HYUNDAI-KIA
AMERICA TECHNICAL CENTER, INC.

July 17, 2008

Mr. Jeffrey L. Quandt
Chief, Vehicle Control Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, D.C. 20590

RE: NVS-213aan, PE08-029

Dear Mr. Quandt:

This letter provides supplemental information in response to your above referenced request for information, dated April 30, 2008. Complete responses were previously provided with a letter dated June 13, 2008 for Requests 1, 2, 3, 4, 5, 6, 7, and 11. A partial response of information that was available at the time was provided for Request 8. NHTSA has granted an extension until July 11, 2008 to provide responses to Requests 9, 10, and 12 as well as any additional information available for Request 8.

Hyundai has made a good faith, reasonable attempt to search for materials responsive to each request in the time frame provided. Hyundai continues, however, to object to the boilerplate definition of "Document" as vague, incomprehensible, overly broad and unduly burdensome.

This response includes additional documents responsive to NHTSA's information request. Hyundai continues to evaluate the data and will provide further analysis to the agency as it becomes available.

Request 8.

> Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Hyundai. For each such action, provide the following information:
>
> a. Action title or identifier;
> b. The actual or planned start date;
> c. The actual or expected end date;

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www.hatci.com

d. Brief summary of the subject and objective of the action;
e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
f. A brief summary of the findings and/or conclusions resulting from the action.

For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

Response to Request 8.

No change from the information provided with the letter dated June 13, 2008.

Request 9.

Describe all modifications or changes made by, or on behalf of, Hyundai in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production of the subject vehicles to date, which relate to, or may relate to, the alleged defect in the subject vehicles. Include all differences between the construction, corrosion protection and drainage of the subject components and front sub-frames used in MY 2003 and later Sonata vehicles. For each such modification or change, provide the following information:

a. The date or approximate date on which the modification or change was incorporated into vehicle production;
b. A detailed description of the modification or change;
c. The reason(s) for the modification or change;
d. The part number(s) (service and engineering) of the original component;
e. The part number(s) (service and engineering) of the modified component;
f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
g. When the modified component was made available as a service component; and
h. Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that Hyundai is aware of which may be incorporated into vehicle production within the next 120 days.

Response to Request 9.

See Attachment G for drawings containing requested information on the crossmember complete assembly and its component parts. Attachment G has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

Hyundai made a running change in the crossmember as of November 20, 2003. As reflected in the engineering order, the change was part of a continuous quality improvement effort. The change was made to add drain holes to allow better painting access to increase the thickness of the paint within the crossmember.

See Attachment H for information describing design changes to the crossmember.
See Attachment I for Engineering Order information related to design changes to the crossmember. Attachment I has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

See Attachment J for crossmember part number information.

See Attachment K for assembly procedure information. Attachment K has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

See Attachment L for crossmember manufacturing process information.

See Attachment M for crossmember production and coating procedure change information.

Source: Hyundai Motor Company
Information as of July 10, 2008

Request 10.

Provide the following information regarding the subject component:

a. Provide top, side and front view diagrams of the subject component and the right-front suspension, wheel/tire and half-shaft;
b. State the material composition and thickness/gauge of the wall section in the area of concern;
c. Describe all potential paths for water and other foreign material entering the subject component and state where the water would collect (e.g., the low point of the assembly;
d. Describe the corrosion protection system for the subject component (internal and external), including all minimum thickness specifications for anti-corrosion protection systems;
e. Describe all requirements for salt-spray and other durability tests related to corrosion resistance; and
f. Provide copies of all documents related to 10.a – 10.e

Response to Request 10.

See Attachment G for drawings containing requested information on the crossmember complete assembly and its component parts. Attachment G has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

See Attachment N for information about the potential corrosion path.

See Attachment O for the Material Specification relevant to metal part rust prevention. Attachment O has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.

Source: Hyundai Motor Company
Information as of July 3, 2008

Request 12.

Furnish Hyundai's assessment of the alleged defect in the subject vehicle, including:

a. The causal or contributory factor(s);
b. The failure mechanism(s);
c. The failure mode(s);
d. The risk to motor vehicle safety that it poses;
e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
f. The reports included with this inquiry.

Response to Request 12.

a. The causal or contributory factor(s);

Road salt contamination of the crossmember complete assembly, which may be referred to as the subframe, can result from vehicle operation over roads that have been coated with salt to promote deicing during the winter months. Some of this road salt contamination may not be washed off of the subframe during normal car washing procedures. Some of the road salt contamination may find its way into the interior of the subframes and cause corrosion of the inner surfaces. Prolonged exposure to the road salts may result in corrosive damage to the subframe.

b. The failure mechanism(s);

The corrosive damage to the subframe may be exhibited at various locations on the subframe. Depending upon the severity of the corrosion, porosity may develop in the surfaces of the subframe, which may weaken or cause separation of the porous portion of the subframe.

c. The failure mode(s);

The failure mode is progressive and generally manifests itself before any significant failure occurs. Any existing corrosion is frequently found during vehicle maintenance or state safety inspections. Customers also report feeling a pull on the steering or finding corrosion upon seeking a tire alignment. Customers have not reported loss of control accompanying the steering feel. In more advanced cases, customers may be alerted to the possibility of a failure by an unusual noise in the front of the vehicle caused by the motion of a portion of the weakened subframe. The failure could result in a fracture of the portion of the subframe that has sustained corrosion damage. In some cases, this may affect the locations where the control arm pivots are attached to the subframe. This may occur in low speed situations, such as in a parking lot or at a stop sign, when a driver articulates the steering wheel significantly in one direction.

d. The risk to motor vehicle safety that it poses;

