

DAIHATSU
F70, F75, F77

Service
manual

GENERAL INFORMATION

DAIHATSU MOTOR CO., LTD.

NO.9703-FE

DAIHATSU

F70, F75, F77

GENERAL INFORMATION

- 1. MODEL VARIATION GI- 4
- 2. CHASSIS SERIAL NUMBER
STAMPED POSITION GI- 5
- 3. MANUFACTURER'S PLATE
POSITION GI- 5
- 4. ENGINE NUMBER AND ENGINE TYPE
STAMPED POSITIONS GI- 6
- 5. BODY COLOR INFORMATION GI- 6
- 6. VEHICLE 4-PLANE DIAGRAMS GI- 8
- 7. PERFORMANCE DIAGRAMS GI-13
- 8. SPECIFICATIONS GI-15
- 9. SUMMARY OF ENGINE
CONSTRUCTION GI-19
- 10. SUMMARY OF BODY AND OTHER
CONSTRUCTIONS GI-23
- 11. SUMMARY OF POWER TRAN
CONSTRUCTION GI-33
- 12. SUMMARY OF CHASSIS
CONSTRUCTION GI-39
- 13. SUMMARY OF BODY ELECTRICAL ... GI-46

This service manual applies to those vehicles with the following chassis numbers onward and with the owner's manual F215-9011-E1, FG1, S1 or A1 furnished.

JDA00F70000645700
JDA00F75000647032
JDA00F77000500689 or 000005789

© 1991 DAIHATSU MOTOR CO., LTD.
All rights reserved. This material may not be reproduced or copied, in whole or in part, without the written permission of Daihatsu Motor Co., Ltd.

WRER1-GA001

IMPORTANT SAFETY NOTICE

The vehicle is a machine comprising a great number of parts. Basically speaking, the vehicle is potentially hazard. However, one can handle it safely if he has the required knowledge.

Correct service methods and repair procedures are very vital for assuring not only the safety and reliability of a vehicle, but also the safety of service personnel concerned.

The methods and procedures contained in this manual describe in a general way the techniques which the manufacturer has recommended. Thus, they will contribute to ensuring the reliability of the products. The contents of the servicing operations come in a wide variety of ways. Moreover, techniques, tools and parts necessary for each operation are different widely from each other.

This manual does not cover all details of techniques, procedures, parts, tools and handling instructions which are necessary for these operations, for such coverage is impossible. Hence, any one who obtains this manual is expected first to make his responsible selection as to techniques, tools and parts which are necessary for servicing the vehicle concerned properly. Furthermore, he must assume responsibility for his actions in connection with his own safety.

Therefore, one should not perform any service if he is not capable of making responsible selection and/or if he can not understand the contents herein described, for this manual has been prepared for experienced service personnel.

WARNINGS, CAUTIONS AND NOTES

All these symbols have their specific purposes, respectively.

WARNING:

- This symbol means that there is a possibility of personal injury of the operator himself or the nearby workers if the operator fails to follow the operating procedure prescribed in this manual.

CAUTION:

- This symbol means that there is a possibility of damage to the component being repaired if the operator fails to follow the operating procedure prescribed in this manual.

NOTE:

- To accomplish the operation in an efficient manner, additional instructions concerning the operation are given in this section.

The following list describes general WARNINGS:

- Always wear safety glasses for eye protection.
- Use safety stands whenever a procedure requires you to be under the vehicle.
- Be sure that the ignition switch is always in the OFF position, unless otherwise required by the procedure.
- Set the parking brake when working on the vehicle.
- Operate the engine only in a well-ventilated area to avoid the danger of carbon monoxide.
- Keep yourself and your clothing away moving parts, when the engine is running, especially from the fan and belts.
- To prevent serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tail pipe, catalytic converter and muffler.
- Do not smoke while working on a vehicle.
- To avoid injury, always remove rings, watches, loose hanging jewelry, and loose clothing before beginning to work on a vehicle.
- Keep hands and other objects clear of radiator fan blades! The electric cooling fan is mounted on the radiator and can start to operate at any time by an increase in underhood temperature. The electric cooling fan is also mounted on the condenser for air conditioner and start to operate in anytime during air conditioner switch "ON". For this reason care should be taken to ensure that the electric cooling fan motor is completely disconnected when working under the hood.

YOU SHOULD OBSERVE THE FOLLOWING WARNING WHEN WORKING ON THE VEHICLE AS LAID DOWN BY THE HEALTH AND SAFETY EXECUTIVE.

THE DANGER

Some vehicle parts contain asbestos. Working with them can create dust. Breathing this dust is harmful. Cases of asbestos related cancer have been reported in garage workers.

The dangerous jobs are:

- cleaning brake assemblies
- cleaning clutch housings
- grinding brake linings
- drilling brake linings
- sweeping floors

Brake and clutch linings and disc pads may contain asbestos. If in doubt assume that they do.

WHO IS AT RISK?

Anyone in the garage could be at risk. There is no known safe level of asbestos dust. But the more dust you breath, the greater the chance of lung damage.

The problem is that the dust particles are too small to be seen by the naked eye. And the diseases caused can take years to develop.

Don't put the brakes on your life. Avoid breathing asbestos dust. Prevent dust getting into the air. Follow the WARNING.

