EA12-005

ISUZU

3-8-2013

Attachment 4

Sample Ft Page ET5-1244

Isuzu IR Response

Request No. Two Data

CONFIDENTIAL INFORMATION REDACTED

EA12-005

ISUZU

3-8-2013

Attachment 4

TESTING INFORMATION, REPORTS,TrooperIsuzu IR Response

Request No. Two Data

CONFIDENTIAL INFORMATION REDACTED

ISUZU ENGINEERING TEST REPORT

2001-0777

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

48km/h REAR MOVING BARRIER IMPACT

2002 ISUZU TROOPER

ISUZU MODEL NO. UBR/S26G

TEST NO. AA828

ISUZU MOTOR LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

THE TABLE OF CONTENTS

1. SUMMARY DATA

SUMMARY OF TEST CONDITION (1)

TYPE OF TEST

_____ FRONTAL ( ) IMPACT
_____ OBLIQUE (30°) IMPACT ON _____ LEFT(DRIVER'S)SIDE
_____ RIGHT SIDE
_____ LATERAL OR SIDE IMPACT ON _____ LEFT(DRIVER'S)SIDE
× REAR IMPACT

TEST CONDITIONS

DATE OF TEST: Aug. 28, 2001 TIME OF TEST: 15:10
AMBIENT TEMPERATURE AT IMPACT AREA: 29℃
TEMPERATURE IN OCCUPANT COMPARTMENT: 29℃

TEST VEHICLE INFORMATION

MANUFACTURER : ISUZU MOTORS LIMITED
MAKE / MODEL : ISUZU / UBS26GLWR-BRCW
BODY STYLE : MPV 4-DOOR MODEL YEAR: 2002
VIN. : JACDJ58X827J00014
TEST NO : AA828 BODY COLOR: EBONY BLACK
ENGINE DATA : 6 CYLINDERS ; 3.6 ;liters
× GASOLINE ; ____ DELESEL ; ____ TURBOCHARGED
× LONGITUDINAL ; ____ TRANSVERSE ;
TRANSMISSION DATA : 5 SPEED , × MANUAL , ____ AUTOMATIC ,
FINAL DRIVE DATA : — FWD , — RWD , × 4WD
MAJOR OPTIONS : × A/C , × P/S , × P/B , × P/wdo ,
× TILT WHEEL , — P/seats . × CRUISE CONTROL
TYPE OF OCCUPANT RESTRAINT : FRONT : airbag with type Ⅱ belt
REAR : type Ⅱ belt

TEST FLUID DATA

TEST FLLUID TYPE : RED STODDARD SOLVENT
SPECIFIC GRAVITY : 0.777
KINEMATIC VISCOSITY : 1.39 CST
NOMINAL FUEL CAPACITY : 85 Liters (NFC)
TEST VOLUME : 80 Liters (94% of NFC)
ELECTRICE FUEL POMP : × YES — NO FUEL INJECTION : × YES — NO

SAMMARY OF TEST CONDITION (2)

VEHICLE TIRE DATA

COLD TIRE PRESSIRE : FRONT 210 KPa
REAR 240 KPa
TIRES SIZE ON VEHICLE : 245/70R16
IS SPARE TIRE A "SPACE SAVER" : NO
IS SPARE TIRE STANDARD EQUIPMENT : YES

VEHICLE CAPACITY

NUMBER OF OCCUPANTS : 2 FRONT; 3 REAR; — 3rd seat
TYPE OF FRONT SEATS : × BUCKET; — BENCH; — SPLIT BENCH
TYPE OF FRONT SEAT BACK : — FIXED × Adj.with × LEVER — Rot.knob
RATED CARGO AND LUGGAGE
WEIGHT (RCLW) = 64.4 kg
GVWR : 2500 kg

CALCULATION FOR TARGET TEST WEIGHT

UW = Unloaded Weight (Including OW) (2095.6 kg)
OW = Option Weight (— kg)
DSC = Designated Seating Capacity (5)
RCLW= 64.4 kg
TARGET TEST WEIGHT = UW + OW + RCLW + (2 dummies × 75.75kg/dummy)
TARGET TEST WEIGHT = 2311.6 kg

WEIGHT OF TEST VEHICLE WITH RBQUIRED DUMMIES AND CARGO

RIGHT FRONT = 585 kg REGHT REAR = 569 kg
LEFT FRONT = 569 kg LEFT REAR = 590 kg
TOTAL FRONT WEIGHT = 1154 kg (49.9 % of Total vehicle weight)
TOTAL REAR WEIGHT = 1159 kg (50.1 % of Total vehicle weight)
TOTAL TEST WEIGHT = 2313 kg

2.TEST DATA

POST IMPACT SUMMARY (1)

Vehicle : UBS26GLWR-BRCW (JACDJ58X827J00014)

Test No. : Aug. 28, 2001

Date : AA828

IMPACT VELOCITY : PRIMARY = 48.58 km/h (30.18 MPH)

VEHICLE STATIC CRUSEH:

Driver Side	: 190	mm
Passenger's Side	: 170	mm
Average	: 180	mm

FUEL SYSTEM INTEGRITY (2)

FUEL SYSTEM INTEGRITY - FMVSS 301-75
BARRIER CRASH

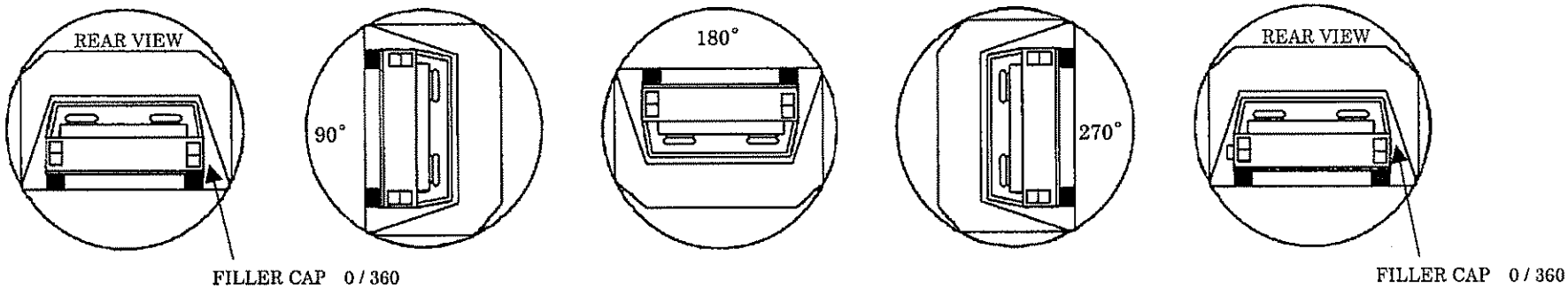
	Actual	Max. Allow.
Fuel spillage impact until vehicle motion ceases.	0	1 ounce
Fuel spillage for 5 minute period following cessation of vehicle motion after impact.	0	5 ounce
Fuel spillage for next 25 minute period	0	1ounce 1 minute

FUEL SPILLAGE LOCATION : NONE

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (1 st. Roll ;Clockwise)

Vehicle : UBS26GLR-BRCW(VIN. JACDJ58X827J00014) Test No. AA828



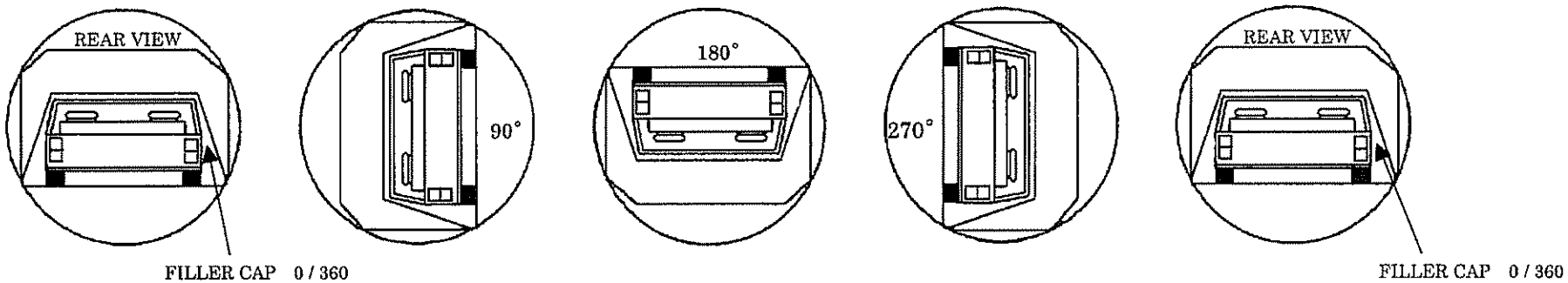
Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6 minute period from onset of rotation	Fuel spillage during 7 minute period from onset of rotation
0 – 90	60 seconds	0 ounce	0 ounce	–
90 – 180	60 seconds	0 ounce	0 ounce	–
180 – 270	60 seconds	0 ounce	0 ounce	–
270 – 360	60 seconds	0 ounce	0 ounce	–
Max. allowed	1–3 minutes	5 ounce	1 ounce	1 ounce

FUEL SPILLAGE LOCATION : NONE

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (2 nd. Roll ; Counterclockwise)

Vehicle : UBS26GLR-BRCW(VIN. JACDJ58X827J00014) Test No. AA828



Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6 minute period from onset of rotation	Fuel spillage during 7 minute period from onset of rotation
0 – 90	60 seconds	0 ounce	0 ounce	–
90 – 180	60 seconds	0 ounce	0 ounce	–
180 – 270	60 seconds	0 ounce	0 ounce	–
270 – 360	60 seconds	0 ounce	0 ounce	–
Max. allowed	1–3 minutes	5 ounce	1 ounce	1 ounce

