

SUSPENSION (FRONT)

SU02-001

LEAF SUSPENSION ASSEMBLY SU02-2

DATA AND SPECIFICATIONS.....	SU02-2
DESCRIPTION	SU02-3
TROUBLESHOOTING.....	SU02-5
SPECIAL TOOL.....	SU02-5
COMPONENT LOCATOR	SU02-6
OVERHAUL	SU02-8
INSPECTION AND REPAIR	SU02-12

LEAF SUSPENSION ASSEMBLY

DATA AND SPECIFICATIONS

EN09A0302I200001

Unit: mm {in.}

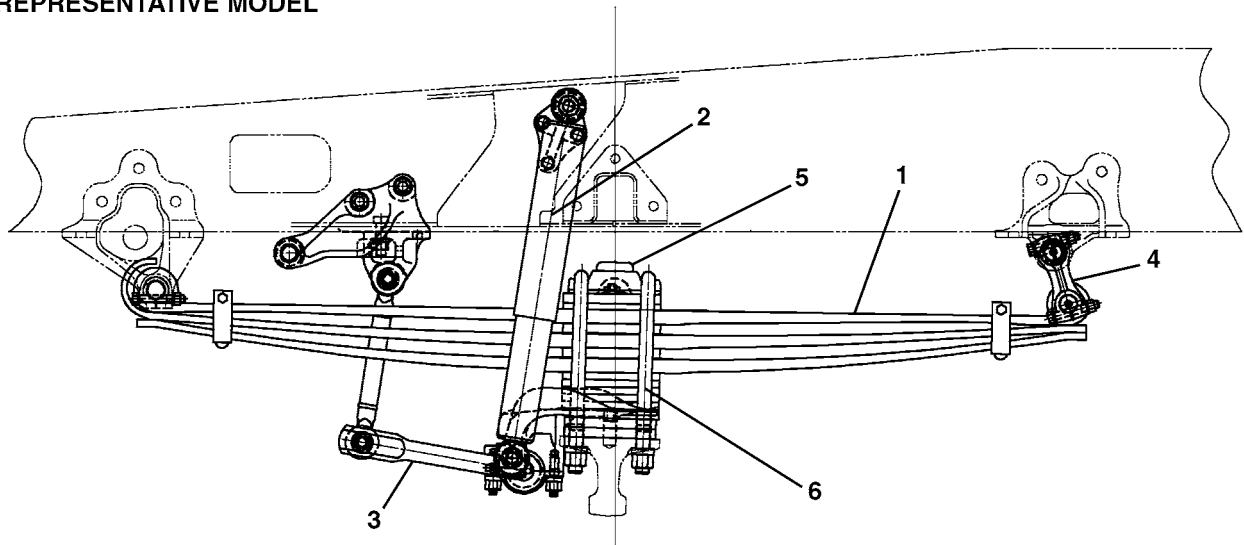
Models		FR, FS, FY, SH, SS						ZS
Type		Semi-elliptic leaf springs with shock absorber						
Dimensions of leaf springs	Span	1,500 {59.06}						1,700 {66.93}
	Width	90 {3.54}						
	Thickness of leaves	Multi leaf spring		Taper leaf spring				Taper leaf spring
		12 {0.47}		21 {0.83}				24 {0.94}
		13 {0.51}		22 {0.87}				25 {0.98}
		—		23 {0.91}				—
Shock absorbers	Type	Single acting		Single acting		Double acting		Double acting
	Stroke	270 {10.63}	290 {11.42}	270 {10.63}	300 {11.81}	270 {10.63}	280 {11.02}	340 {13.39}
	Min. length	420 {16.54}	440 {17.32}	420 {16.54}	450 {17.72}	423 {16.65}	433 {17.05}	489 {19.25}
	Max. length	690 {27.17}	730 {28.74}	690 {27.17}	750 {29.53}	693 {27.28}	713 {28.07}	829 {32.64}
Stabilizer (If so equipped)		Torsion bar						—

