

Throttle Valve Kit

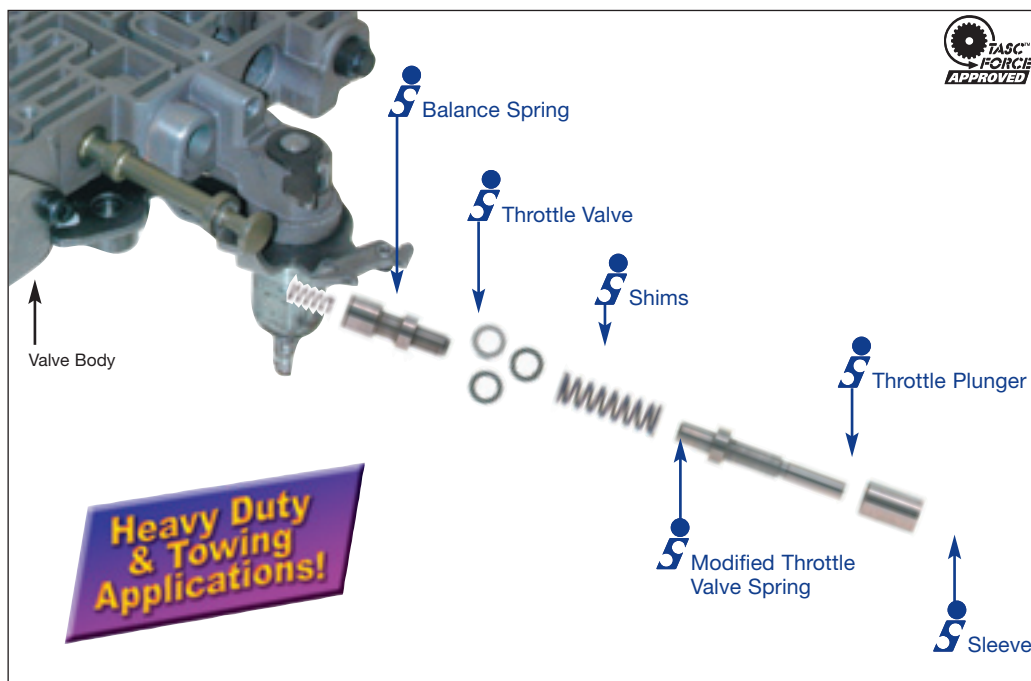
22771-HDK

- 1 Throttle Valve
- 1 Throttle Plunger
- 1 Balance Spring
- 3 Spring Shims
- 1 Alternative TV Spring
- 1 Sleeve

Note: The modified TV spring should never be installed alone. Always use at least one shim with spring.



The Sonnax balance spring included in this kit should be used only if the TV bore is worn, and **MUST** be used with the OE TV spring. **DO NOT** use the balance spring with the purple spring included in this kit.



Wiggle Test

1. Hold the throttle valve in the bottom of the bore.
2. Pry the valve side to side as pictured. Seeing valve movement or any oil being squeezed out indicates excessive clearance.
3. Remove the valve and visually inspect the bore for wear. Pay close attention to bore surface between the balance oil groove and the TV circuit.

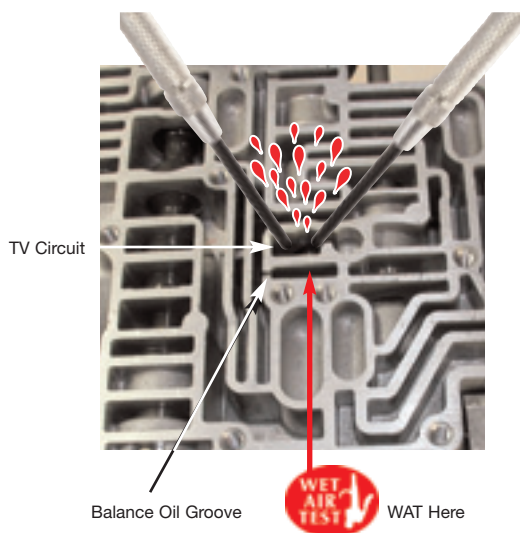


Figure 1

PART NUMBER 22771-HDK

2nd way to inspect the bore

Be sure to hold the throttle valve against the bottom of the bore with this test. Add oil followed by regulated shop to the balance circuit. Be sure the balance feed groove is sealed during the test. There should be no leakage from the TV circuit.

