

Valve Adjustment - Procedure and Tool Update

SPECIAL SERVICE TOOLS

SS002-00

Title:

[VALVE CLEARANCE](#) ADJUSTING COMPRESSOR SWING ARM RETROFIT

Models:

'00 Celica GTS

September 15, 2000

Introduction

As a result of tolerance stack, some of the subject [Valve Clearance](#) Adjusting Compressor SSTs, P/N 09248-07010-01, will not fully compress the valve follower on the 2000 Celica GTS with 2ZZ-GE engine, making it difficult or impossible to remove the valve adjusting shim. To correct this condition, a new swing arm will be distributed to all Toyota dealerships. The swing arms are zinc-plated for easy identification.

The purpose of this TSB is to provide instructions for field upgrade of this SST and to provide detailed instructions for its use.

Applicable Vehicles

^ 2000 model year Celica GTS with 2ZZ-GE engine.

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME
N/A	09248-07010-ARM	Valve Clearance Adjusting Compressor Swing Arm

Parts Information

TOOLS & MATERIALS	QUANTITY
2 mm Hex Wrench (included with Valve Clearance Adjusting Compressor Swing Arm)	1

Required Tools & Material**Part Upgrade Description****SWING ARM**

A revised design swing arm will replace the existing swing arm on the [Valve Clearance](#) Adjusting Compressor. This new swing arm is approximately 0.2" longer than the original and is zinc-plated for identification purposes.

OP CODE	DESCRIPTION	TIME	OPN	T1	T2
N/A	Not Applicable to Toyota Warranty*	—	—	—	—

Warranty Information

NOTE: The [Valve Clearance](#) Adjusting Compressor upgraded swing arm will be distributed to all Toyota dealers by OTC.

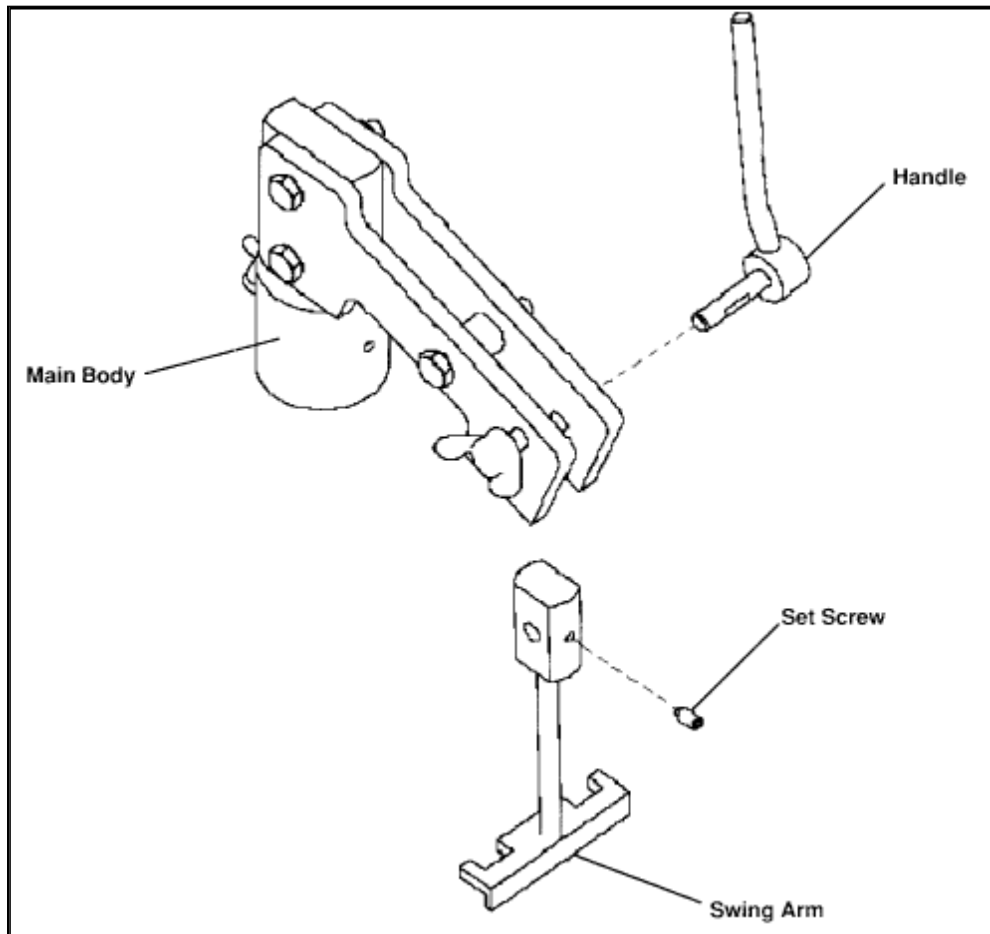
Swing Arm

A revised design swing arm will replace the existing swing arm on the [Valve Clearance](#) Adjusting Compressor. This new swing arm is approximately 0.2" longer than the original and is zinc-plated for identification purposes.