DESCRIPTION

EN09A0302C100001

MODELS: FS, FR, SH, SS, ZS

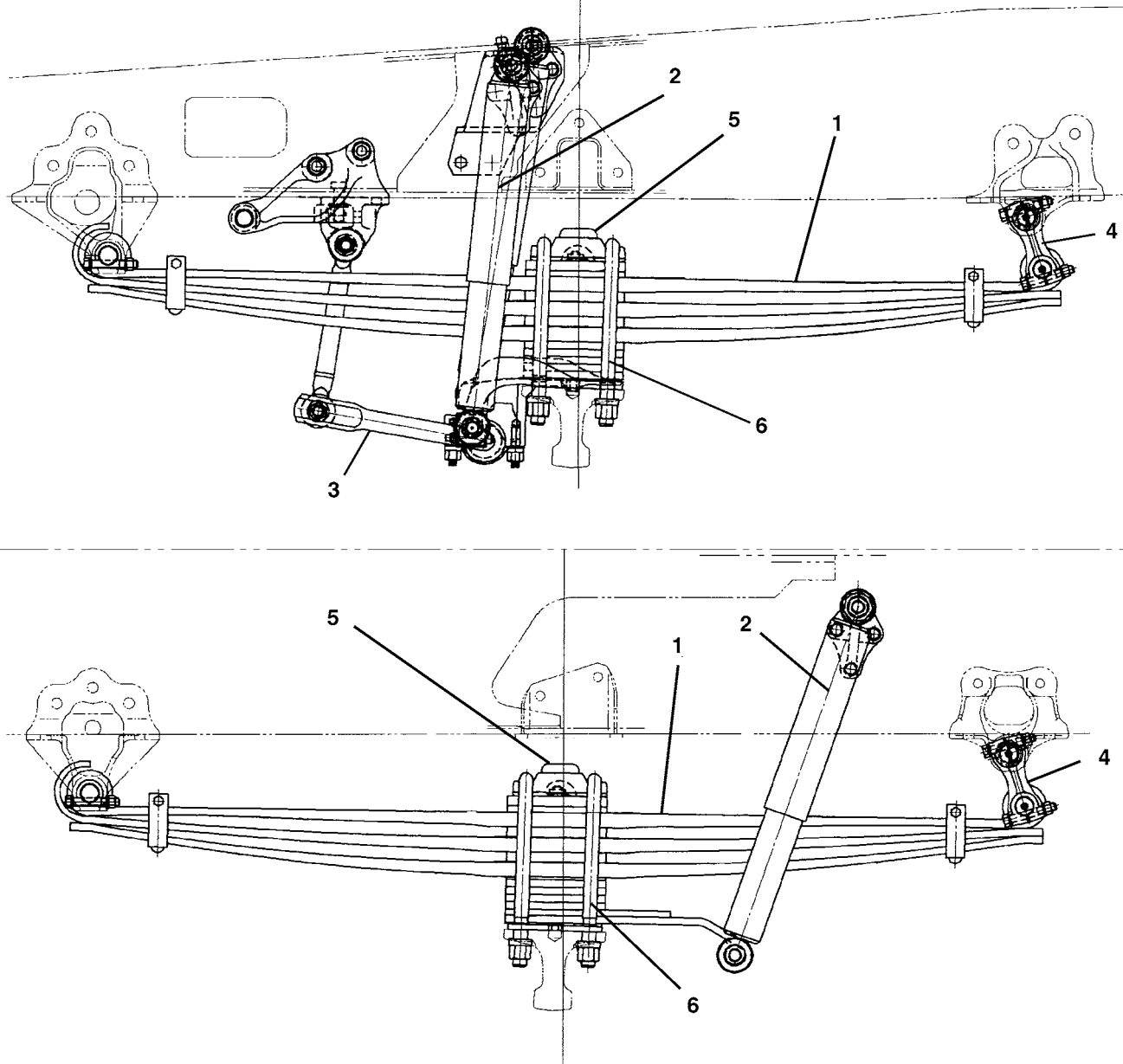
REPRESENTATIVE MODEL



SHTS09A030200001

- | | |
|---|-----------------------------|
| 1 | Spring assembly |
| 2 | Shock absorber |
| 3 | Stabilizer (If so equipped) |