3rd way to inspect the bore

Attach a rubber tube or grip the throttle valve with needle nose pliers, then stroke the valve in the normal operating range. The valve should stroke smoothly and freely. Any sticking or hang-up would indicate a worn bore.

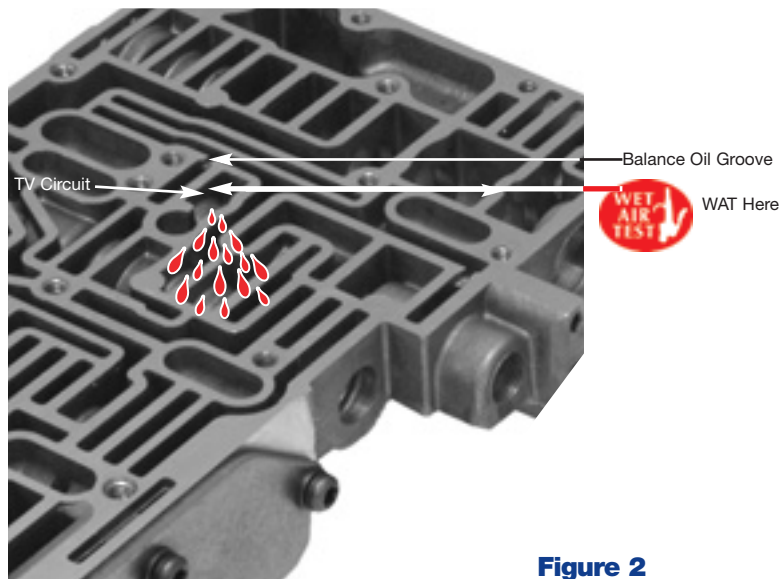


Figure 2

Instructions

1. Remove the throttle valve line-up and save the original throttle valve spring. **Reuse the OE throttle valve spring whenever possible.**
2. Clean the valve body.
3. Follow inspection procedures above to determine if the Sonnax balance spring is required. **The inspection is important to determine if the Sonnax balance spring should be used.**
4. Reassemble using the Sonnax replacement throttle valve, throttle plunger and sleeve and the OE throttle valve spring.

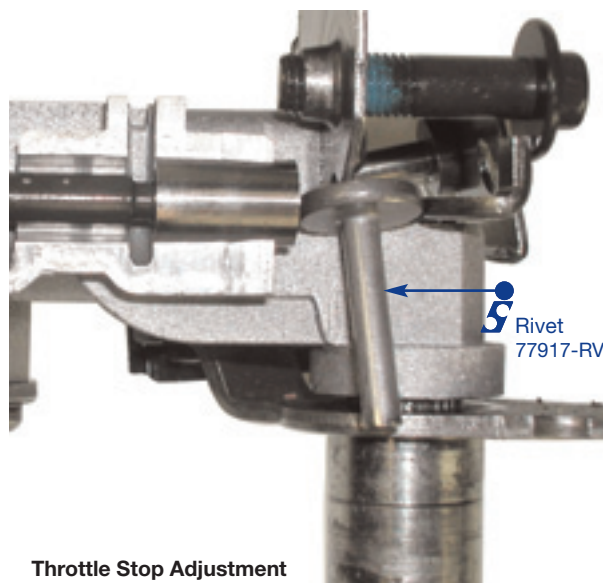
THE BALANCE SPRING SHOULD BE USED ONLY IF THE INSPECTION PROCESS IN STEP 3 REVEALED A WORN BORE AND THE OE THROTTLE VALVE SPRING WILL BE USED.

THE SONNAX PURPLE THROTTLE VALVE SPRING SHOULD BE USED ONLY WHEN CHANGES TO SHIFT TIMING ARE DESIRED (see Step 6).

