Ford AX4N, 4F50N SURE CURE KIT

PART NUMBER SC-AX4N **INSTRUCTION BOOKLET**

Part No. SC-AX4N

NOTE: This kit is fully compatible with all AX4N units. For AXODE and AX4S units, use Sure Cure kit **SC-AXODE.**

Valve Body Parts

Boost Valve Kit
96201-01K

Oversized Bypass Clutch Control Valve Kit
96206-05K

NOTE: This part requires tool kit **96206-TL**.

Oversized Converter Regulator Valve Kit
96201-23K

NOTE: This part requires tool kit **96201-TL3** or **F-96201-TL23**. The F-tool kit requires the **VB-FIX** reaming fixture.

Oversized Solenoid Regulator Valve Kit
96201-21K

NOTE: This part requires tool kit **96201-TL2**.

WARNING! Required tool kit **96201-TL2** is no longer in production. Check with your distributor for availability.

Forward Control Valve Kit
96206-07K
Patent No. 6,736,747

NOTE: Sonnax recommends bore sizing tool **96206-BST***.

WARNING! Recommended tool kit **96206-BST** is no longer in production. Check with your distributor for availability.

Pump Part

Pump Slide Pin
96200-02

Reassembly Part

Relief Valve, Low Radius (2)
10000-01

The following tool kits are required or recommended to install this Sure Cure Kit:

NOTE: Instructions are provided with these tool kits.

Part No. 96206-TL

- Reamer
- Reamer Jig
- Bore Sizing Tool

NOTE: For installing oversized bypass clutch control valve kit **96206-05K**.

Part No. F-96201-TL23

VALVE BODY FIXTURE REQUIRED

- Reamer
- Reamer Jig
- Guide Pin

NOTE: For installing oversized converter regulator valve kit **96201-23K** in bores with severe wear. 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.

Part No. 96201-TL2

Reamers (2)

NOTE: For installing oversized solenoid regulator valve kit **96201-21K**.

Part No. 96201-TL3

Reamers (2)

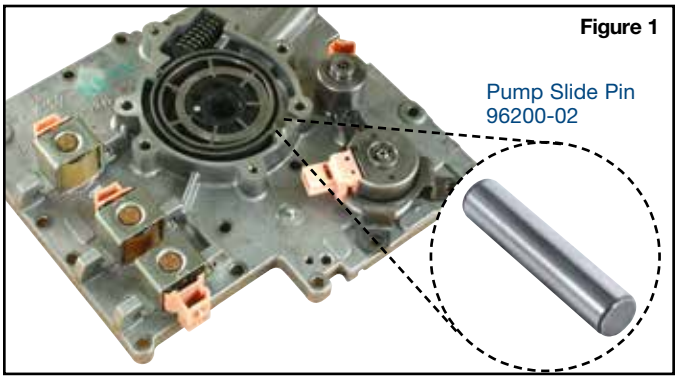
NOTE: For installing oversized converter regulator valve kit **96201-23K** in bores with mild wear.

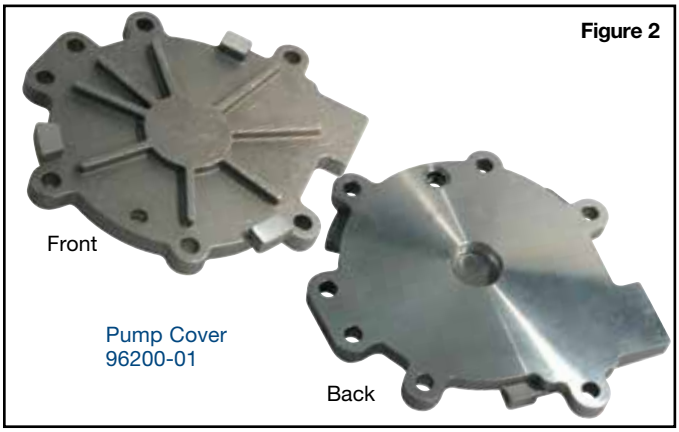
Recommended

Part No. 96206-BST

Bore Sizing Tool

NOTE: For installing forward control valve kit **96206-07K**.