- | | |
|---|---------------|
| 4 | Shackle |
| 5 | Spring bumper |
| 6 | U-bolt |

MODEL: FY**REPRESENTATIVE MODEL**

SHTS09A030200002

1	Spring assembly	4	Shackle
2	Shock absorber	5	Spring bumper
3	Stabilizer (If so equipped)	6	U-bolt

TROUBLESHOOTING

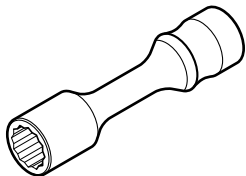
EN09A0302F300001

Symptom	Possible cause	Remedy/Prevention
Rough ride	Broken leaves	Replace the leaves. Check the load capacity rating.
	Cracked or damaged	Replace the leaves. Check the load capacity rating.
	Overloading	Decrease the load.
Heavy sway	Inoperative shock absorber	Replace the shock absorber.
Leaves broken at the center bolt hole	Loosen U-bolts	Tighten to specified torque.
Squeaking of the leaves	Friction between the leaves	Replace the silencers and/or apply chassis grease between leaves.

SPECIAL TOOL

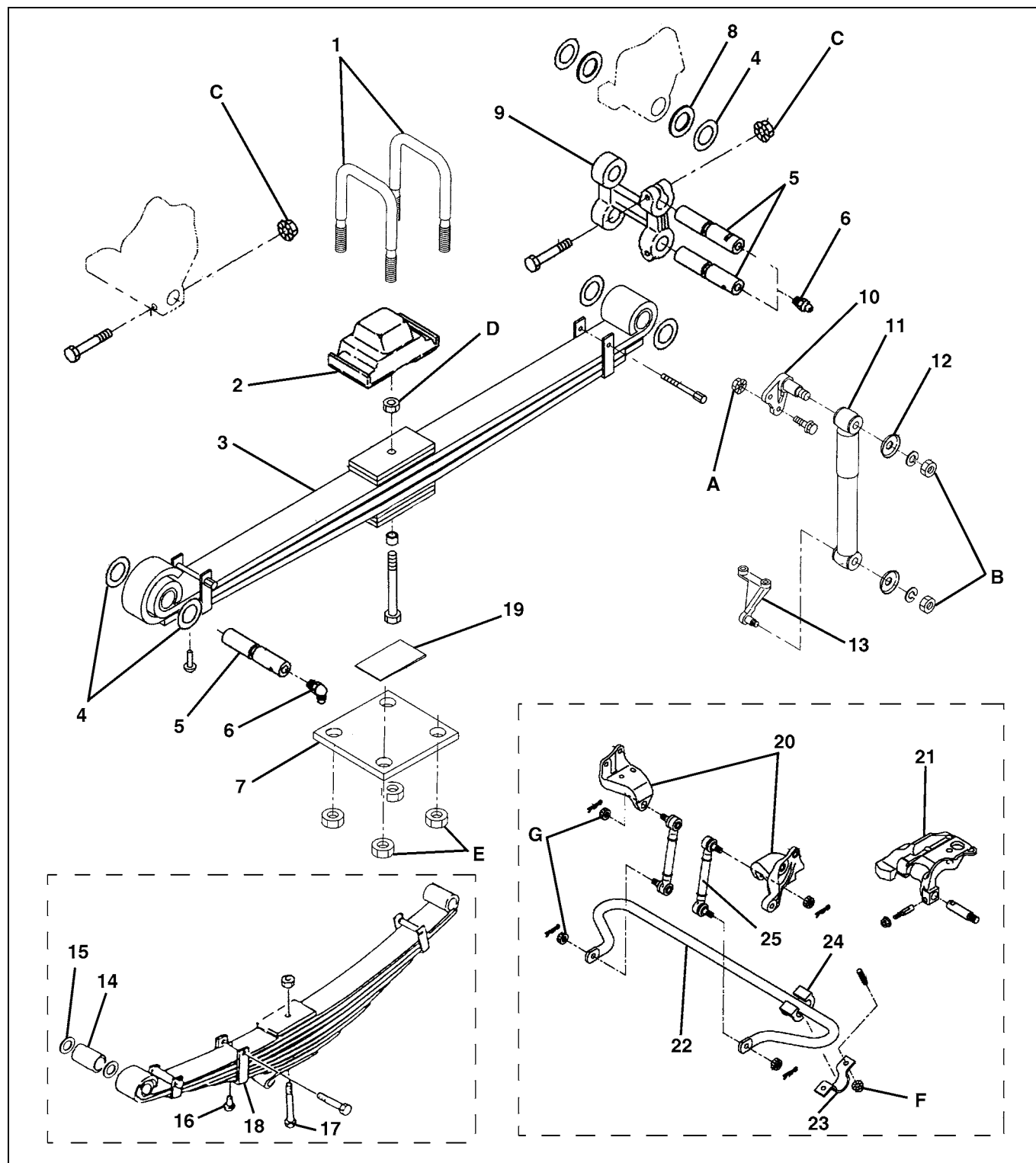
EN09A0302K100001

Prior to starting a suspension overhaul, it is necessary to have this special tool.

Illustration	Part number	Tool name	Remarks
	09603-1550	SOCKET WRENCH	FOR FRONT U-BOLT

COMPONENT LOCATOR

