HYUNDAI Technical Service Bulletin	Group: CAMPAIGN
	Number: 09-01-022-2
Subject: **XD ELANTRA, GK TIBURON - FRONT LOWER CONTROL ARM AND FRONT SUBFRAME CORROSION TREATMENT (CAMPAIGN 091)**	Date: NOVEMBER, 2009
	Model: ELANTRA (XD); TIBURON (GK)

CIRCULATE TO:	[ ] GENERAL MANAGER	[X] PARTS MANAGER	[X] TECHNICIAN
[X] SERVICE ADVISOR	[X] SERVICE MANAGER	[X] WARRANTY MGR	[ ] SALES MANAGER

NOTE: ***THIS BULLETIN SUPERCEDES 09-01-022-1. PARTS APPLICATION FOR THE GK TIBURON DEPENDS ON WHICH PARTS REQUIRE REPLACEMENT. SEE THE PARTS TABLE OR PAGE 7 OF THIS BULLETIN FOR DETAILS.***

IMPORTANT: DEALERS MUST PERFORM THIS CAMPAIGN ON ALL AFFECTED VEHICLES WHENEVER AN AFFECTED VEHICLE IS IN THE SHOP FOR ANY MAINTENANCE OR REPAIR.

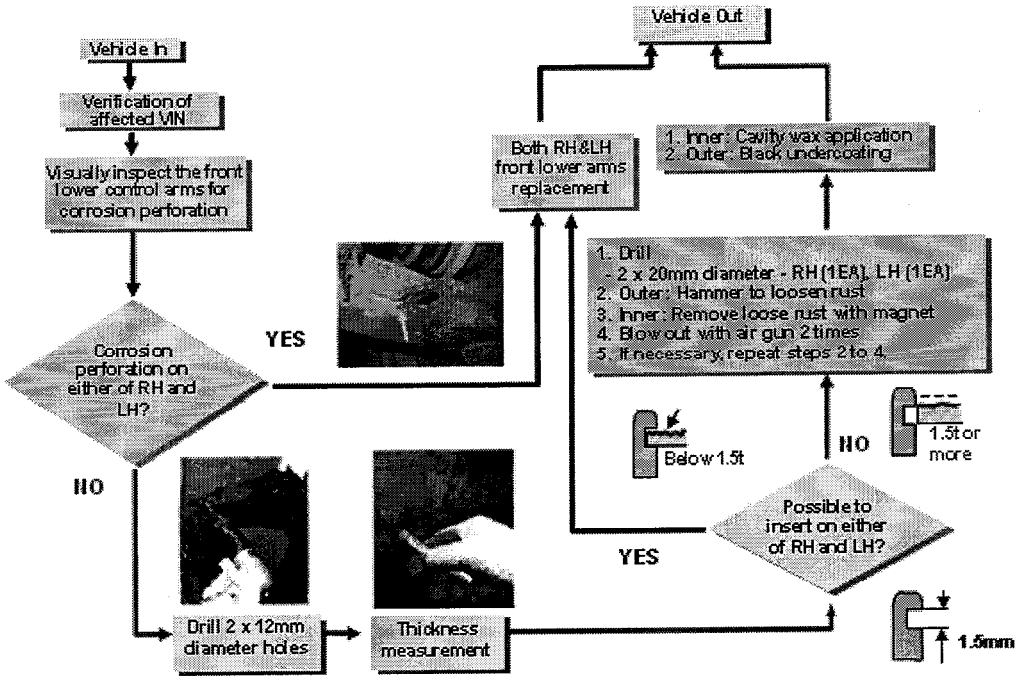
IMPORTANT: WHEN A VEHICLE ARRIVES AT THE SERVICE DEPARTMENT, ACCESS HYUNDAI MOTOR AMERICA'S "WARRANTY VEHICLE INFORMATION" SCREEN VIA WEBDCS TO IDENTIFY OPEN CAMPAIGNS.

DESCRIPTION:

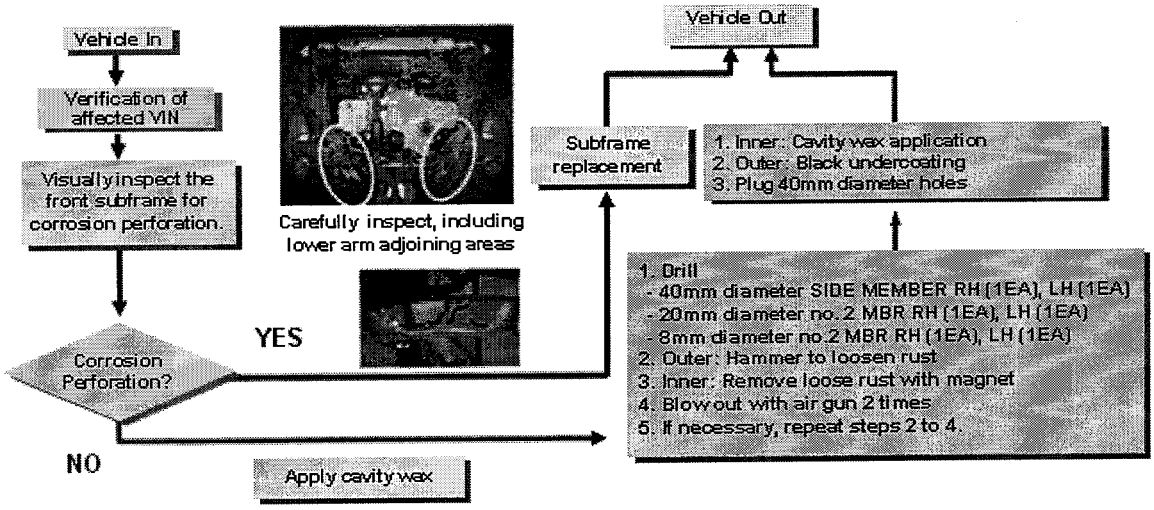
- Some 2001-2003 Elantra (XD) and 2003 Tiburon (GK) vehicles that are registered and operated in specified "salt belt" states may exhibit corrosion damage to the front lower control arms.
- Inspect the front lower control arms for corrosion damage. **The control arm inspection MUST be performed FIRST, before the subframe inspection**. Measure the thickness of the front lower control arm steel. If specified levels of corrosion damage have occurred, as described in this bulletin, replace the front lower control arms with new front lower control arms that incorporate additional holes in the upper and lower panels. If the front lower control arms do not require replacement, add drainage holes and treat the front lower control arms with rust-proofing material.
- Inspect the front subframes for corrosion damage. **The subframe inspection MUST be performed AFTER the front lower control arm inspection.** As a precautionary measure and to improve drainage from the subframe, add drainage holes and treat the front subframe with rust-proofing material. If corrosion perforation is found as described in this bulletin, replace the front subframe.

SUMMARY OF SERVICE PROCEDURE:

- FRONT LOWER CONTROL ARMS



- SUBFRAME ASSEMBLY



APPLICABLE VEHICLES - VERIFY THAT THE VEHICLE IS IDENTIFIED AS AFFECTED BY THE CAMPAIGN VIA WEBDCS:

Models: 2001-2003 (XD) Elantra, 2003 (GK) Tiburon

Applicable vehicle production date range:

- XD Elantra - From Job#1 through January 13, 2003.
- GK Tiburon - From Job#1 through January 13, 2003.