WARNING

1. DON'T blow dust out of brake drums or clutch housings with an air line
2. DO use properly designed drum cleaning equipment which prevents dust escaping
or
use clean wet rags to clean out drums or housings.
Put used rags in a plastic waste bag while still wet.
3. DON'T grind or drill linings unless the machine has exhaust ventilation or there is a ventilated booth to do the work in.
4. DON'T use brushes to sweep up dust.
5. DO use a special vacuum cleaner to remove dust
6. DO wet dust *thoroughly* and scrape it up if you haven't got a vacuum.
7. DO wear the protective clothing, such as overalls, provided by your employer.
8. DON'T take the protective clothing home. It should be cleaned by your employer.
9. DON'T use equipment if it is not maintained and checked. Ask to see the examination reports for ventilation systems.

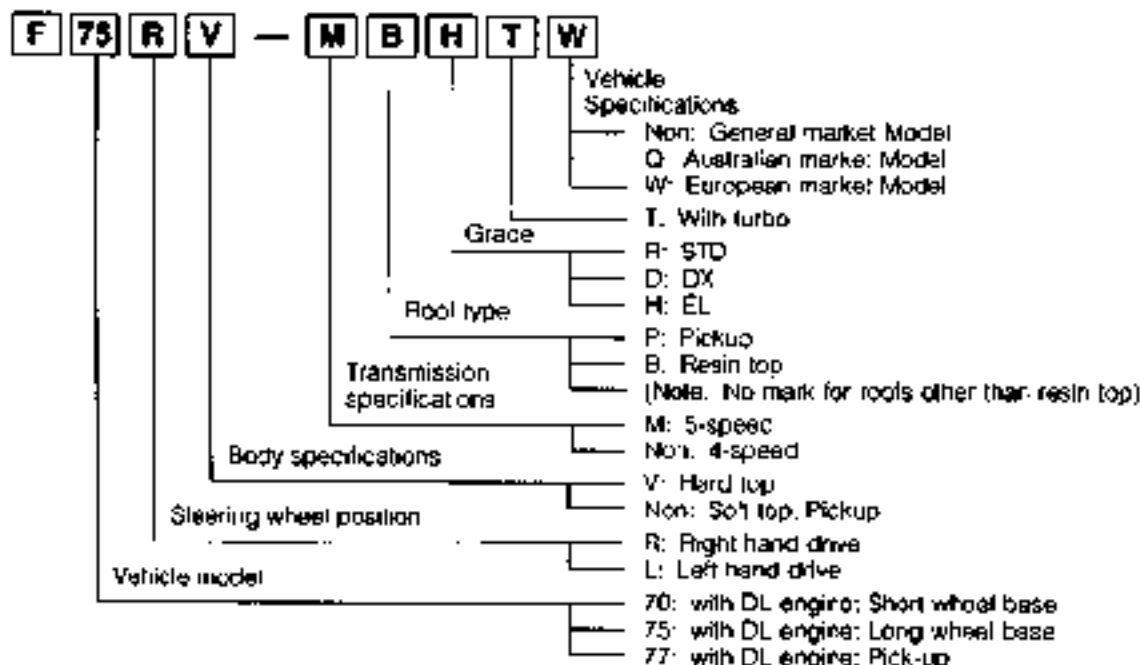
GENERAL INFORMATION

1. MODEL VARIATION

Model		Market Grade	General			Australia			Europe		
			STD	DX	EL	STD	DX	EL	STD	DX	EL
Short Wheelbase	Hard Top	DL-42	RHD	F70RV-R	F70RV-D		F70RV-MRQ	F70RV-MDQ			F70RV-MDQW
			LHD	F70LV-R	F70LV-D						F70LV-MDQW
		DL-52 (TURBO)	RHD		F70RV-MDT						F70RV-MDTW
			LHD		F70LV-MDT						F70LV-MDTW
	Soft Top	DL-42	RHD							F70R-MRW	
			LHD	F70L-R						F70L-MRW	
		DL 52 (TURBO)	LHD							F70L-MDTW	
Long Wheelbase	Wagon	DL	RHD		F75RV-BD			F75RV-MBHQ			F75RV-MBDW
			LHD		F75LV-BD	F75LV-BH					F75LV-MBDW
		DL-52 (TURBO)	RHD		F75RV-MBDT			F75RV-MBHTQ			F75RV-MBDTW
			LHD		F75LV-MBDT						F75LV-MBDTW
	Soft Top	DL-42	RHD	F75R-R							
			LHD	F75L-R					F75L-MRW		
	Pickup	DL-42	RHD	F77R-PR						F77R-MPRW	
			LHD	F77L-PR						F77L-MPRW	
	Chassis	DL-42	RHD	F77R-PRC			F77R-MPRC				
			LHD	F77L-PRC							

WFE9140004

DESCRIPTION OF VEHICLE MODEL CODE

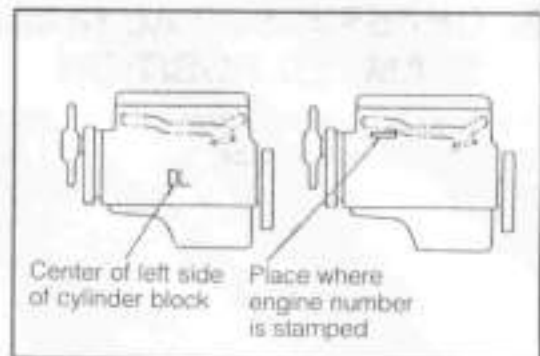


WFE9140005

GENERAL INFORMATION

4. ENGINE NUMBER AND ENGINE TYPE STAMPED POSITIONS

The engine number and serial number is stamped on the place as shown in the illustration.



