

Section : Chassis/
Power Train

Ref. No. : CP-2016

Date : Aug., 2002

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Area Application : USA/Canada, Europe, General, G.C.C. Countries, Australia

Model Name : ALL MODELS

Model Code : All

Subject : Suspension Ball Joint Inspection

This Service Bulletin is to inform of the inspection method and specification figures of free play for the suspension ball joints for better understanding in servicing. For your information, the inspection methods are reconsidered for all models this time. The on-vehicle inspection methods are standardized in 3 kinds for the lower ball joint, 2 kinds for the upper ball joints and 1 kind for the ball joint at the arm part, and the unit inspection method are standardized in 1 kind.

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
CENTURY (GZG50)	Front	1-(a)	0.4 mm	2.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	3	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
CROWN (JZS175)	Front	1-(a)	0.4 mm	3.0 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	3	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	3.0 N·m or less
CROWN (JZS155, GS15#)	Front	1-(a)	0.4 mm	3.0 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	3	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	4.0 N·m or less
CROWN (MS13#, YS132, LS130)	Front	1-(b)	2.3 mm	2.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	-	-	-	-	-	-
CRESSIDA (MX8#, RX8#, GX81, LX80)	Front	1-(c)	No feel of play by hand	4.5 N·m or less	-	-	-
	Rear	3	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less



		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
SUPRA (JZA70)	Front	1-(a)	0.4 mm	0.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	3	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
SUPRA (JZA80)	Front	1-(a)	0.4 mm	3.0 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
	Rear	1-(a)	No feel of play by hand	3.5 N·m or less	2-(a)	No feel of play by hand	3.5 N·m or less
HIGHLANDER (ACU2#, MCU2#)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
CROWN CONFORT (LXS1#, YXS10)	Front	1-(c)	No feel of play by hand	4.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
AVALON (MCX10, 20)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
CAMRY, CAMRY SOLARA (MCV10, 20, 30, ACV 20, 30, SXV10, 20)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
AVENSIS (AT22#, ST220, CT220, CDT220, ZZT22#, AXT22#)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
AVENSIS VERSO (ACM20, CLM20)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
CORONA, CARINA E (AT19#, ST191, CT190)	Front	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
CORONA (AT210, ST210)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
MR2 (AW1#)	Front	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
	Rear	1-(c)*1 3*2	No feel of play by hand	3.0 N·m or less*1 3.5 N·m or less*2	-	-	-
MR2 (AW20)	Front	1-(c)	No feel of play by hand	2.5 N·m or less	-	-	-
	Rear	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
MR2 (AW30)	Front	1-(c)	No feel of play by hand	2.5 N·m or less	-	-	-
	Rear	3	No feel of play by hand	1.0 N·m or less	-	-	-
CELICA (AT180, ST18#)	Front	1-(c)	No feel of play by hand	4.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
CELICA (AT200, ST20#, ZZT23#)	Front	1-(c)	No feel of play by hand	5.0 N·m or less 2.0 N·m or less*3	-	-	-
	Rear	-	-	-	-	-	-
PRIUS (NHW11)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
COROLLA (EE9#, 10#, 11#, AE92, 10#, 11#, CE90, 100, 110, CDE110, ZZE110)	Front	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
COROLLA NUMMI Made TMUK Made (EE10#, 11# AE10#, 11#, CE100, 110, CDE110, ZZE11#,12#)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
COROLLA, COROLLA SPA- CIO, COROLLA VER- SO (AE111F, NZE12#, ZZE12#)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
YARIS, ECHO, YARIS VERSO, ECHO VERSO (SCP1#, NCP1#, 2#, NLP10, 2#)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
TERCEL, PASEO (EL4#, 5#)	Front	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
STARLET (EP8#, NP80)	Front	1-(c)	No feel of play by hand	3.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
STARLET (EP9#)	Front	1-(c)	No feel of play by hand	2.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
PREVIA, TRAGO (TCR1#, 2#)	Front	1-(c)	No feel of play by hand	4.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
PREVIA, TRAGO (ACR30)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
LITEACE, TOW- NACE (KR2#, KR4#, YR2#, SR40, CR2#, 41)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	2.5 N·m or less
	Rear	-	-	-	-	-	-
LITEACE, TOW- NACE (YR39)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
LITEACE (KM3#, YM3#, CM35)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	3.5 N·m or less
	Rear	-	-	-	-	-	-