TORQUE SPECIFICATIONS

Stator support to case	7.5 - 8.8 ft-lb
Park abutment to case	18 - 23 ft-lb
Pans to case	7 - 8 ft-lb
Chain cover to case	19 - 25 ft-lb
O.D. servo cover to case	7.5 - 8.8 ft-lb
Pump casting to main control	7 - 9 ft-lb
Valve body to chain cover, 23 bolts @	8.8 ft-lb

TECH TIPS

Pump alignment tool and valve alignment pins **MUST** be used before assembly to the case cover.

OE tool #T86-70370-A inserts into valve body sleeve, aligning pump bearing to the sleeve.

Wire harness termination is often mixed up. This causes erratic pressure, loss of lockup or a shift cycling concern. Refer to trade publications or OE manual if confused.

Always air check accumulator pins before installing VB. (See our accumulator info for procedure.) Supply air to center of the pin. It should push the pin out, and no leakage allowed from clutch feed hole working on the other side of the piston.

Air check all clutch drums assembled onto the driven support. No cross leakage allowed.

Air check the reverse clutch after the chain cover has been torqued. This checks the feed tube and gaskets as well.

Loss of 4th? Servo pin bore wear should be air checked before valve body is installed. OD piston should apply, but no case bore leaks.

Pump Repairs

Replace the pump slide pin (**Figure 1**). Ensure to inspect cover for wear.

Note: Pump cover also available as part number **96200-01** (**Figure 2**).

Valve Body Repairs

• Inspection & Disassembly

Several bores must be reamed to install the contents of this kit. It is recommended that the entire valve body be disassembled prior to reaming. Special attention should be paid to the following areas to inspect for valve and bore wear:

1. Wet Air Test the pressure regulator valve circuit before disassembly.

Place a small amount of oil into the balance line port. Follow with low air pressure. There should be minimal/no leakage past the valve spool and out the neighboring exhaust port. Worn pressure regulator valves can be repaired. Order Sonnax oversized pressure regulator valve kit **96206-10K**, which requires tool kit **96206-TL2** (**Figure 3**).

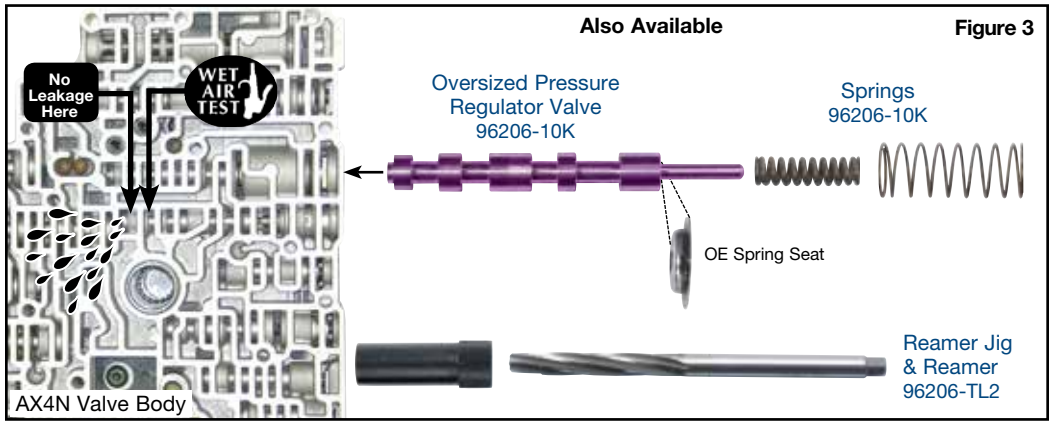
2. Inspect the manual valve and manual valve bore for wear that causes delayed Forward and Reverse or low line pressure at idle.