Hyundai continues to evaluate the data in response to this investigation. Hyundai does not believe that the alleged defect poses an unreasonable risk to motor vehicle safety. Customers are alerted to the gradual corrosion during vehicle maintenance, steering feel or noise. When a fracture occurs, the circumstances are typically reported as low speed events with minor damages. Hyundai has received only one generic and unsubstantiated allegation of an undefined injury.

e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and

Because the corrosion is gradual and progressive, customers have substantial warning before any safety consequence is likely to arise. The driver and occupants often become aware of an unusual noise in the front of the vehicle. Indeed, over half of the VOQs filed with NHTSA reflect the fact that the owner sought service and had the crossmember replaced under either warranty or goodwill prior to any catastrophic failure. Similarly there are numerous reports of noise amongst the customer inputs provided directly to Hyundai. Drivers may also notice a change in steering feel, which indicates the need to seek service. Customers have been alerted to the presence of corrosion on the subframes of their vehicles during state vehicle inspections and routine maintenance.

f. The reports included with this inquiry.

NHTSA provided 40 Vehicle Owner Questionnaires with this inquiry. None of the 40 VOQs claim that an accident or crash occurred. None of the 40 VOQs alleges that any injury occurred.

The condition was discovered on one vehicle during a state inspection procedure and for five other owners, the condition was discovered during normal vehicle maintenance procedures. Four owners were made aware of the condition through the presence of an unusual noise. Five owners sought service because they believed that their vehicle's wheels had become misaligned, while eight owners reported changed steering characteristics. Twelve reported a suspension failure. Five did not specify the reason that they sought service, during which the corrosion condition was discovered.

The reports provided directly to Hyundai and supplied in response to this inquiry are similar. The vast majority of reports are from the salt belt. Numerous of the reports indicate that the customers were told of corrosion during vehicle maintenance, felt a steering pull or believed they needed a wheel alignment or heard a noise. In the uncommon instance of a fracture, the failure occurs at low speeds and the vehicle is immobilized and no safety risk arises.

Please do not hesitate to call me with any questions relating to this response.

Sincerely,

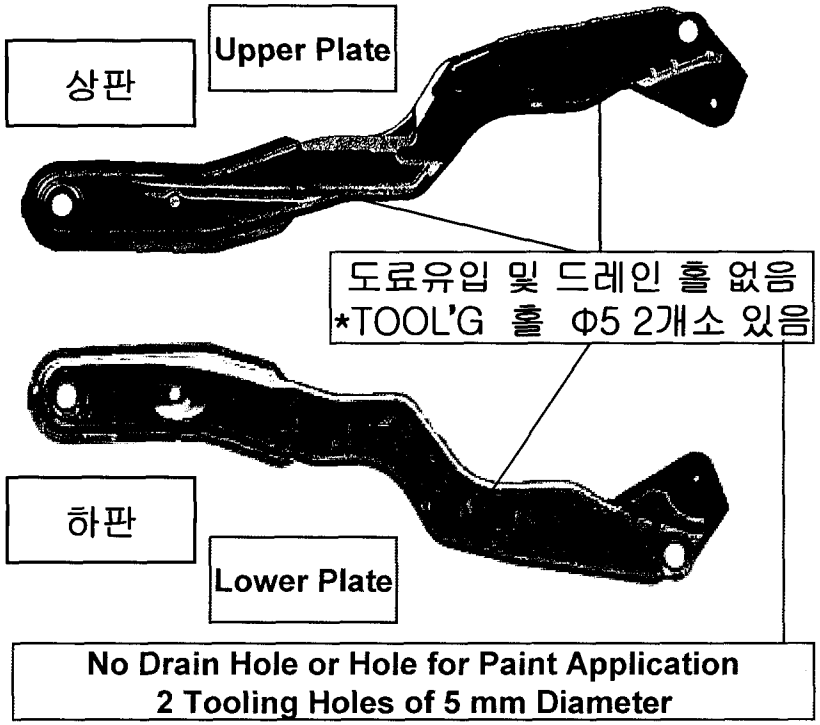
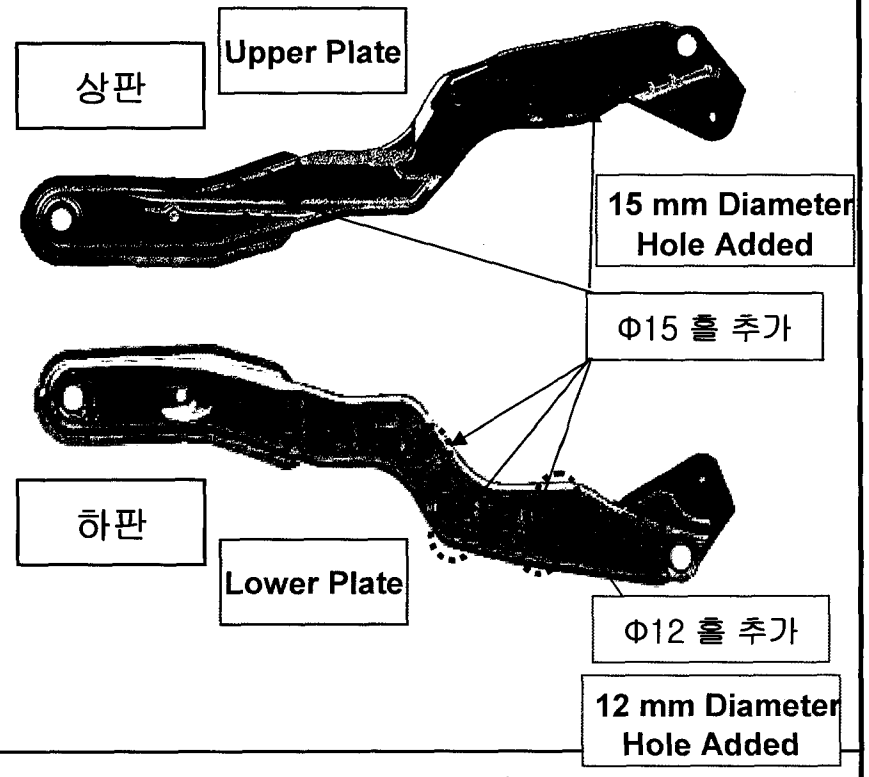
Robert Babcock