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
SIENNA (MCL10)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
RAV4 (SXA1#)	Front	1-(c)	No feel of play by hand	4.5 N·m or less	-	-	-
	Rear	3	No feel of play by hand	3.5 N·m or less	-	-	-
RAV4 (ACA2#, ZCA2#)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
PICNIC (SXM10, CXM10)	Front	1-(c)	No feel of play by hand	5.0 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
AVENSIS VER-SO, PICNIC (ACM20, CLM20)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	-	-	-
	Rear	-	-	-	-	-	-
HIACE S.B.V. (RCH1#, 2#, LXH1#, 2#, KLH1#, 2#)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
HIACE (RZH10#, 11#, 125, 135, 153, LH10#, 11#, 125, 166, 17#, 184)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
COASTER (HZB50, BB50, 4#, 2#, RB2#)	Front	1-(b)	2.3 mm	8.5 N·m or less	2-(b)	2.3 mm	6.0 N·m or less
	Rear	-	-	-	-	-	-
DYNA (YH8#, LH80, YY100, LY100)	Front	1-(b)	2.3 mm	4.0 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
DYNA (LY22#, 230, KDY220, 230, 250, 260)	Front	1-(b)	No feel of play by hand	6.5 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
DYNA (XZU30#, 342)	Front	1-(b)	No feel of play by hand	4.0 N·m or less	2-(a)	2.3 mm	5.0 N·m or less
	Rear	-	-	-	-	-	-

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
LAND CRUISER 100 (UZJ100, FZJ10#, HDJ100)	Front	1-(a)	No feel of play by hand	3.0 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
LAND CRUISER PRAD (RZJ9#, VZJ9#, KZJ9#, KDJ9#)	Front	1-(a)	0.5 mm	2.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
SEQUOIA (UCK35, 45)	Front	1-(a)	0.5 mm	2.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
4RUNNER (VZN120, 13#, YN13#, RN13#, 125, LN13#)	Front	1-(c)	2.3 mm	6.0 N·m or less	2-(b)	No feel of play by hand	Turns smoothly
	Rear	-	-	-	-	-	-
4RUNNER (RZN185, VZN18#, KZN185)	Front	1-(a)	0.5 mm	2.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
TUNDR (VCK30, 40, UCK30, 40)	Front	1-(a)	0.5 mm	2.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
TACOMA*4 (RZN140, 150, VZN150)	Front	1-(a)	0.5 mm	4.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
TACOMA*5 (RZN140, 150, VZN150)	Front	1-(a)	0.5 mm	3.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
TACOMA (RZN161, 171, 19#, VZN160, 170, 195)	Front	1-(a)	0.5 mm	2.5 N·m or less	2-(a)	No feel of play by hand	4.5 N·m or less
	Rear	-	-	-	-	-	-
HILUX*6 (YN8#, 9#, RN8#, 90, LN8#, 90, VAN85, 9#)	Front	1-(b)	2.3 mm	5.0 N·m or less	2-(a)	2.3 mm	4.0 N·m or less
	Rear	-	-	-	-	-	-
HILUX*7 (YN8#, 9#, RN8#, 90, LN8#, 90, VAN85, 9#)	Front	1-(b)	0.5 mm	5.0 N·m or less	2-(a)	2.3 mm	4.0 N·m or less
	Rear	-	-	-	-	-	-

		Lower ball joint or suspension ball joint			Upper ball joint		
		Inspection method	Max. Play	Turning torque	Inspection method	Max. Play	Turning torque
HILUX (RZN14#, 15#, LN14#, 15#)	Front	1-(b)	0.5 mm	5.0 N·m or less	2-(a)	1.9 mm	4.0 N·m or less
	Rear	-	-	-	-	-	-
HILUX (YN10#, 11#, RN10#, 11#, LN10#, 11#)	Front	1-(c)	2.3 mm	6.0 N·m or less	2-(b)	2.3 mm	Turns smoothly
	Rear	-	-	-	-	-	-
HILUX (LN16#, 17#, 19#, RZN16#, 17#, 19#)	Front	1-(c)	2.3 mm	6.0 N·m or less	2-(b)	No feel of play by hand	Turns smoothly
	Rear	-	-	-	-	-	-
T-100 (RCK10, VCK1#)	Front	1-(a)	0.5 mm	7.0 N·m or less	2-(a)	1.9 mm	4.0 N·m or less
	Rear	-	-	-	-	-	-
T-100 (VCK2#)	Front	1-(c)	2.3 mm	6.0 N·m or less	2-(b)	No feel of play by hand (From '95 MY)	Turns smoothly
	Rear	-	-	-	-	-	-
TUV (KF40, 50)	Front	1-(c)	No feel of play by hand	4.0 N·m or less	2-(b)	No feel of play by hand	2.0 N·m or less
	Rear	-	-	-	-	-	-
TUV (KF60, 70, 80)	Front	1-(c)	0 mm	4.0 N·m or less	2-(b)	0 mm	2.0 N·m or less
	Rear	-	-	-	-	-	-
TUV (LF50)	Front	1-(c)	No feel of play by hand	3.5 N·m or less	2-(b)	No feel of play by hand	3.5 N·m or less
	Rear	-	-	-	-	-	-
TUV (LF85)	Front	1-(c)	No feel of play by hand	4.0 N·m or less	2-(b)	No feel of play by hand	Turns smoothly
	Rear	-	-	-	-	-	-