Area: Salt belt states: Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin and the District of Columbia.

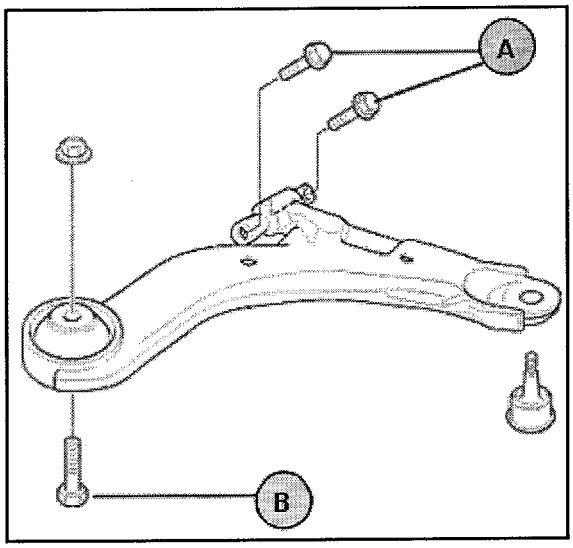
PARTS (KIT) REQUIRED:

XD ELANTRA PARTS

Model	Kit #	Components	Remark
XD	54505-2D002-QQH	Lower arm, LH	
		Lower arm, RH	
		Nut, 2EA	G bush mounting
		Bolt, 2EA	
		Bolt, 4EA	A bush mounting
	62405-2D011-QQH	Subframe, 2 nuts, 2 bolts	

GK TIBURON PARTS

Case #	Part #	Description	Remark
1) Only lower control arms need to be replaced	54505-2D002-QQH	Control Arm Kit (same parts as XD)	Both arms, nuts and bolts included
2) Only the subframe needs to be replaced	62405-2D011-QQH	Subframe (same part as XD)	Subframe, 2 nuts, 2 bolts
3) Both the lower control arms and sub-frame need to be replaced	54505-2C607-QQH	Lower Control Arm Kit	Both arms, nuts and bolts included
	62405-2C511-QQH	Subframe	Subframe, 2 nuts, 2 bolts



A: A bush mounting bolt

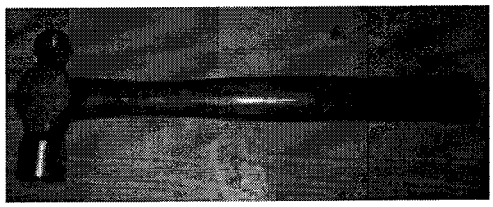
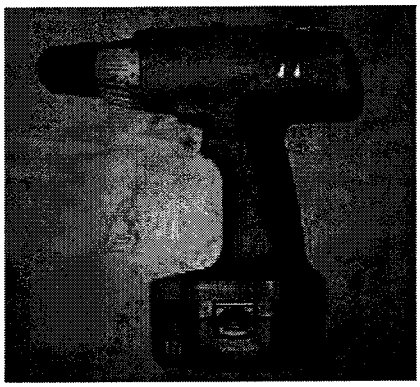
B: G bush mounting bolt

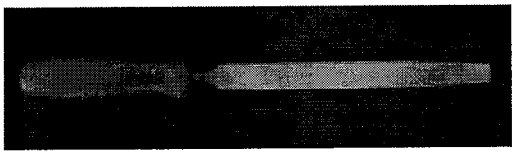
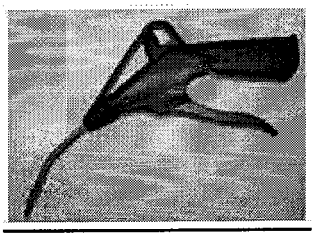
NOTE: For the GK Tiburon, if only the subframe or only the lower control arms require replacement (cases #1 and #2), use the same part number as XD Elantra. If both the arms and the subframe require replacement (as in case #3), use the alternate part numbers as seen in the table on the previous page.

WAX APPLICATION FOR CORROSION PREVENTION

Model	Kit #	Components	Remark
XD/GK	62460-2D000QQH	2 Rubber plugs	For plugging 40mm holes after wax application.

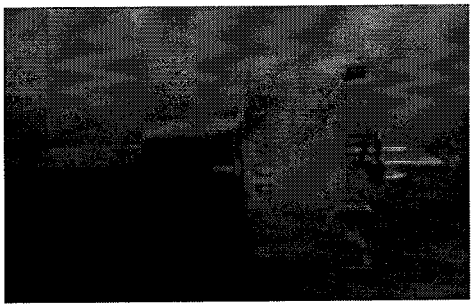
TOOLS REQUIRED (not supplied in tool kit - Dealer supplied)

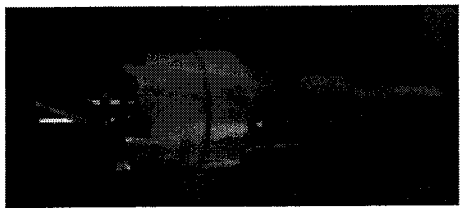
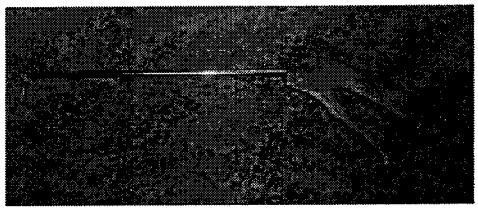
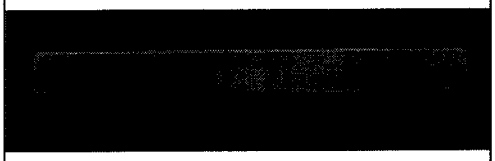
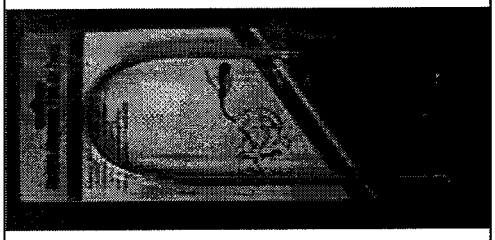
No.	Name	Image	Remark
1	Hammer		
2	Electric drill (Do NOT use a pneumatic/air drill)		
3	Drill bit (8mm diameter)		Center-pointed type
4	Drill bit (12mm diameter)		Center-pointed type

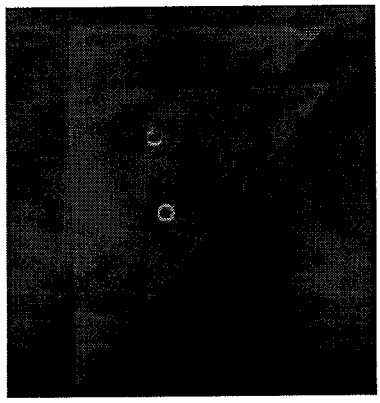
5	File		For removing burrs from around the drilled holes
6	Air gun		Straight nozzle type

NOTE: Additional drill bits should be obtained from your local Parts Supply vendor when needed.