Robert Babcock
Senior Manager, Regulation and Certification Department

Attachments:

Attachment G (8 Drawings) (Attachment G has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.)
Attachment H Crossmember Design Change
Attachment I Engineering Order (Attachment I has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.)
Attachment J Service Part Numbers
Attachment K Assembly Procedure (Attachment K has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.)
Attachment L Crossmember Process
Attachment M Production and Coating Change
Attachment N Crossmember Corrosion Path
Attachment O Rust Prevention MS 630-01 (Attachment O has been provided to the Office of Chief Counsel with a request for treatment as Confidential Business Information.)

▣ EF CROSSMEMBER DESIGN CHANGE (EO NO: N3830284)

Original 개 선 전	Countermeasure개 선 후
	

개선 내용
Description of Improvement

▶ CROSSMEMBER 도료 유입 홀 추가 및 도막 두께 증대 ('03.11.20)
- 도료유입 및 드레인 홀 추가 : Φ15 홀 5개소, Φ12 홀 1개소

Added Holes in Crossmember for Paint Application and Increased Thickness of Paint (11/20/2003)
- Add 5 Holes of 15 mm Diameter and 1 Hole of 12 mm Diameter

CROSS MEMBER P/NO.변경이력(A/S PART 기준)

No.	P/NO 변경이력	적용일자	변경내용
1	62405 38100	Job#1~'990414	초기 양산품
2	62405 38101	990414~000814	FR ROLL 마운팅 브라켓 파이프 길이 변경(NVH 향상)
3	62405 38600	000814~030306	EF F/L(신엔진 적용에 따른 기어박스, 리어 롤 마운팅 부 형상 변경)
4	62405 38300	030306~041214	후속차종 부품 공용 적용관련 변경
5	62405 38310	041214~050315	스태빌라이져바 장착부 위치 및 형상 변경(조립성 향상)

CROSS MEMBER PART NUMBER CHANGE HISTORY (BASED UPON SERVICE PARTS)

No.	P/NO CHANGE HISTORY	EFFECTIVE DATE	DESCRIPTION
1	62405 38100	Job#1~'990414	INITIAL PRODUCTION
2	62405 38101	990414~000814	CHANGE LENGTH OF FRONT ROLL BRACKET MOUNTING PIPE TO IMPROVE NVH
3	62405 38600	000814~030306	FOR EF FACELIFT, ADDED A NEW ENGINE AND REVISED FOR NEW GEAR BOX AND REAR ROLL MOUNTING BRACKET
4	62405 38300	030306~041214	CHANGE TO COMMONIZE WITH FUTURE MODEL
5	62405 38310	041214~050315	CHANGE JOINT AREA AND SHAPE OF STABILIZER BAR TO IMPROVE ASSEMBLY QUALITY