*1: Lower ball joint

*2: Suspension arm ball joint

*3: Super strut suspension

*4: Except *5

*5: From flam No.Z718190

*6: Except *7

*7: From flam No. YN80-0003802, YN81-0006191, YN85-0024564, YN85-8004508, YN85-9001566, YN86-0012985, YN90-9003140, YN92-0000337, LN80-0002096,

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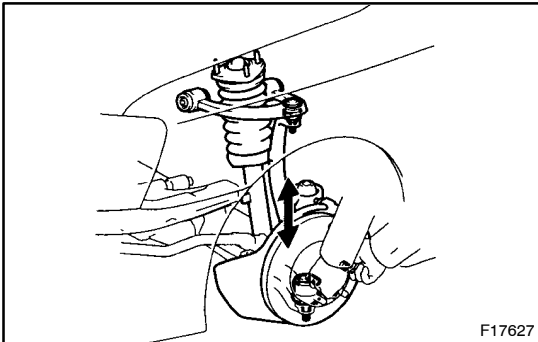
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LN81-0000847, LN85-0082922, LN85-9004937, LN86-0001612, LN86-9000011,
LN90-9002121, RN80-0087125, RN80-5130170, RN85-0004477, RN85-5046258,
RN85-9010725, RN90-0014600, RN90-5047105, RN90-9002376, VZN85-0003605,
VZN85-5004547, VZN90-0006119, VZN90-5025989, VZN95-0025290

ON-VEHICLE INSPECTION

NOTICE:

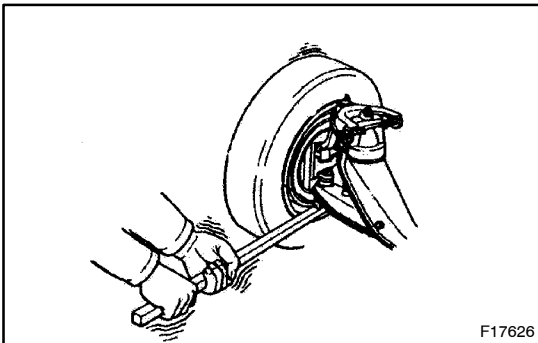
- Be sure to check the applicable vehicle model for the inspection with the table.
- Refer to the table for the standard value of the free play.



1. INSPECT LOWER BALL JOINT FREE PLAY

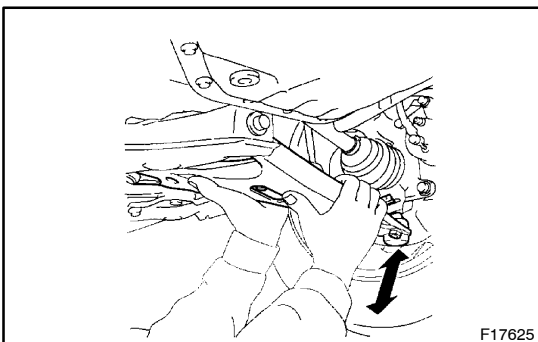
(a) Move the hub up and down by hand (Most models of double wish-bone type suspension):

- (1) Remove the tire.
- (2) Install the 2 hub nuts.
- (3) Inspect the free play while moving the hub nuts up and down at a force of 294 N (30 kgf, 67 lbf).



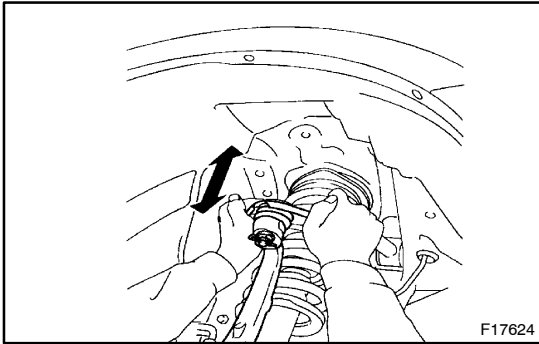
(b) Move the lower arm using a lever (Some models of double wish-bone type suspension):

- (1) Lift up the vehicle.
- (2) Place the tip of the lever to the wheel, and inspect the free play while moving the lower arm up and down.