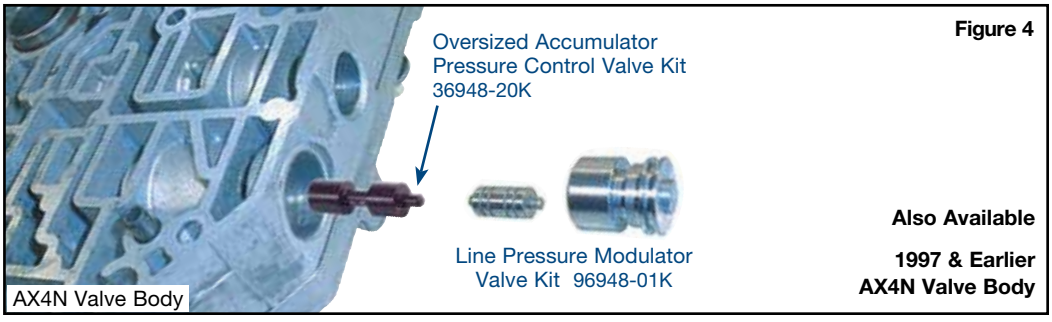
Valve wear or minor bore wear can be overcome with the Sonnax manual valve kit **96201-05**.

3. On 1997–earlier units:

A. Inspect the line pressure modulator sleeve and inner valve. If the valves are worn, order Sonnax line pressure modulator valve kit, **96948-01K** (**Figure 4**).

B. Inspect the accumulator pressure control bore. Valve should be set into position it regulates and should not have side or up-down movement. Worn valves and bores can be repaired with the Sonnax oversized accumulator pressure control valve kit **36948-20K**, which requires tool kit **36948-TL** (**Figure 4**).





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Reaming

Follow the general reaming procedures included at the end of these instructions.

Reaming the solenoid regulator bore: Use 96201-TL2

Start with Reamer #1. This is a self-piloting reamer, so no reamer jig is necessary.

Finish with Reamer #2. Also, no reamer jig required.

Reaming the converter regulator bore : Use 96201-TL3

Start with Reamer #1. This is a self-piloting reamer, so no reamer jig is necessary.

Finish with Reamer #2. Also, no reamer jig required.

Note: Reamer #2 will cut more slowly than Reamer #1. It may feel like it wants to stop as it finds a new center. Continue until the reamer bottoms in the bore.

Reaming and bore sizing the bypass clutch control bore: Use 96206-TL

Start with the reamer guide and reamer.

After reaming the bore, use the bore sizing tool with a slide hammer to ensure proper valve fit and bore integrity.

1. Lubricate the bore sizing tool with ATF.
2. Insert the reamer jig into the valve body, then insert the sizing tool into the bore, pushing carefully until it bottoms in the bore.
3. The tool should then be reciprocated in the bore, mimicking the stroking of the valve.
4. If the tool will not slide smoothly, push the tool into the bottom of the bore. A screwdriver tip may be placed through a valve body port and into a tool groove, then tapped with a hammer. Recheck fit.

Bore sizing the forward control valve bore: Use 96206-BST

1. Lubricate the bore sizing tool with ATF.
2. Insert the sizing tool into the bore, pushing carefully until it bottoms in the bore.
3. The tool should then be reciprocated in the bore, mimicking the stroking of the valve.
4. Clean the bore of any debris.
5. Lubricate the replacement valve and install into the bore. If the valve continues to stick, repeat the sizing tool procedure. With the tool bottomed in the bore, a screwdriver tip may be placed through a valve body port and into a tool groove, then tapped with a hammer. Recheck valve fit.