EN09A0302D100001

FRONT SUSPENSION

SHTS09A030200004

1	U-bolt	14	Bushing
2	Spring bumper	15	Dust seal
3	Leaf spring assembly	16	Rivet
4	Thrust washer	17	Center bolt
5	Spring pin	18	Clip
6	Lubrication fitting	19	Caster shim
7	Seat	20	Bracket (If so equipped)
8	Dust seal	21	Lower seat (If so equipped)
9	Shackle	22	Stabilizer (If so equipped)
10	Shock absorber bracket	23	Holder (If so equipped)
11	Shock absorber	24	Rubber bushing (If so equipped)
12	Cushion washer	25	Stabilizer link rod (If so equipped)
13	Shock absorber bracket		

Tightening torque

Unit: N·m {kgf·cm, lbf·ft}

A	73-109 {745-1,111, 54-80}	E	490-590 {4,997-6,016, 362-435}
B	236-324 {2,407-3,304, 175-239}	F	107.5-146.5 {1,097-1,493, 80-108}
C	73-109 {745-1,111, 54-80}	G	128-172 {1,306-1,753, 95-126}
D	148-176 {1,510-1,794, 110-129}		

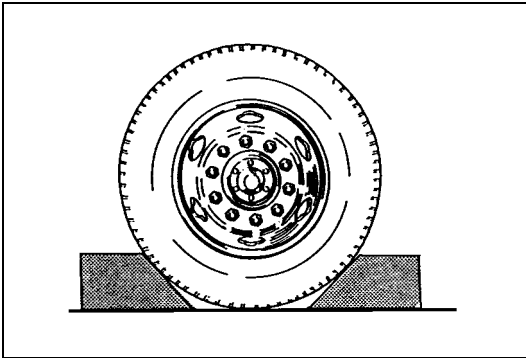
OVERHAUL

EN09A0302H200001

IMPORTANT POINTS - DISMOUNTING

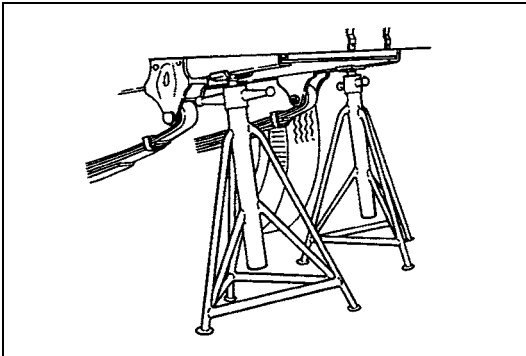
1. SUPPORT OF THE FRAME WITH STANDS

- (1) Park the vehicle on level ground.
- (2) Be sure to block the wheels before dismounting.