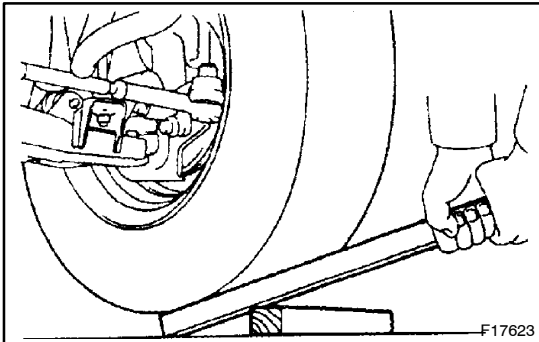
(c) Move the lower arm by hand (All models of strut type suspension, some models of double wish-bone type suspension):

- (1) Lift up the vehicle.
- (2) Inspect the free play while moving the lower arm up and down at a force of 294 N (30 kgf, 67 lbf).

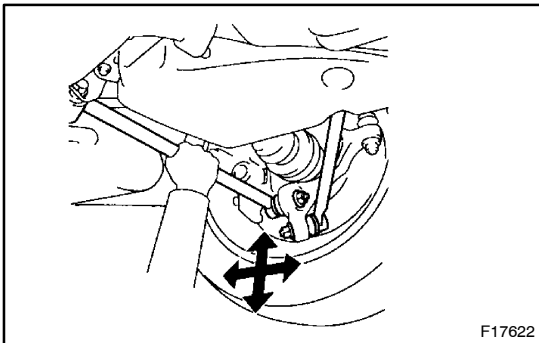


2. INSPECT UPPER BALL JOINT FREE PLAY

- (a) Move the upper arm by hand (Models of which spring for suspension is linked with the lower arm with a torsion bar and all the models of which spring for suspension is coil):
- (1) Remove the tire.
 - (2) Inspect the free play while moving the upper arm up and down at a force of 294 N (30 kgf, 67 lbf).

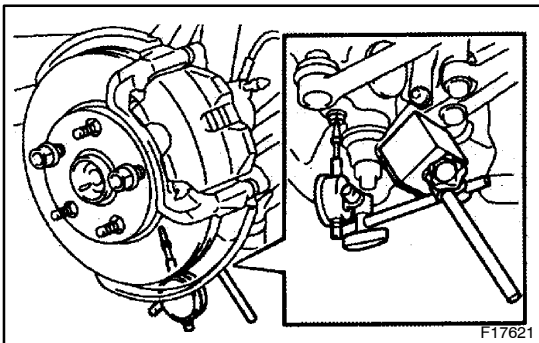


- (b) :Move the tire with a lever (Models of which spring for suspension is linked with the upper arm with a torsion bar)
- (1) Lift up the vehicle.
 - (2) Place the lever under the tire, and inspect the free play while lifting the tire using a wood stick, etc., as a fulcrum.



3. INSPECT SUSPENSION ARM BALL JOINT PLAY

- (a) Lift up the vehicle.
- (b) Inspect the free play while swinging the arm part by hand.



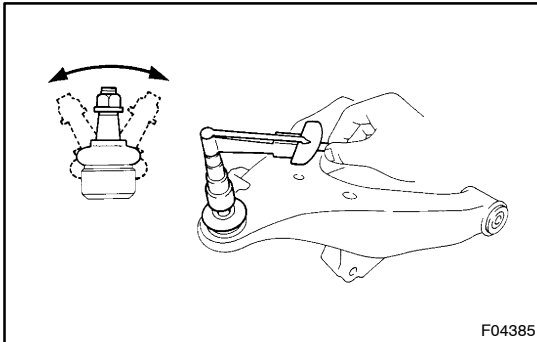
(Reference)

Inspection method of the free play (Installation method of the gauge)

- Set the dial gauge between the arm (upper or lower) and the knuckle, and measure the free play.
- Illustration shows the example of measuring the free play for the vehicle with the double wishbone type suspension with coil spring.

4. INSPECT BALL JOINT DUST COVER

Check for cracks and grease leaks on the dust cover (Boots).



UNIT INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

Move the stud back and forth 5 times in the slicing direction, and then turn the stud continuously at 3-5 second per 1 turn, and measure the turning torque at the 5th turn.

HINT:

Refer to the table for the standard value of the turning torque.