FUEL SPILLAGE LOCATION : NONE

PRE-TEST RIGHT SIDE VIEW

POST-TEST RIGHT SIDE VIEW

PRE-TEST RIGHT VIEW

POST-TEST RIGHT VIEW

PRE-TEST REAR VIEW

POST-TEST REAR VIEW

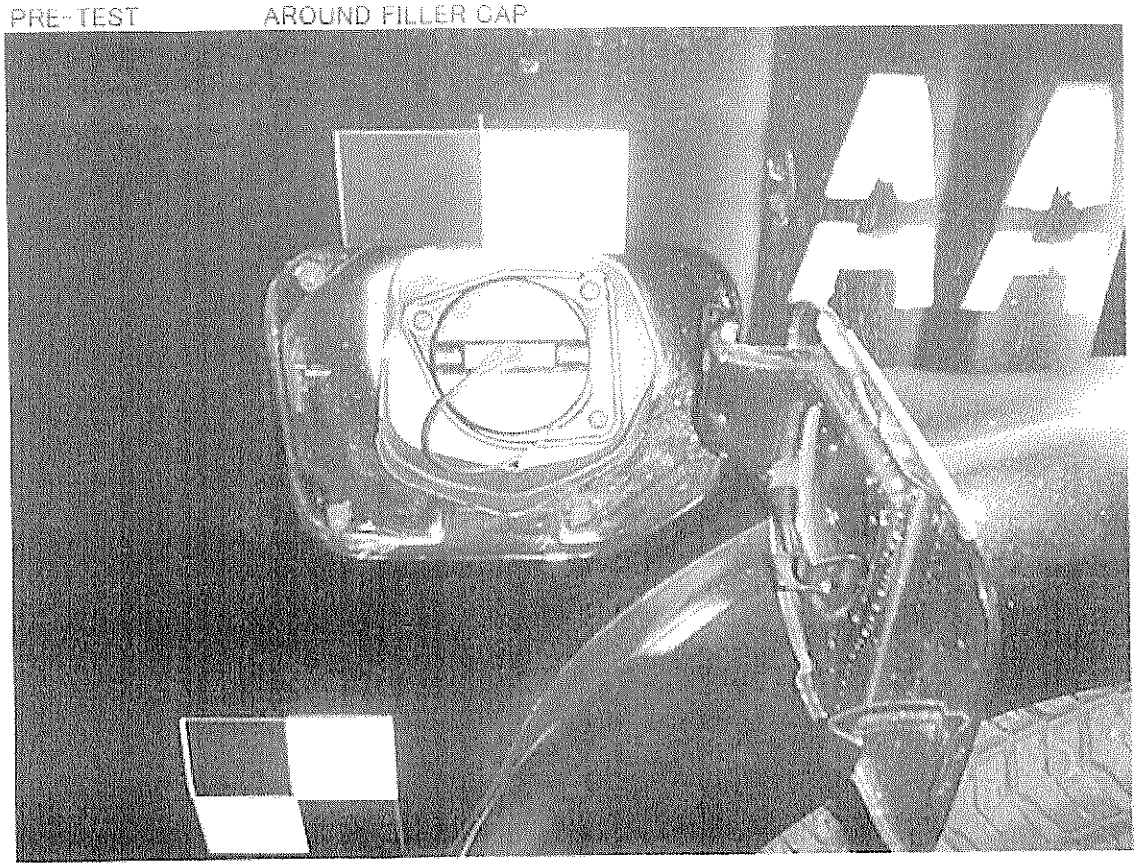
PRE-TEST LEFT VIEW

POST-TEST LEFT VIEW

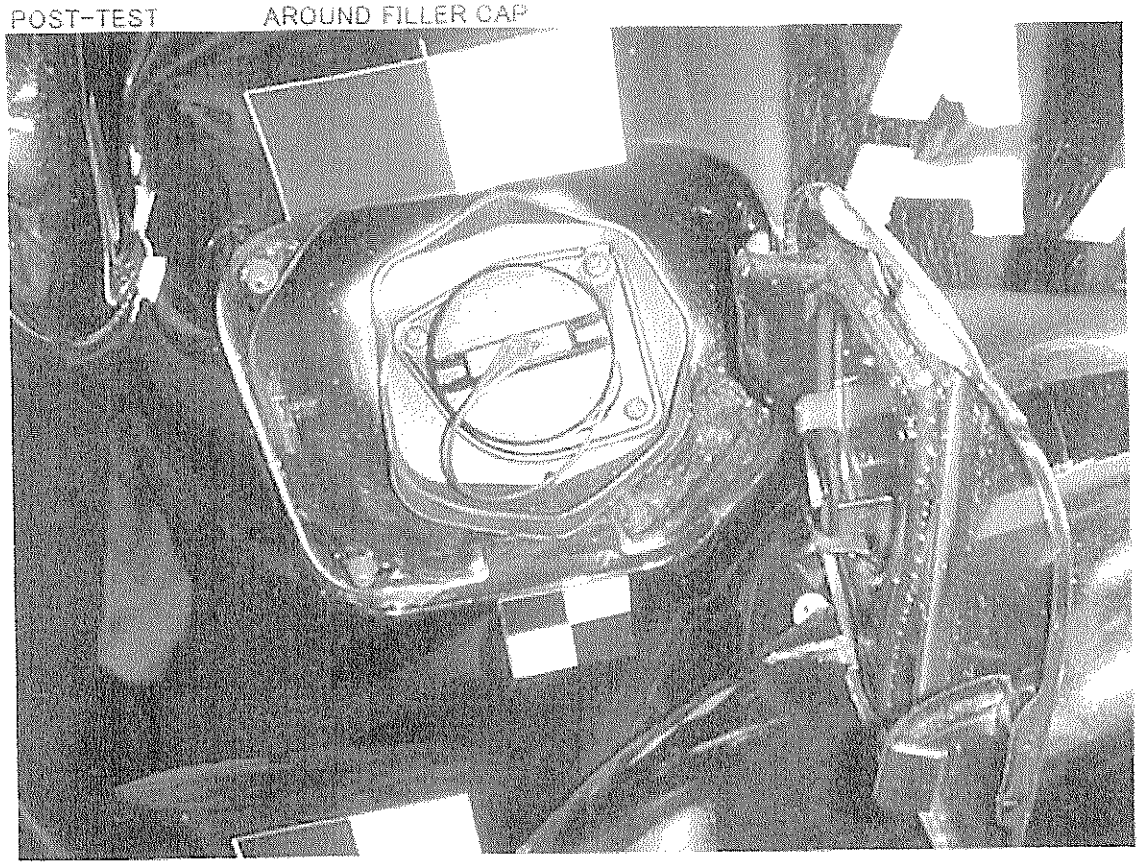
PRE-TEST LEFT SIDE VIEW

POST-TEST LEFT SIDE VIEW

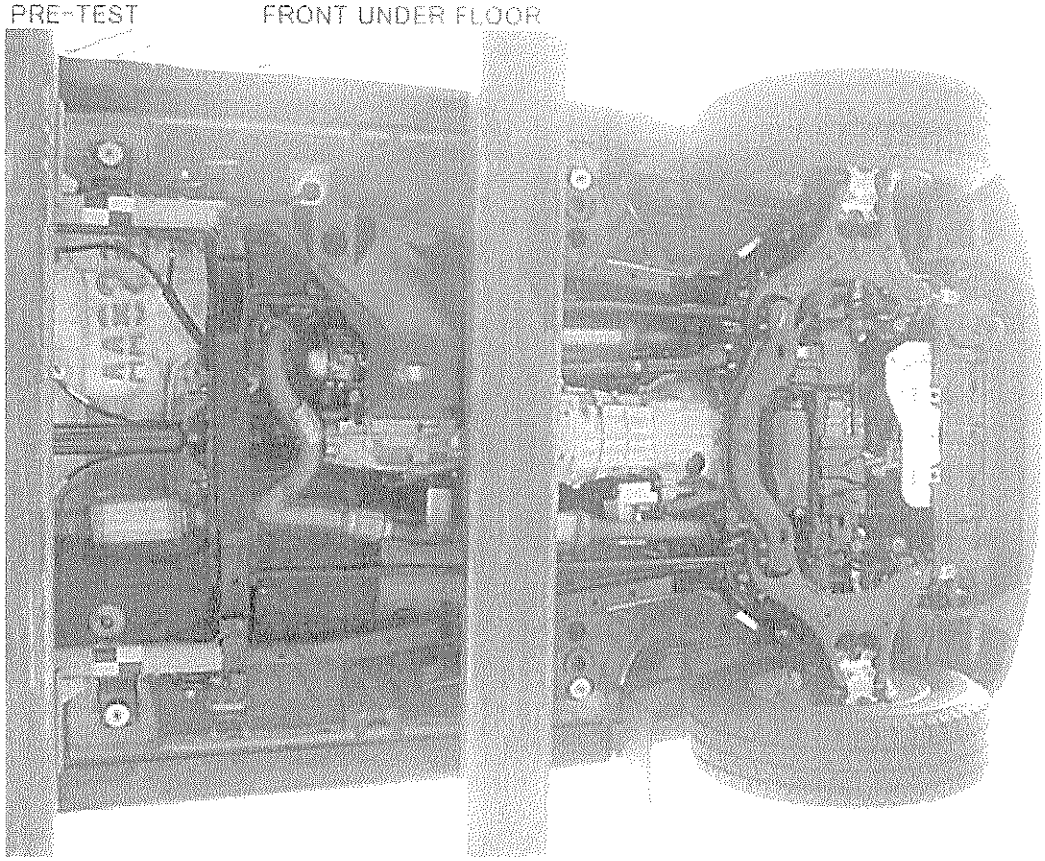
PRE-TEST AROUND FILLER CAP



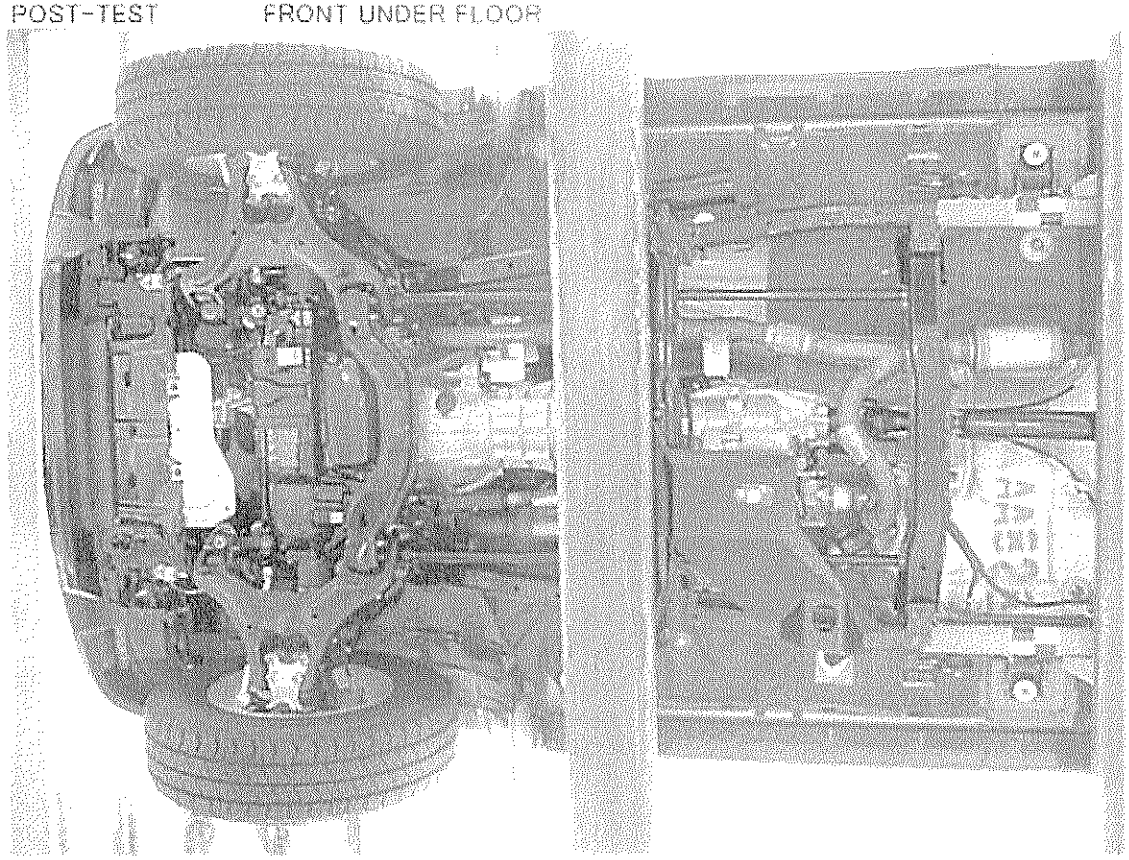
POST-TEST AROUND FILLER CAP



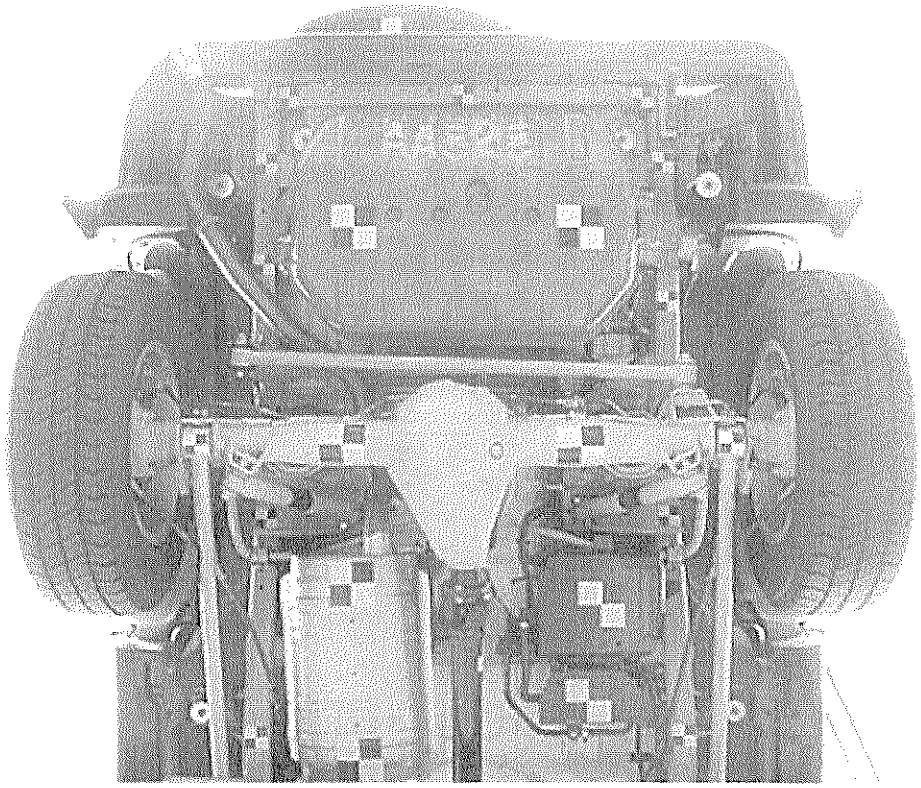
PRE-TEST FRONT UNDER FLOOR



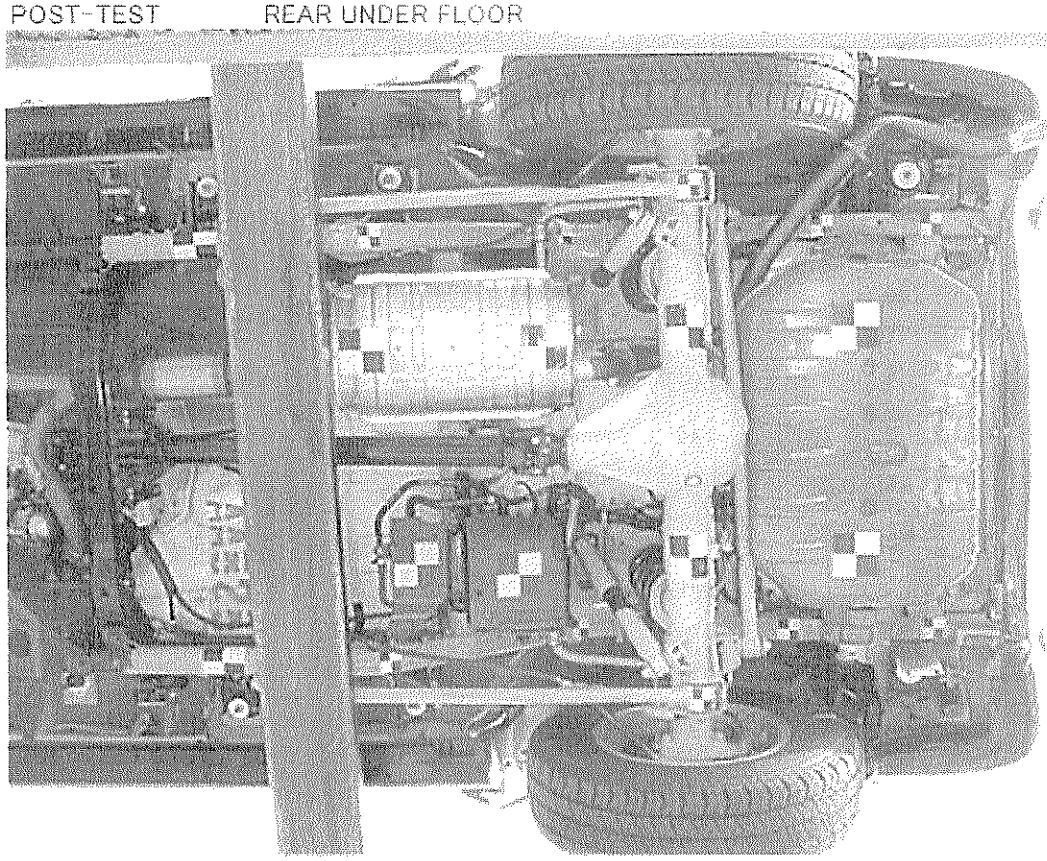
POST-TEST FRONT UNDER FLOOR



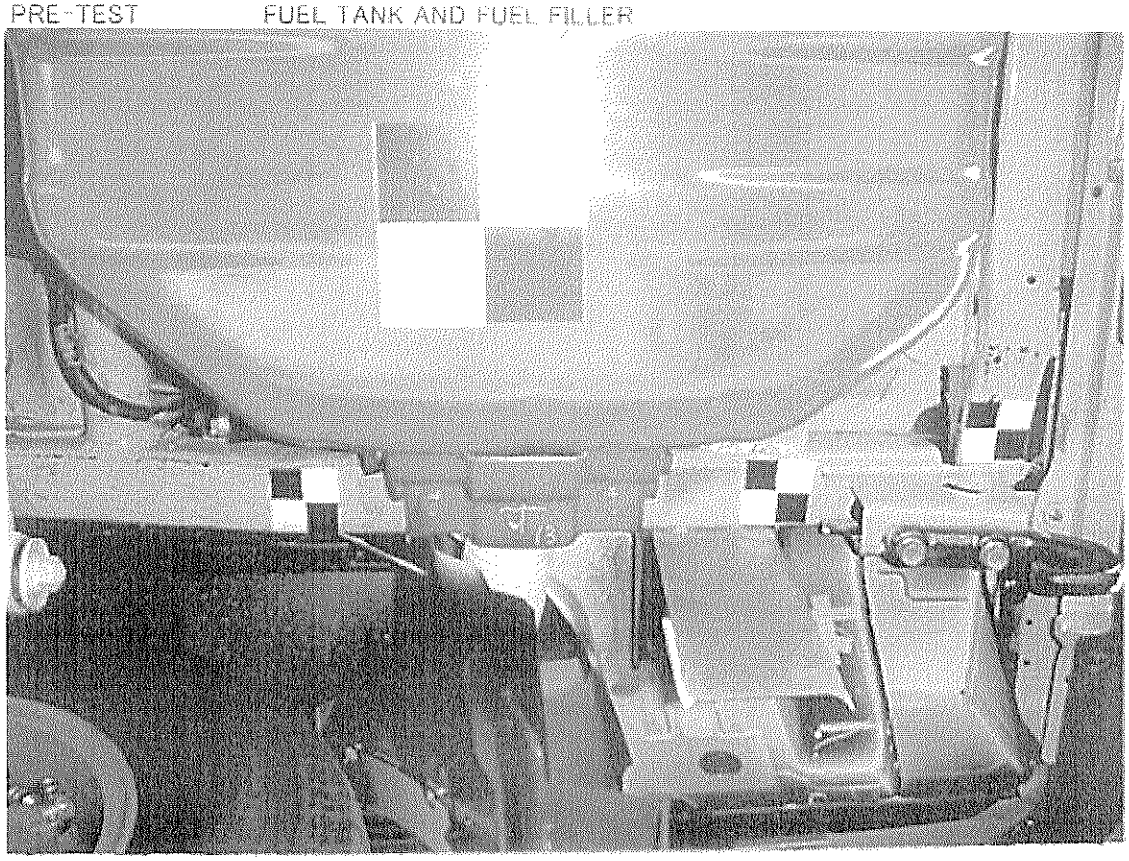
PRE-TEST REAR UNDER FLOOR



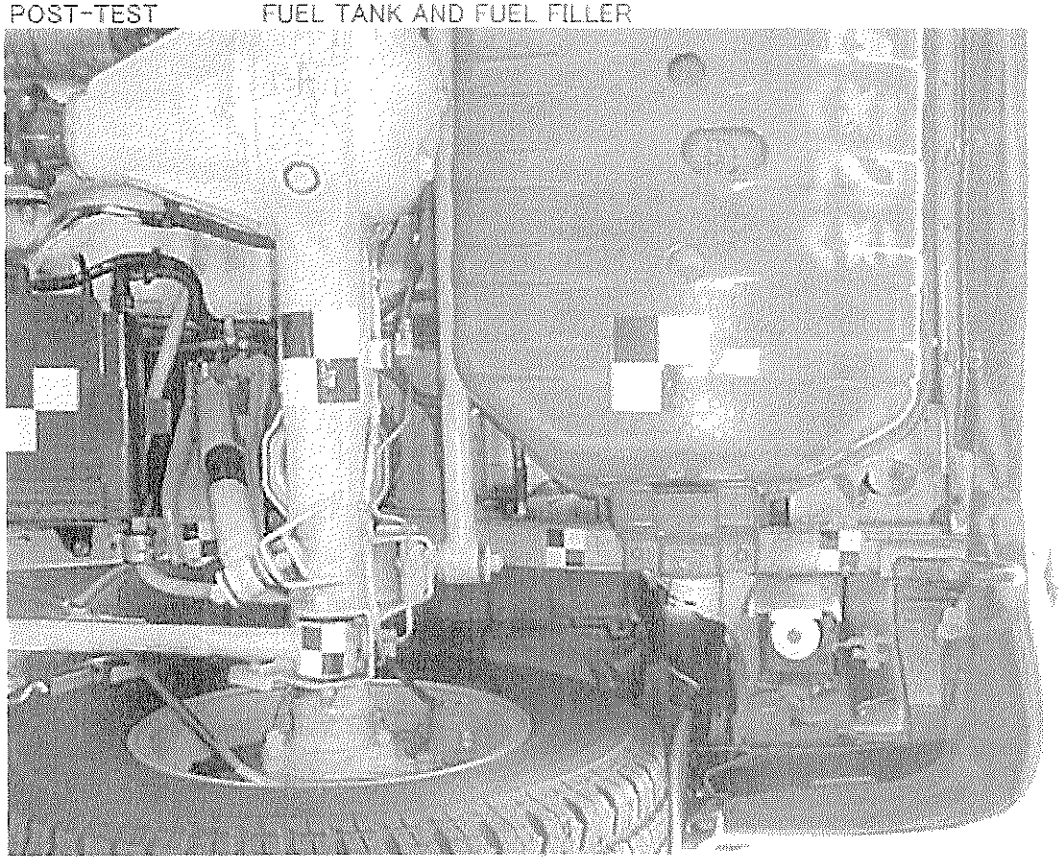
POST-TEST REAR UNDER FLOOR



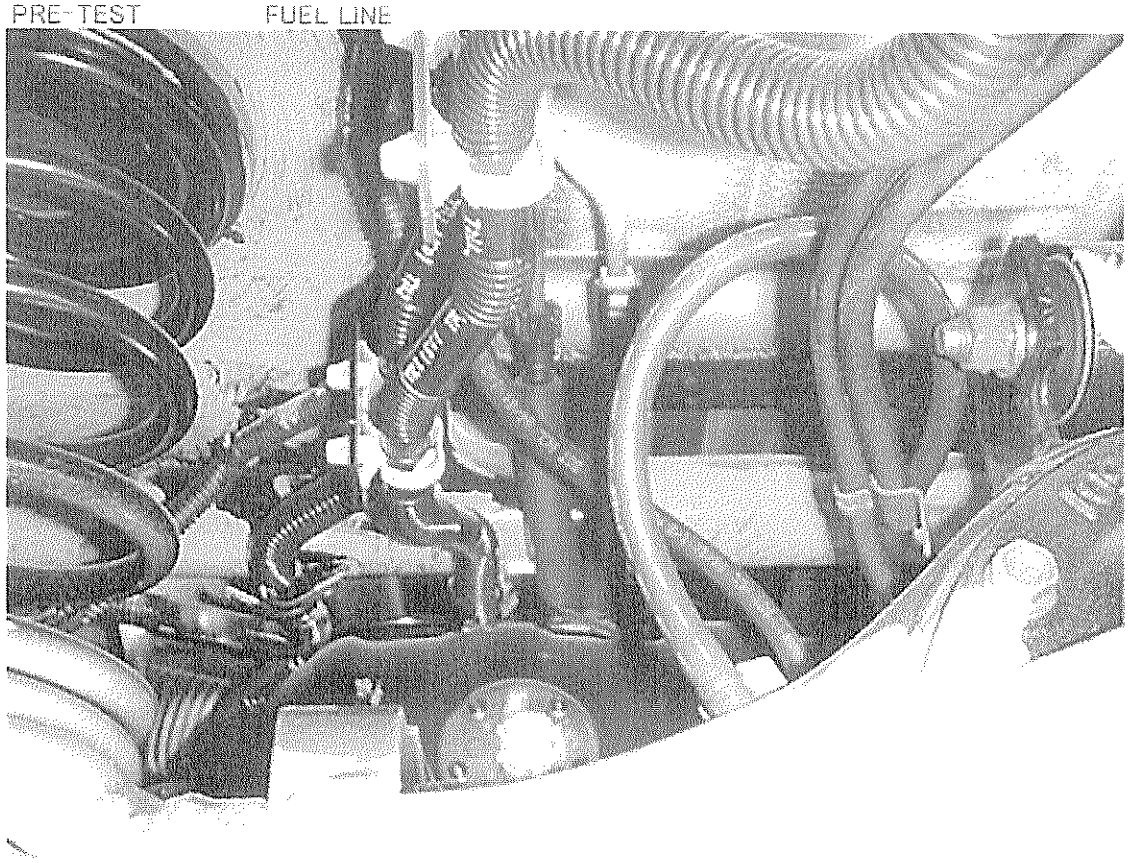
PRE-TEST FUEL TANK AND FUEL FILLER



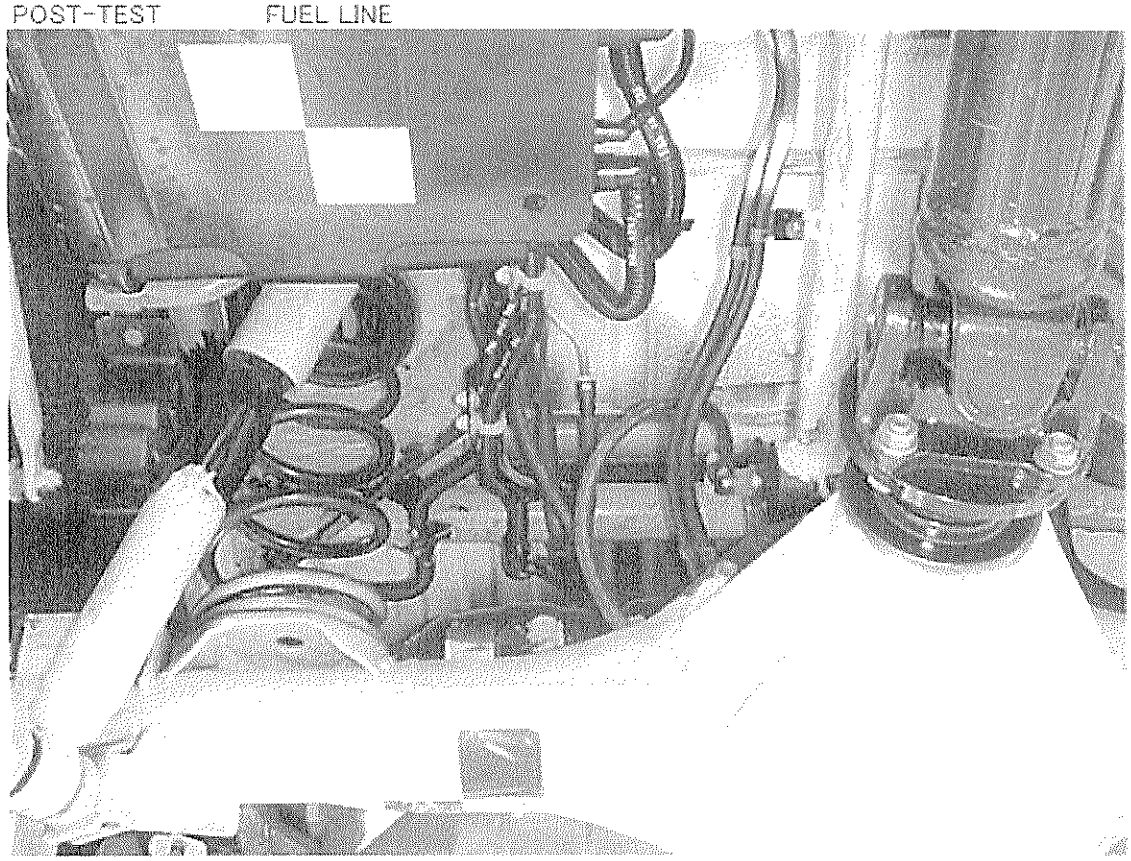
POST-TEST FUEL TANK AND FUEL FILLER



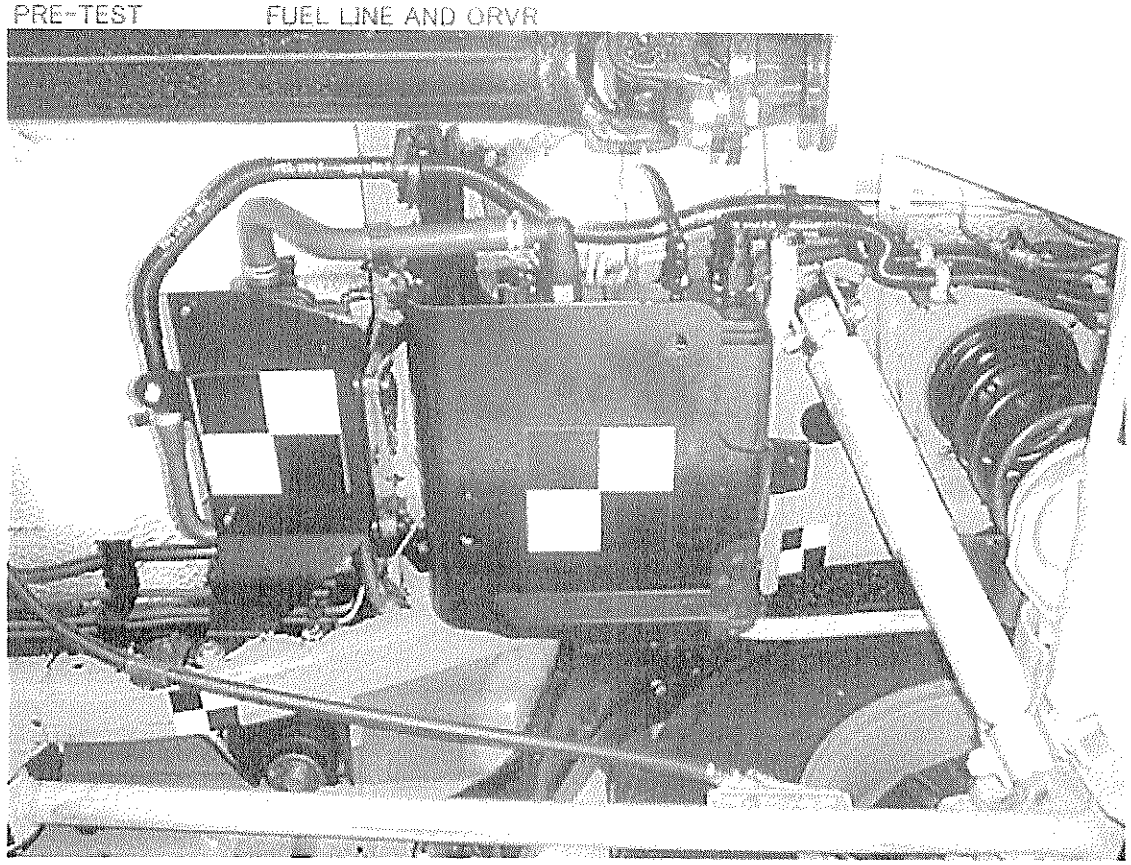
PRE-TEST FUEL LINE



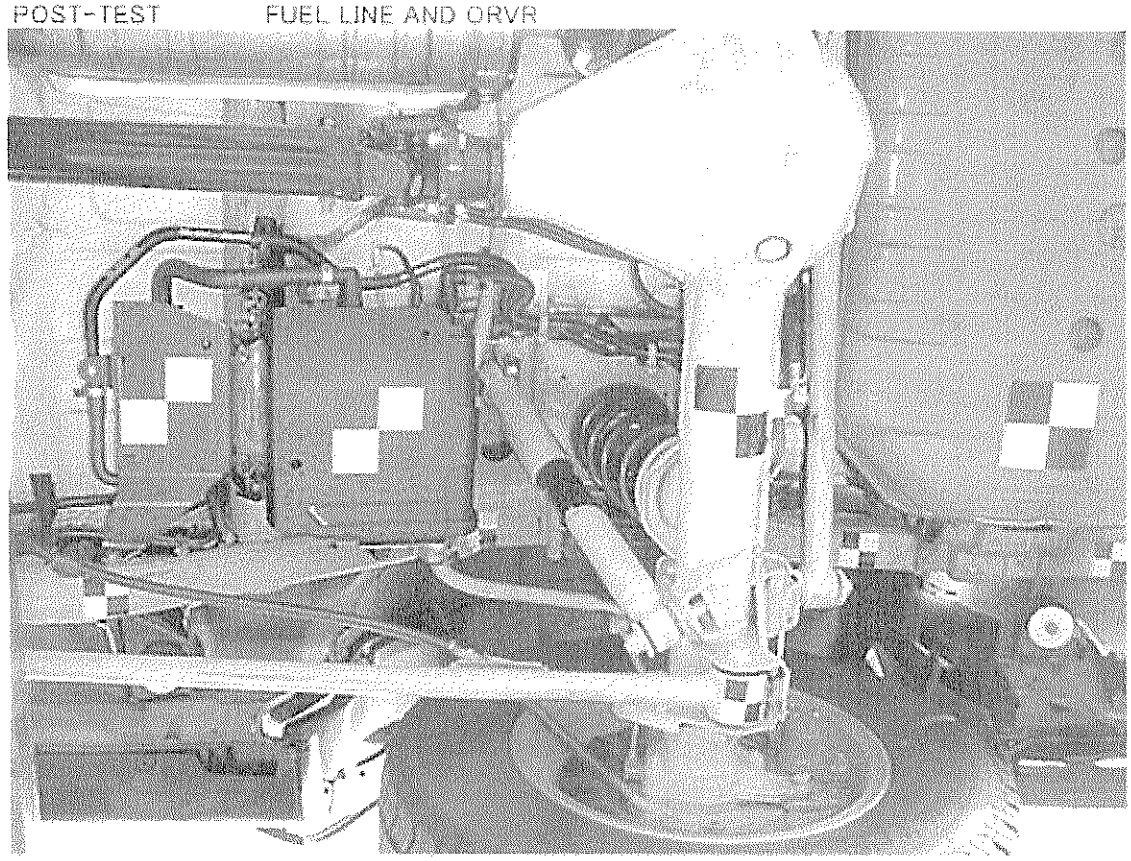
POST-TEST FUEL LINE



PRE-TEST FUEL LINE AND ORVR

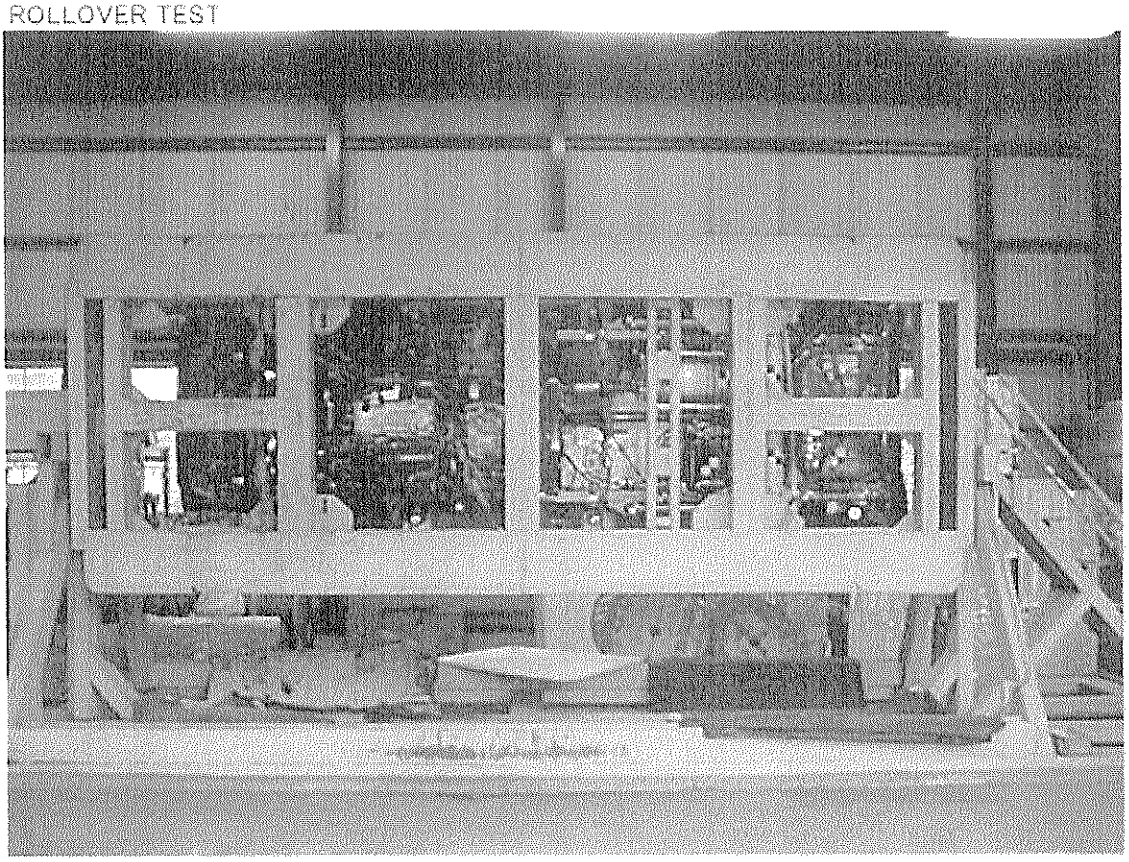


POST-TEST FUEL LINE AND ORVR

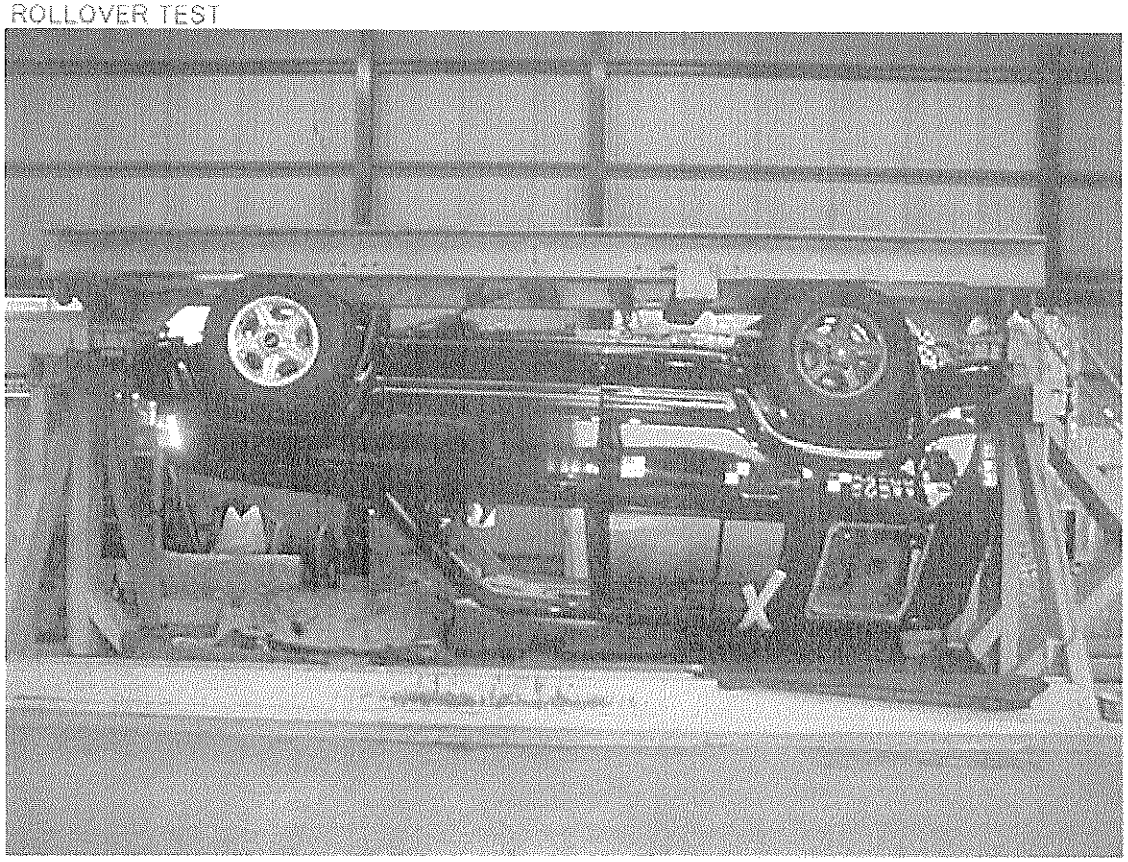


ROLLOVER TEST

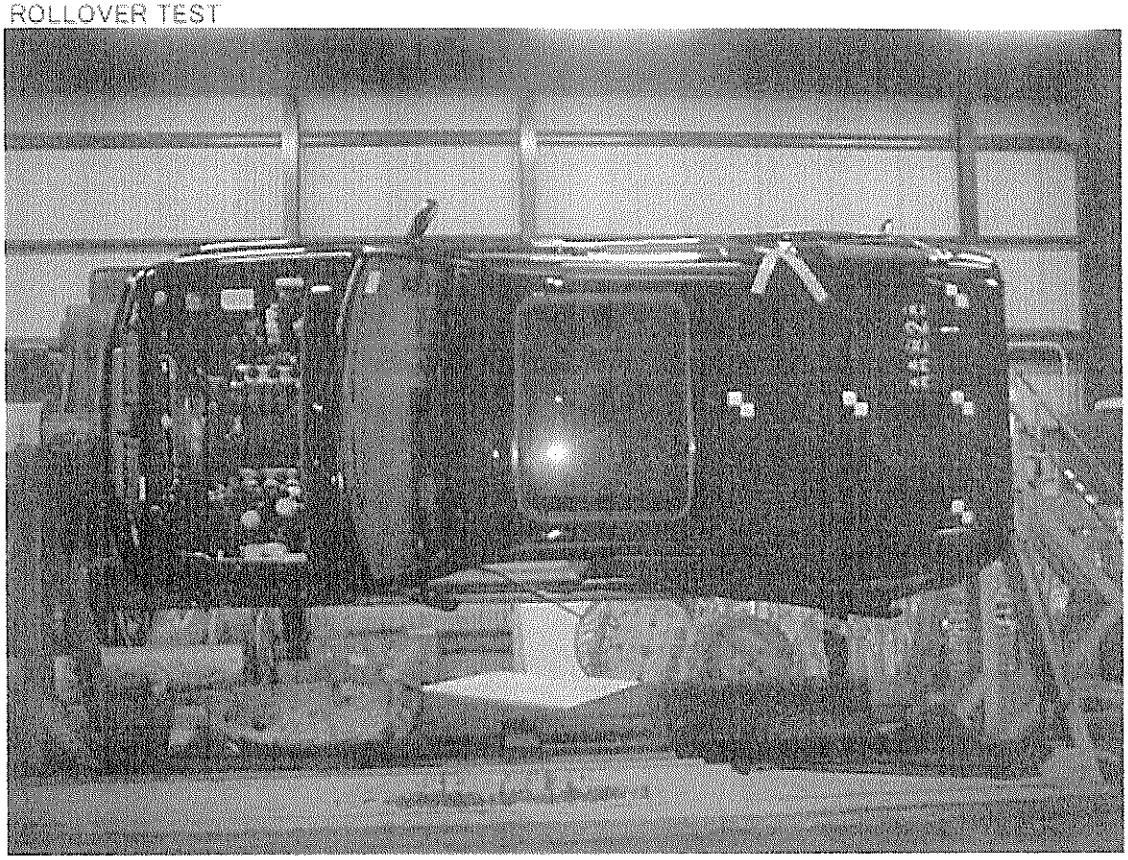
ROLLOVER TEST



ROLLOVER TEST



ROLLOVER TEST



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ISUZU ENGINEERING TEST REPORT

ET5 - 0700

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

48km/h REAR MOVING BARRIER IMPACT

1992 ISUZU TROOPER

ISUZU MODEL NO. UBS 25G

TEST NO. A1151

ISUZU MOTORS LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

1. SUMMARY DATA

SUMMARY OF TEST CONDITION (1)

TYPE OF TEST

_____ FRONTAL ( ) IMPACT
_____ OBLIQUE ( ) IMPACT ON_____ LEFT(DRIVER'S)SIDE
_____ RIGHT SIDE
_____ LATERAL OR SIDE IMPACT ON_____ LEFT(DRIVER'S)SIDE
__×__ REAR IMPACT

TEST CONDITIONS

DATE OF TEST: Sep. 17, 1991 TIME OF TEST: 15:45
AMBIENT TEMPERATURE AT IMPACT AREA: 26 ° C
TEMPERATURE IN OCCUPANT COMPARTMENT: 26 ° C

TEST VEHICLE INFORMATION

MANUFACTURER : ISUZU MOTORS LIMITED
MAKE / MODEL : ISUZU / UBS25GLWT-DFAW
BODY STYLE : 4 DOOR WAGON MODEL YEAR: 1992
VIN. : JACDH58W4N7900039
TEST NO. : A-1151 BODY COLOR: RED
ENGINE DATA : 6 CYLINDERS ; 3.2 liters
× GASOLINE ; - DIESEL ; - TURBOCHARGED
× LONGITUDINAL ; - TRANSVERSE ;
TRANSMISSION DATA : 4 SPEED , - MANUAL , × AUTOMATIC ,
FINAL DRIVE DATA : - FWD , - RWD , × 4WD
MAJOR OPTIONS : × A/C , × P/S , × P/B , × P/wdo ,
× TILT WHEEL , - P/seats , × CRUISE CONTROL
ODOMETER READING : 10 miles

TEST FLUID DATA

TEST FLUID TYPE : RED STODDARD SOLVENT SPECIFIC GRAVITY : 0.777