SHTS09A030200005

- (3) Jack up the axle, and support the frame with stands.
- (4) Remove the tires.



SHTS09A030200006

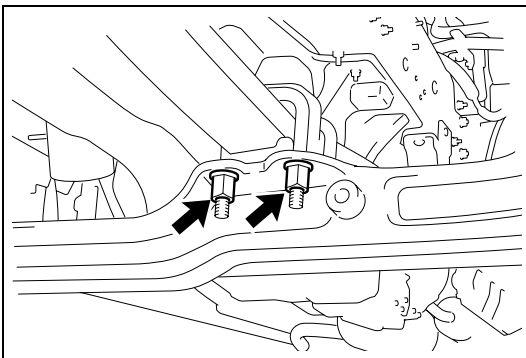
2. REMOVAL OF THE U-BOLT

- (1) Remove the shock absorber.
- (2) Support the axle with a floor jack.
- (3) Remove the U-bolt mounting nuts.

NOTICE

When cutting off the U-bolts (Due to rusted threads) with a torch, never direct the flame toward the leaves or allow sparks to come in contact with the leaves.

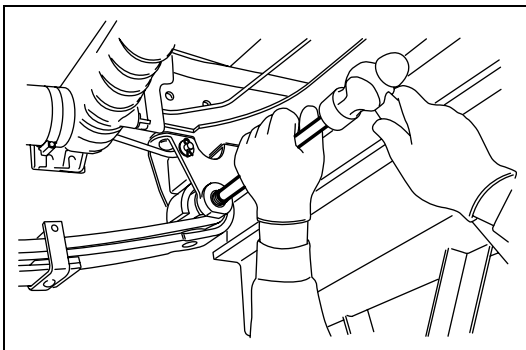
SST: Socket Wrench for Front U-bolt (09603-1550)



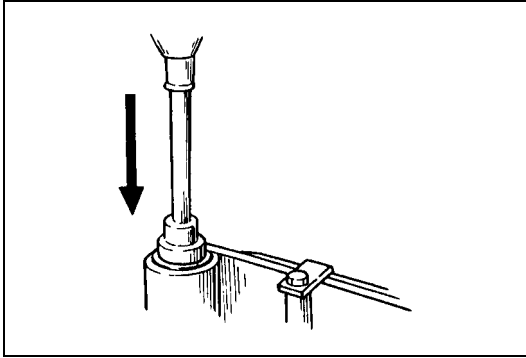
SHTS09A030200007

3. REMOVAL OF THE SPRING PIN

- (1) Remove the lubrication fitting and spring pin lock bolt.
- (2) Use a brass rod to remove the spring pins.



SHTS09A030200031

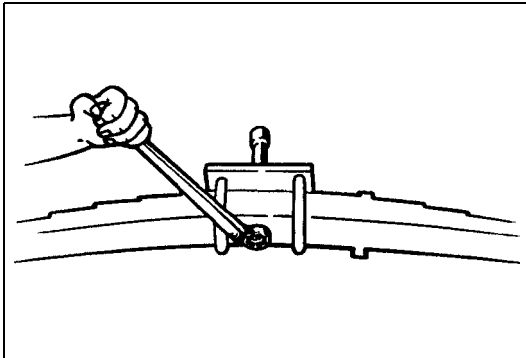


SHTS09A030200009

IMPORTANT POINTS - DISASSEMBLY

1. REPLACEMENT OF THE EYE BUSHING

- (1) Use a suitable tool to press out the old eye bushing.
- (2) Use a suitable tool to press in the new eye bushing.