WRE21-GI009

5. BODY COLOR INFORMATION

Mono. color	Code
White	045
Red	3E7
Green	G05
Dark Blue Metallic	8G4
Grey Metallic	168
Black Metallic	6A6

Two tone color	Code
Black Metallic/Grey Metallic	NA5 (6A5/168)
Dark Blue Metallic/Grey Metallic	26L (8G4/168)
Red Mica Metallic/Grey Metallic	25L (3H1/168)

5-1. COLOR CODE IN THE WORLD

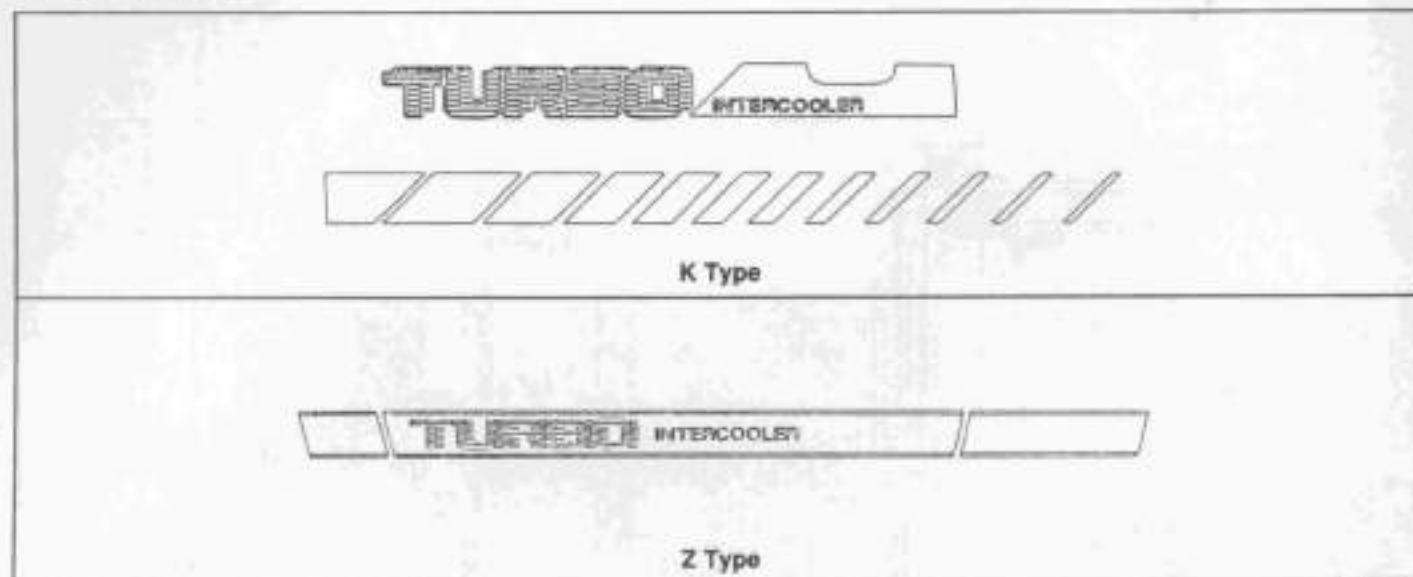
WRE21-GI010

COLOR	CODE					
	DAIHATSU	AXZO	DUPONT	ICI	SPIES HECKER	STANDOX
WHITE	045	DAH045	L8997	NW80	16067	045
RED	3E7	DAH3E7	G8690	KK26	38299	3E7
GREEN	G05	DAHG05	G8691	KV77	68470	G05
DARK BLUE METALLIC	8G4	DAH8G4	K9131	C247B	97909	8G4
GREY METALLIC	168	DAH168	N8832	B936B	97728	168
BLACK METALLIC	6A5	DAH6A5	G8742	A403B	97806	6A5
TWO TONE	NA5	DAHNA5	G8742/N8832	A403B/B936B	97806/97728	NA5
TWO TONE	26L	DAH26L	K9131/N8832	C247B/B936B	97909/97728	26L
TWO TONE	25L	DAH25L	G8730/N8832	PC86B/B936B	97840/97728	25L

WRE21-GI011

5-2. BODY STRIPE INFORMATION

Along with the change to the intercooler turbo, an INTERCOOLER TURBO decal has been added to accentuate the stripes. The present M type was changed to Z type as shown below. K type comes only with the gold stripes.