***Applicable Warranty:**

With the LIFETIME MARATHON(R) WARRANTY, all SPX OTC products and parts are warranted against defects in materials and workmanship for the life of the product or part. For service on this or any other Toyota SST, call 1(800) 933-8335.

Retrofit Procedure



1. Remove the 2 mm set screw from the swing arm using the Hex wrench supplied.
2. Remove the handle and the old swing arm; discard the old swing arm.
3. Install the new swing arm (P/N 09248-07010-ARM) and handle, making sure that the flat portion of the handle is aligned with the set screw prior to tightening.
4. Tighten the set screw using the Hex wrench supplied.

Instructions for SST Use (2ZZ-GE)

Corrections have been made to the 2000 MY Celica Repair Manual to provide the technician with detailed instructions on how to use this SST. CHANGES INDICATED BY ARROWS.

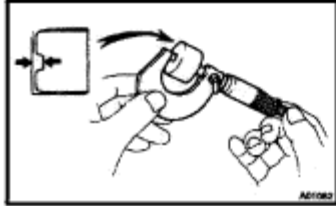
NOTE: For complete [valve clearance](#) adjustment instructions, please refer to TSB EG008-00, REPAIR MANUAL CORRECTION: VALVE CLEARANCE ADJUSTMENT.

PUBLICATION	NUMBER	PAGE(S)
2000 Model Year Celica	RM744U2	EM-6, EM-7, EM12

Amended pages to follow as shown.

EM-6

ENGINE MECHANICAL - VALVE CLEARANCE



A13500

(g) Determine the size of the replaced valve lifter according to these Formula or Charts:


- Using a micrometer, measure the thickness of the removed lifter.
- Calculate the thickness of a new lifter so the valve clearance comes within the specified value.


T..... Thickness of used lifter
A..... Measured valve clearance
N..... Thickness of new lifter

Intake: $N = T + (A - 0.20 \text{ mm (0.008 in.)})$
Exhaust: $N = T + (A - 0.30 \text{ mm (0.012 in.)})$

- Select a new lifter with a thickness as close as possible to the calculated values.

HINT:
Lifter are available in 35 sizes in increments of 0.020 mm (0.0008 in.), from 5.060 mm (0.1992 in.) to 5.740 mm (0.2260 in.).





A13505

5. 2ZZ-GE:
ADJUST VALVE CLEARANCE

(a) Set the SST.

(1) Turn the crankshaft so that the related rocker arm, where the valve clearance is adjusted, is fully pushed down.

NOTICE:
Remove the spark plug and take off the compression.

(2) Insert SST into the plug tube.
SST 09248-77010 (09248-07010)

NOTICE:

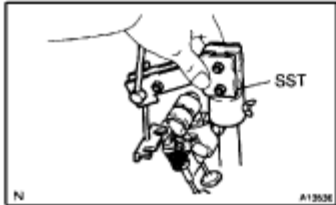
- SST cannot be inserted unless the set screw is loosened.
- Make sure that the camshaft is in the same condition as step (1).

(3) Operate the lever so that SST's seat surface comes to contact with the valve retainer and lock them with the set screw.

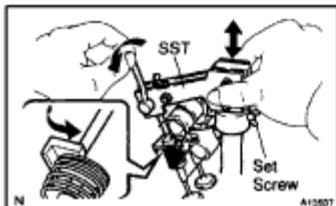
NOTICE:

- Clearance between the valve retainer and SST's seat surface is not allowed.
- Care should be taken not to make clearance when inserting SST, since a presence of clearance may unlock the keeper.

(4) Lock the set screw on the plug tube side of SST.