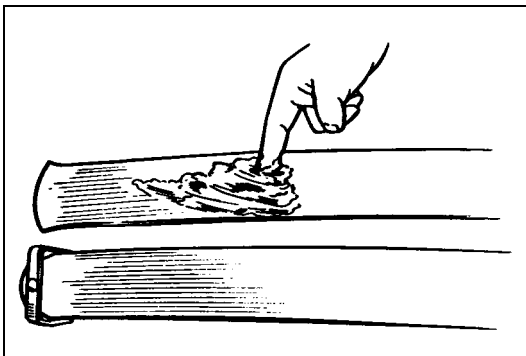
SHTS09A030200010

2. DISASSEMBLY OF THE LEAF SPRING

⚠ WARNING

When removing the center bolt lock nut, the spring leaves may jump. Care should be taken to avoid possible personal injury.

- (1) Remove the clip bolts.
- (2) Use a vise or an arbor press to hold the leaf spring near the center bolt.
- (3) Remove the center bolt.
- (4) Loosen a vise or an arbor press slowly, and separate the leaves.



SHTS09A030200011

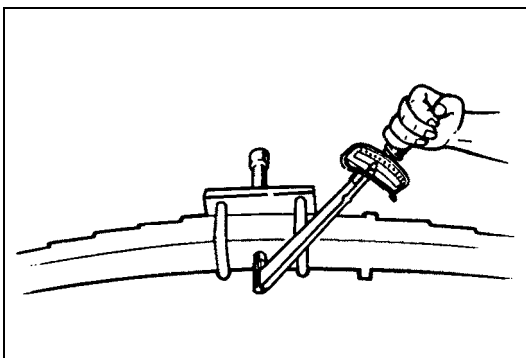
IMPORTANT POINT - ASSEMBLY

1. ASSEMBLY OF THE LEAF SPRING

⚠ WARNING

When clamping the spring leaves, they may jump. Care should be taken to avoid possible personal injury.

- (1) Apply coating on the leaf after removing rust, and apply chassis grease on both surface at leaves.

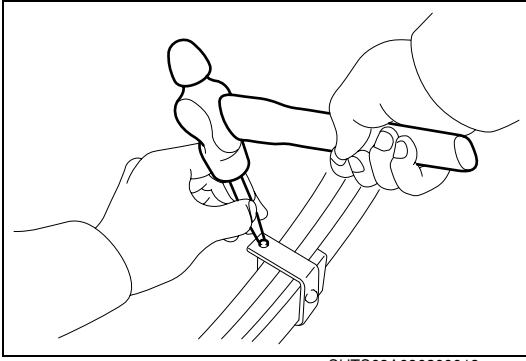


SHTS09A030200012

- (2) Align the leaf holes and secure the leaves with a vise or an arbor press.
- (3) Insert the center bolt and tighten the lock nut.

NOTICE

When reassembling the leaf spring, replace the center bolt with a new one.



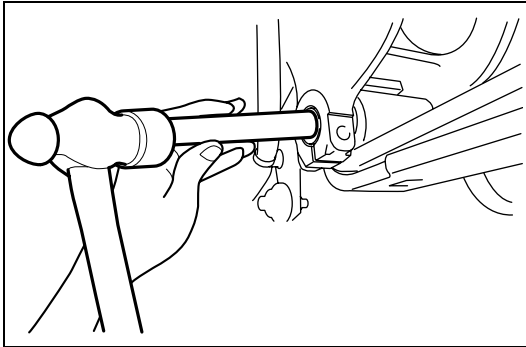
SHTS09A030200013

- (4) Tighten the clip bolts.

NOTICE

When tightening the clip bolts, use a new clip bolts.

- (5) Use a punch to peen the thread of the clip bolts.