TOOL KIT (supplied to dealers by HMA)

No.	Name	Image	Remark
1	Hole saw (40mm diameter)		Provided in tool kit; recommend use of carbide tipped saw Usage tips to maximize hole saw durability: 1. Be sure to use an electric drill at a lower speed for cutting steel. DO NOT use a pneumatic (air) drill which will greatly reduce the life of the hole saw. 2. Do not contact the cutting surface with the teeth of the hole saw before beginning to spin the drill. If the teeth are contacting the surface when the drill starts to spin, there is a great chance that the teeth may be broken. 3. If the drill bogs down during the cut and stops, fully retract the cutter head before restarting the drill operation. 4. It may help to remove the plug ejection spring from the hole saw arbor. This spring can push the cutout into the subframe, making it difficult to remove. 5. When replacing the cutting head, use anti-seize compound on arbor threads.

2	Hole saw (20mm diameter)		Common use for SM and XD; provided in tool kit; recommend use of carbide tipped saw Usage tips to maximize hole saw durability: 1. Be sure to use an electric drill at a lower speed for cutting steel. DO NOT use a pneumatic (air) drill which will greatly reduce the life of the hole saw. 2. Do not contact the cutting surface with the teeth of the hole saw before beginning to spin the drill. If the teeth are contacting the surface when the drill starts to spin, there is a great chance that the teeth may be broken. 3. If the drill bogs down during the cut and stops, fully retract the cutter head before restarting the drill operation. 4. It may help to remove the plug ejection spring from the hole saw arbor. This spring can push the cutout into the subframe, making it difficult to remove. 5. When replacing the cutting head, use anti-seize compound on arbor threads.
3	Air gun		90 degree angle nozzle type; provided in tool kit
4	Thickness gauge		Measuring thickness of panel
5	Flexible magnet		Flexible type; provided in tool kit

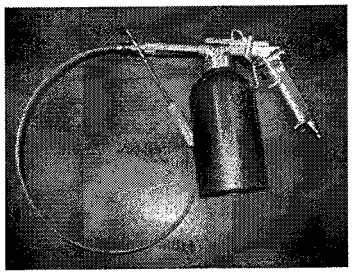
6	Control arm drilling template		2 templates provided. Each can be used on either left or right control arm.

NOTE: Dealers will automatically be supplied with a Tool Kit from HMA.

NOTE: Additional hole saws and arbors should be obtained by calling SPX at 800-345-2233. Please note the replacement hole saws from SPX are compatible with the arbors in the supplied tool kit.

Part Number	Description
J-50236	1 5/8" (40mm) Hole Saw
J-50237	1/2" Hex Shank Arbor - for use with 40mm Hole Saw
J-50238	13/16" (20mm) Hole Saw
J-50239	3/8" Hex Shank Arbor - for use with 20mm Hole Saw

CHEMICAL KIT:

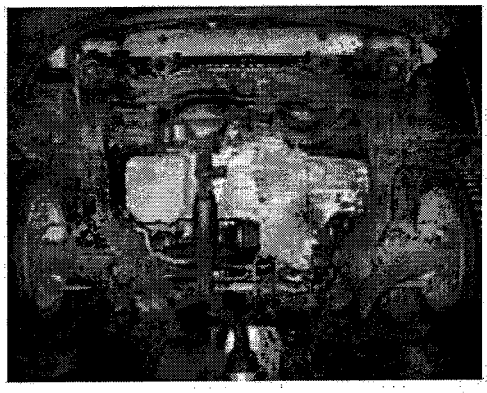
No.	Name	Image	Remark
1	Wax injection gun		P/N 00232-19036 **NOTE:** **Clean wax injection gun after every use.** **Required application pressure for the wax injection is 40-50 psi.**
2	Cavity wax		P/N 00232-19034 1 vehicle per can
3	Undercoating spray		P/N 00232-19035 Black color 10 vehicles per can

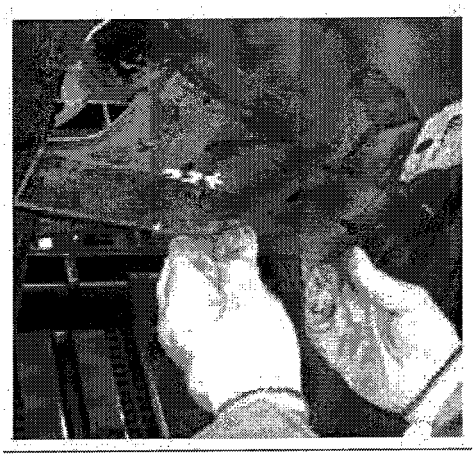
NOTE: Dealers will be supplied with an initial order of the Chemical Kit. Additional product should be ordered through your facing PDC.

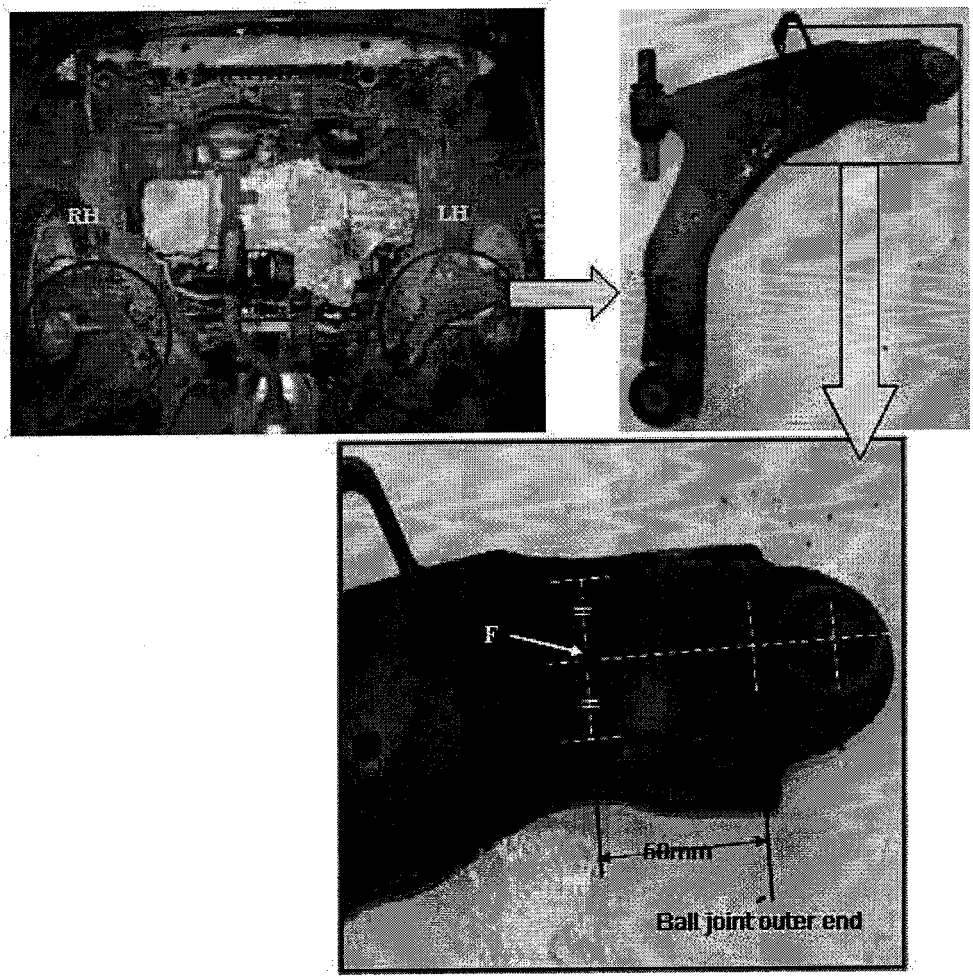
SERVICE PROCEDURE:

IMPORTANT: Perform the front lower control arm inspection BEFORE the subframe inspection.