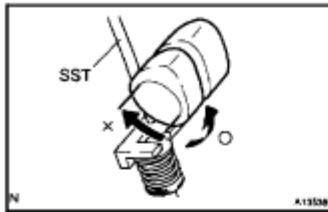
A13506



A13507

ENGINE MECHANICAL — VALVE CLEARANCE

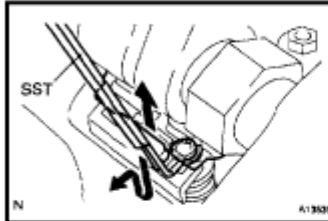
EM-7



- (5) Rotate the crankshaft so that the camshaft is positioned as shown in the illustration.

NOTICE:

- Pay attention to the direction of the rotation to prevent the nose of the camshaft from interfering with the SST's shaft.
- Do not rotate the crankshaft excessively.



- (b) Remove the adjusting shim.

Lift the rocker arm to make a room and remove the adjusting shim using SST.

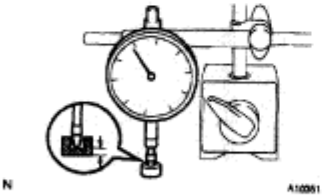
SST 09248-77010 (09248-07020)

NOTICE:

Do not remove SST in the condition that the adjusting shim is removed.

HINT:

- Setting SST from the right above makes the removal easy.
- If there is not enough room, reset SST.



- (1) Determine the size of the replaced shim according to these Formula or Charts:

- Using dial indicator, measure the thickness of the removed shim.
- Calculate the thickness of a new shim so the valve clearance comes within the specified value.

T..... Thickness of used shim

A..... Measured valve clearance

N..... Thickness of new shim

Intake: $N = T + (A - 0.13 \text{ mm (0.0051 in.)}) \times 1.5$

Exhaust: $N = T + (A - 0.27 \text{ mm (0.0106 in.)}) \times 1.5$

- Select a new shim with a thickness as close as possible to the calculated values.

HINT:

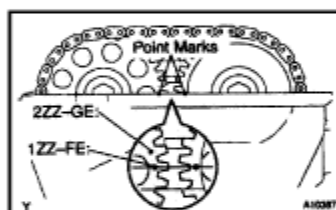
Shim are available in 41 size in increments of 0.020 mm (0.0008 in.), from 2.000 mm (0.0787 in.) to 2.800 mm (0.1102 in.).

EM-12

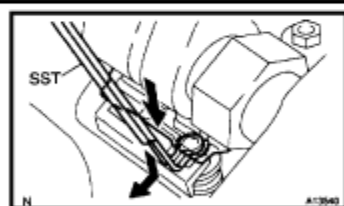
ENGINE MECHANICAL - VALVE CLEARANCE

6. 1ZZ-FE:**REINSTALL CAMSHAFT**

- (a) Reinstall the valve lifters (See page EM-62).
- (b) Align the crankshaft pulley groove with the timing mark "0" of the timing chain cover.
- (c) Hold the timing chain, and place the intake camshaft and timing sprocket assembly.
- (d) Align the matchmarks on the timing chain and camshaft timing sprocket.
- (e) Reinstall the camshaft and timing sprocket assemblies (See page EM-66).



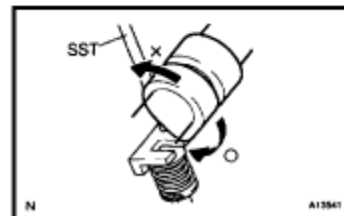
- (f) Check that the point marks of the camshaft timing sprockets are in straight line on the timing chain cover surface as shown in the illustration.
- (g) Check that the matchmarks are on the timing chain and camshaft timing sprockets.
- (h) Install the chain tensioner (See page EM-26).
- (i) Recheck the valve clearance (See procedure in step 3).
- (j) Check the valve timing (See page EM-26).

**7. 2ZZ-GE:****REINSTALL ADJUSTING SHIM**

- (a) Lift the rocker arm to make a room and use SST, install the adjusting shim.

HINT:

- Setting SST from the right above makes the removal easy.
- To remove SST from the adjusting shim, it is advisable to push down the rocker arm.



- (b) Turn the crankshaft so that the related rocker arm, where the valve clearance is adjusted, is fully pushed down.

NOTICE:

- Pay attention to the direction of the rotation to prevent the nose of the camshaft from interfering with the SST's shaft.
- Do not rotate the crankshaft excessively.

- (c) After loosening the 2 set screws of SST, remove SST itself.

SST 09248-77010 (09248-07010)