Note: The OEM throttle valve may appear to be etched between the spools. This is an indication of a poor ground circuit. An additional ground should be installed between the transmission and the negative battery post.

5. Set throttle lever stop using a Sonnax rivet (77917-RV) or equivalent tool measuring .627" as a gauge to set the distance between the throttle lever and the throttle plunger. To obtain the correct measurement, the throttle valve needs to be fully bottomed and the throttle valve spring fully compressed. With the tool in place, the valve line-up should have no movement (see Figure 1).
6. Customizing TV pressure and shift points can be accomplished by following the directions and chart below.

CUSTOMIZING TV PRESSURE AND SHIFT POINTS CAN VARY DEPENDING ON THE OVERALL CONDITION OF THE TRANSMISSION, WHAT TYPE OF LOADS THE VEHICLE WILL BE SUBJECT TO, AND DRIVING HABITS.



Throttle Stop Adjustment

Use the following chart as a general guide to determine change in TV pressure with any one of the spring/shim combinations.

Desired Results	Spring/Shim Selection	Approximate Change to TV Pressure
HIGHER UPSHIFTS		
Increased throttle raises shift points and reduces throttle buzz	(3 Shims not recommended w/ OEM spring)	+21 psi
TV Pressure	OEM Spring +2 Shims	+14 psi
	OEM Spring +1 Shim	+7 psi
OEM Specifications	OEM Spring	0 psi
LOWER UPSHIFTS - Do not use balance spring with Sonnax spring		
Decreased throttle lowers shift points and corrects oversensitive kickdown	Sonnax Spring +3 Shims	-7 psi
TV Pressure	Sonnax Spring +2 Shims	-14 psi
	Sonnax Spring +1 Shims	-21 psi
	Sonnax Spring Only	-28 psi

Increasing TV pressure above OEM specifications

Spring shims can be used to increase throttle sensitivity, delay upshifts and reduce throttle buzz or pulsation. The shims can be installed on either the plunger or control valve, where the spring sits. Spring shims increase spring load and TV pressure. TV pressure delays upshifts and gives sensitivity to 3-2 downshifts.

Note: Vehicle load, driving habits and engine modifications will affect the outcome. Increasing line pressure and leaking governor circuits result in sensitive 1-2, 2-3 and 3-2 shift timing.

The spring shims can be installed to increase throttle pressure at an idle, which stabilizes the TV valve and often eliminates a pulsation or buzz. Adding one shim will delay the upshifts slightly (approximately 3-5 mph depending on load, engine, etc.). Installing a second shim is suggested when late upshifts are desired. For example, on the OEM blue spring, each shim raises the spring weight approximately .5 lbs. and increases TV pressure by 7 psi. The shims can also be used in conjunction with the modified Sonnax spring (see chart on previous page).

Decreasing TV pressure below OEM specifications

A common problem in the 42-46-47RH/RE, A904 and A727 is poor throttle control that occurs during heavy load or towing applications. The increased load requires the driver to use more throttle. This increases TV pressure and creates complaints such as late 2-3 upshift and oversensitive 3-2 downshifts. Installing the modified spring and shim(s) designed by Sonnax (provided in kit) can reduce TV pressure and sensitivity. The Sonnax spring and shims reduce throttle sensitivity, lower shift points, prevent delayed upshifts and reduce falling out of third under heavy throttle. The Sonnax spring and shims can be combined with additional spring shims to fine-tune TV pressure (see chart on previous page).

Note: It is not necessary to completely remove the valve body to alter this spring adjustment. Remove the external linkage levers and loosen/lower the body about 3/4" with bolts still in place. Remove the two bolts, one side and one lower bracket bolt (that are holding the spring bracket into position). Pivot the bracket off toward the front, and slide out the throttle plunger, spring and valve.

Suggestions

Use the OEM spring whenever possible. If late upshifts are a concern, set the TV gap first, then install the purple spring with two shims. If late upshifts persist, install purple spring with one shim. Verify that the problem is not related to governor pressure.