KINEMATIC VISCOSITY : 1.39 CST
NOMINAL FUEL CAPACITY : 85 Liters (NFC)
TEST VOLUME : 80.75 Liters (95% of NFC)
ELECTRIC FUEL PUMP : × YES _____NO FUEL INJECTION : × YES _____NO

SUMMARY OF TEST CONDITION (2)

VEHICLE TIRE DATA

COLD TIRE PRESSURE : FRONT 2.1 kg/cm²

REAR 2.4 kg/cm²

TIRES SIZE ON VEHICLE : P245/70R15

IS SPARE TIRE A "SPACE SAVER" : NO

IS SPARE TIRE STANDARD EQUIPMENT : YES

VEHICLE CAPACITY

NUMBER OF OCCUPANTS : 2 FRONT; 3 REAR; - 3rd SEAT; 5. TOTAL

TYPE OF FRONT SEATS : × BUCKET; - BENCH; - SPLIT BENCH

TYPE OF FRONT SEAT BACK : - FIXED × Adj.with × LEVER - Rot.Knob

RATED CARGO AND LUGGAGGE

WEIGHT (RCLW) = 300 lbs.

GVWR 5510 lbs. GAWR: FRONT 2755 lbs. REAR 3085 lbs.

CALCULATION FOR TARGET TEST WEIGHT

UW = Unloaded Weight (4285 lbs.)

OW = Option Weight (103 lbs.)

DSC = Designated Seating Capacity (5)

RCLW = 300 lbs.

TARGET TEST WEIGHT = UW + OW + RCLW + (2 dummies * 164 lbs./dummy)

TARGET TEST WEIGHT = 5016 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO

RIGHT FRONT = 1195 lbs. RIGHT REAR = 1310 lbs.

LEFT FRONT = 1190 lbs. LEFT REAR = 1325 lbs.

TOTAL FRONT WEIGHT = 2385 lbs. (47.5 % of Total vehicle Weight)

TOTAL REAR WEIGHT = 2635 lbs. (52.5 % of Total vehicle Weight)

TOTAL TEST WEIGHT = 5020 lbs.

2) Test Data

POST IMPACT SUMMARY (1)

Vehicle : UBS25GLWT-DFAW (JACDH58W4N7900039)

Test No.: A-1151 Date: Sep. 17, 1991

IMPACT VELOCITY:

Trap 1 = 31.0 mph

Trap 2 = — mph

Average= 31.0 mph

VEHICLE STATIC CRUSH: Driver Side = 4.2 inches

Passenger's Side = 4.3 inches

Average = 4.3 inches

FUEL SYSTEM INTEGRITY - FMVSS 301-75

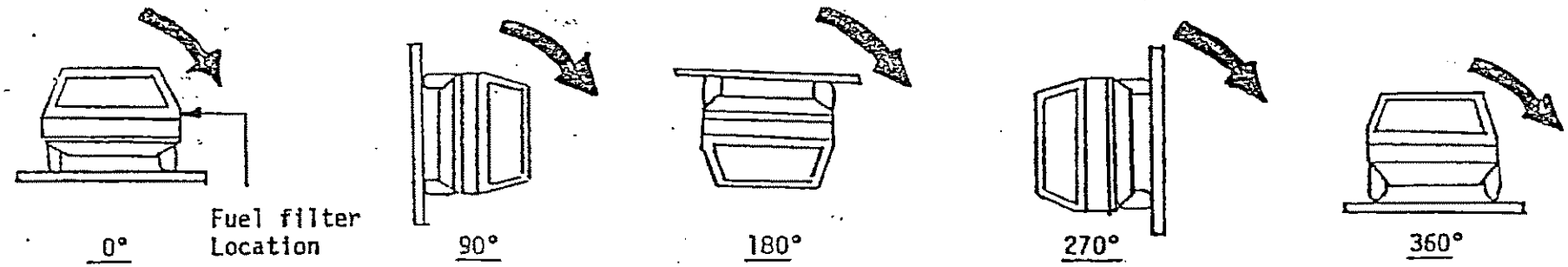
	Actual	Max. Allow.
Fuel spillage from impact until vehicle motion ceases.	0 ounce	1 ounce
Fuel spillage for 5 minute period following cessation of vehicle motion after impact.	0 ounce	5 ounce
Fuel spillage for next 25 minute period	0 ounce	1 ounce 1 minute

Fuel spillage location: NONE

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (1st Roll;Clockwise)

Vehicle: UBS25GLWT-DFAW (JACDH58W4N7900039) Test No.: A-1151



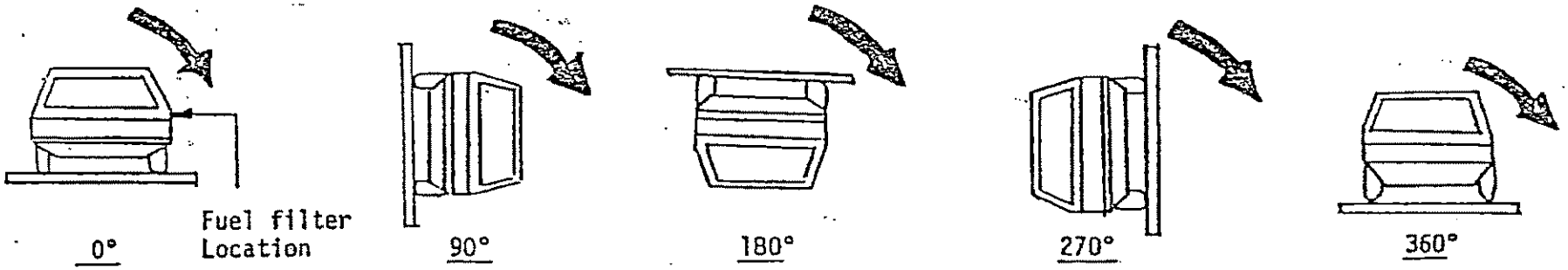
Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6th minute period from onset of rotation	Fuel spillage during 7th minute period from onset of rotation
0 - 90	60 seconds	0 ounce	0 ounce	——
90 - 180	60 seconds	0 ounce	0 ounce	——
180 - 270	60 seconds	0 ounce	0 ounce	——
270 - 360	60 seconds	0 ounce	0 ounce	——
Max. Allowed	1-3 minutes	5 ounce	1 ounce	1 ounce

Fuel Spillage Location : NONE

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (2nd Roll;Clockwise)