주식회사 새화신 | SAE HWA SHIN

ATTACHMENT L
HYUNDAI'S RESPONSE TO PE08-029

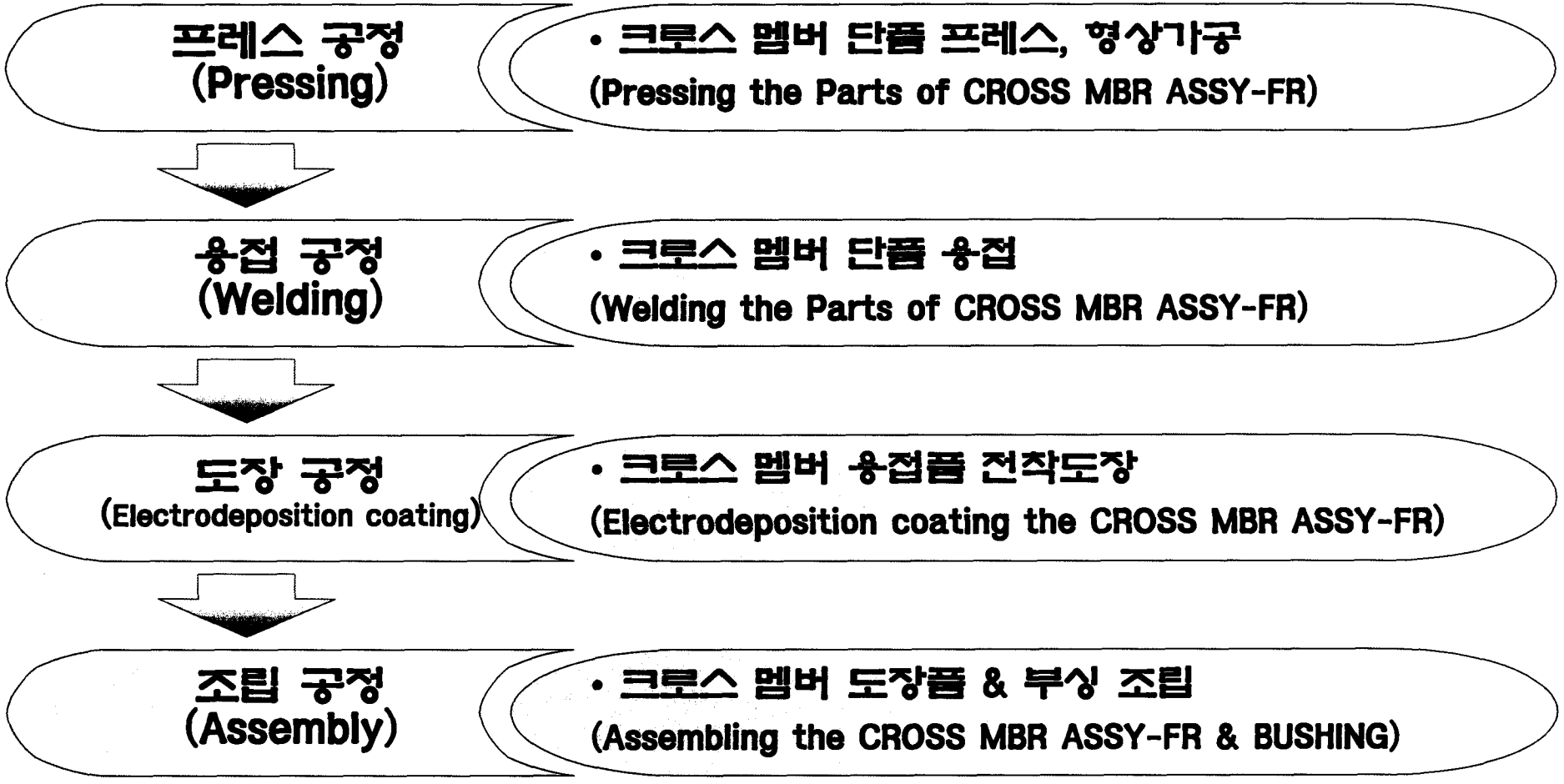
FE-CAR
CROSS MEMBER PROCESS

2008. 06. 14

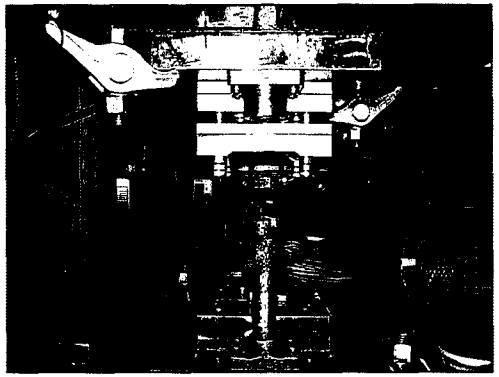
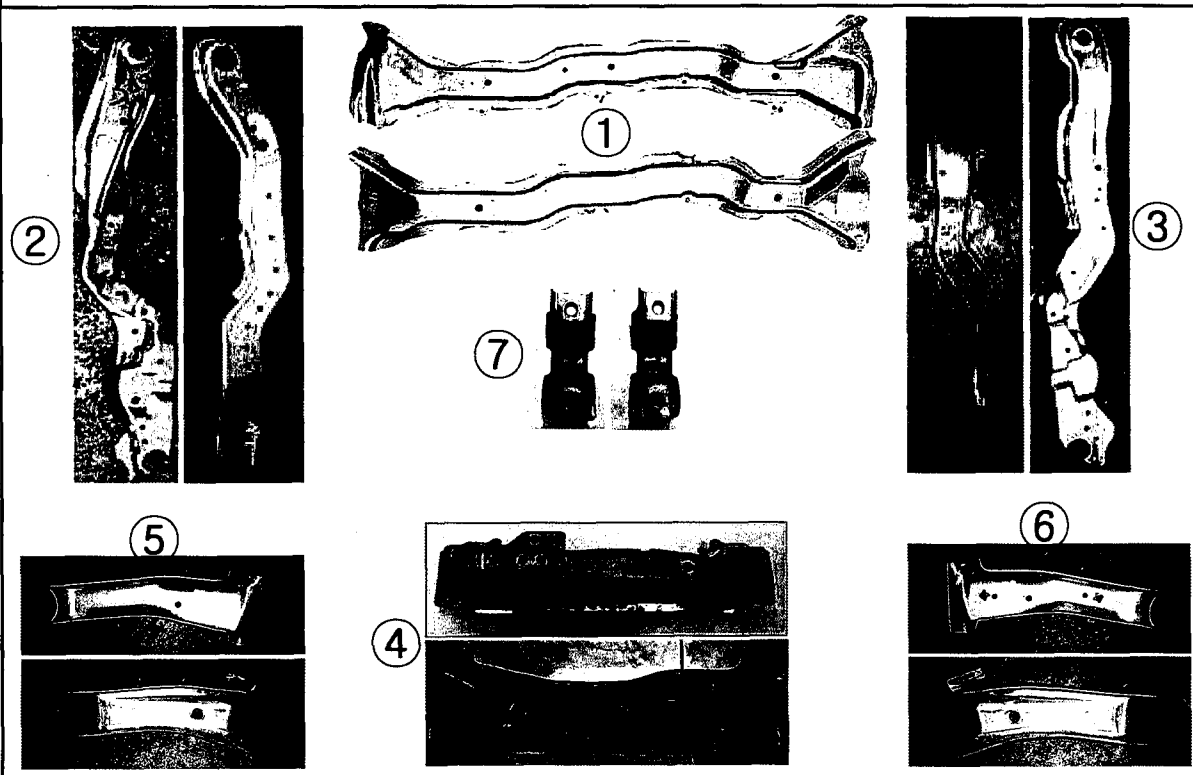
㈜ 새화신