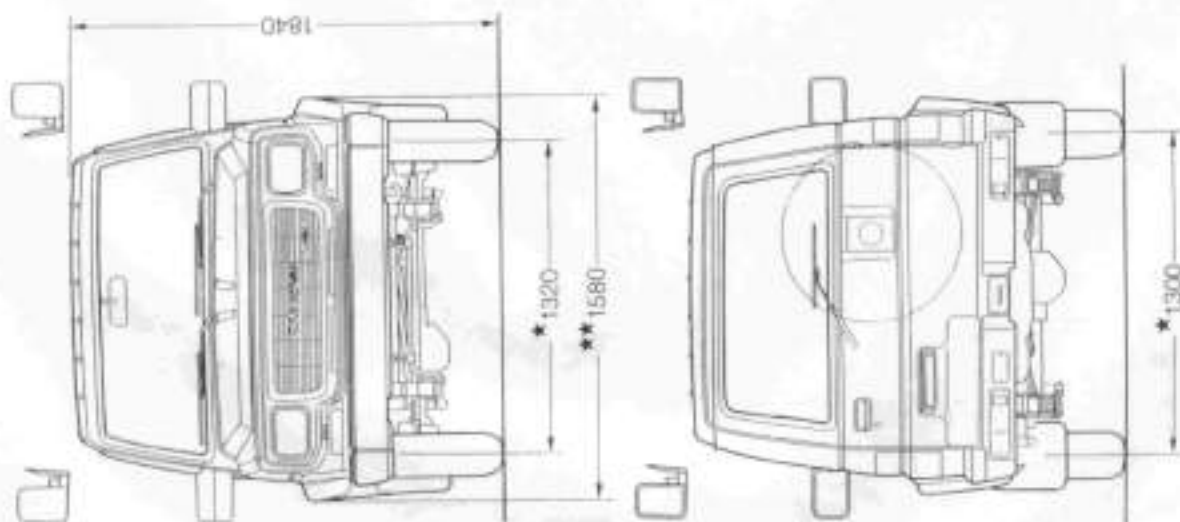
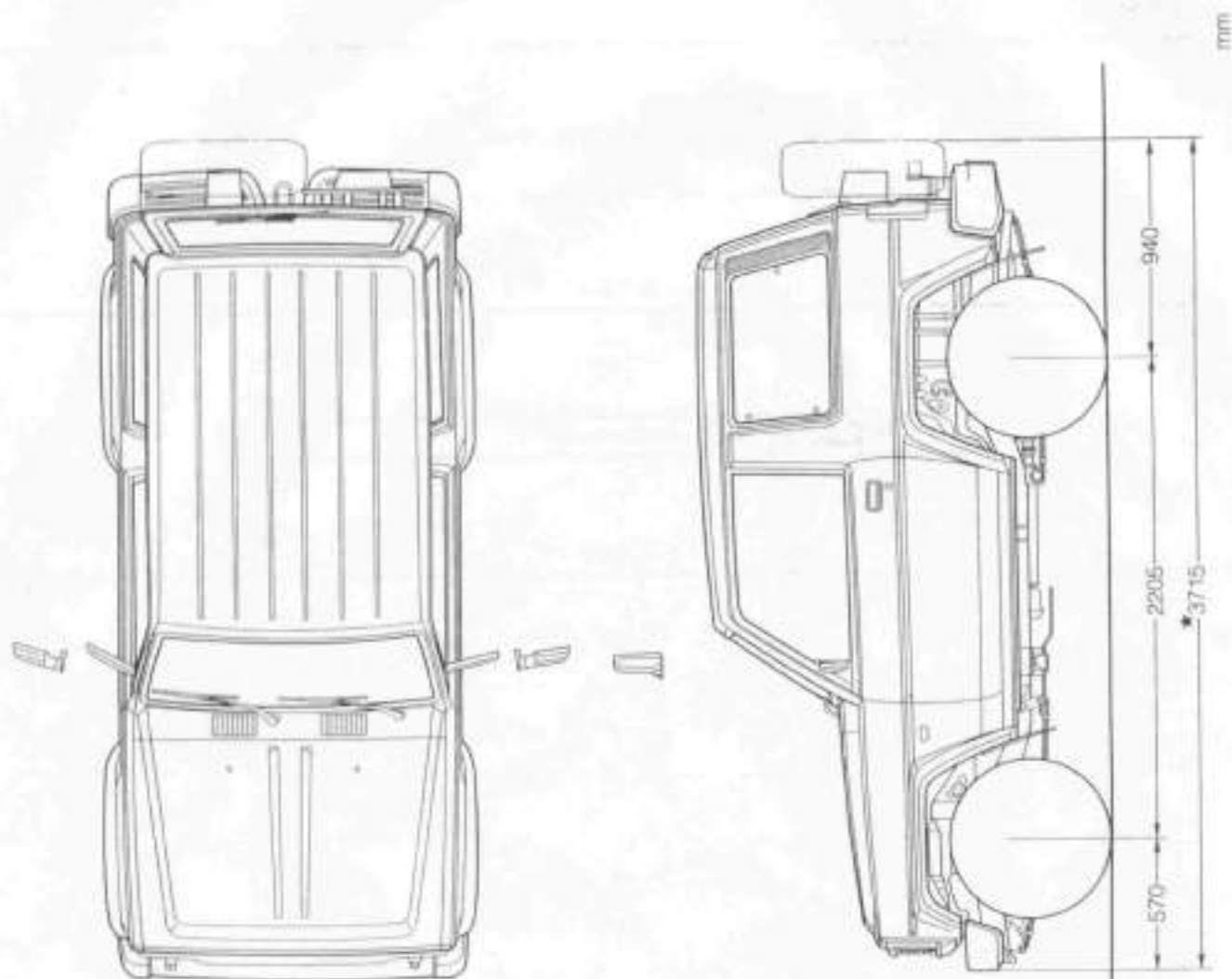


WRE91-G012

GENERAL INFORMATION

6. VEHICLE 4-PLANE DIAGRAMS

Version: A (F70V-Hard top)