Vehicle: UBS25GLWT-DFAW (JACDH58W4N7900039) Test No.: A-1151



Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6th minute period from onset of rotation	Fuel spillage during 7th minute period from onset of rotation
0 - 90	60 seconds	0 ounce	0 ounce	—
90 - 180	60 seconds	0 ounce	0 ounce	—
180 - 270	60 seconds	0 ounce	0 ounce	—
270 - 360	60 seconds	0 ounce	0 ounce	—
Max. Allowed	1-3 minutes	5 ounce	1 ounce	1 ounce

Fuel Spillage Location : NONE

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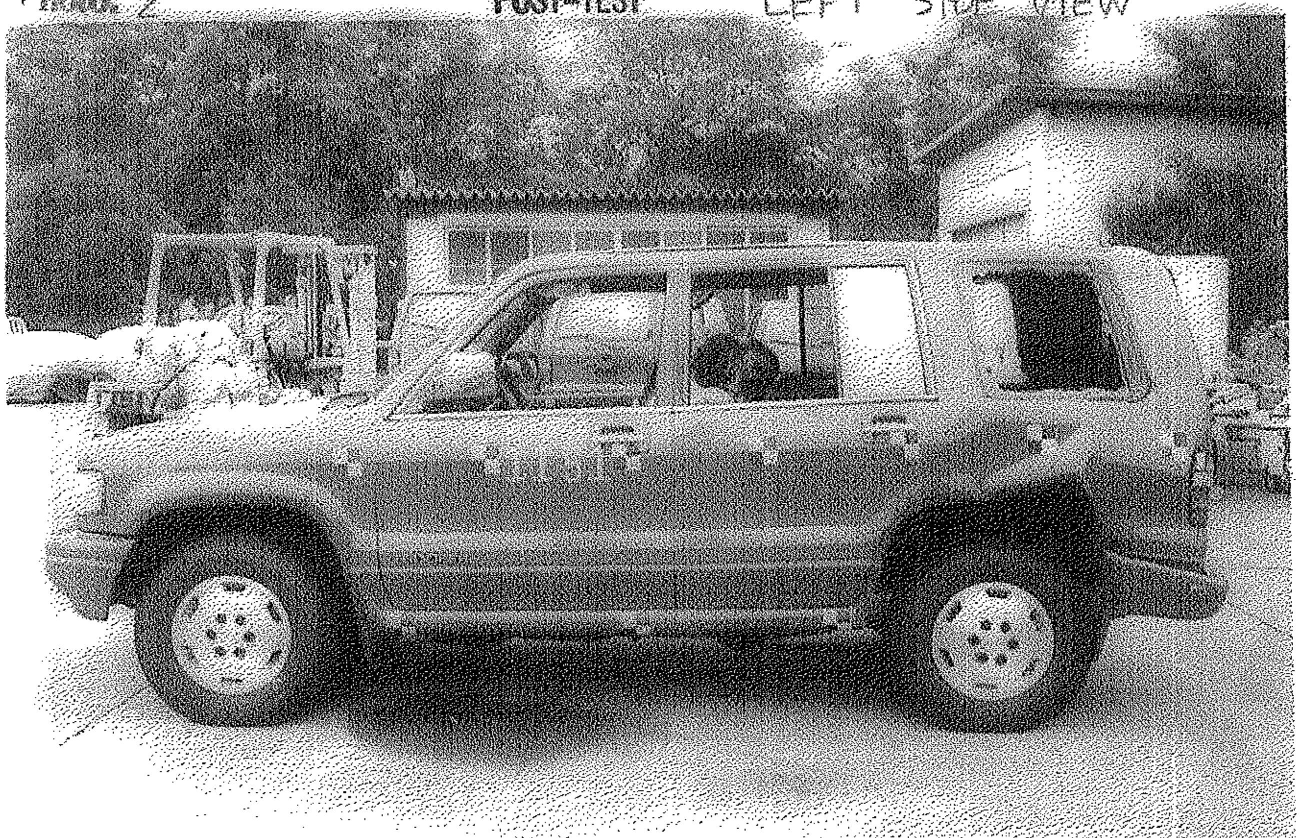
Photo. 1 PRE-TEST LEFT SIDE VIEW

Photo. 2 POST-TEST LEFT SIDE VIEW



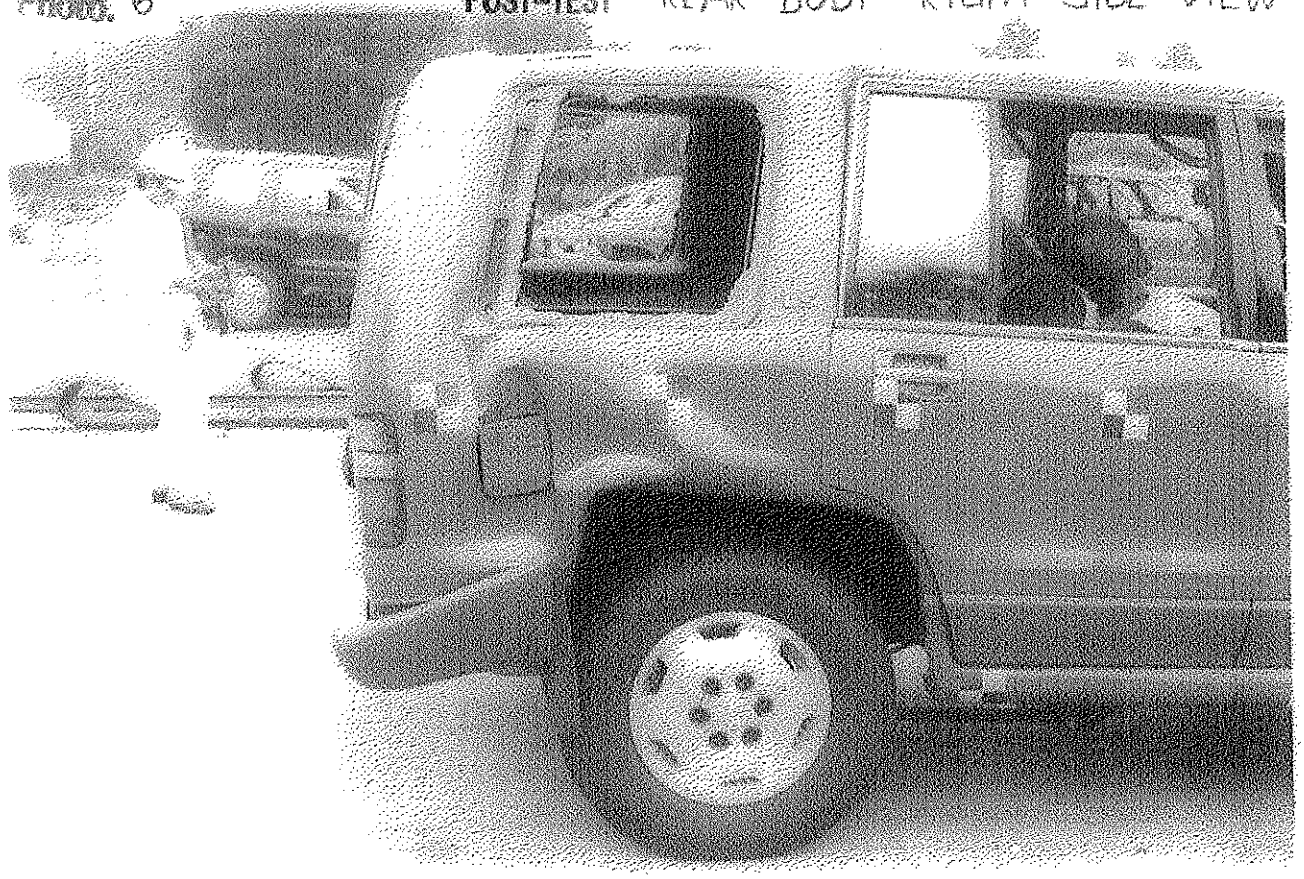
ET 5 0700 ~~ET 5 0700~~

Photo. 3 PRE-TEST RIGHT SIDE VIEW

Photo. 4 POST-TEST RIGHT SIDE VIEW

Photo. 5 POST-TEST REAR BODY LEFT SIDE VIEW

Photo. 6 POST-TEST REAR BODY RIGHT SIDE VIEW



ET 5 0/00

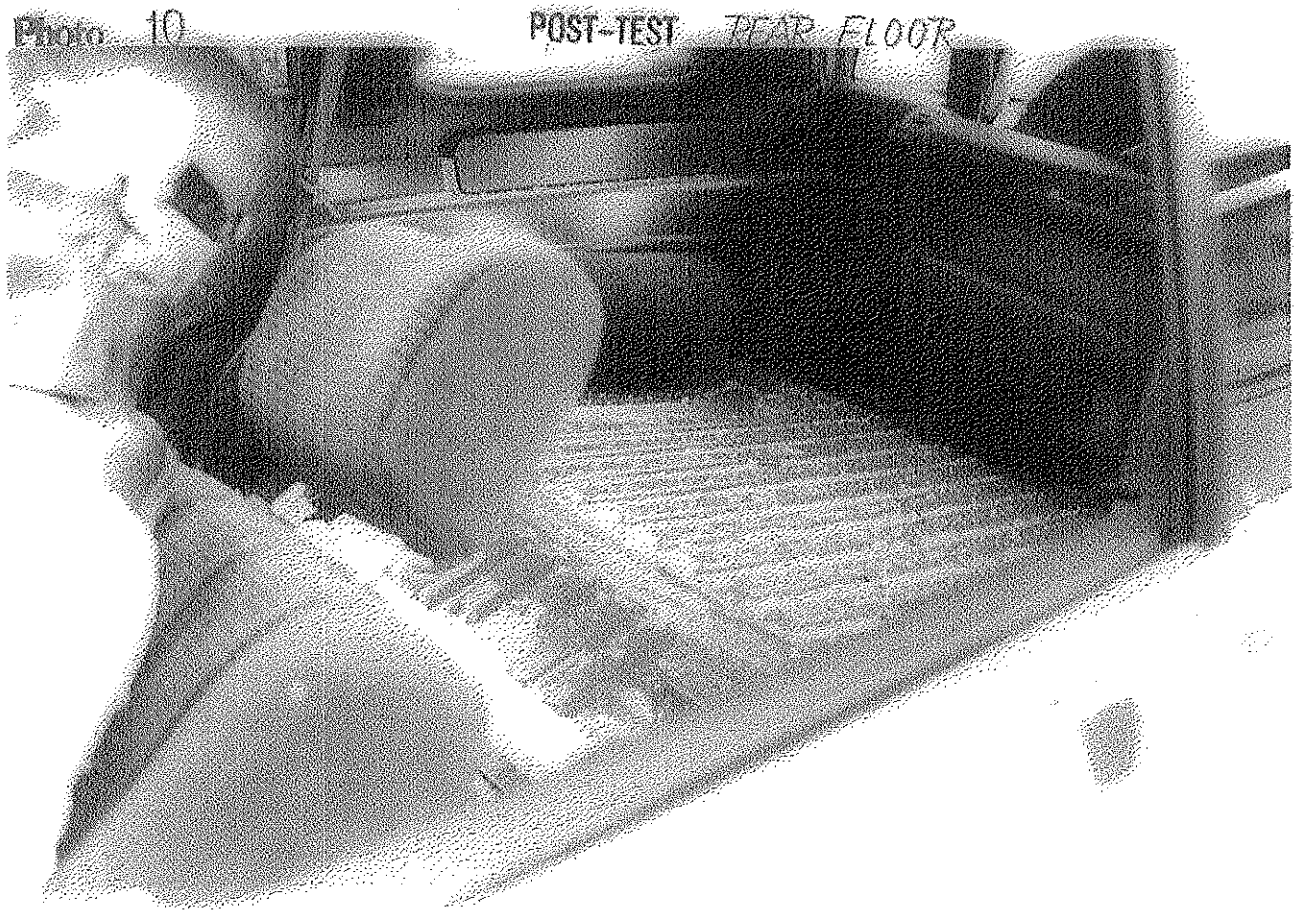
Photo. 7 PRE-TEST REAR VIEW

Photo. 8 POST-TEST REAR VIEW

ET 5 0700

Photo. 9 PRE-TEST REAR FLOOR

Photo. 10 POST-TEST REAR FLOOR



ET 5 0100

Photo. 11 POST-TEST DUMMY, LEFT VIEW

Photo. 12 POST-TEST DUMMY RIGHT VIEW

Photo 13 PRE-TEST FRONT UNDERBODY

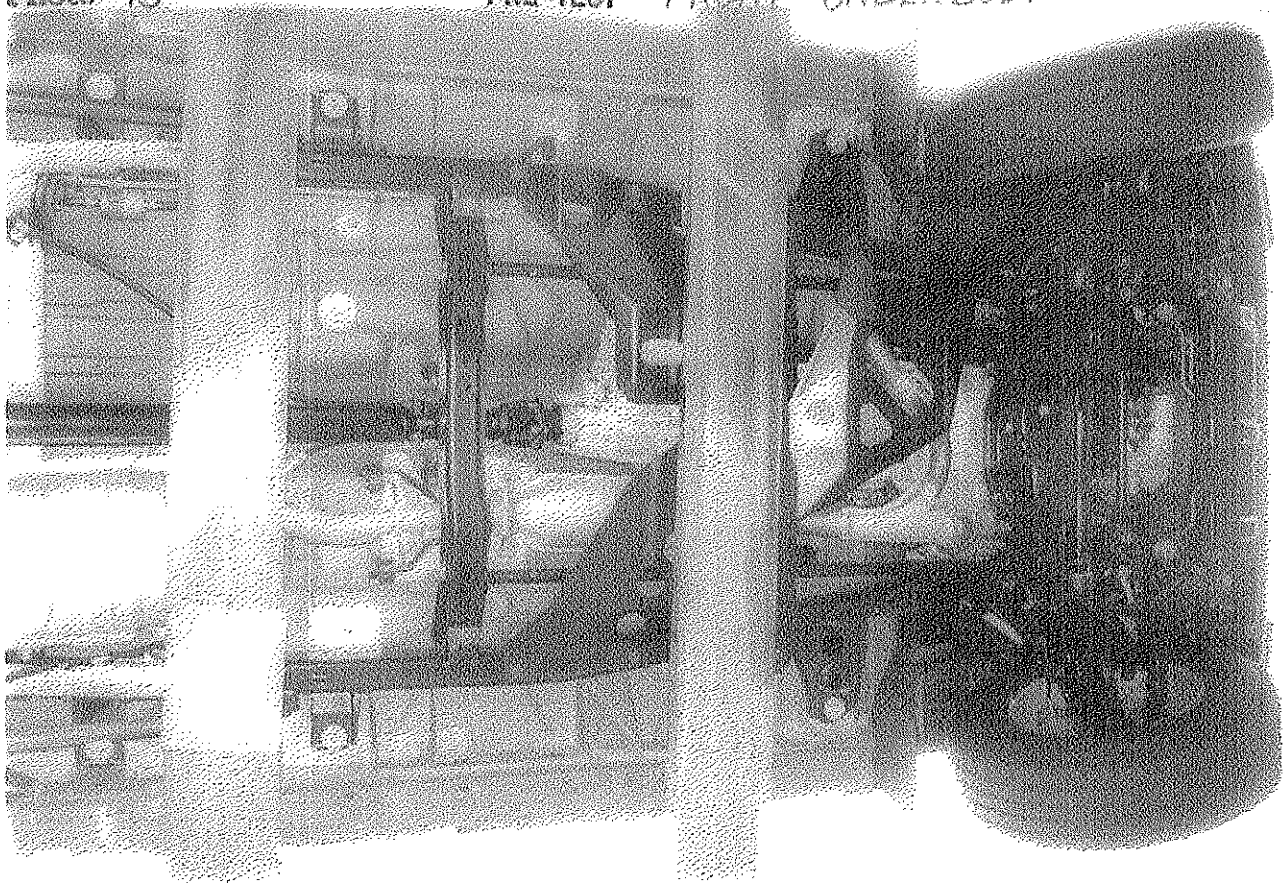


Photo 14 PRE-TEST REAR UNDERBODY

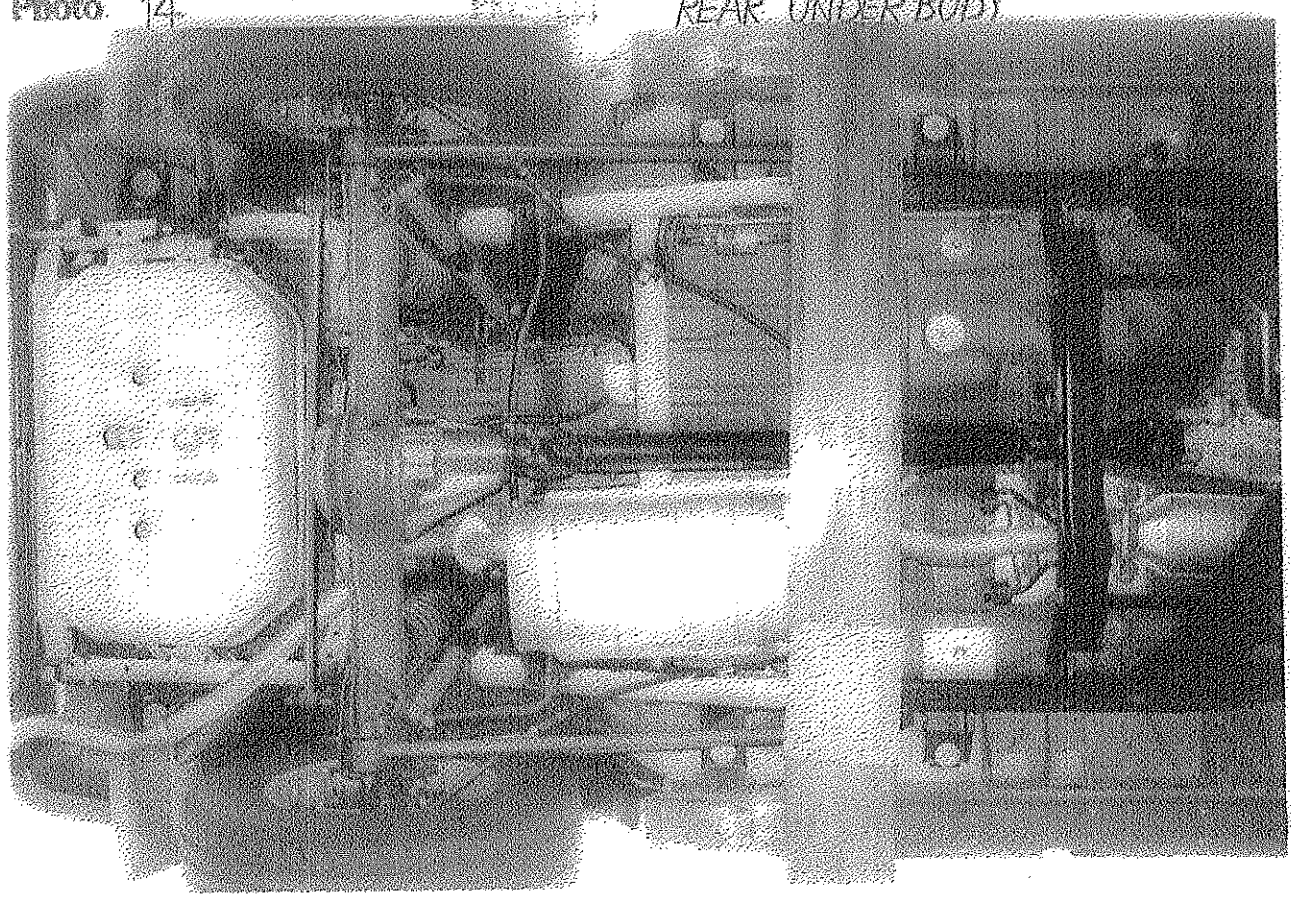


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Photo. 15 POST-TEST FRONT UNDER BODY