SHTS09A030200014

IMPORTANT POINTS - MOUNTING

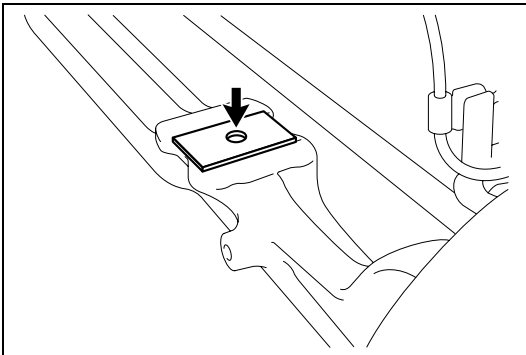
1. INSTALLATION OF THE SPRING PIN

- (1) Use a brass rod to install the spring pin with thrust washers.

NOTICE

Apply chassis grease on the surface of the eye bushing and spring pin before installing.

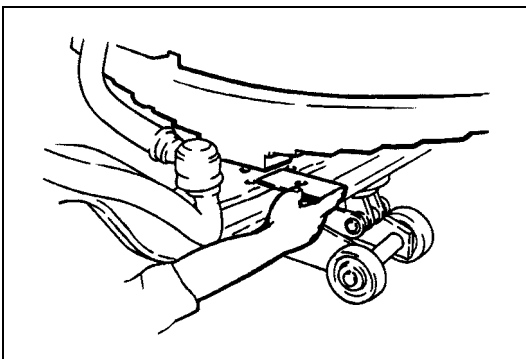
- (2) Install the spring pin lock bolt.



SHTS09A030200015

2. INSTALLATION OF THE U-BOLT

- (1) Put the spacer on the front axle I-beam part of the driver's seat side.

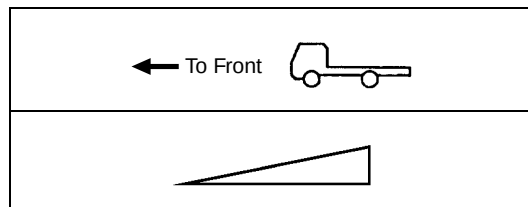


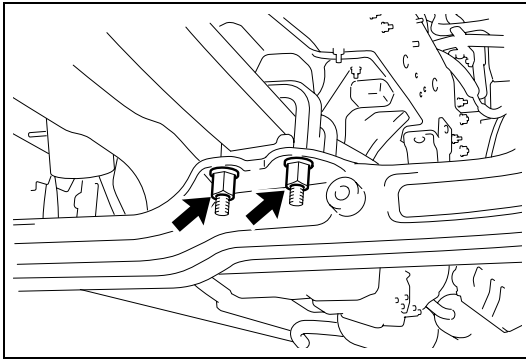
SHTS09A030200018

- (2) Place the caster shim between the spring seat and leaf spring.

NOTICE

When installing the caster shim, the thick end should face the rear of the vehicle.





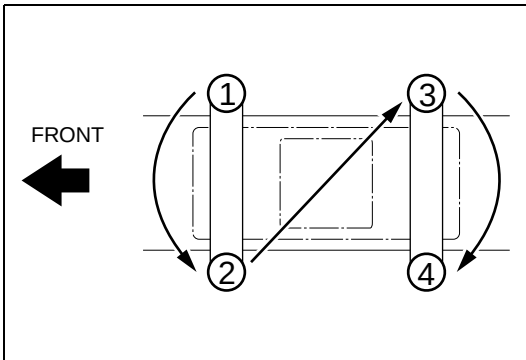
SHTS09A030200007

- (3) Lift the axle using a jack and align the hole of the leaf spring center bolt and the hole of the axle I-beam.

NOTICE

Axle and suspension assembly are heavy, therefore be careful when handling them.

- (4) Put the spring pads on the leaf springs.
 (5) Set the U-bolts so that they catch the spring pads and tighten the U-bolt nuts temporarily.



SHTS09A030200019

- (6) Using the special tool, tighten the U-bolt nuts (4 pieces) alternately right and left and equally.
 After repeating this operation 3 to 5 times, tighten the nuts to the specified torque.