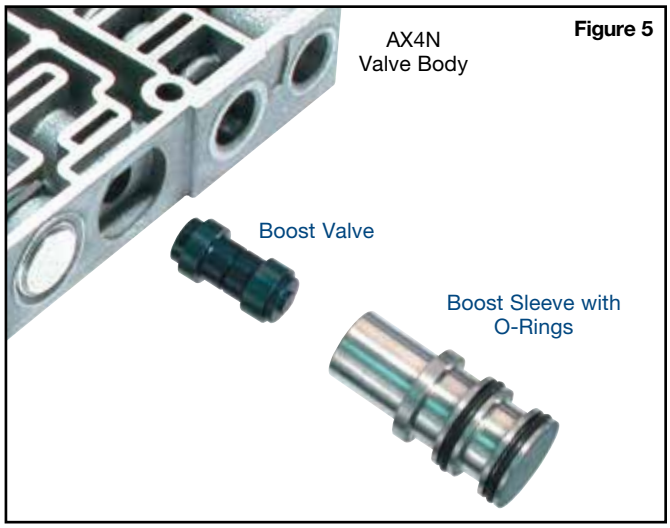


Figure 5

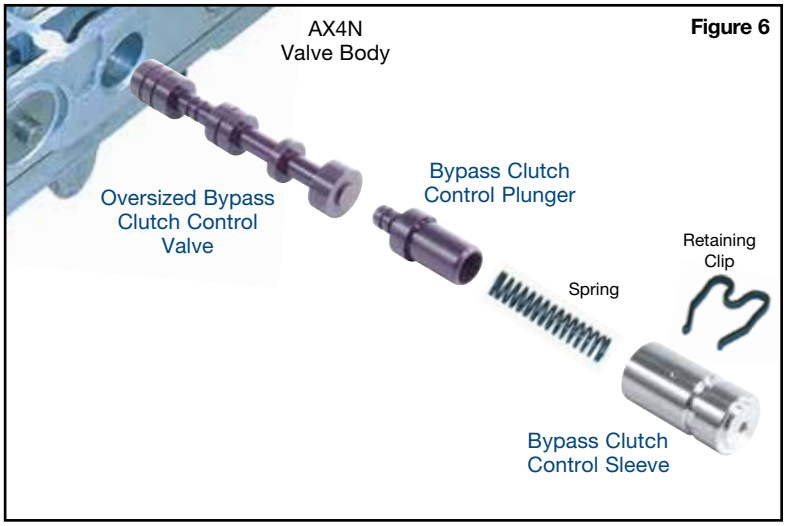


Figure 6

Valve Body Parts Installation

Boost Valve Installation

Install the boost valve and sleeve assembly, reusing the OE springs and retainer (**Figure 5**).

Bypass Clutch Control Valve Line-up & Installation

Install the BCC valve, plunger and sleeve with the OE spring and retaining clip (**Figure 6**).

Bore Location

1. Install solenoid regulator and converter regulator valve line-ups (**Figures 7 & 8**).

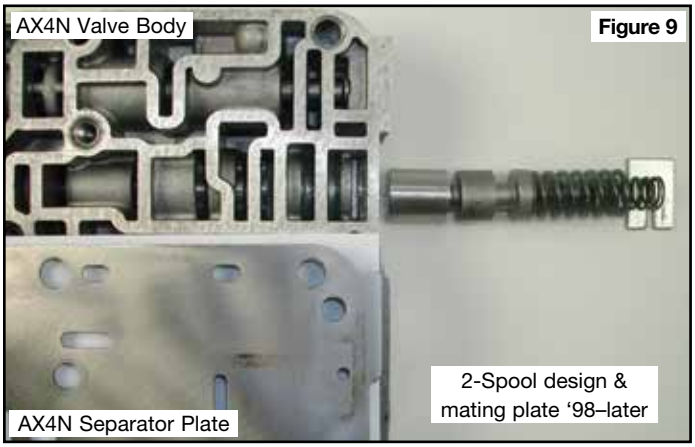
Important Note: Spring Selection: If OE had a 4-spooled valve, use the Sonnax black spring.
If OE had a 2-spooled valve, use the Sonnax white spring.

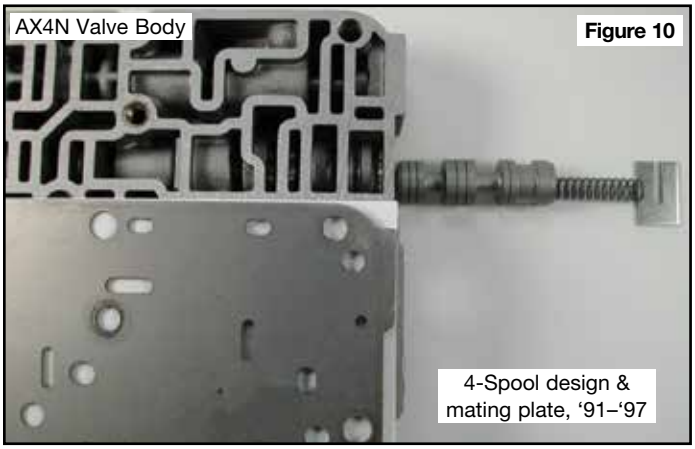
2. Be sure to reuse the OE outer valve body clip.