ATTACHMENT L
HYUNDAI'S RESPONSE TO PE08-029

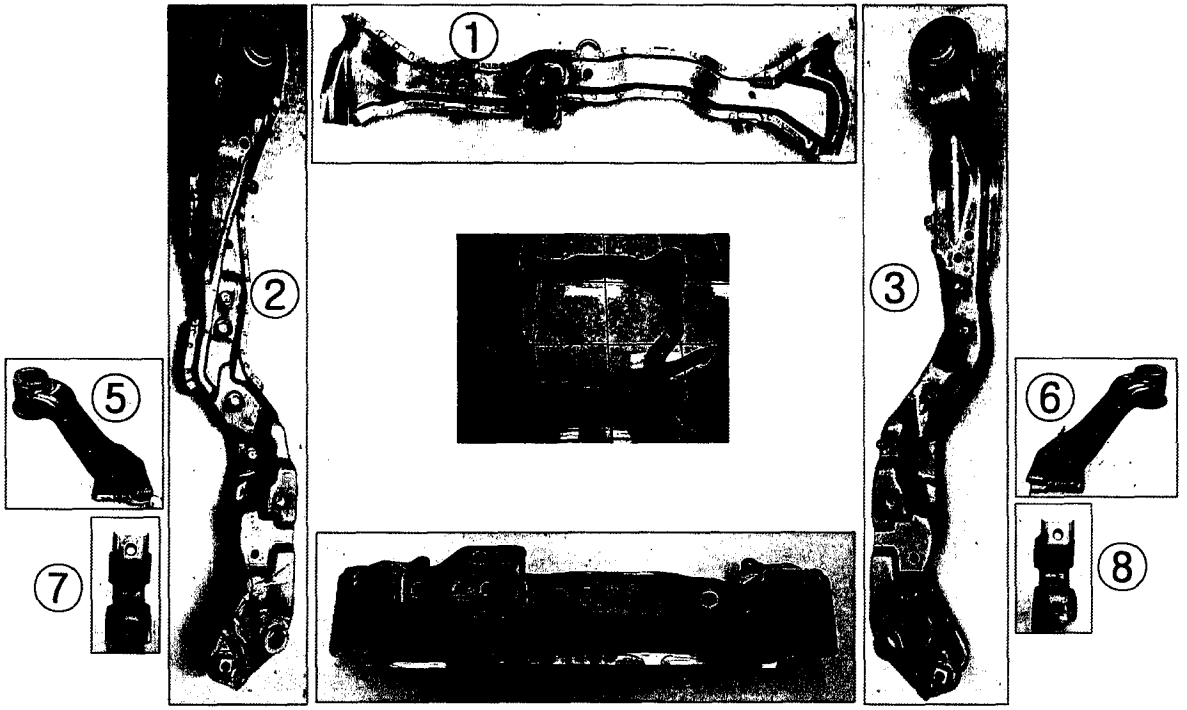
▣ 크로스 멤버 생산공정 흐름도
(Production Process Flowchart)



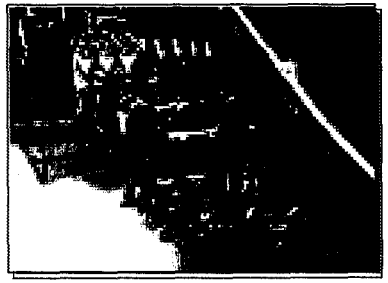
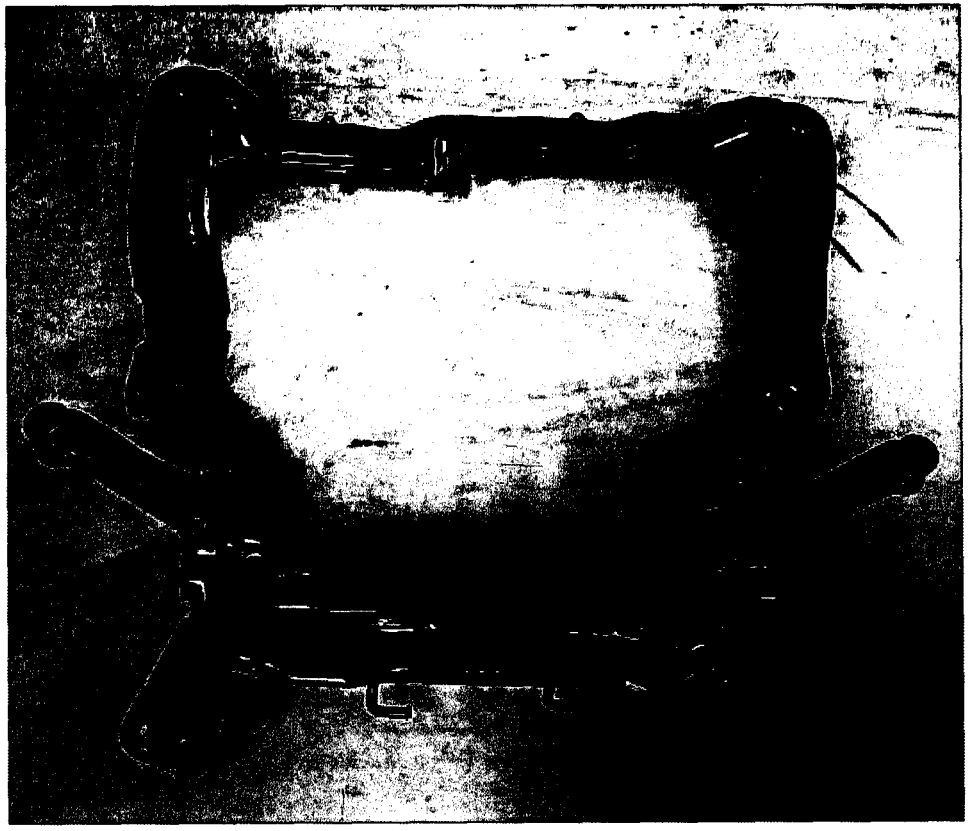
1. 프레스 공정(Press Process)