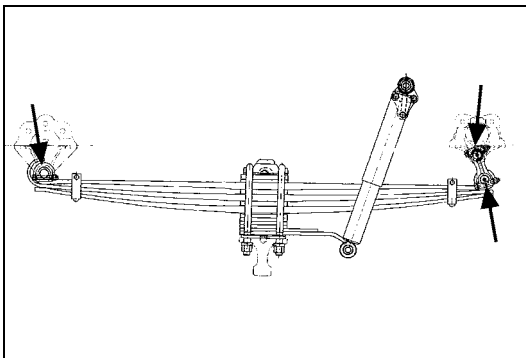
SST: Socket Wrench for Front U-bolt (09603-1550)

3. ADJUSTMENT OF THE SUSPENSION AFTER ASSEMBLING

- (1) If the vehicle inclination is observed after assembling suspension, correct it by inserting the following spacer between the spring and the axle.

Spacer:

Part No.	Thickness (mm)
9004-85492	4.5
9004-85493	9.0



SHTS09A030200020

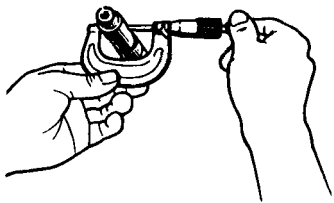
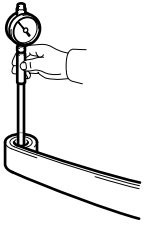
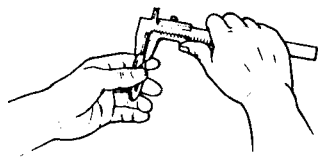
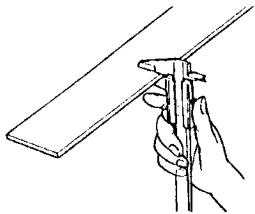
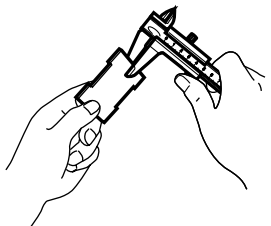
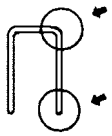
4. LUBRICATION

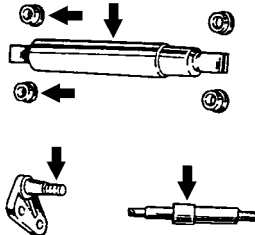
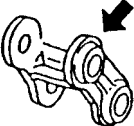
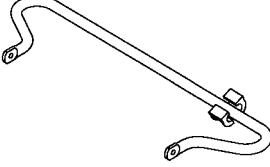
- (1) Lubricate the following parts with chassis grease.
 a. Spring pins

INSPECTION AND REPAIR

EN09A0302H300001

Unit: mm {in.}

Inspection item		Standard	Limit	Remedy	Inspection procedure
Spring pin: Outside diameter		30 {1.181}	29.7 {1.170}	Replace.	Measure 
Clearance between spring pin and eye bushing		0.020-0.13 {0.0008-0.0051}	0.5 {0.0196}	Replace the pin and/or bushing.	Measure 
Thrust washer: Wear	Pivot side	1.8 {0.071}	1.5 {0.059}	Replace.	Measure 
	Shackle side	4.0 {0.157}	3.5 {0.138}		
Leaf: Damage and wear		—	More than 15%	Replace.	Measure 
Silencer: Wear		5.0 {0.1968}	1.0 {0.0394}	Replace.	Measure 
Spring bumper: Damage and wear		—	—	Replace, if necessary.	Visual check 
U-bolt: Damage		—	—	Replace, if necessary.	Visual check 

Inspection item	Standard	Limit	Remedy	Inspection procedure
Shock absorber: Operation, oil leak and damage	—	—	Replace, if necessary.	Visual check 
Cushion: Damage and wear	—	—		
Shock absorber pin and bracket: Damage and wear	—	—		
Shackle: Damage	—	—	Replace, if necessary.	Visual check 
Stabilizer bar: Damage (If so equipped)	—	—	Replace, if necessary.	Visual check 
Stabilizer sleeve: Wear (If so equipped)				
Stabilizer bushing: Wear (If so equipped)				