Note: The 2- and 4-spool designs do not use the same separator plate. Be sure to match the plate to the original converter regulator spool design (**Figures 9 & 10**).

Converter Regulator Valve & Separator Plate

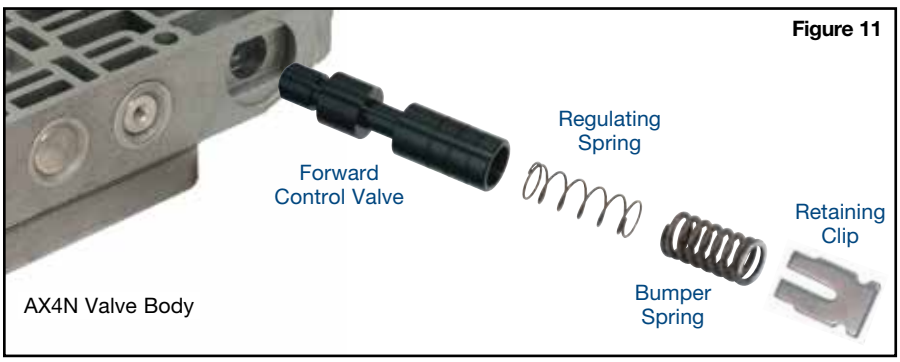
Chain cover remains the same for this circuit in both applications.



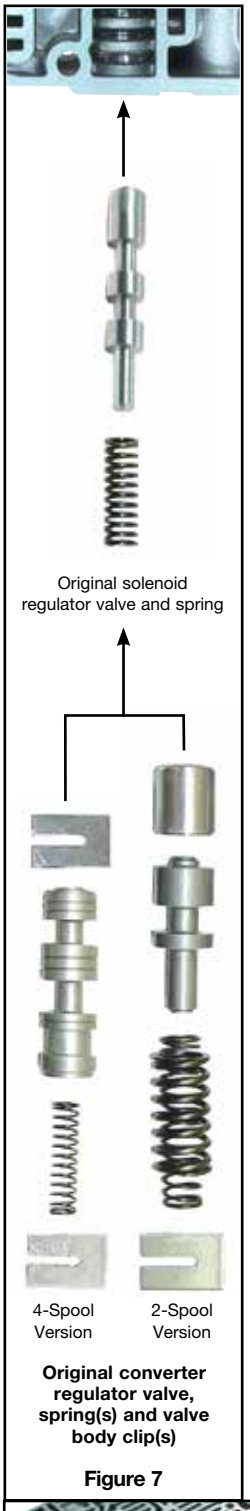


Forward Control Valve Installation

Install forward control valve (**Figure 11**).



OE LINE-UP



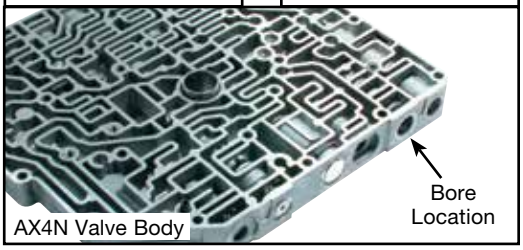
Original converter regulator valve, spring(s) and valve body clip(s)

Figure 7

SONNAX LINE-UP

The Sonnax solution replaces either the 2-spool or 4-spool OEM versions.

Figure 8



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Relief Tees and Checkballs (Figure 12)