	공정(Process)	제품(Product)
SKETCH		
비고 remark	①. 크로스 멤버 프레스 (Pressing the Parts of CROSS MBR ASSY-FR)	①. CROSS MBR-NO.1 UPR/LWR ②. MBR UPR/LWR-LH ③. MBR UPR/LWR-RH ④. CROSS MBR-NO.2 UPR/LWR ⑤. BRKT UPR/LWR-CTR MTG,LH ⑥. BRKT UPR/LWR-CTR MTG,RH ⑦. BRKT-STAB, LH/RH

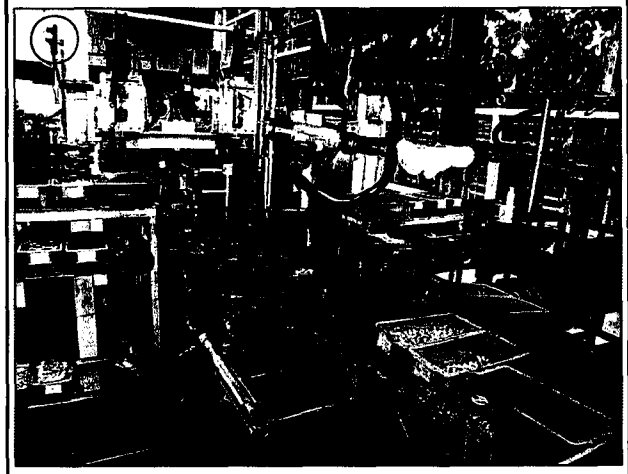
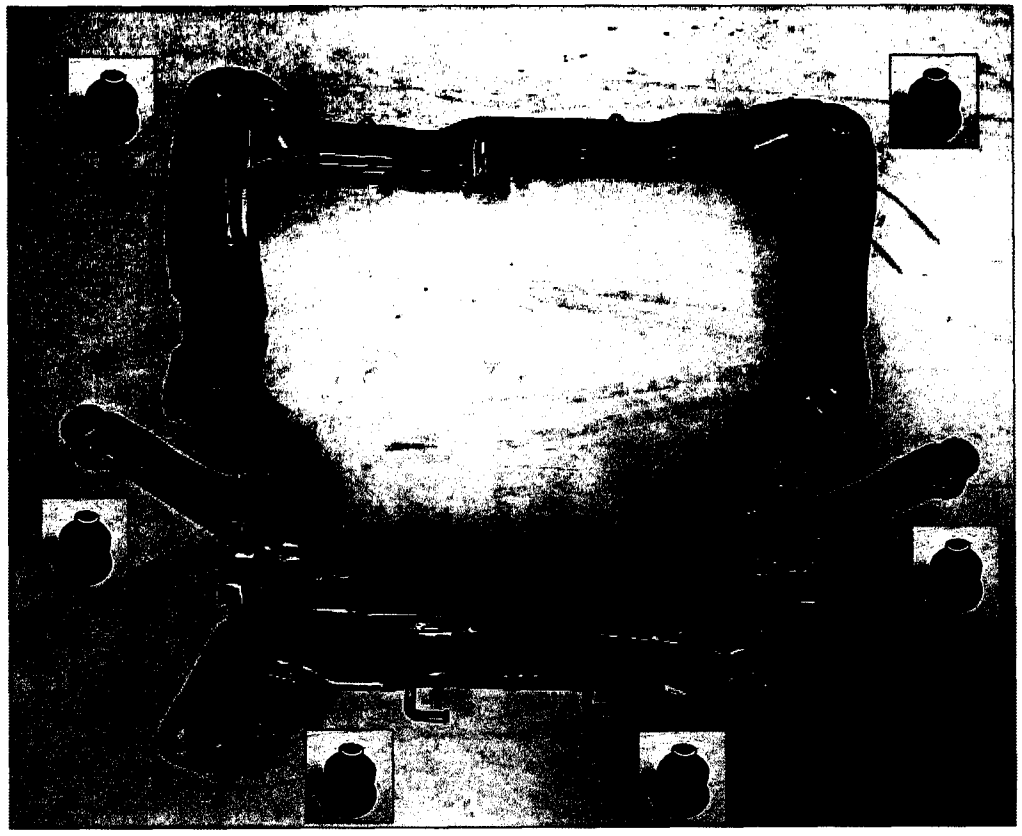
2. 용접 공정(Welding Process)

	공정(Process)	제품(Product)
SKETCH		
비고 remark	①. 크로스 멤버 용접 (Welding CROSS MBR ASSY)	①. CROSS MBR ASSY-NO.1 ②. CROSS MBR ASSY-LH ③. CROSS MBR ASSY-RH ④. CROSS MBR ASSY-NO.2 ⑤. BRKT ASSY-CTR MTG,LH ⑥. BRKT ASSY-CTR MTG,RH ⑦. BRKT ASSY-STAB BAR, LH ⑧. BRKT ASSY-STAB BAR, RH

3. 도장 공정(Electronic_Painting Process)

	공정(Process)	제품(Product)
SKETCH	①  ②  ③ 	
비고 remark	①. 제품 로딩(Loading) ②. 전착도장(Electronic Painting) ③. 제품 언로딩(Unloading)	①. CROSS MBR ASSY-FR

4. 조립 공정(Assembly Process)

	공정(Process)	제품(Product)
SKETCH		
비고 remark	①. 크로스 멤버 & 부시 조립 (Assembling the CROSS MBR ASS'Y-FR & BUSHING)	①. CROSS MBR ASSY-FR ②. BUSHING ▷ CROSS MBR COMPL-FR