- **FRONT LOWER CONTROL ARM INSPECTION AND REMOVAL**

1. Lift up the vehicle.	
2. Lightly strike the right and left front lower control arms thoroughly with a hammer. **CAUTION: Be careful, DO NOT strike the front lower control arms too hard to prevent deformation damage.**	

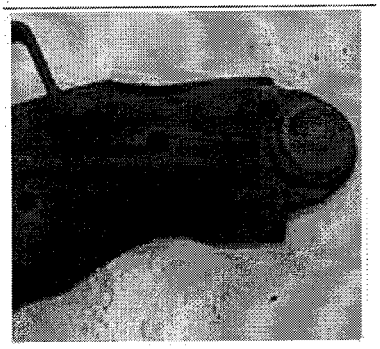
3. Inspect the lower control arms for corrosion perforation. # The photo at the right shows corrosion perforation. **CAUTION: Inspect for corrosion perforation throughout the right and left front lower control arms including the sides.** **NOTE: If there is any corrosion perforation on either the right or left front lower control arms, replace both right and left front lower control arm assemblies following the applicable shop manual. If no perforation exists, go to the next step to further inspect the front lower control arms for corrosion.**	
4. Put a marking point (F) on the left front lower control arm as indicated in the photo. 5. Put a marking point on the right front lower control arm at the same position as the left side.	


RH
LH
F
60mm
Ball joint outer end

6. Center the 12mm drill bit on the mark (F) and drill a hole on the left front lower control arm.

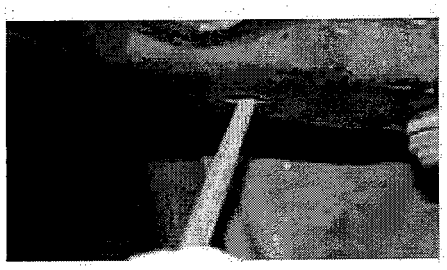
7. Repeat this procedure for the right lower control arm.

<Drill bit>

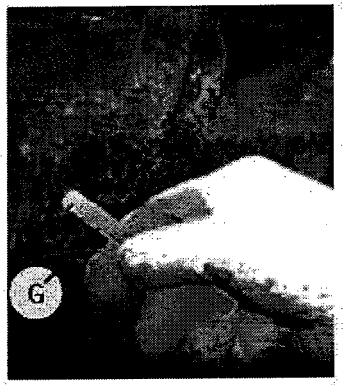


8. With a file, remove burrs around the holes. Totally remove remnants of rust around the holes.

CAUTION: If the burrs are not fully removed, it may prevent the thickness gauge from being inserted over the edge of the drilled holes.

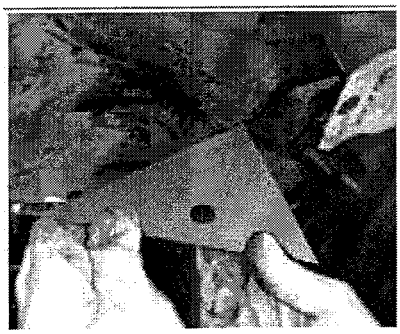


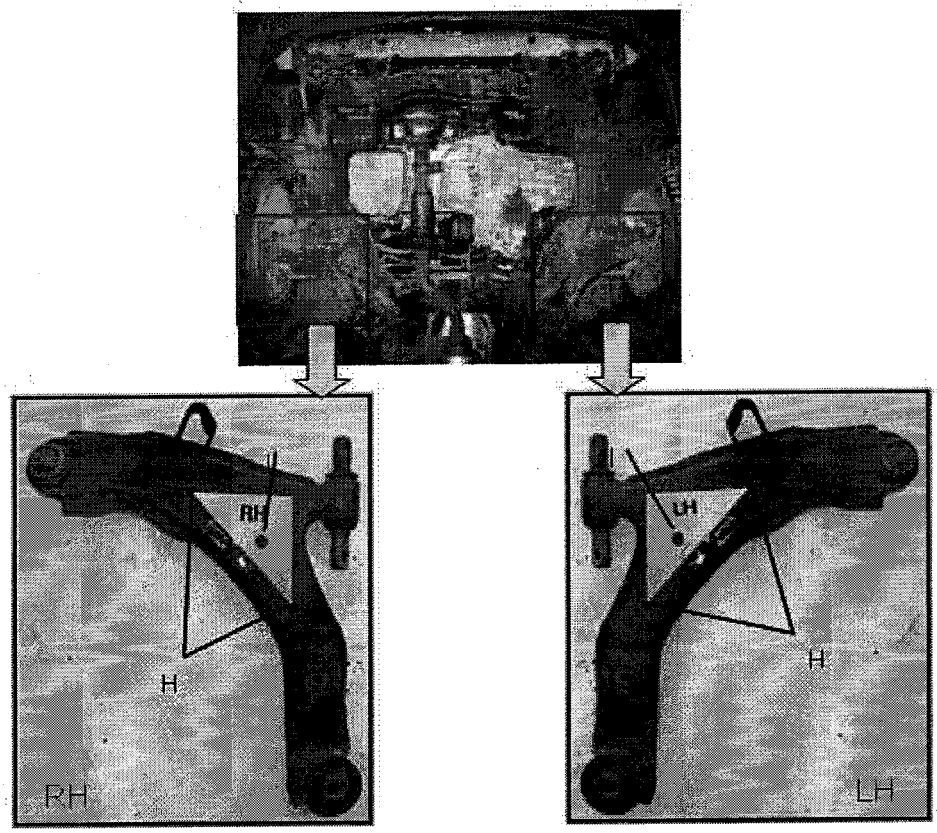
9. Inspect the thickness of the front lower control arm lower panels with the 1.5mm groove of the thickness gauge (G). Check the thickness of the front lower control arms at as many points around the hole as possible.



10. If either the right or left front lower control arm metal fits into the thickness gauge or is inserted into the groove, replace both right and left assemblies. If the front lower control arm metal does not fit into the 1.5mm thickness gauge, go to the procedure **FRONT LOWER CONTROL ARM WAX APPLICATION FOR CORROSION PREVENTION.**	

- **FRONT LOWER CONTROL ARM WAX APPLICATION FOR CORROSION PREVENTION**

1. Align the right angled triangle template with the 2 current holes (H) in the center of the front lower control arm as shown in the photo at the right. Put a mark (I) on the right front lower control arm. Repeat this procedure for the left.	



2. Center the 20mm hole saw on the mark and drill a hole in the right lower control arm. Repeat this procedure for the left.

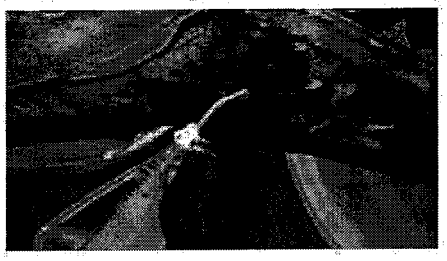
< 20mm hole saw >

3. Remove fragments of rust from the inside of the front lower control arms by following the detailed procedures below.

   a. Strike right and left front lower arms thoroughly with a hammer.