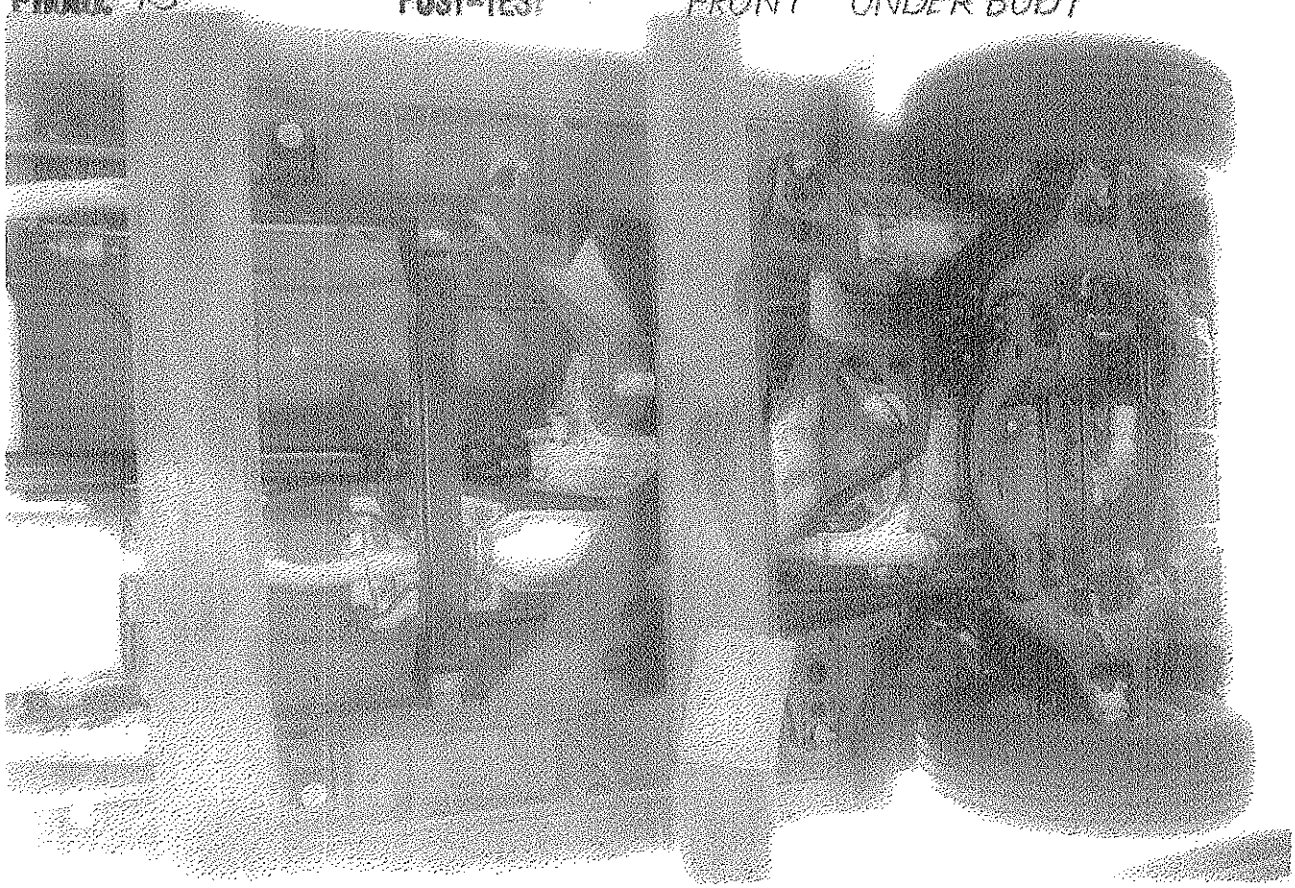
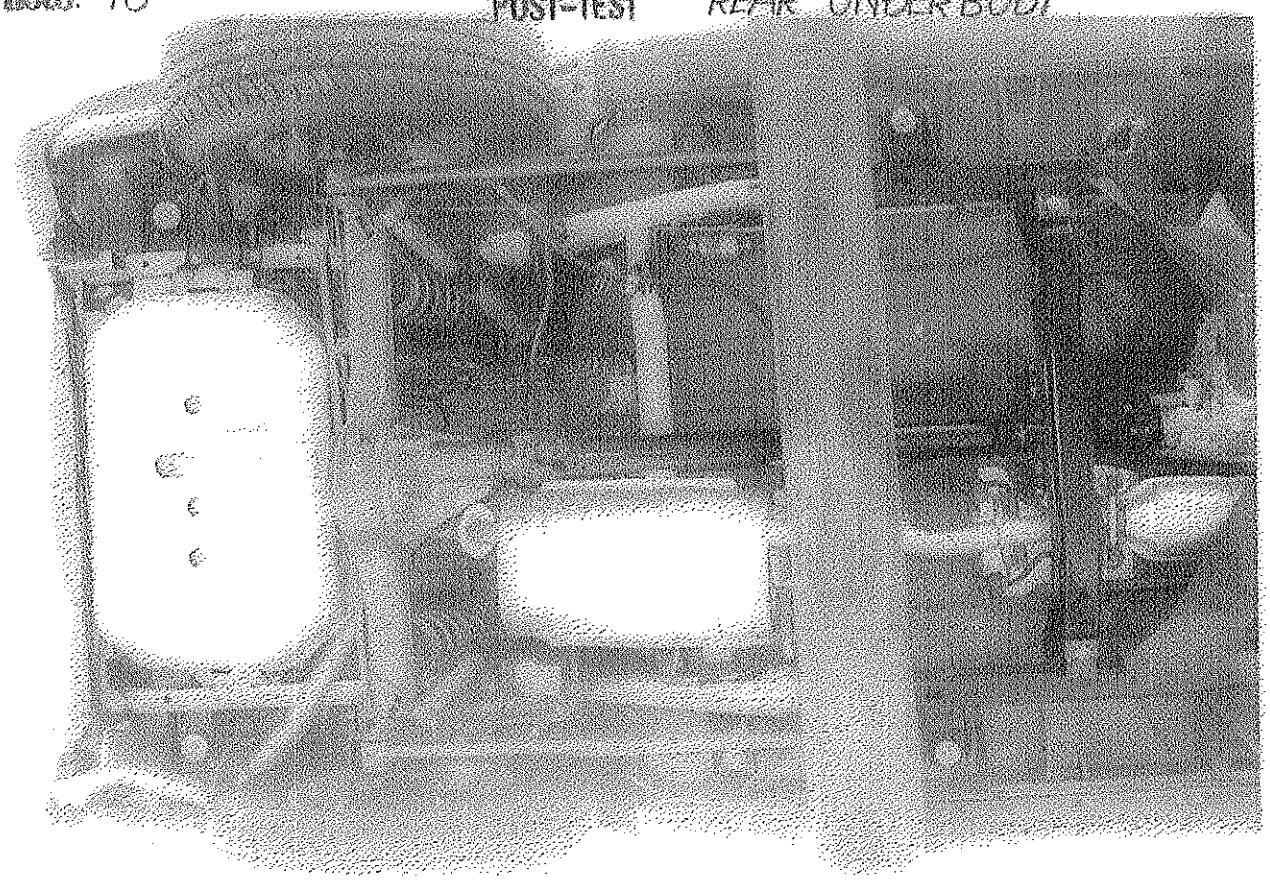


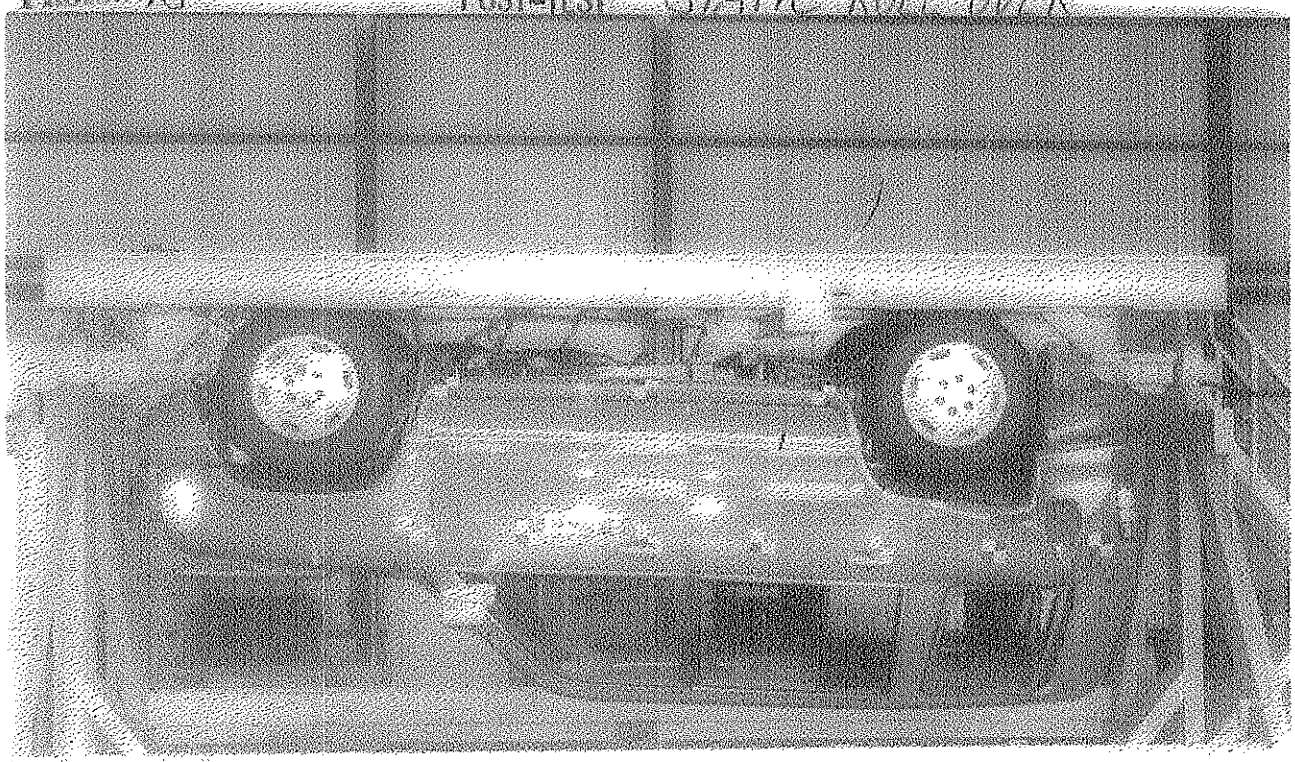
Photo. 16 POST-TEST REAR UNDER BODY



BTS 0700

Photo. 17 POST-TEST STATIC ROLL OVER

Photo. 18 POST-TEST STATIC ROLL OVER



CONFIDENTIAL INFORMATION REDACTED

ET 5-1145

ISUZU ENGINEERING TEST REPORT

ET5 − 1145

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

REAR MOVING BARRIER IMPACT

1998 ISUZU TROOPER

ISUZU MODEL NO.UBS25G

TEST NO. A7305P

ISUZU MOTORS LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

ET 5-1145

THE TABLE OF CONTENTS

1. SUMMARY DATA

ET 5-1145

SUMMARY OF TEST CONDITION (1)

TYPE OF TEST

_____ FRONTAL ( ) IMPACT
_____ OBLIQUE ( ) IMPACT ON ____ LEFT(DRIVER'S)SIDE
____ RIGHT SIDE
_____ LATERAL OR SIDE IMPACT ON _____ LEFT(DRIVER'S)SIDE
__×__ REAR IMPACT

TEST CONDITIONS

DATE OF TEST: Mar. 5, 1997 TIME OF TEST: 11:30
AMBIENT TEMPERATURE AT IMPACT AREA: 12°C
TEMPERATURE IN OCCUPANT COMPARTMENT: 12°C

TEST VEHICLE INFORMATION

MANUFACTURER : ISUZU MOTORS LIMITED
MAKE / MODEL : ISUZU / UBS25G
BODY STYLE : MPV 4-DOOR MODEL YEAR: 1998
VIN. : JACDJ58X7W7900020
TEST NO : A7305P BODY COLOR: RED
ENGINE DATA : 6 CYLINDERS : 3.494 :liters
× GASOLINE : ____DIESEL : ____TURBOCHARGED
× LONGITUDINAL : ____TRANSVERSE :
TRANSMISSION DATA : 4 SPEED . — MANUAL . × AUTOMATIC .
FINAL DRIVE DATA : — FWD . — RWD . × 4WD
MAJOR OPTIONS : × A/C . × P/S . × P/wdo .
× TILT WHEEL . — P/seats . × CRUISE CONTROL
TYPE OF OCCUPANT RESTRAINT : Driver and passenger airbag with type II belt

TEST FLUID DATA

TEST FLUID TYPE : RED STODDARD SOLVENT SPECIFIC GRAVITY : 0.78
KINEMATIC VISODSITY : 1.39CST
NOMINAL FUEL CAPACITY : 85 Liters (NFC)
TEST VOLUME : 80 Liters (94% of NFC)
ELECTRICE FUEL POMP : × YES — NO FUEL INJECTION : × YES — NO

SAMMARY OF TEST CONDITION (2)

ET 5-1145

VEHICLE TIRE DATA

COLD TIRE PRESSIRE : FRONT 206 KPa
REAR 235 KPa
TIRES SIZE ON VEHICLE : P245/70R16
IS SPARE TIRE A "SPACE SAVER" : NO
IS SPARE TIRE STANDARD EQUIPMENT : YES

VEHICLE CAPACITY

NUMBER OF OCCUPANTS : 2 FRONT: 3 REAR: — 3rd seat
TYPE OF FRONT SEATS : × BUCKET: — BENCH: — SPLIT BENCH
TYPE OF FRONT SEAT BACK : — FIXED × Adj.with × LEVER — Rot.knob
RATED CARGO AND LUGGAGE
WEIGHT (RCLW) = 70 kg
GVWR : 2499.28 kg

CALCULATION FOR TARGET TEST WEIGHT

UW = Unloaded Weight (Including OW) (2090 kg)
OW = Option Weight (— kg)
DSC = Designated Seating Capacity (5)
RCLW= 70 kg
TARGET TEST WEIGHT = UW + OW + RCLW + (2 dummies 🧍 74.0kg/dummy)
TARGET TEST WEIGHT = 2308 kg

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO

RIGHT FRONT = 579 kg REGHT REAR = 580 kg
LEFT FRONT = 582 kg LEFT REAR = 567 kg
TOTAL FRONT WEIGHT = 1161 kg (50 % of Total vehicle weight)
TOTAL REAR WEIGHT = 1147 kg (50 % of Total vehicle weight)
TOTAL TEST WEIGHT = 2308 kg

2.Test Data

(1) POST IMPACT SUMMARY

Vehicle : UBS25G (JACDJ58X7W7900020)

Test No. : Mar. 5, 1997

Date : A7305P

IMPACT VELOCITY : PRIMARY = 48.9 km/h (30.4 MPH)

VEHICLE STATIC CRUSH:

Driver Side	: 189	mm
Passenger's Side	: 222	mm
Average	: 204	mm

FUEL SYSTEM INTEGRITY - FMVSS 301-75

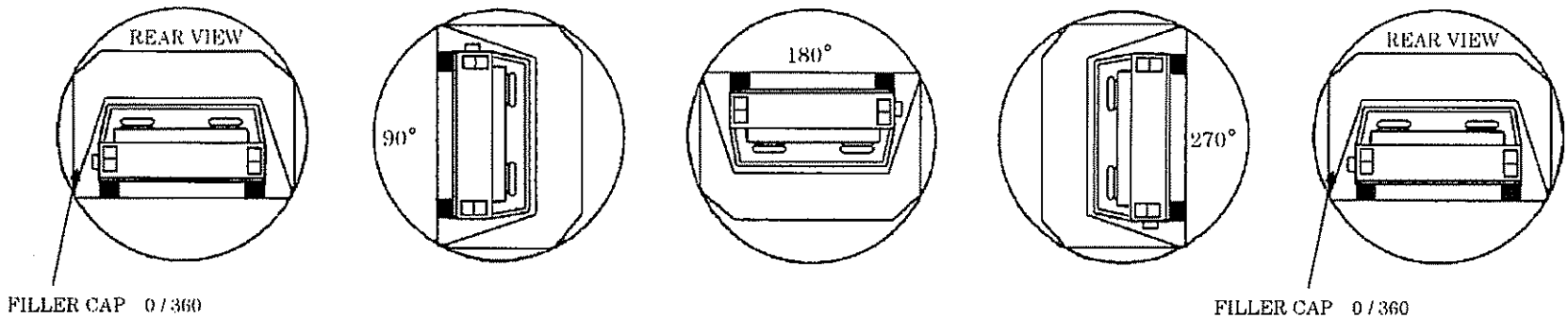
	Actual	Max. Allow.
Fuel spillage impact until vehicle motion ceases.	0	1 ounce
Fuel spillage for 5 minute period following cessation of vehicle motion after impact.	0	5 ounce
Fuel spillage for next 25 minute period	0	1ounce 1 minute

FUEL SPILLAGE LOCATION : NONE

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (1 st. Roll ;Clockwise)

Vehicle : UES25F (VIN. JAC DJ58X7W7900020) Test No. A7305P



Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6 minute period from onset of rotation	Fuel spillage during 7 minute period from onset of rotation
0 – 90	60 seconds	0 ounce	0 ounce	–
90 – 180	60 seconds	0 ounce	0 ounce	–
180 – 270	60 seconds	0 ounce	0 ounce	–
270 – 360	60 seconds	0 ounce	0 ounce	–
Max. allowed	1–3 minutes	5 ounce	1 ounce	1 ounce

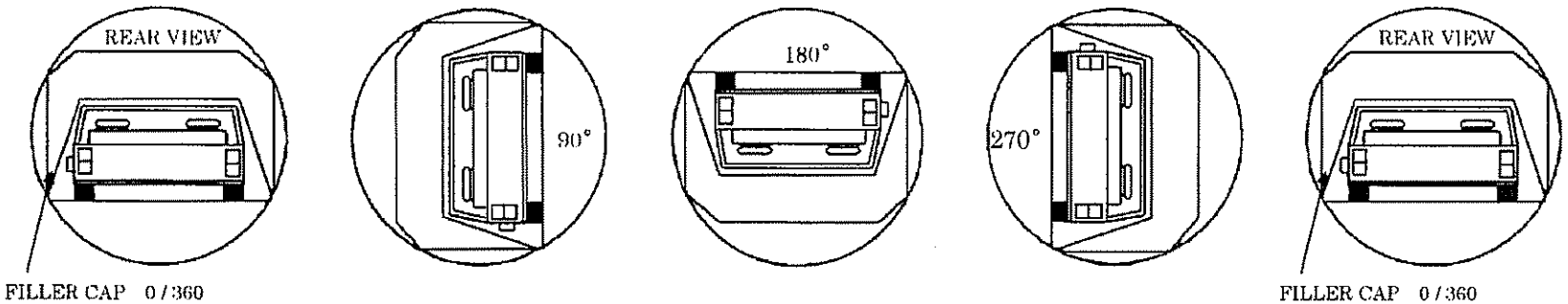
FUEL SPILLAGE LOCATION : NONE

ET-1125

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (2 nd. Roll :Clockwise)

Vehicle : UES25F (VIN. JAC DJ58X7W7900020) Test No. A7305P



FILLER CAP 0 / 360 FILLER CAP 0 / 360

Rotation Angle	Rotation Time	Fuel spillage during 5 minute period from onset of rotation	Fuel spillage during 6 minute period from onset of rotation	Fuel spillage during 7 minute period from onset of rotation
0 − 90	60 seconds	0 ounce	0 ounce	−
90 − 180	60 seconds	0 ounce	0 ounce	−
180 − 270	60 seconds	0 ounce	0 ounce	−
270 − 360	60 seconds	0 ounce	0 ounce	−
Max. allowed	1−3 minutes	5 ounce	1 ounce	1 ounce