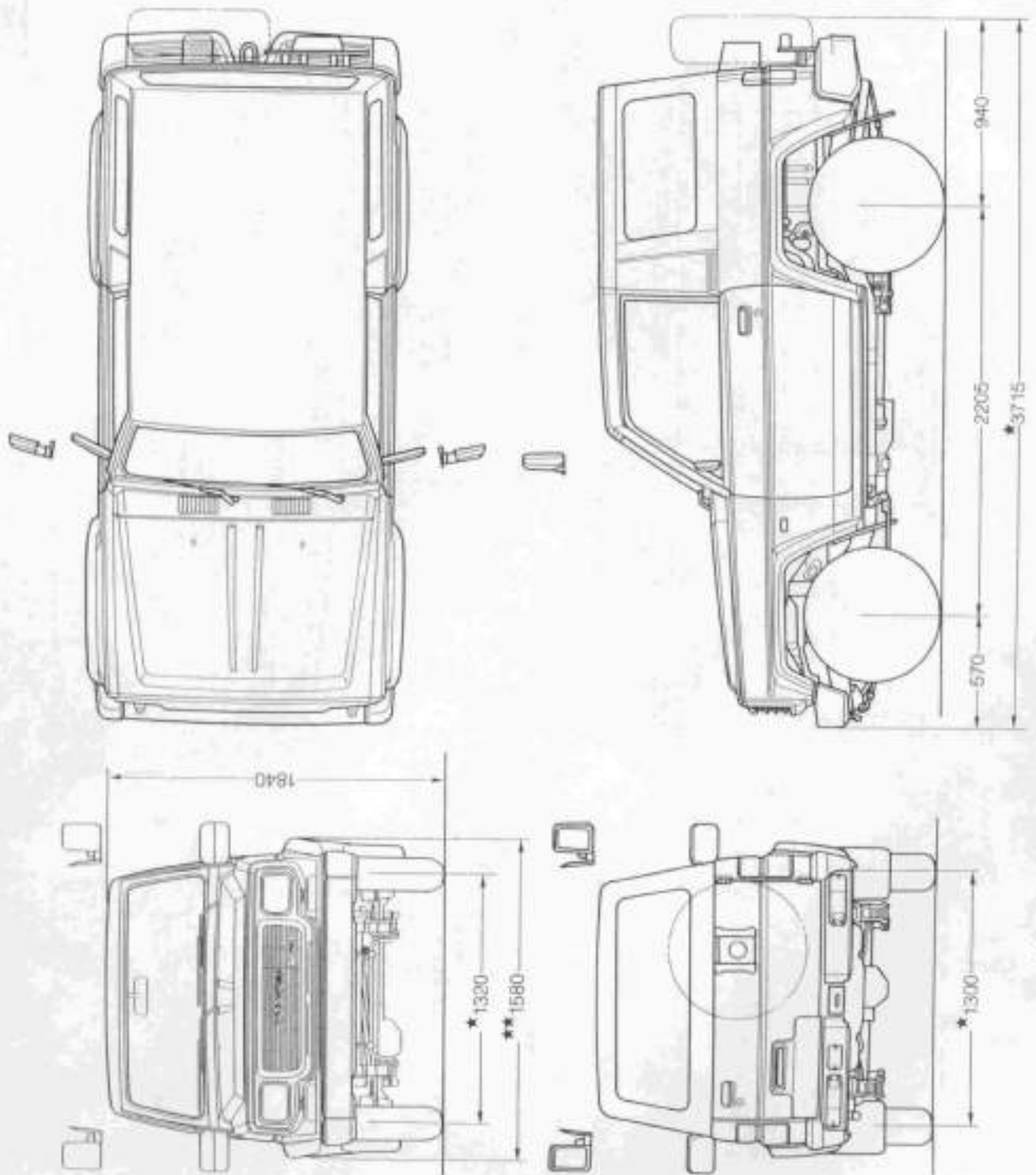


* Wide tyre 255/70 R15: +50 mm ** Wide tyre 255/70 R15: +90 mm

WRE01-G013

GENERAL INFORMATION

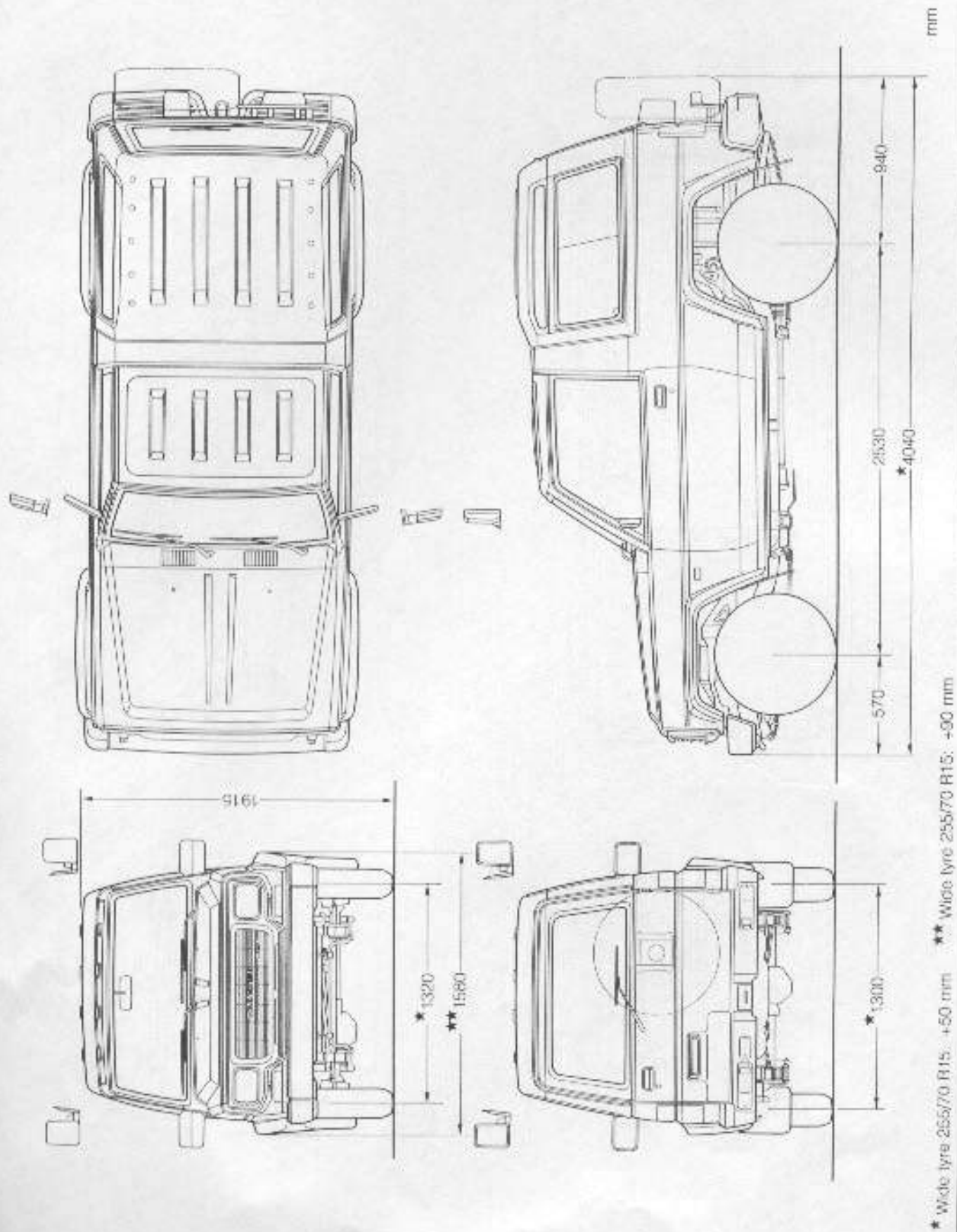
Version: B (F70-Soft top)