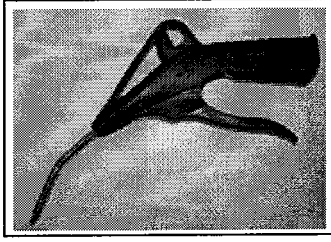
   b. Insert a flexible magnet through all the holes and remove fragments of rust.

   c. Insert the air gun into the inside of the front lower control arms through all the holes and blow out rust from inside the lower control arms.

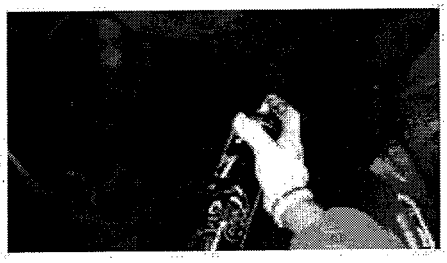


   • Air guns required

Figure

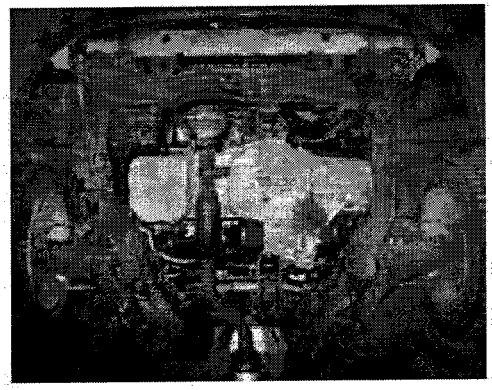


   d. Repeat steps from a) to c) more than 2 times.

4. Pour about 150cc of cavity wax into the injection gun reservoir. 5. Spray cavity wax into the inside of the right and left front lower control arms through all the holes until wax drains through the holes. **IMPORTANT: Required wax application pressure is 40-50 psi.** **CAUTION: (1) Protect yourself by wearing goggles, a respirator, gloves, etc.** **CAUTION: (2) Insure proper ventilation of your working area.** **CAUTION: (3) Be careful NOT to contaminate nearby parts and panels with wax or undercoating.**	
6. Spray undercoating around the holes.	

- SUBFRAME INSPECTION

IMPORTANT: Perform the front lower control arm inspection BEFORE the subframe inspection.

1. Lift up the vehicle.	
2. Lightly strike the subframe thoroughly with a hammer. **CAUTION: Be careful, DO NOT strike the subframe too hard to prevent deformation damage.**	

3. Inspect the subframe for corrosion perforation.

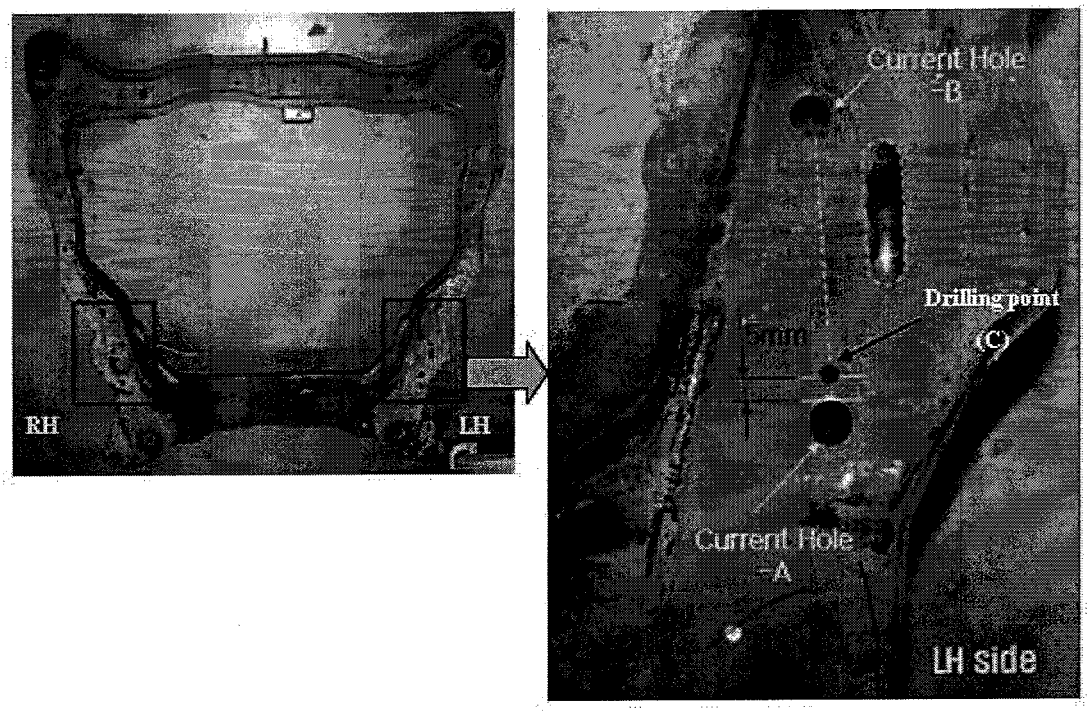
The photo at the right shows corrosion perforation.

CAUTION: Make sure to inspect for corrosion perforation throughout the subframe including the sides.

NOTE: If there is any corrosion perforation, replace the subframe assembly following the SUBFRAME REPLACEMENT PROCEDURE. If no perforation exists, go to the SUBFRAME WAX APPLICATION FOR CORROSION PREVENTION procedure.

- **SUBFRAME WAX APPLICATION FOR CORROSION PREVENTION**

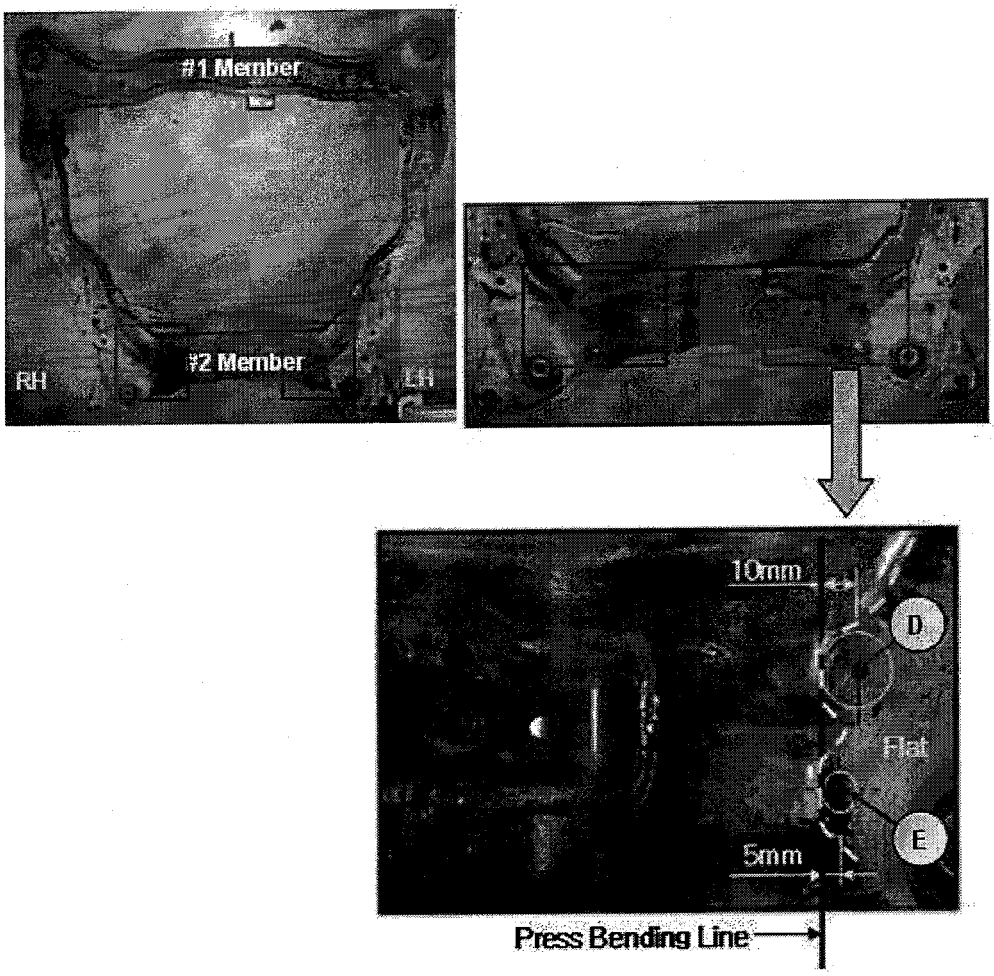
1. Put a marking point (C) on the left side member as indicated in the photo below.
2. Put a marking point on the right side member at the same position as the left side.