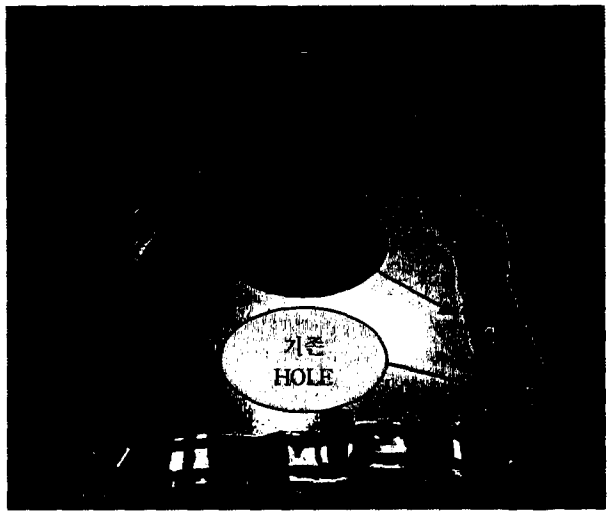
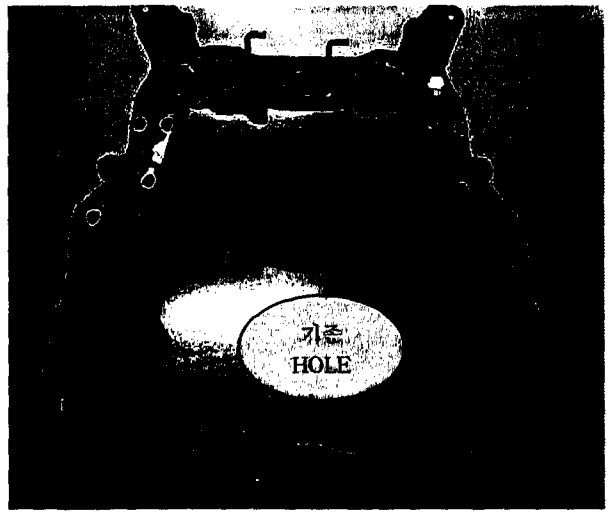
▣ EF 크로스멤버 생산 및 도장 공정 변경 이력

▣ EF CROSSMEMBER PRODUCTION AND COATING PROCEDURE CHANGE

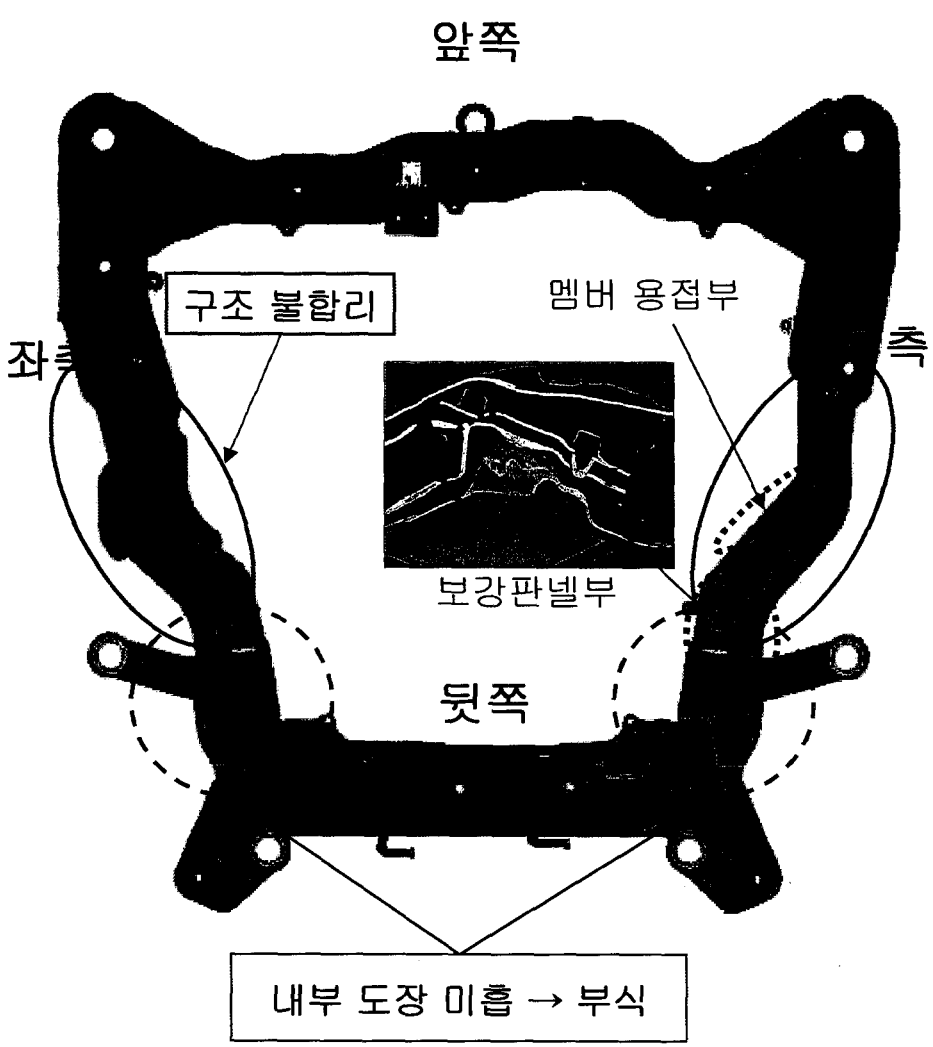
구 분	일 자	변 경 내 용	비 고
생산공정	2003.11.20	-. C/MBR S/MBR 드레인 홀 추가 : 12EA (UPR : Φ15 - 4EA, LWR : Φ12 - 4EA, Φ15 - 4EA)	
도장공정	2003. 9월	-. 전처리 탕세공정 신설 -. 표면조정공정 개선 (스프레이→딥핑)	