* Wide tyre 255/70 R15: +50 mm ** Wide tyre 255/70 R15: +90 mm

GENERAL INFORMATION

Version: C (F75V-Wagon)

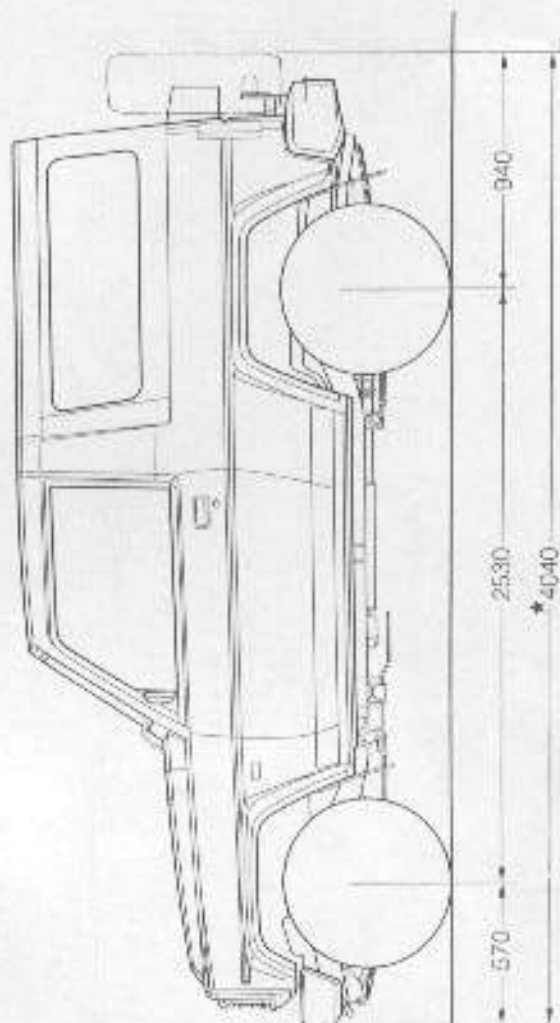
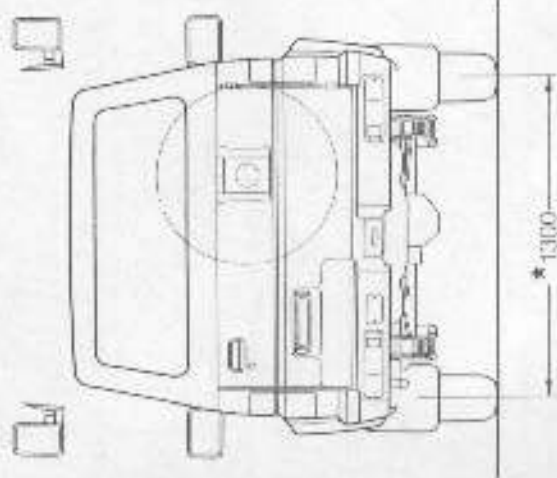
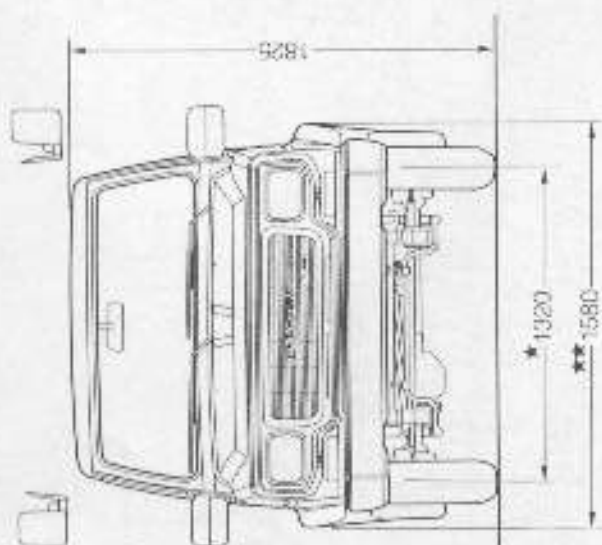
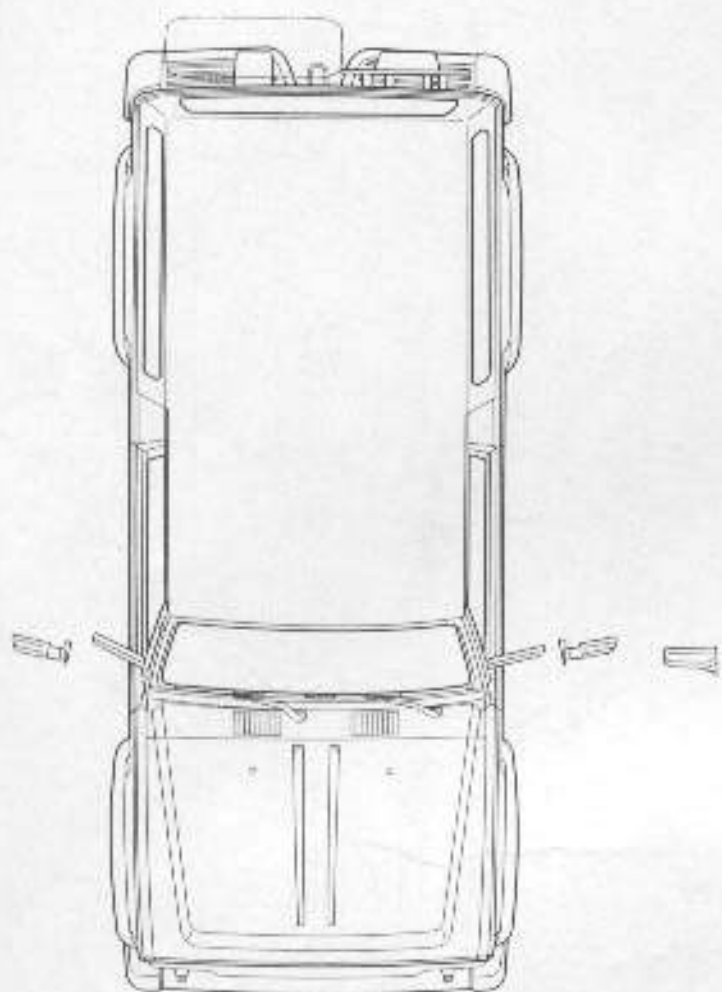