3. Put 2 marking points (D, E) on the left side of # 2 member as indicated in the photo.

   D: 10mm from the first inflection point of press bending line (yellow dotted line)

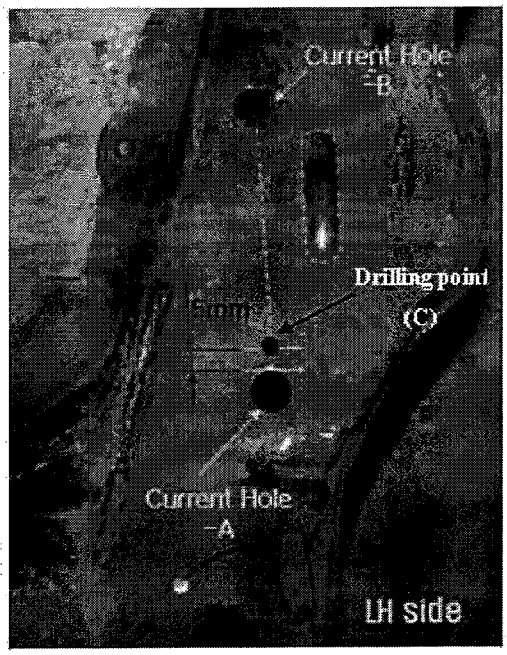
   E: 5mm from the second inflection point of press bending line (yellow dotted line)

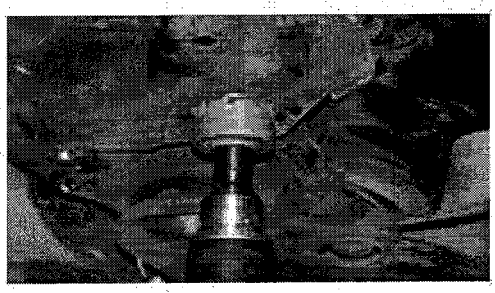


4. Put 2 marking points on the right side of # 2 member at the same positions as the left side.

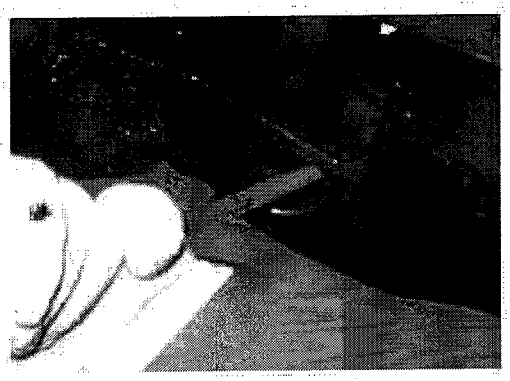
5. Center the 40mm hole saw on the mark (C) and drill a hole on the left side member.
6. Repeat this procedure for the right.

CAUTION: Protect yourself by wearing goggles, a respirator, gloves, etc.

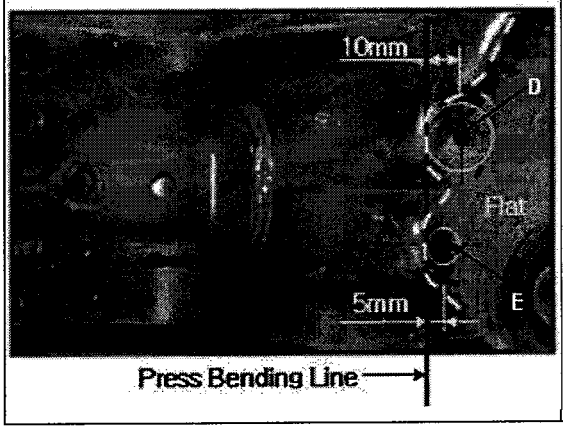




7. Remove burrs from around both the upper and lower openings of the drilled holes with a file and remove remnants of rust from around the holes prior to wax application.

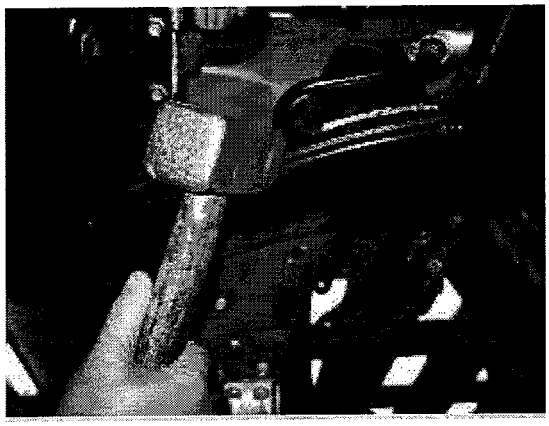


8. Center the 20mm hole saw on the mark (D) and drill a hole on the right side member.
9. Repeat this procedure for the left.
10. Chuck a drill bit 8mm in diameter to a drill. Center the drill bit on the mark (E) and drill a hole on the left side member.
11. Repeat this procedure for the right.

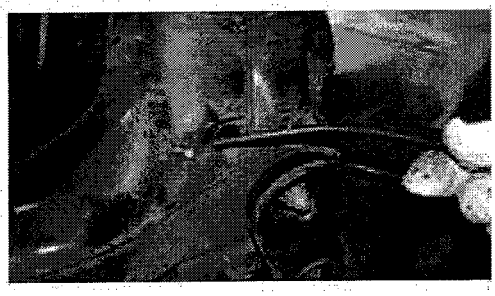


12. Remove fragments of rust from the inside of the subframe by following the detailed procedures below.

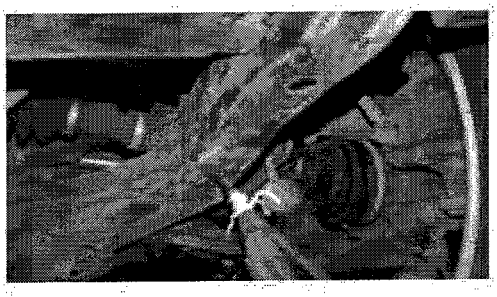
    a. Strike the subframe thoroughly with a hammer to loosen internal rust.



    b. Insert a flexible magnet through the 40mm and 20mm holes and remove fragments of rust.