FUEL SPILLAGE LOCATION : NONE

EP 5-1145

3. PHOTOGRAGHS

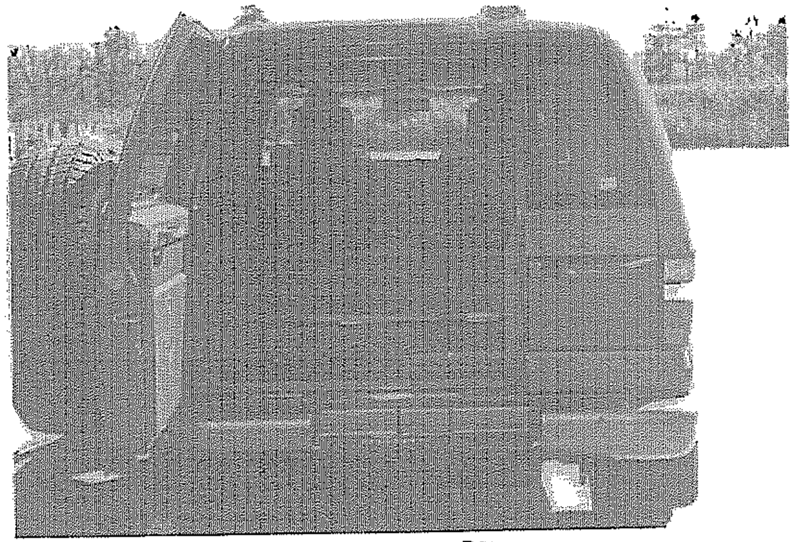
Photo. 1

試 験 前 PRE-TEST

Photo. 2

試 験 後 POST-TEST

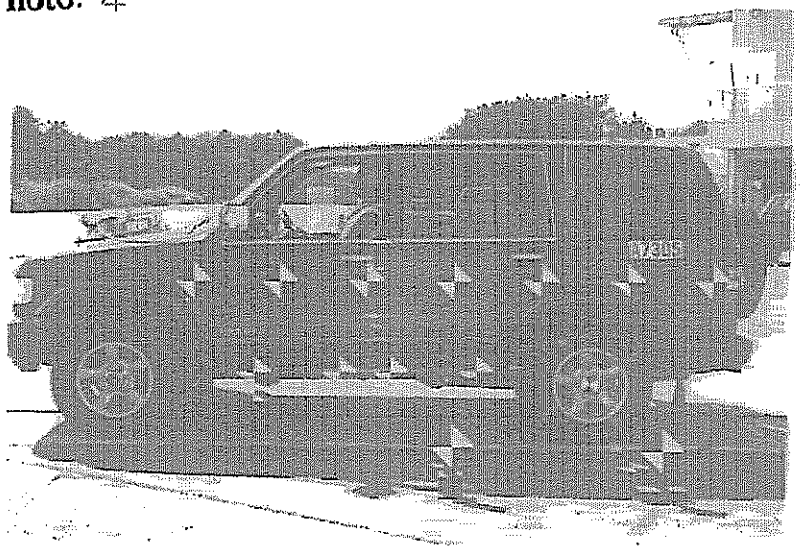
Photo. 3



試 験 前 PRE-TEST

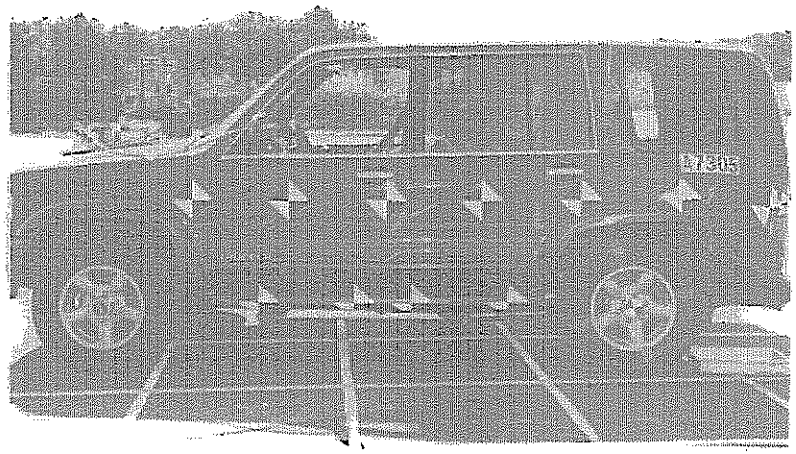
~~試験後~~

Photo. 4



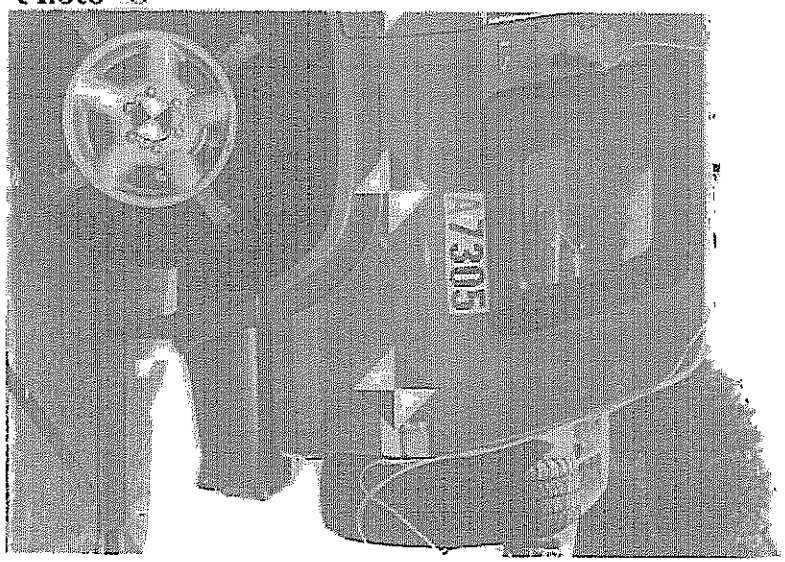
試 験 前 PRE-TEST

Photo. 5



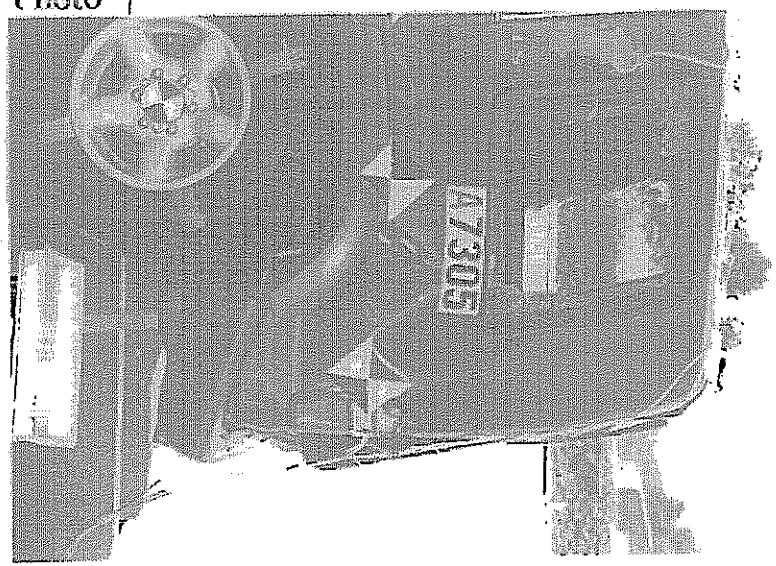
試 験 後 POST-TEST

Photo 6



試 験 前 PRE-TEST

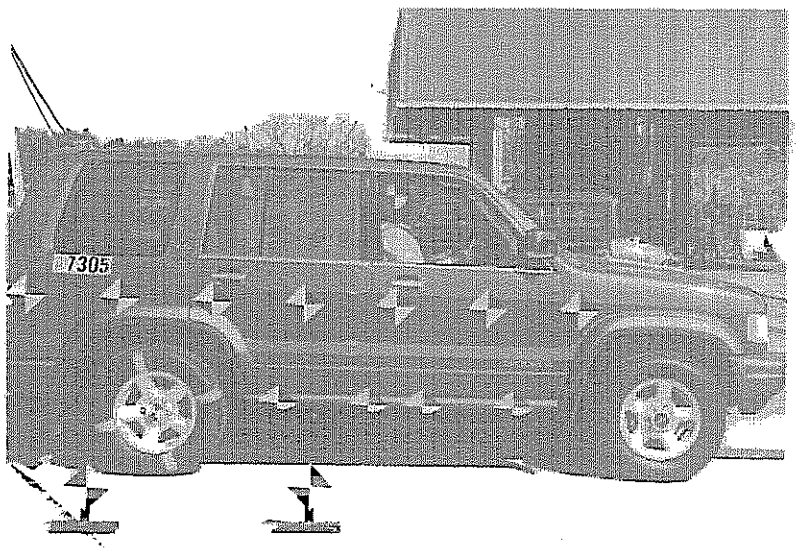
Photo 7



試 験 後 POST-TEST

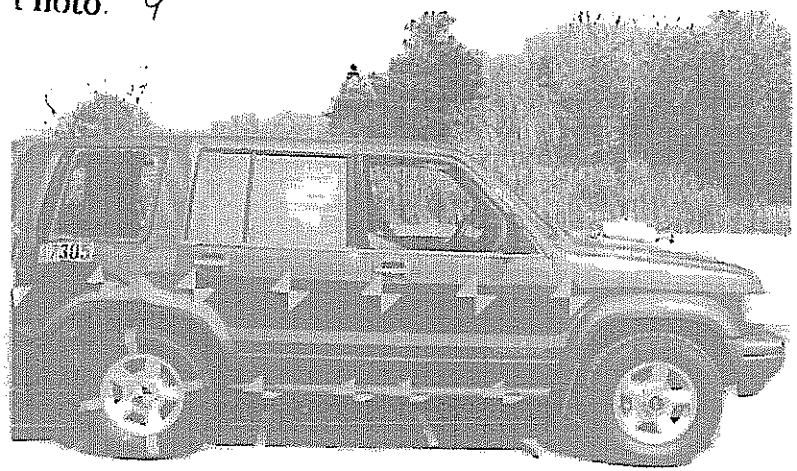
ET 6-1145

Photo. 8



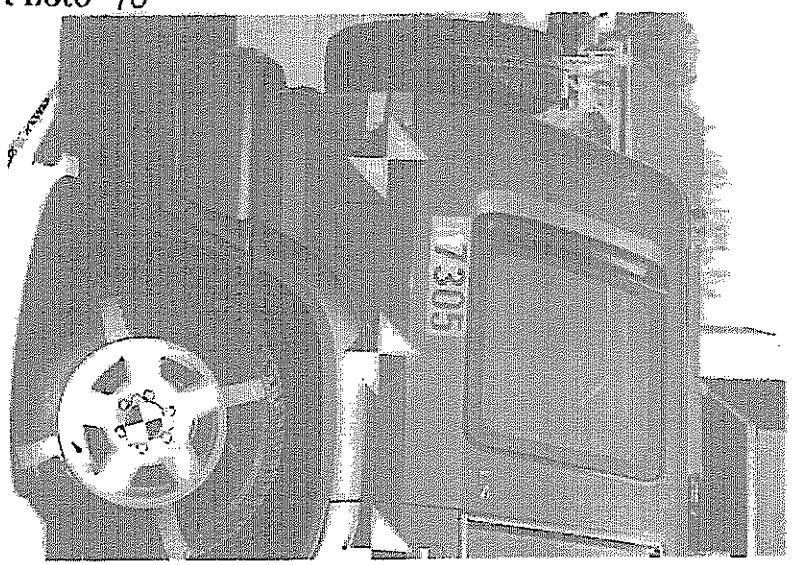
試 験 前 PRE-TEST

Photo. 9



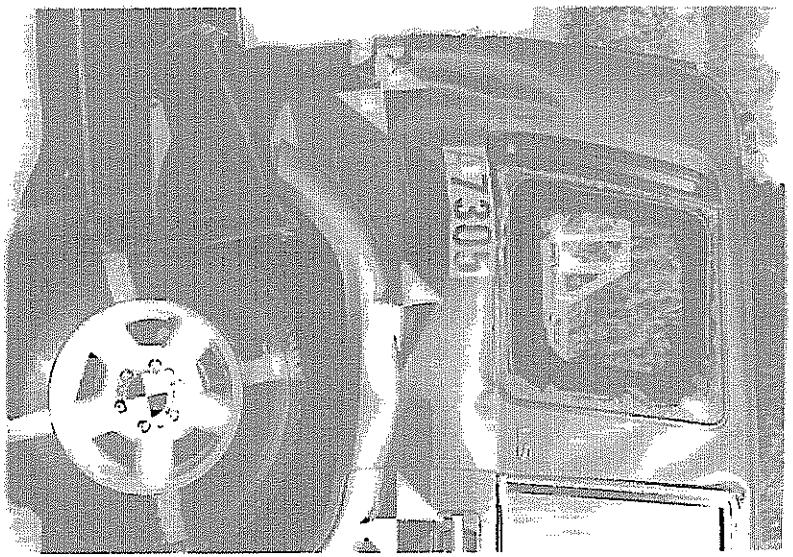
試 験 後 POST-TEST

Photo. 10



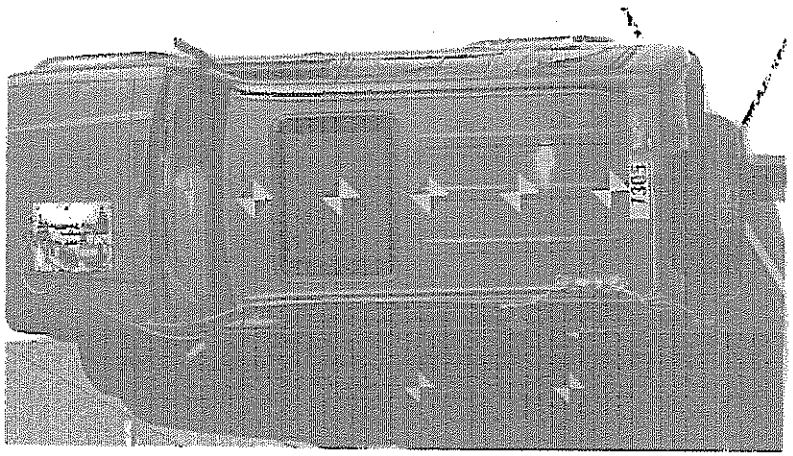
試 験 前 PRE-TEST

Photo. 11



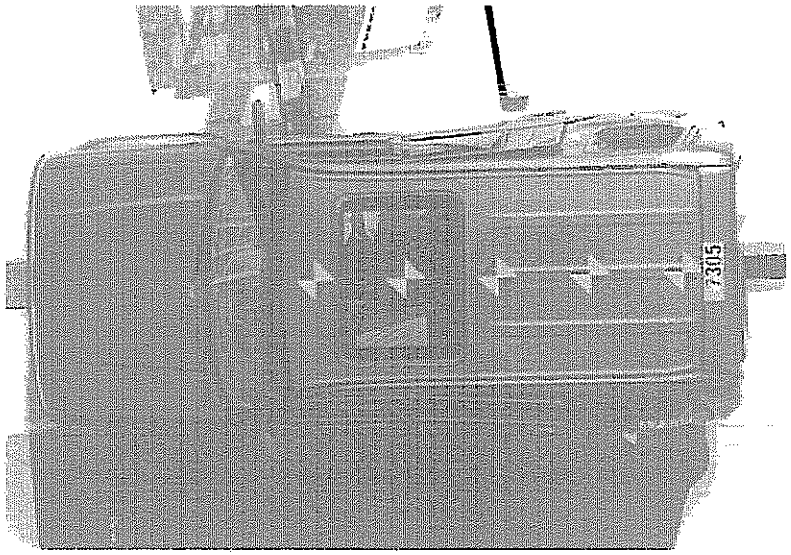
試 験 後 POST-TEST

Photo. 12



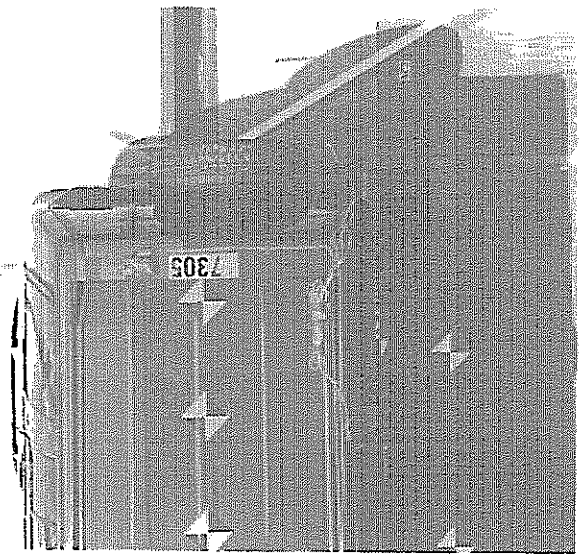
試 験 前 PRE-TEST

Photo. 13



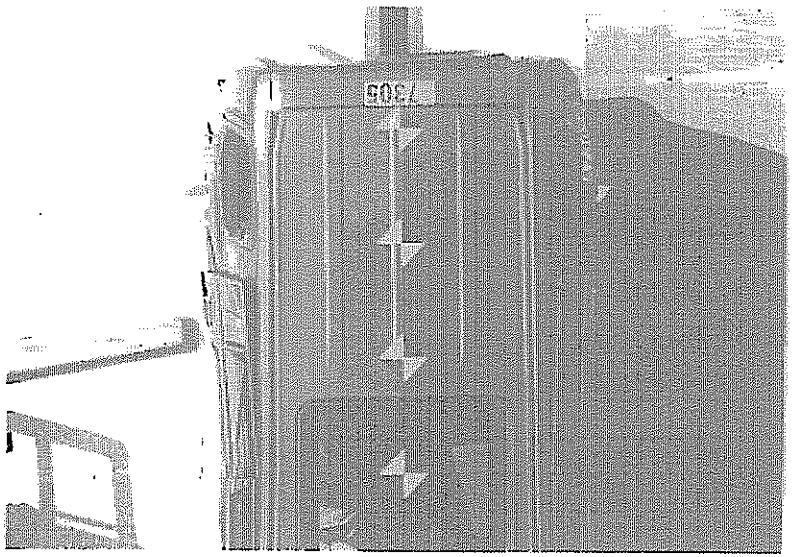
試 験 後 POST-TEST

Photo. 14



試 験 前 PRE-TEST

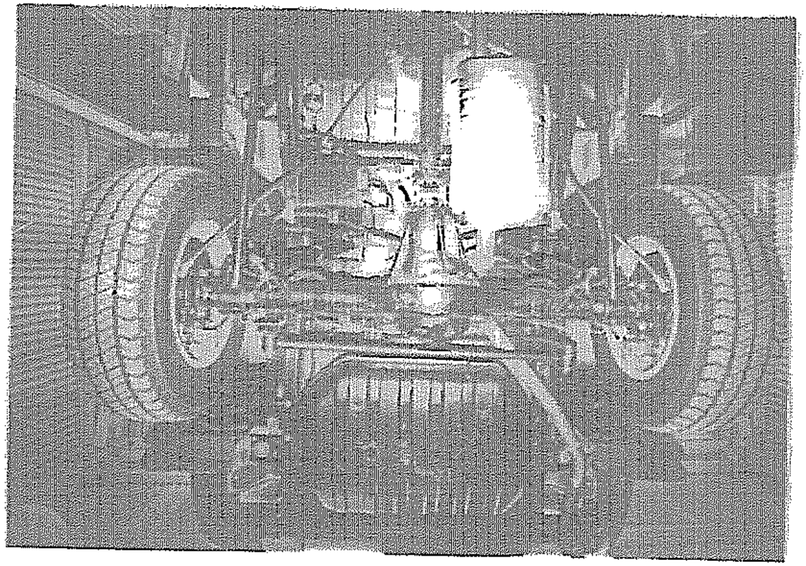
Photo 15



試 験 後 POST-TEST

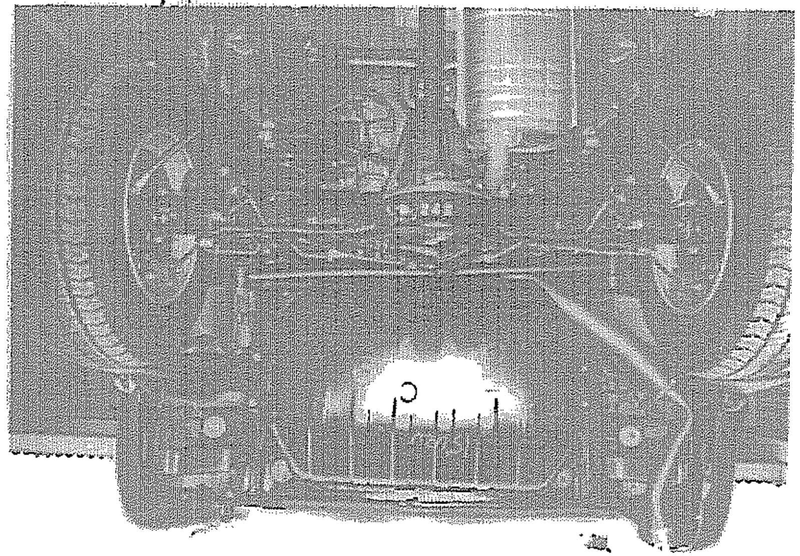
ET 5-1145

Photo. 16



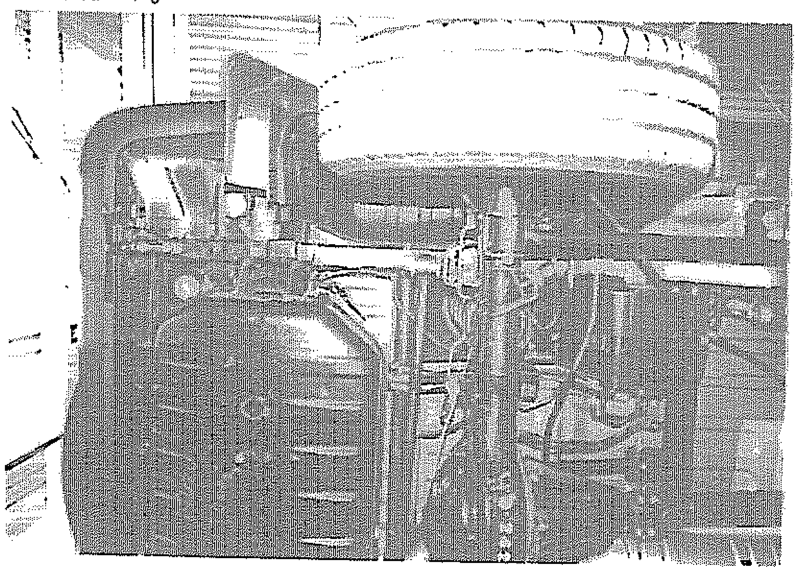
試験前 PRE-TEST

Photo. 17



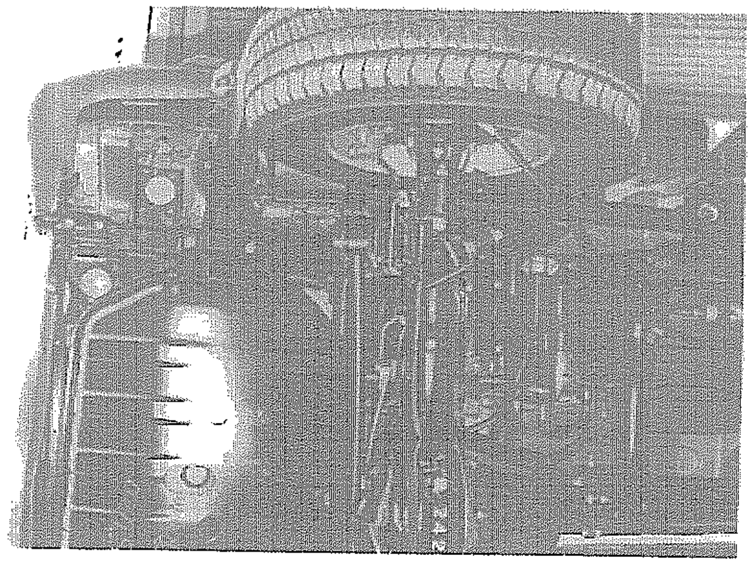
試験後 POST-TEST

Photo 18



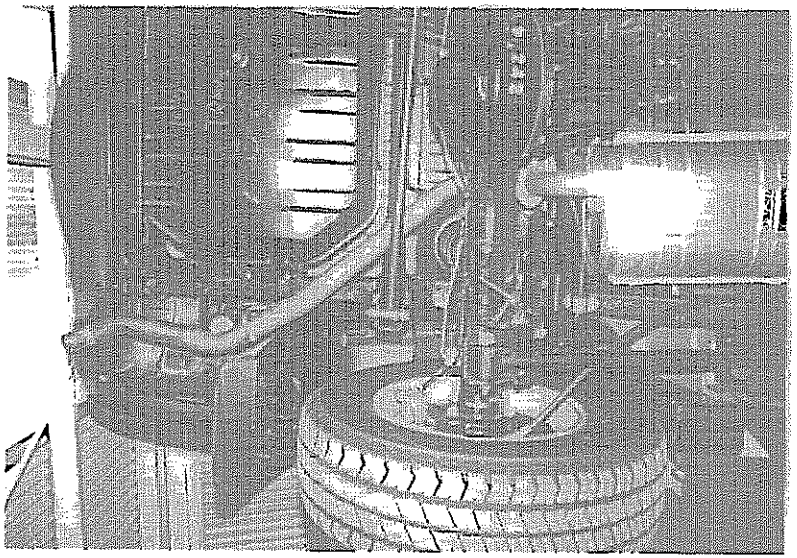
試験前 PRE-TEST

Photo 19



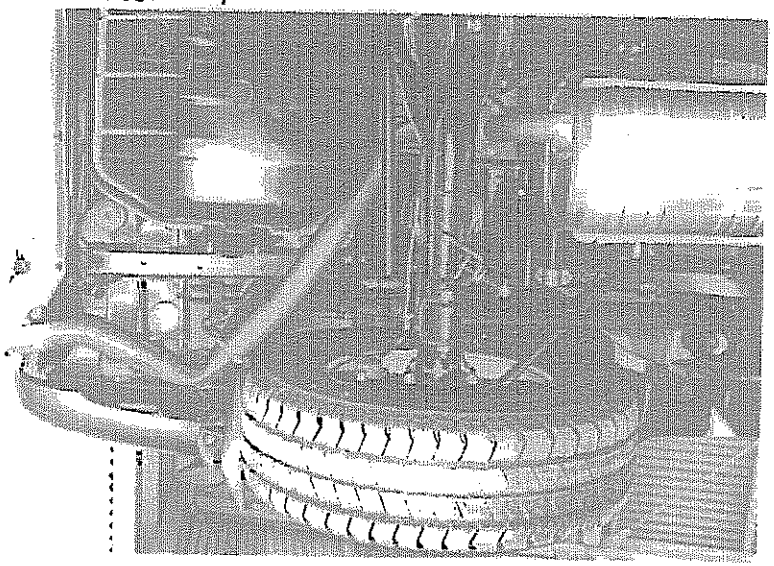
試験後 POST-TEST

Photo. 20



試 験 前 PRE-TEST

Photo. 21



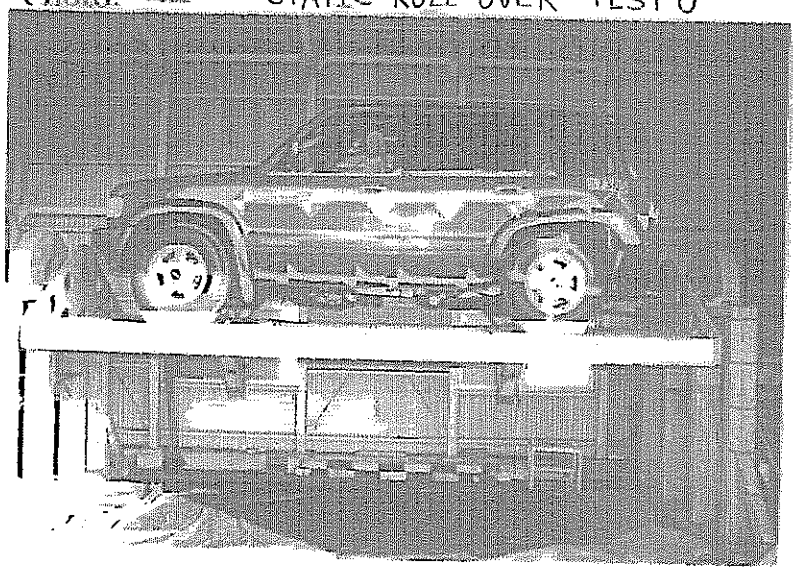
試 験 後 POST-TEST

ET 5-1145

試 験 前

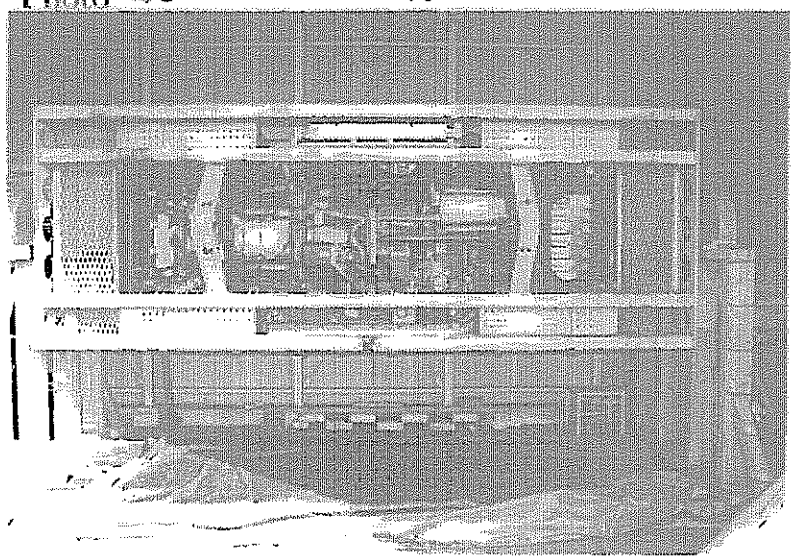
試 験 後

Photo. 22 STATIC ROLL-OVER TEST 0°



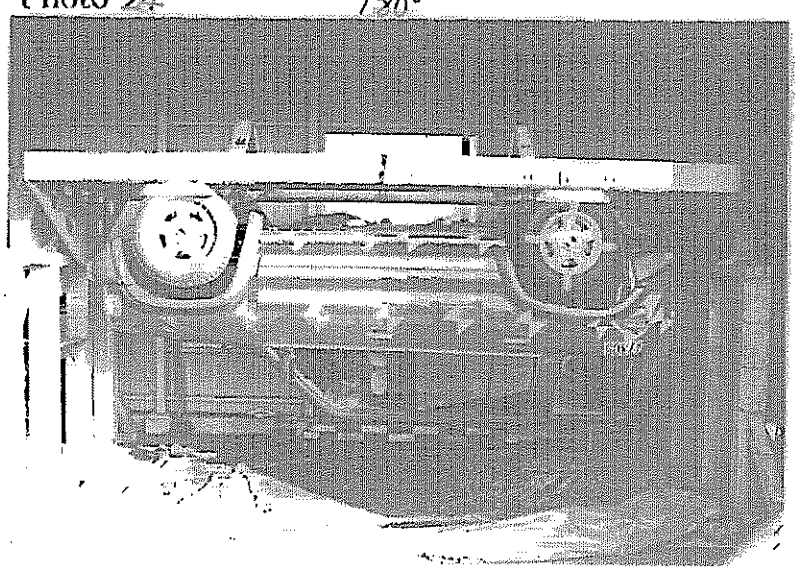
試 験 後 POST-TEST

Photo 23 90°



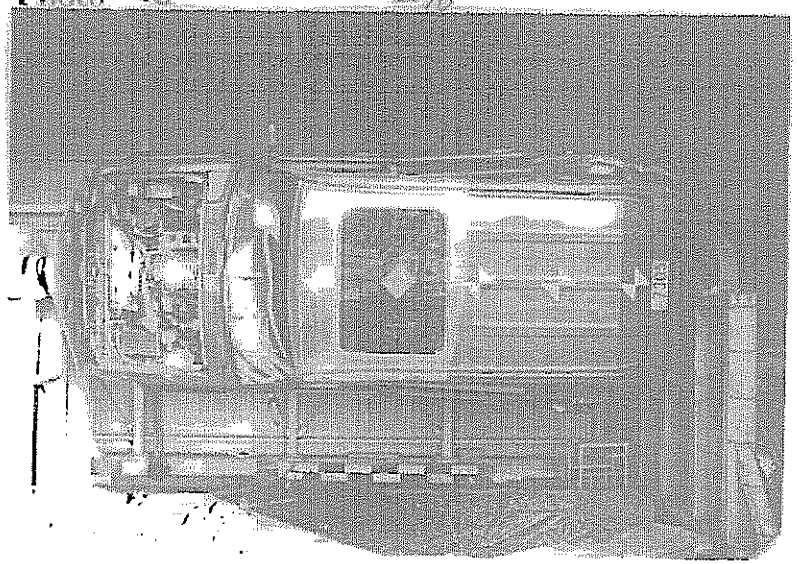
試 験 後 POST-TEST

Photo 24 180°



試 験 後 POST-TEST

Photo 25 270°



試 験 後 POST-TEST

ET 5-1145

CONFIDENTIAL INFORMATION REDACTED

ISUZU MOTORS LIMITED

ET2 - 1495

DESIGN VALIDATION REPORT

REPORT NO. V-UBS-330
ISSUED DATE October 10, 1991

Vehicle Model: UBS25G

Model Year : 1992

Subject: FMVSS No.301, Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment B to J)
S5.6	Fuel Spillage: Rollover	Test	Comply (cf. Attachment B to J)

This certifies that UBS25G meet the applicable requirements of FMVSS Nc.301.

N. Takeda

N.TAKEDA
General Manager
Car & Light Duty Truck
Research & Experiment Dept.

Attachment A

ET2 - 1495

SELECTION OF TEST VEHICLE

○ : Test

— : Substitute by other vehicle

Test Item	UBS25G	
	DOHC	SOHC
Perpendicular Frontal Barrier	○ Attachment B	○ Attachment C
Right Side Oblique Frontal Barrier	○ Attachment D	○ Attachment E
Left Side Oblique Frontal Barrier	○ Attachment F	○ Attachment G
Right-hand Side Lateral Moving Barrier	○ Attachment H	— (by DOHC)
Left-hand Side Lateral Moving Barrier	○ Attachment I	— (by DOHC)
Rear Moving Barrier	○ Attachment J	— (by DOHC)

Vehicle Model: UBS25G (DOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the repuirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDH58W2N7900038 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GLWT-DFAW.

Test Date: Sep. 26, 1991

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.8 MPH
Vehicle Weight less Dummies	4690 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Percent of Fuel Tank Capacity Used	95 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

___×___ YES _____ NO

Continued

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

ET2 - 1495

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0698

K. Yamanaka

K. YAMANAKA
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. Maeda

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Vehicle Model: UBS25G (SOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the repuirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDH58V7N7900026 (UBS25GWF-STA・FA)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GWF-STA・FA.

Test Date: Sep. 10, 1991

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.3 MPH
Vehicle Weight less Dummies	4456 lbs
Occupants	
Driver	Hybrid Ⅱ (164 lbs)
Right Front passenger	Hybrid Ⅱ (164 lbs)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

___X___YES _____NO

Continued

Attachment C (2 of 3)

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment C (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

___×___YES _____NO

Reference Report: ISUZU Research Engineering Report No. ET5-0683

K. YAMANAKA
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Vehicle Model: UBS25G (DOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Right Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDH58WXN7900028 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GLWT-DFAW.

Test Date: Oct. 3, 1991

Test Conditions:

1. Front Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.5 MPH
Vehicle Weight less Dummies	4692 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

___×___YES _____NO

Continued

Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment D (3 of 3)

ET2 - 1495

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

___×___ YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0687

K. YAMANAKA
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. Maeda

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Vehicle Model: UBS25G (SOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDH58V1N7900023 (UBS25GWF-STA・FA)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GWF-STA・FA.

Test Date: Sep. 25, 1991

Test Conditions:

1. Front Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.7 MPH
Vehicle Weight less Dummies	4458 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

___×___YES _____NO

Continued

Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise):

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment E (3 of 3)

ET2 - 1495

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0682

K. YAMANAKA
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Attachment F (1 of 3)

Vehicle Model: UBS25G (DOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDH58W8N7900044 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GLWT-DFAW.

Test Date: Oct. 4, 1991

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.5 MPH
Vehicle weight less Dummies	4688 lbs
Occupants	
Driver	Hybrid Ⅲ (164 lbs)
Right Front passenger	Hybrid Ⅲ (164 lbs)
Percent of Fuel Tank Capacity Used	94 %

2

. Rollover Test

Is roll duration time at each increment of 90 degress between 1-3 minute?

× YES _____ NO

Test Results:

1. Left Side Oblique Frontal Barrier Crash Test Results :

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~90°	minute	0	0	—
90° ~ 180°	minute	0	0	—
180° ~ 270°	minute	0	0	—
270° ~ 360°	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0681

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Car & Light Duty Truck
Research & Experiment Dept.

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Attachment G (1 of 3)

G 2 - 195

Vehicle Model: UBS25G (SOHC MODEL)

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDH58V9N7900030 (UBS25GWF-STA・FA)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25GWF-STA・FA.

Test Date: Sep. 26, 1991

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.7 MPH
Vehicle weight less Dummies	4458 lbs
Occupants	
Driver	Hybrid Ⅲ (164 lbs)
Right Front passenger	Hybrid Ⅲ (164 lbs)
Percent of Fuel Tank Capacity Used	94 %

2

. Rollover Test

Is roll duration time at each increment of 90 degress between 1-3 minute?

___X___YES _____NO

Test Results:

1. Left Side Oblique Frontal Barrier Crash Test Results :

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~90°	minute	0	0	—
90° ~ 180°	minute	0	0	—
180° ~ 270°	minute	0	0	—
270° ~ 360°	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0684

K. Yamanaka

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Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. Maeda

S.MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Attachment H (1 of 3)

ET2 - 1495

Vehicle Model: UBS25G

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Right-hand Side Lateral Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDH58W7N7900035 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: Sep. 11, 1991

Test Conditions:

1. Lateral Moving Barrier Crash Test

Impacted Face of the vehicle	Left-hand Side
Moving Barrier Impact Speed	20.9 MPH
Vehicle Weight less Dummies	4690 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Moving Barrier Weight	4000 lbs