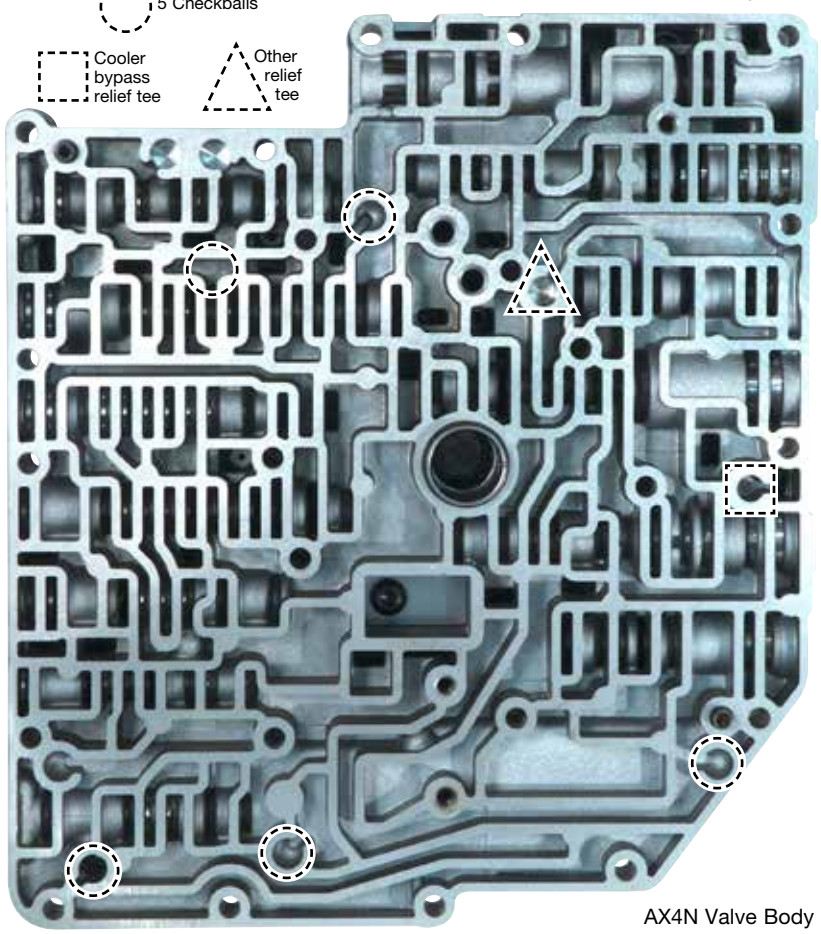
Two low radius relief tees have been included in the kit. One is to replace the cooler bypass relief tee. The other can be used to replace an additional relief tee as needed.

NOTE: Tees supplied can't be used to replace the OE rubber-covered plugs in later AX4N & 4F50N units.

General Reaming Instructions

1. Clean valve body after disassembly. A mix of mineral spirits & degreaser in a 5:1 ratio or equivalent works well.
2. Clamp the valve body to bench with open circuits up. Do not clamp over the bore being reamed.
3. The reamer should be turned either by hand using a speed handle or by a low RPM, high-torque air drill regulated to a maximum of 200 rpm. Use a socket to fit the square shank of the reamer, and attach it to a wobble/swivel socket.
4. Fill bore with cutting fluid (Mobilmet S-122, Bio Tap, Tap Magic™, etc.). For best results, provide a continuous flow of water-soluble cutting fluid (e.g. Mobilmet S-122) during the reaming process.
5. If tool kit includes a reamer jig, insert it into bore.
6. Soak fluted end of reamer with cutting fluid.
7. Insert reamer into reamer jig or bore for self-piloted reamers, until reamer guide tip enters the first bore to be cut. Securely position the reamer against the bore to remove any reamer wobble.
8. With the reamer carefully and securely positioned, the reaming action should be clockwise in a smooth and continuous motion, at approximately 1 to 1¼ revolutions per second.
9. The reamer should actually pull itself through the bore, so little or no pressure should be applied to the reamer or speed handle.
10. Continue reaming until the tip of the reamer bottoms in the bore. Spin the reamer 5-10 more times after bore bottoming to allow for excess material removal and better surface finish.
11. Using low air pressure, blow free the chips before removing the reamer.
12. To remove the reamer, turn clockwise while slowly pulling outward on the reamer.
13. Remove any remaining debris from bore with low air pressure and mineral spirits/degreaser mixture.
14. Examine bore after cleaning for surface finish, debris and burrs. Flashing and burrs on the exit side of casting bores can be carefully removed with a small piece of Scotchbrite™ on the end of a long wire.
15. Lubricate the replacement valve with ATF. Fit the valve into the reamed bore. If snug, repeat the reaming procedure with an air drill at 500 RPM.

Figure 12



AX4N Valve Body

General Cautions For All Reaming Operations

- Never turn the reamer backward.
- Pushing on the reamer will result in poor surface finish, inadequate and sporadic material removal, and material being left unremoved as the reamer exits a bore.
- Blow free any chips from the reamer after each use.
- Never use a crescent wrench to turn the reamer.