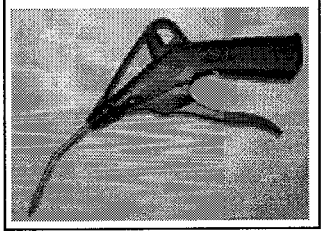


c. Insert the air gun into the inside of the subframe through holes in the right and left side members and blow out rust from inside the subframe.

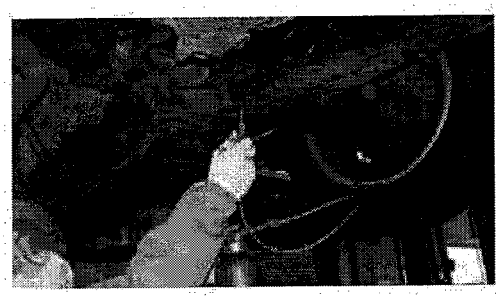


d. - Air guns required

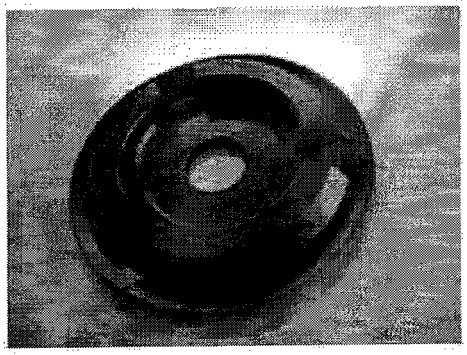
Figure

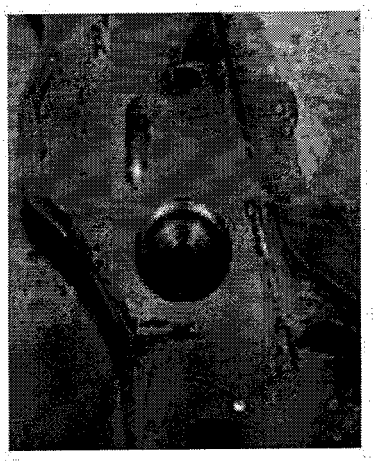


e. Repeat steps from a) to c) 2 or more times.

13. Pour about 850cc of cavity wax into the injection gun reservoir. Spray cavity wax into the inside of the subframe through all the holes until wax drains through the holes. **NOTE: Make sure to use one bottle (1000cc) of cavity wax per vehicle for the subframe and front lower control arm. Use about 150cc cavity wax for front lower control arm wax application.** **IMPORTANT: Required wax application pressure is 40-50 psi.** **CAUTION: (1) Protect yourself by wearing goggles, a respirator, gloves, etc.** **CAUTION: (2) Insure proper ventilation of your working area.** **CAUTION: (3) Be careful NOT to contaminate nearby parts and panels with wax or undercoating.**	
14. Spray undercoating on the subframe, especially around the holes.	

15. Cover both 40mm holes with hole plugs.



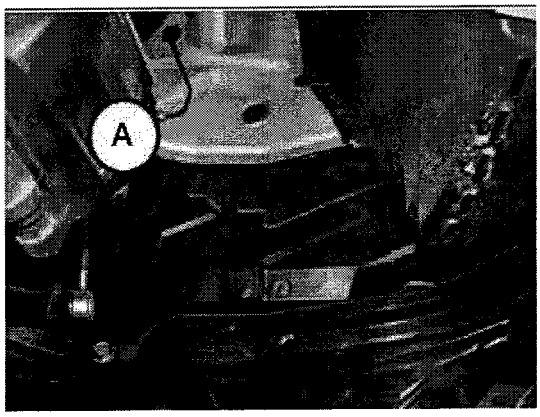


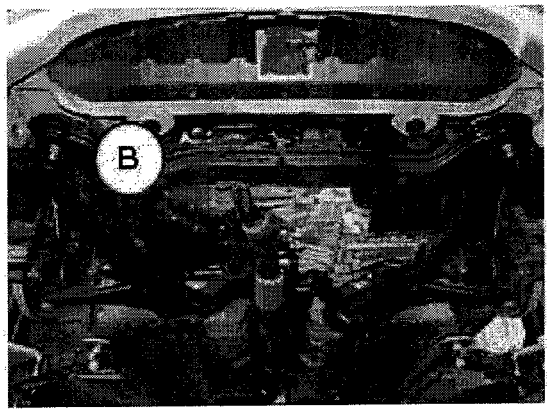
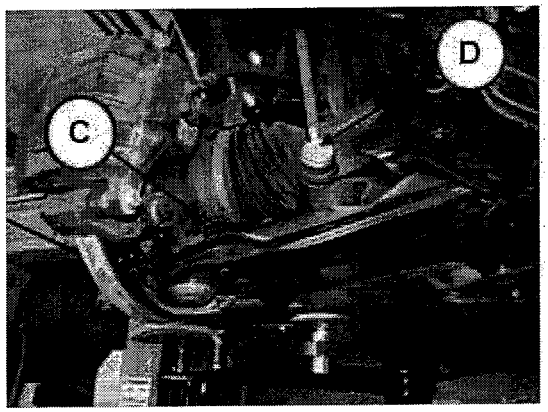
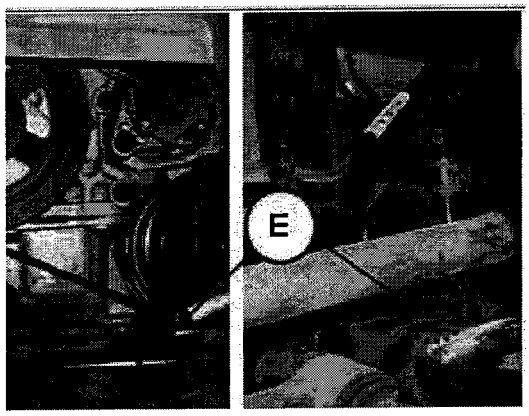
- **SUBFRAME REPLACEMENT PROCEDURE**

