.
- Remove reamer jig **F-84596-RJ** and insert new reamer jig **F-84596-RJ2**.
- Use the new reamer jig **F-84596-RJ2** with new reamer **F-84596-RM2** and repeat steps 7–9 illustrated below.

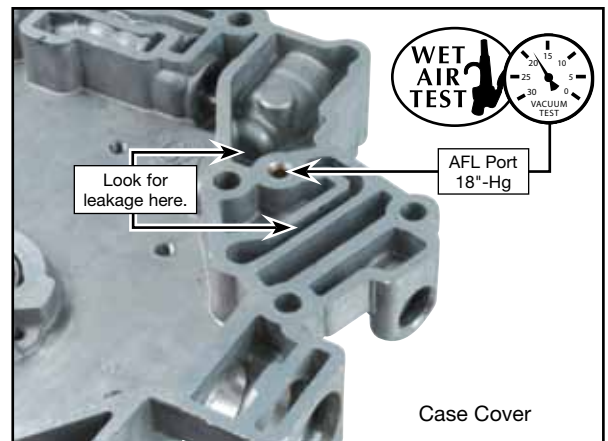


#### 4. Installation & Assembly

- Install Sonnax AFL sleeve and valve assembly into the bore.
- Install Sonnax regulating spring over the stem of the valve.
- Install Sonnax sleeve retention spring, seating the end against the face of the sleeve.
- Compress the springs with a screwdriver and return the OE clip to the outboard exhaust port.
- Push on the valve at the inboard exhaust port to ensure that it strokes freely and the springs do not coil bind.

#### 5. Final Testing

A vacuum test at AFL port should hold 18 in-Hg of vacuum or higher. If performing a wet air test (WAT) at the AFL port, prevent the valve from stroking. There should not be excessive leakage from the two locations indicated.



**IMPORTANT NOTE:** To eliminate codes 1811 and 741 and TCC-related issues, be sure to also inspect the boost valve assembly, TCC regulated apply valve and TCC apply valve. The PCM must be reset/relearned after any valve body repairs. Aftermarket scanner relearn procedure or battery disconnect for 12 hours may not restore drivability and line pressure control. Performing a dealer reflash or a web reflash is frequently the other method to properly restore control.