Percent of Fuel Tank Capacity Used	95 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×____YES _____NO

Continued

Test Results:

1. Right-hand Side Lateral Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

___×___ YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0701

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Research & Experiment Dept.

S. Maeda

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

Test Results:

1. Left-hand Side Lateral Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise):

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment I (1 of 3)

ET2 - 1495

Vehicle Model: UBS25G

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left-hand Side Lateral Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDH58WXN7900031 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above;

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: Sep. 11, 1991

Test Conditions:

1. Lateral Moving Barrier Crash Test

Impacted Face of the vehicle	Left-hand Side
Moving Barrier Impact Speed	20.9 MPH
Vehicle Weight less Dummies	4690 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Moving Barrier Weight	4000 lbs
Percent of Fuel Tank Capacity Used	95 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____X____YES _____NO

Continued

Attachment I (3 of 3)

ET2 - 1495

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

___X___ YES _____ NO

0699 Correct Mar. 27, 2001

Reference Report: ISUZU Research Engineering Report No. ET5-~~0701~~

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Research & Experiment Dept.

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Attachment J (1 of 3)

ET2 - 1495

Vehicle Model: UBS25G

Model Year: 1992

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Rear Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDH58W4N7900039 (UBS25GLWT-DFAW)

Explanation of reason why the test was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical design concerning the rear body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: Sep. 17, 1991

Test Conditions:

1. Rear Moving Barrier Crash Test

Moving Barrier Impact Speed	31.0 MPH
Vehicle Weight less Dummies	4690 lbs
Occupants	
Driver	Hybrid II (164 lbs)
Right Front passenger	Hybrid II (164 lbs)
Moving Barrier Weight	4000 lbs
Percent of Fuel Tank Capacity Used	95%

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

___×___ YES _____ NO

Continued

Test Results:

1. Rear Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~180 °	1 minute	0	0	—
180° ~270 °	1 minute	0	0	—
270° ~360 °	1 minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment J (3 of 3)

ET2 - 1495

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

___×___YES _____NO

Reference Report: ISUZU Research Engineering Report No. ET5-~~0702~~ 0700 Correct Mar. 27, 2001

K. Yamanaka

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Safety & Human Engineering Section
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S. Maeda

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CONFIDENTIAL INFORMATION REDACTED

ISUZU ISUZU MOTORS LIMITED ET 2-0934

DESIGN VALIDATION REPORT

REPORT NO. V-UBS-410

ISSUED DATE Oct. 20, 1994

Vehicle Model: UBS25G, UBS25D

Model Year : 1995

Subject: FMVSS No.301, Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment A to E)
S5.6	Fuel Spillage: Rollover	Test	Comply (cf. Attachment A to E)

This certifies that UBS25G, UBS25D meet the applicable requirements of FMVSS No.301.

S. Maeda

S. MAEDA
General Manager
L/D Vehicle Research &
Experiment Dept.

Attachment A

SELECTION OF TEST VEHICLE

○ : Test
— : Substitute by other vehicle

Vehicle Models / Test Items	UBS25G		UBS25D
	DOHC	SOHC	DOHC
Perpendicular Frontal Barrier	○ Attachment B	— (by UBS25G DOHC)	— (by UBS25G DOHC)
Right Side Oblique Frontal Barrier	○ Attachment C	— (by UBS25G DOHC)	— (by UBS25G DOHC)
Left Side Oblique Frontal Barrier	— (by UBS25D)	— (by UBS25D)	○ Attachment D
Right-hand Side Lateral Moving Barrier	— Attachment E	— Attachment E	— Attachment E
Left-hand Side Lateral Moving Barrier	— Attachment E	— Attachment E	— Attachment E
Rear Moving Barrier	— Attachment E	— Attachment E	— Attachment E

Attachment B (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1995

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ58WXS7900062 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UBS25G, UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: July 18, 1994

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.11 km/h (30.52 MPH)
Vehicle Weight less Dummies	2182.2 kg
Occupants	
Driver	Hybrid Ⅲ (74.4 kg)
Right Front passenger	Hybrid Ⅲ (74.4 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

ET 4 09 A

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Continued

Attachment B (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0960

T. Takada

T. TAKADA
Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

A. Matsushita

A. MATSUSHITA
Manager
Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

Attachment C (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1995

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Right Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDJ58W6S7900026 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above:

All vehicle models of UBS25G, UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: Aug. 2, 1994

Test Conditions:

1. Front Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.85 km/h (30.35 MPH)
Vehicle Weight less Dummies	2182.2 kg
Occupants	
Driver	Hybrid Ⅱ (74.4 kg)
Right Front passenger	Hybrid Ⅱ (74.4 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Attachment C (2 of 3)

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Continued

E. 7 094

Attachment C (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-0966

T. Takada

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Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

A. Matsushita

A. MATSUSHITA
Manager
Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

Attachment D (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1995

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Left Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ57W0S7900055 (UBS25D)

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UBS25G, UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: Aug. 1, 1994

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.98 km/h (30.43 MPH)
Vehicle weight less Dummies	2026.2 kg
Occupants	
Driver	Hybrid Ⅲ (74.4 kg)
Right Front passenger	Hybrid Ⅲ (74.4 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degress between 1-3 minute?

× YES _____ NO

Continued

Attachment D (2 of 3)

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Continued

Attachment D (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. BT5-0965

T. Takada

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Safety Engineering Test Sect.
L/D Vehicle Research &
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A. Matsushita

A. MATSUSHITA
Manager
Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

Attachment B

Vehicle Model: UBS25G, UBS25D

Model Year: 1995

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right and Left-hand Side Lateral and Rear Moving Barrier Crash & Static Rollover)

Basis of Validation

1) The rear body structure and the fuel tank of '95 UBS25G & UBS25D are the same as those of '92 UBS25G.
2) The frame structure is changed for '92 UBS25G, but the changed section is front side only, which is no deformation area.
3) The fuel systems are changed for '92 UBS25G, but the changed section is the layout in engine compartment only, which is no deformation area.

The following Design Validation Report is applicable.

Applicable Design Validation Report No. V-UBS-330

Reference Report : ISUZU Research Engineering Report No. ET5-0699, ET5-0700

T. Takada

T. TAKADA
Safety Engineering Sect.
L/D Vehicle Research &
Experiment Dept.

A. Matsushita

A. MATSUSHITA
Manager
Safety Engineering Sect.
L/D Vehicle Research &
Experiment Dept.

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ISUZU MOTORS LIMITED

ET2 - 1494

DESIGN VALIDATION REPORT

REPORT NO. V-UBS-439

ISSUED DATE August 31, 1995

Vehicle Model: UBS25G, UBS25D

Model Year : 1996

Subject: FMVSS No.301, Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment A to F)
S5.6	Fuel Spillage: Rollover	Test	Comply (cf. Attachment A to F)

This certifies that UBS25G, UBS25D meet the applicable requirements of FMVSS No.301.