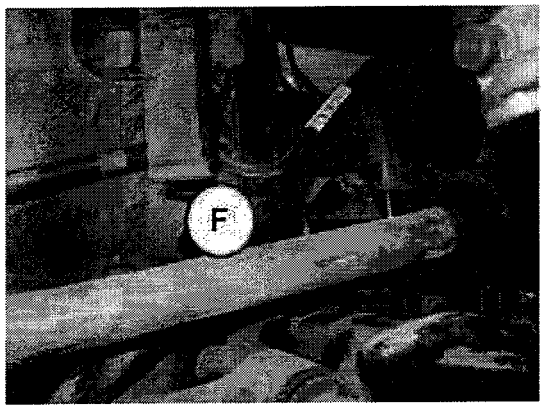
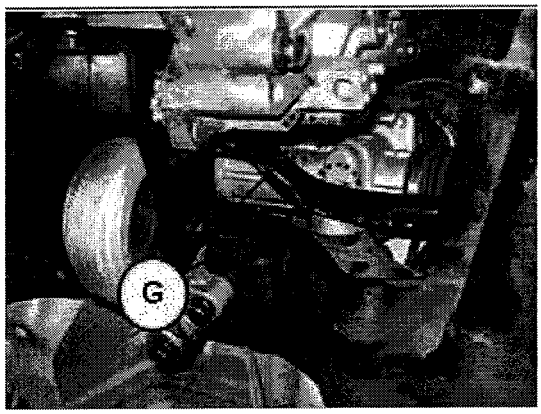
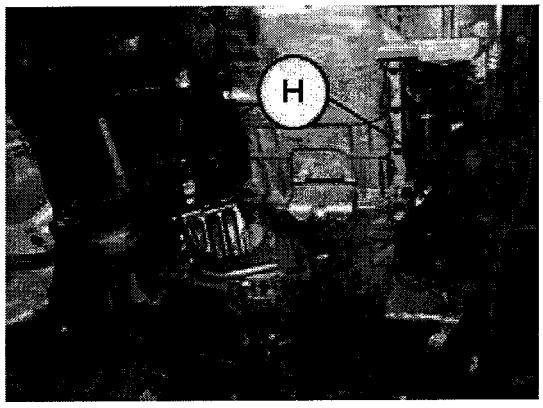
This instruction provides a procedure to replace the ELANTRA (XD) and TIBURON (GK) subframe more easily and efficiently than the original procedure.

	Original Procedure	Revised Procedure
Procedure	To replace the crossmember, remove it simultaneously with the steering gearbox.	It is possible to remove the crossmember without detaching the steering gearbox from the vehicle. DO NOT remove the steering gearbox for the crossmember replacement.

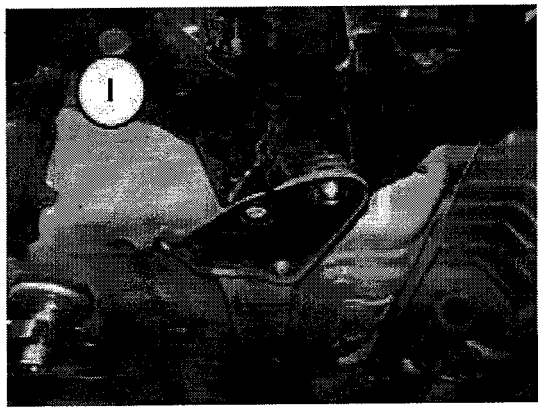
1. Lift the vehicle off the ground.
2. Remove the right and left front wheels.
3. Remove the right and left wheel side covers (A).



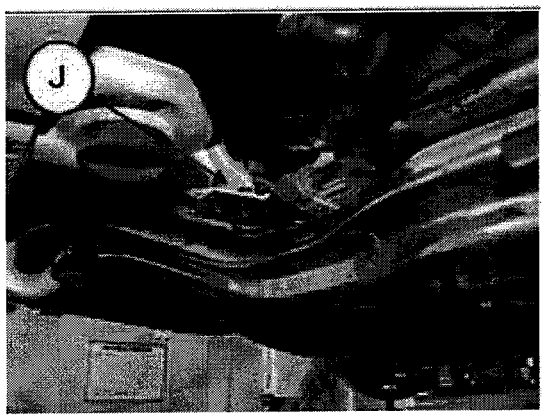
4. Remove the under cover. 5. Remove the front pipe (B).	
6. Remove the right and left lower control arm ball joint mounting nuts (C). 7. Remove the right and left stabilizer link lower ends (D) from the stabilizer bar.	
8. Remove the power steering pipe line mounting bolts (E).	

9. Remove the RH power steering gear mounting bolts (F).	
10. Remove the LH power steering gear mounting bolts (G).	
11. Remove the bolts (H) holding the front and rear roll stoppers to the brackets.	

12. Remove the right and left crossmember rear stays (I).



13. Unfasten the 2 washer tank lower mounting bolts (J).



14. Support the crossmember with a jack.

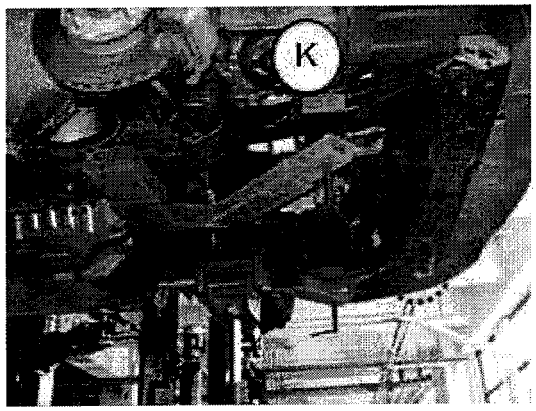
15. Removing the 4 crossmember mounting bolts (K), detach the crossmember from the steering gearbox and then remove the crossmember.

16. Install in reverse order of removal.

NOTE: Perform toe adjustment.

NOTE: Spec GK (Front): 0±2 mm (0.08±0.08 in.)

NOTE: Spec XD (Front): 4 +3/-1 mm (0.16 +.12/-.04 in)



WARRANTY CLAIM INFORMATION:

XD Elantra: Produced from Job #1 through Jan. 13, 2003 (Subframe + Front Lower Control Arm)

Op Code	Description	Op Time
		XD
91B021R0	Subframe / Lower Arm Replacement	2.5
91B021R1*	Subframe Replacement / Lower Arm Inspection & Wax Application	2.8
91B021R2	Subframe Replacement / Lower Arm Inspection & Replacement	2.6
91B021R3*	Subframe Wax Application/ Lower Arm Replacement	1.4
91B021R4*	Subframe Wax Application / Lower Arm Inspection & Wax Application	0.9
91B021R5*	Subframe Wax Application / Lower Arm Inspection & Replacement	1.5

GK Tiburon: Produced from Job #1 through Jan. 13, 2003 (Subframe + Front Lower Control Arm)

Op Code	Description	Op Time
		GK
91B021R6	Subframe / Lower Arm Replacement	2.7
91B021R7*	Subframe Replacement / Lower Arm Inspection & Wax Application	3.1
91B021R8	Subframe Replacement / Lower Arm Inspection & Replacement	2.8
91B021R9*	Subframe Wax Application / Lower Arm Replacement	1.4
91B021RA*	Subframe Wax Application / Lower Arm Inspection & Wax Application	0.9
91B021RB*	Subframe Wax Application / Lower Arm Inspection & Replacement	1.5

IMPORTANT: If either the front lower control arms or the subframe is replaced, a front end alignment MUST be performed and is included in the campaign labor operation time.

NOTE: Submit claims using Campaign Entry Screen

NOTE: * Each applicable claim includes a sublet amount for chemical, hole saw, and drill bit reimbursement.

NOTE: * Reimbursement for the Wax Injection Gun will be processed in Dealership's Parts statement.

PARTS SCRAP INFORMATION:

1. Lower Arm/Subframe Inspection and Replacement (without drilling holes) - It is required that digital photos be taken of the replaced parts as well as the VIN plate. These pictures must be attached to their respective repair order for DPSM review. The removed lower arms/subframe may be scrapped.

2. Lower Arm/Subframe Inspection and Replacement (with drilling holes) - It is required to retain the core sample and repair information for DPSM review. The removed lower arms/subframe may be scrapped.

3. Lower Arm/Subframe Inspection and Wax Application - It is required to retain the core sample and repair information for DPSM review.