LIINE	DATE	DESCRIPTION OF CHANGE	REMARK
ASSEMBLY LINE	11/20/2003	-. CROSSMEMBER AND SIDEMEMBRR ADDED 12 DRAIN HOLES EACH (UPPER : Φ15 mm - 4EA, LOWER : Φ12 mm– 4EA, Φ15 mm – 4EA)	
PAINT LINE	9/2003	-. ADDED CLEANING PROCESS -. CHANGED CLEANING PROCESS (FROM SPRAY→ DIPPING)	

첨부. C/MBR 드레인 홀 개선 내용 **DESCRIPTION OF CROSSMEMBER DRAIN HOLE IMPROVEMENT**

BEFORE AND AFTER	UPPER PANEL	LOWER PANEL	NUMBER OF HOLES
구분	UPR PNL	LWR PNL	HOLE 개수
개선前 **ORIGINAL**			**ORIGINAL HOLES** 기존 HOLE UPR 2EA LWR 2EA (TOOL'G HOLE)
개선後 **COUNTER MEASURE**			**ORIGINAL HOLES** 기존 HOLE UPR 2EA LWR 2EA 추가 HOLE UPR 4EA LWR 8EA

EF CROSSMEMBER COROSSION 경로



■ 겨울철 내부 보강판이 있어 도장이 미흡한 부위에 지속적으로 염화칼슘 등이 내부에 남아 있을 경우 발생

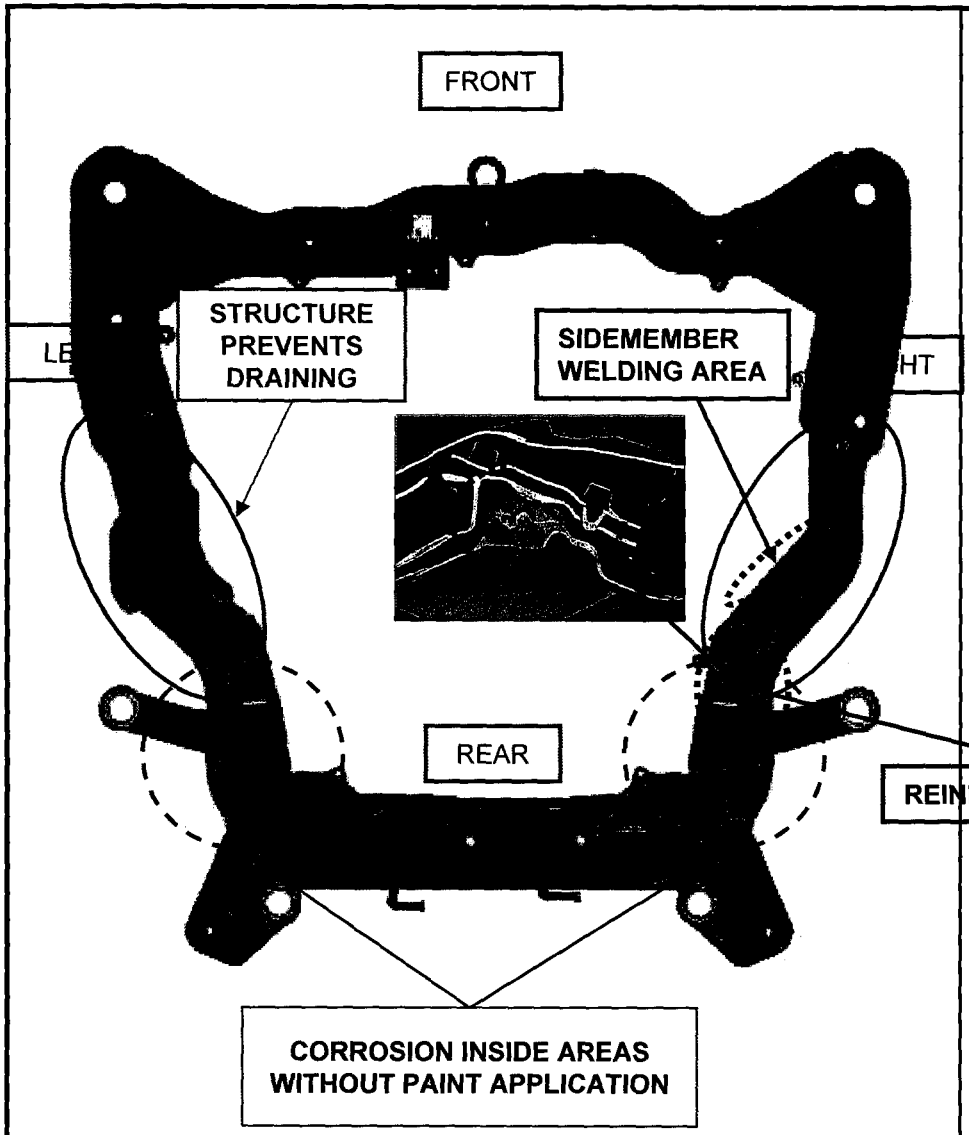
□ 부식 부위

- SIDE MEMBER 용접부
- 보강판넬부/코너부 도료침투 부족 부위

EF CROSSMEMBER CORROSION PATH

ATTACHMENT N

HYUNDAI'S RESPONSE TO PE08-029



■ DURING WINTER DRIVING ROAD SALT MAY DEPOSIT NEAR REINFORCEMENTS INSIDE THE CROSSMEMBER

☐ AREAS OF CORROSION

- SIDE MEMBER WELDING AREA
- AREA WHERE REINFORCEMENTS MAY PREVENT ANTI-CORROSION TREATMENT