* Wide tyre 255/70 R15: +50 mm ** Wide tyre 255/70 R15: +90 mm

mm

WRE91-0010

Version: D (F75-Soft top)

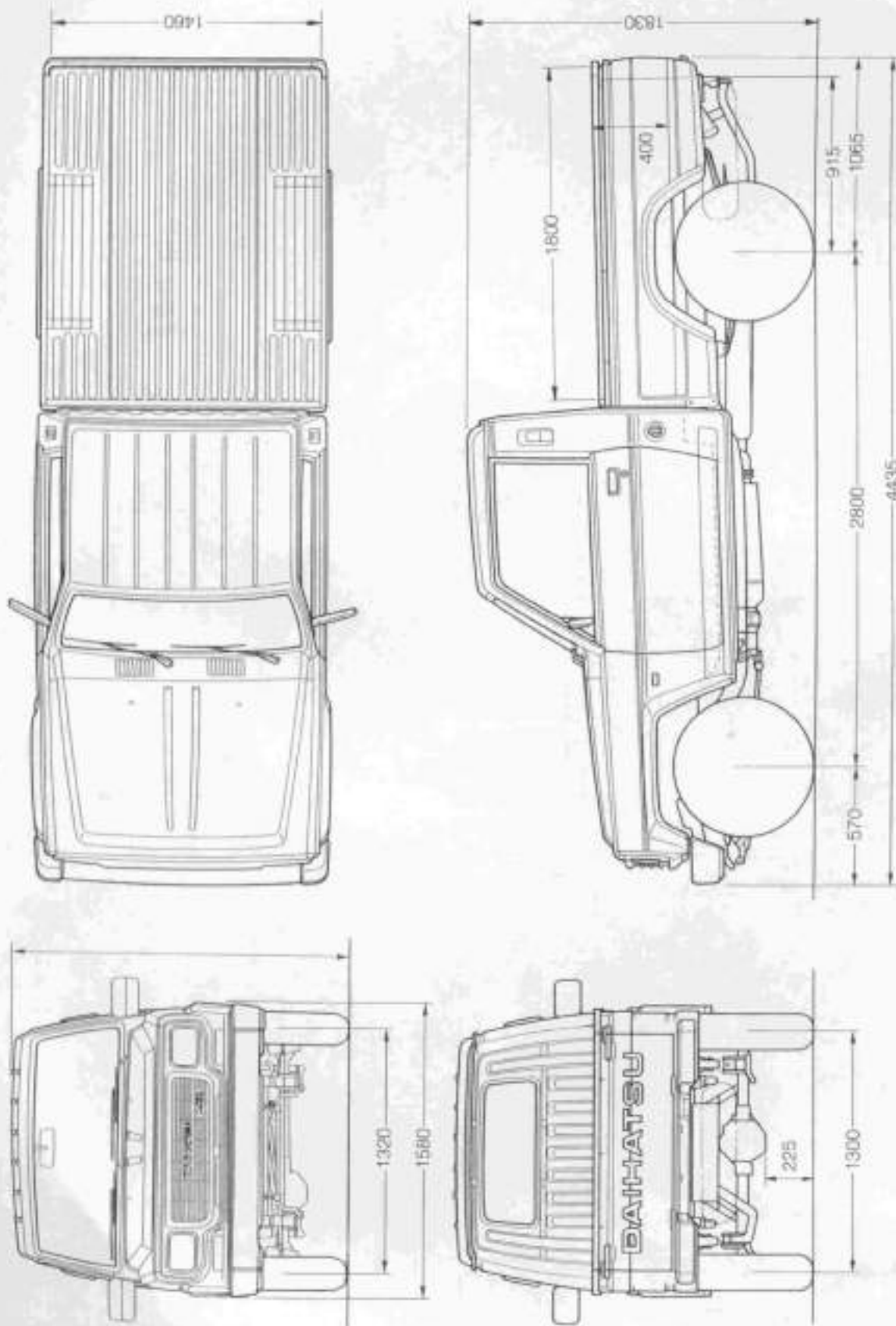


* Wides tyre 255/70 R15: -50 mm ** Wides