Authorized by S. Maeda

S. MAEDA
General Manager
L/D Vehicle Research &
Experiment Dept.

Attachment A

SELECTION OF TEST VEHICLE

○ : Test

— : Substitute by other vehicle

Vehicle Models / Test Items	UBS25G	UBS25D
Perpendicular Frontal Barrier	○ Attachment B	— (by UBS25G)
Right Side Oblique Frontal Barrier	○ Attachment C	— (by UBS25G)
Left Side Oblique Frontal Barrier	○ Attachment D	— (by UBS25G)
Right-hand Side Lateral Moving Barrier	— Attachment E	— Attachment E
Left-hand Side Lateral Moving Barrier	— Attachment E	— Attachment E
Rear Moving Barrier	— Attachment E	— Attachment E

Attachment B (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1996

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G,UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ58VXT7900006 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UBS25G,UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: Jun. 3, 1995

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.97 km/h (30.43 MPH)
Vehicle Weight with Dummies	2311.0 kg
Dummies	
Driver	Hybrid Ⅲ (75.7 kg)
Right Front passenger	Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allowance	1 - 3	5.0	1.0	1.0

Continued

Attachment B (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

1032 Correct Mar. 26, 2001

Reference Report: ISUZU Research Engineering Report No. ET5-~~1017~~

Prerared by M. Sakamoto
M. SAKAMOTO
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by A. Matsushita
A. MATSUSHITA
Manager
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

Attachment C (1 of 3)

ET2 - 1494

Vehicle Model: UBS25G

Model Year: 1996

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ58V8T7900019

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UCR25G are identical in design concerning the front body structure and fuel system.

Test Date: Ful. 29, 1995

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.71 km/h (30.26 MPH)
Vehicle Weight with Dummies	2312.0 kg
Dummies	
Driver	Hybrid Ⅲ (75.7 kg)
Right Front passenger	Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continue

Attachment C (2 of 3)

Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allowance	1 - 3	5.0	1.0	1.0

Continued

Attachment C (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-~~1010~~ 1034 Correct Mar.26,2001

Prerared by M. Sakamoto
M. SAKAMOTO
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by A. Matsushita
A. MATSUSHITA
Manager
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

Attachment D (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1996

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ58V3T7900039 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UBS25G, UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: Aug. 10, 1995

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.38 km/h (30.06 MPH)
Vehicle Weight with Dummies	2311.0 kg
Dummies	
Driver	Hybrid Ⅲ (75.7 kg)
Right Front passenger	Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Contin

Test Results:

1. Left Side Oblique Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allowance	1 - 3	5.0	1.0	1.0

Continued

Attachment D (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	—
90° ~180 °	1	0	0	—
180° ~270 °	1	0	0	—
270° ~360 °	1	0	0	—
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5~~1018~~ 1033 Correct Mar. 26, 2001

Prerared by M. Sakamoto
M. SAKAMOTO
Crashworthiness & Safty Sec.
L/D Vehicle Research &
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Approved by A. Matsushita
A. MATSUSHITA
Manager
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

ET2 - 1494

Attachment E

Vehicle Model: UBS25G, UBS25D

Model Year: 1996

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right and Left-hand Side Lateral and Rear Moving Barrier Crash
& Static Rollover)

Basis of Validation

1) The frame structure of '96 UBS is changed for '92 UBS but the changed section is front side only, which is no deformation area.
2) The fuel systems of '96 UBS are changed for '92 UBS concerning the layout in engine compartment, which is no deformation area.
3) The rear body structure and the fuel tank of '96 UBS25G & UBS25D are the same as those of '92 UBS25G.

The following Design Validation Report is applicable.

Applicable Design Validation Report No. V-UBS-330

Reference Report : ISUZU Research Engineering Report No. ET5-0699, ET5-0700

Prerared by M. Sakamoto
M. SAKAMOTO
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by A. Matsushita
A. MATSUSHITA
Manager
Crashworthiness & Safty Sec.
L/D Vehicle Research &
Experiment Dept.

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ISUZU ISUZU MOTORS LIMITED

ET 2-1084

DESIGN VALIDATION REPORT

REPORT NO. V-UBS-452
ISSUED DATE May 31, 1996

Vehicle Model: UBS25G, UBS25D

Model Year : 1997

Subject: FMVSS No.301, Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment A to D)
S5.6	Fuel Spillage: Rollover	Test	Comply (cf. Attachment A to D)

This certifies that UBS25G, UBS25D meet the applicable requirements of FMVSS No.301.

Authorized by S. Maeda

S. MAEDA
General Manager
L/D Vehicle Research & Experiment Dept.

Attachment A

ET 2-1084

SELECTION OF TEST VEHICLE

○: Test

—: Substitute by other vehicle

	UBS25G	UBS25D
Perpendicular Frontal Barrier	○ Attachment B	— (by UBS25G)
Right Side Oblique Frontal Barrier	○ Attachment C	— (by UBS25G)
Left Side Oblique Frontal Barrier	— (Attachment D)	— (Attachment D)
Right-hand Side Lateral Moving Barrier	— (Attachment D)	— (Attachment D)
Left-hand Side Lateral Moving Barrier	— (Attachment D)	— (Attachment D)
Rear Moving Barrier	— (Attachment D)	— (Attachment D)

Attachment B (1 of 3)

No. 2-1084

Vehicle Model: UBS25G, UBS25D

Model Year: 1997

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the repuirements of S5.5 and S5.6 of FMVSS No.301.

Method of validation: Test

Vehicle Identification No.: JACDJ58V2V7900004 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above;

All vehicle models of UBS25G, UBS25D are identical in design concerning the front body structure and fuel system.

Test Date: May. 10, 1996

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.4 km/h (30.1 MPH)
Vehicle Weight less Dummies	2311 kg
Occupants	
Driver	Hybrid Ⅲ (75.7 kg)
Right Front passenger	Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____X____ YES _____ NO

Continued

ET 2-1084

Test Results:

1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

ET 2-1084

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1049

Prepared by K. Yamazaki
K. YAMASAKI
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by Y. Ohkami
Y. OHKAMI
Manager
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

Attachment C (1 of 3)

AP 96-1084

Vehicle Model: UBS25G, UBS25D

Model Year: 1997

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity (Right Side Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G, UBS25D meets the requirements of S5.5 and S5.6 of FMVSS No.301.

Method of Validation: Test

Vehicle Identification No.: JACDJ58V7T7910038 (UBS25G)

Explanation of reason why the test was conducted on the vehicle stated above:

All vehicle models of UBS25G, UBS25D are identical design concerning the front body structure and fuel system.

Test Date: Mar. 25, 1996

Test Conditions:

1. Front Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.98 km/h (29.43 mph)
Vehicle Weight less Dummies	2311 kg
Occupants	
Driver	Hybrid Ⅲ (75.7 kg)
Right Front passenger	Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Attachment C (2 of 3)

Test Results:

1.Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment C (3 of 3)

3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~180 °	minute	0	0	—
180° ~270 °	minute	0	0	—
270° ~360 °	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1050

Prepared by K. Yamasaki
K. YAMASAKI
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by Y. Ohkami
Y. OHKAMI
Manager
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

4-1084

Attachment D

Vehicle Model: UBS25G, UBS25D

Model Year: 1997

Subject: Comliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left Side Oblique Frontal, Right & Left-hand Side Lateral and
Rear Moving Barrier Crash & Static Rollover)

Basis of Validation

1) The fuel lines of '97 UBS are changed for '96 UBS but the changed section is right front side only.

The following Design Validation Report is applicable.

Applicable Design Validation Report No. V-UBS-439

Reference Report : ISUZU Research Engineering Report No. BT5-1018

Prepared by K. Yamazaki
K. YAMAZAKI
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

Approved by Y. Ohkami
Y. OHKAMI
Manager
Crashworthness & Safety Sec.
L/D Vehicle Research &
Experiment Dept.

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ET 2-1212

ISUZU MOTORS LIMITED

DESIGN VALIDATION REPORT

REPORT No. V-UBS-464

ISSUED DATE Aug. 31, 1997

Vehicle Model: UBS25G

Model Year : 1998

Subject: FMVSS No.301.Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test & Examination	Comply (cf. Attachment B to F)
S5.6	Fuel Spillage: Rollover	Test & Examination	Comply (cf. Attachment B to F)

This certifies that UBS25G meet the applicable requirements of FMVSS No.301

Authorized by

T. YAMADA
General Manager
Vehicle Research &
Experiment Dept.

Attachment A

ET 2-1212

SELECTION OF TEST VEHICLE

O: Test
C/O: Carry-over
—: Substitute by other vehicle

Test Item	UBS25G
Perpendicular Frontal Barrier	O Attachment B
Right side Oblique Frontal Barrier	O Attachment C
Left Side Oblique Frontal Barrier	O Attachment D
Left-hand Side Lateral Moving Barrier	C/O Attachment F (See Validation Report No. V-UBS-330)
Right-hand Side Lateral Moving Barrier	C/O Attachment F (See Validation Report No. V-UBS-330)
Rear Moving Barrier	O Attachment E

Attachment B (1 of 3)

ET 2-1212

Vehicle Model:: UBS25G

Model Year: 1998

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X5W7900016

Explanation of reason why the tests was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical in design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date : May 12. 1997

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.2km/h (30.56mph)
Vehicle Weight with Dummies	2308kg
Occupants	
Driver	Hybrid Ⅲ
Right Front passenger	Hybrid Ⅲ
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Test Results

1. Perpendicular Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

ET 2-1212

Attachment B (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

×YES_____NO

Reference Report: ISUZU Research Engineering Report No. ET5-1142

K. YAMASAKI

Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Y.OKAMI
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

ET 2-1212

Attachment C (1 of 3)

Vehicle Model:: UBS25G

Model Year: 1998

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right Side 30° Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X9W7900018

Explanation of reason why the tests was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical in design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: May 26. 1997

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.7 km/h (30.27 mph)
Vehicle Weight with Dummies	2309 kg
Occupants	
Driver	Hybrid Ⅲ
Right Front Passenger	Hybrid Ⅲ
Percent of Fuel Teak Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×___YES_____NO

Continued

Attachment C (2 of 3)

Test Results

1. Right Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

Attachment C (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1143

K. YAMASAKI

Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Y.OKAMI
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Attachment D (1 of 3)

ET 2-1212

Vehicle Model:: UBS25G

Model Year: 1998

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301. Fuel System Integrity
(Left Side 30° Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X1W7900028

Explanation of reason why the tests was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: June 24. 1997

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degree in the left direction from the Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.8km/h (30.3MPH)
Vehicle Weight with Dummies	2307kg
Occupants	
Driver	Hybrid Ⅲ
Right Front passenger	Hybrid Ⅲ
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×___YES_____NO

Continued

Attachment D (2 of 3)

Test Results

1.Left Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2.Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

Attachment D (3 of 3)

ET 2-1212

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1144

K. YAMASAKI

Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Y.OKAMI
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Attachment E (1 of 3)

Vehicle Model : UBS25G

Model Year: 1998

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301. Fuel System Integrity
(Rear Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X7W7900020

Explanation of reason why the tests was conducted on the vehicle stated above:

1. All vehicle models of UBS25G are identical design concerning the rear body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G.

Test Date: Mar. 5. 1997

Test Conditions:

1. Rear Moving Barrier Crash Test

Moving Barrier Impact Speed	48.9km/h (30.4MPH)
Vehicle Weight with Dummies	2308g
Occupants	
Driver	Hybrid Ⅲ
Right Front passenger	Hybrid Ⅲ
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×___YES_____NO

Continued

Attachment E (2 of 3)

Test Results

1. Rear Moving Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

Attachment E (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

× YES_____NO

Reference Report: ISUZU Research Engineering Report No. ET5-1145

K. YAMASAKI

Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Y.OKAMI
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Attachment F

ET 2-1212

Vehicle Model : UBS25G

Model Year: 1998

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Basis of validation
The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of both the vehicle sides on 1998 year model UBS25G have not been changed from 1992 year model UBS25G.
Therefore the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation Report No. V-UBS-330

K. YAMASAKI

Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

Y.OKAMI
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Research &
Experiment Dept.

CONFIDENTIAL INFORMATION REDACTED

ET 2-1375

ISUZU MOTORS LIMITED

DESIGN VALIDATION REPORT

REPORT No. V-UBS-495

ISSUED DATE Aug. 27, 1999

Vehicle Model: UBR26

Model Year : 2000

Subject: FMVSS No.301.Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test & Examination	Comply (cf. Attachment B to F)
S5.6	Fuel Spillage: Rollover	Test & Examination	Comply (cf. Attachment B to F)

This certifies that UBR26 meet the applicable requirements of FMVSS No.301

Authorized by Y. Okami

Y. OKAMI
General Manager
Vehicle Safety
Engineering Dept.

Attachment A

ET 2-1375

SELECTION OF TEST VEHICLE

O: Test

C/O: Carry-over

—: Substitute by other vehicle

Test Item	UBR26
Perpendicular Frontal Barrier	O Attachment B
Right side Oblique Frontal Barrier	O Attachment C
Left Side Oblique Frontal Barrier	O Attachment D
Left-hand Side Lateral Moving Barrier	— Attachment E (See Validation Report No. V-UBS-330)
Right-hand Side Lateral Moving Barrier	— Attachment E (See Validation Report No. V-UBS-330)
Rear Moving Barrier	— Attachment F (See Validation Report No. V-UBS-464)

Attachment B (1 of 3) ET 2-1375

Vehicle Model:: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X0X7914648

Explanation of reason why the tests was conducted on the vehicle stated above;

1. All vehicle models of UBR26 are identical in design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR26.

Test Date : Mar. 16, 1999

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	57.1 km/h (35.5 mph)
Vehicle Weight with Dummies	2281 kg
Occupants	
Driver	Hybrid Ⅲ
Right Front passenger	Hybrid Ⅲ
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×___YES_____NO

Continued

Test Results

1.Perpendicular Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2.Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

Attachment B (3 of 3)

ET 2-1375

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

____×___YES_____NO

Reference Report: ISUZU Research Engineering Report No. ET5-1246

K. YAMASAKI
Assistant Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

S. SAITOH
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

Attachment C (1 of 3)

FT 2-1375

Vehicle Model:: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Right Side 30° Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X7X7914789

Explanation of reason why the tests was conducted on the vehicle stated above;

1. All vehicle models of UBR26 are identical in design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR26.

Test Date: Mar. 25, 1999

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.9 km/h (31.0 mph)
Vehicle Weight with Dummies	2281 kg
Occupants	
Driver	Hybrid Ⅲ
Right Front Passenger	Hybrid Ⅲ
Percent of Fuel Teak Capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Attachment C (2 of 3)

Test Results

1.Right Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

ET 2-1375

Attachment C (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1247

K. YAMASAKI
Assistant Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

S. SAITOH
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

ET 2-1375

Attachment D (1 of 3)

Vehicle Model:: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left Side 30° Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X5X7914791

Explanation of reason why the tests was conducted on the vehicle stated above:

1. All vehicle models of UBR26 are identical design concerning the front body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR26.

Test Date: Apr. 16, 1999

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle	30 degree in the left direction from the Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.0 km/h (30.4 mph)
Vehicle Weight with Dummies	2282 kg
Occupants	
Driver	Hybrid Ⅲ
Right Front passenger	Hybrid Ⅲ
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES _____ NO

Continued

Test Results

1. Left Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	—
90° ~ 180°	1 minute	0	0	—
180° ~ 270°	1 minute	0	0	—
270° ~ 360°	1 minute	0	0	—
Max. Allowance	1-3 minute	5.0	1.0	1.0

Continued

ET 2-1375

Attachment D (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	–
90° ~ 180°	1 minute	0	0	–
180° ~ 270°	1 minute	0	0	–
270° ~ 360°	1 minute	0	0	–
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

× YES _____ NO

Reference Report: ISUZU Research Engineering Report No. ET5-1248

K. YAMASAKI
Assistant Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

S. SAITOH
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

Attachment E

ET 2-1375

Vehicle Model : UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Basis of validation
The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of both the vehicle sides on 2000 year model UBR26 have not been changed from 1992 year model UBS25G.
Therefore the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation Report No. V-UBS-330

K. YAMASAKI
Assistant Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

S. SAITOH
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

ET 2-1375

Attachment F

Vehicle Model : UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Rear Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5 and S5.6 of FMVSS No. 301.

Basis of validation
The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of the rear of vehicle on 2000 year model UBR26 have not been changed from 1999 year model UBS25G.
Therefore the Design Validation Report of 1999 year model is applicable.

Applicable Design Validation Report No. V-UBS-464

K. YAMASAKI
Assistant Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

S. SAITOH
Manager
Crashworthiness &
Safety Performance Sec.
Vehicle Safety
Engineering Dept.

CONFIDENTIAL INFORMATION REDACTED

ISUZU MOTORS LIMITED

D E S I G N V A L I D A T I O N R E P O R T

REPORT No. V-UBS-510

ISSUED DATE Sep. 11, 2001

Vehicle Model: UBR/S26G

Model Year : 2002

Subject: FMVSS No.301.Fuel System Integrity

FMVSS Section	Item	Method of Validation	Conclusion
S5.5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment A to C)
S5.6	Fuel Spillage: Rollover	Test	Comply (cf. Attachment A to C)

This certifies that UBR/S26G meet the applicable requirements of FMVSS No.301

Authorized by

M.YOSHINO
General Manager
Vehicle Safety
Engineering Dept.

Attachment A

SELECTION OF TEST VEHICLE

O: TEST

C/O: Carry-over

Test Item	UBR/S26G
Perpendicular Frontal Barrier	C/O Attachment B (UBR : See Validation Report No. V-UBS-495) (UBS : See Validation Report No. V-UBS-464)
Right Side Oblique Frontal Barrier	
Left Side Oblique Frontal Barrier	
Left-hand Side Lateral Moving Barrier	C/O Attachment C (See Validation Report No. V-UBS-330)
Right-hand Side Lateral Moving Barrier	
Rear Moving Barrier	O Attachment D

Attachment B (1 of 1)

Vehicle Model: UBR/S26G

Model Year: 2002

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Perpendicular Frontal Barrier Crash , Right Side Oblique Frontal Barrier, Left Side Oblique Frontal Barrier & Static Rollover)

Introduction: To determine if the fuel system of UER/S26G meets the requirements of S5.5 and S5.6 of FMVSS No. 301.

Basic of validation

The following Design Validation Report is applicable as following reasons.

The fuel system except fuel tank and ORVR, and the body structure on 2002 year model UBR/S26G have not changed from 1998 year model UBS25G and 2000 year model UBR26G.
There is no deformation on the area which are equipped with fuel tank system and ORVR.
So, these changes don't influence the fuel system integrity.
Therefore, Design Validation Reports of 1998 and 2000 year model is applicable.

Applicable Design Validation No. V-UBS-464, V-UBS-495.

Y.MIKI

Crashworthiness &
Safety Performance Test Section
Vehicle Safety Engineering Dept.

A.KAWABATA
Manager
Crashworthiness &
Safety Performance Test Section
Vehicle Safety Engineering Dept.

Attachment C (1 of 1)

Vehicle Model:: UBR/S26G

Model Year: 2002

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UES26G meets the requirements of S5.5 and S5.6 of FMVSS No. 301.

Basic of validation

The following Design Validation Report is applicable as following reasons.

The fuel system except fuel tank and ORVR, and the body structure on 2002 year model UBS26G have not changed from 1992 year model UBS25G.
There is no deformation on the area which are equipped with fuel tank system and ORVR.
So, these changes don't influence the fuel system integrity.
Therefore, the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation No. V-UBS-330.

Y.MIKI

Crashworthiness &
Safety Performance Test Section
Vehicle Safety Engineering Dept.

A.KAWABATA
Manager
Crashworthiness &
Safety Performance Test Section
Vehicle Safety Engineering Dept.

Attachment D (1 of 3)

Vehicle Model : UBR/S26G

Model Year: 2002

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity
(Rear Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UER/S25G meets the requirements of S5.5 and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No.: JACDJ58X827J00014

Explanation of reason why the tests was conducted on the vehicle stated above;

1. All vehicle models of UBR/S26G are identical design concerning the rear body structure and fuel system.
2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR/S26G.

Test Date: Aug. 28, 2001

Test Conditions:

1. Rear Moving Barrier Crash Test

Moving Barrier Impact Speed	48.6km/h (30.2MPH)
Vehicle Weight Less Dummies	2313g
Occupants	
Driver	Hybrid II (75.75kg)
Right Front passenger	Hybrid II (75.75kg)
Percent of Fuel Teak capacity Used	94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

____×___YES_____NO

Continued

Attachment D (2 of 3)

Test Results

1.Rear Moving Barrier Crash Test Results.

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
per minutes for subsequent 25 minutes Period	0	1.0 / 1 ,minute

2.Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~ 180°	minute	0	0	—
180° ~ 270°	minute	0	0	—
270° ~ 360°	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Continued

Attachment D (3 of 3)

3.Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	—
90° ~ 180°	minute	0	0	—
180° ~ 270°	minute	0	0	—
270° ~ 360°	minute	0	0	—
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

_____×_____YES _____NO

Reference Report: ISUZU Research Engineering Report No. 2001-0777

Y.MIKI

Crash worthiness &
Safety Performance Test Section
Vehicle Safety Engineering Dept.

A.KAWABATA
Manager
Crash worthiness &
Safety & Performance Test Section
Vehicle Safety Engineering Dept.