tyre 255/70 R15: +90 mm

mm

GENERAL INFORMATION

Version: E (F77-Pick-up)

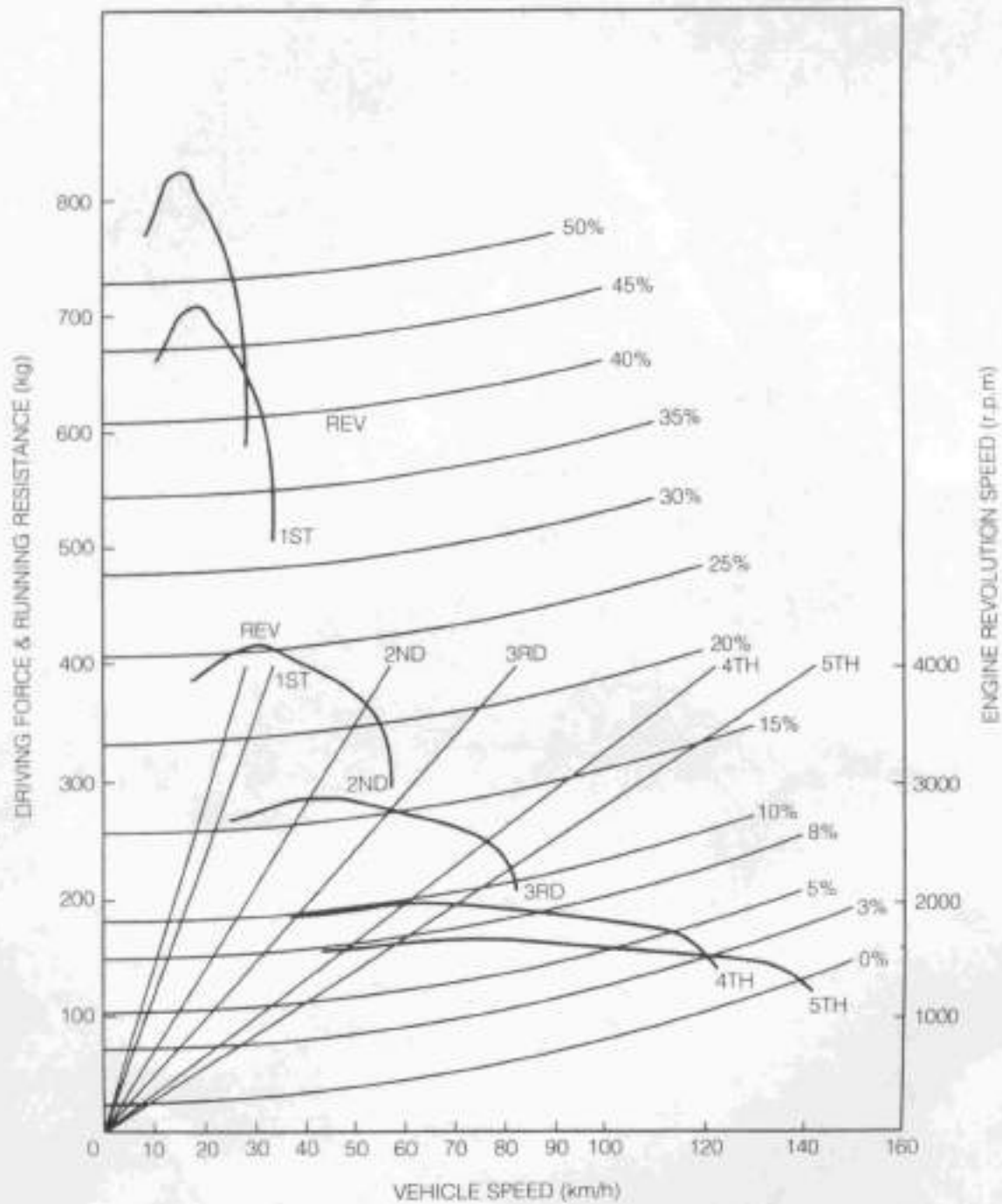


WRE91-GD17

7. PERFORMANCE DIAGRAMS

F70V

F70RV-MRQ 255/70-15

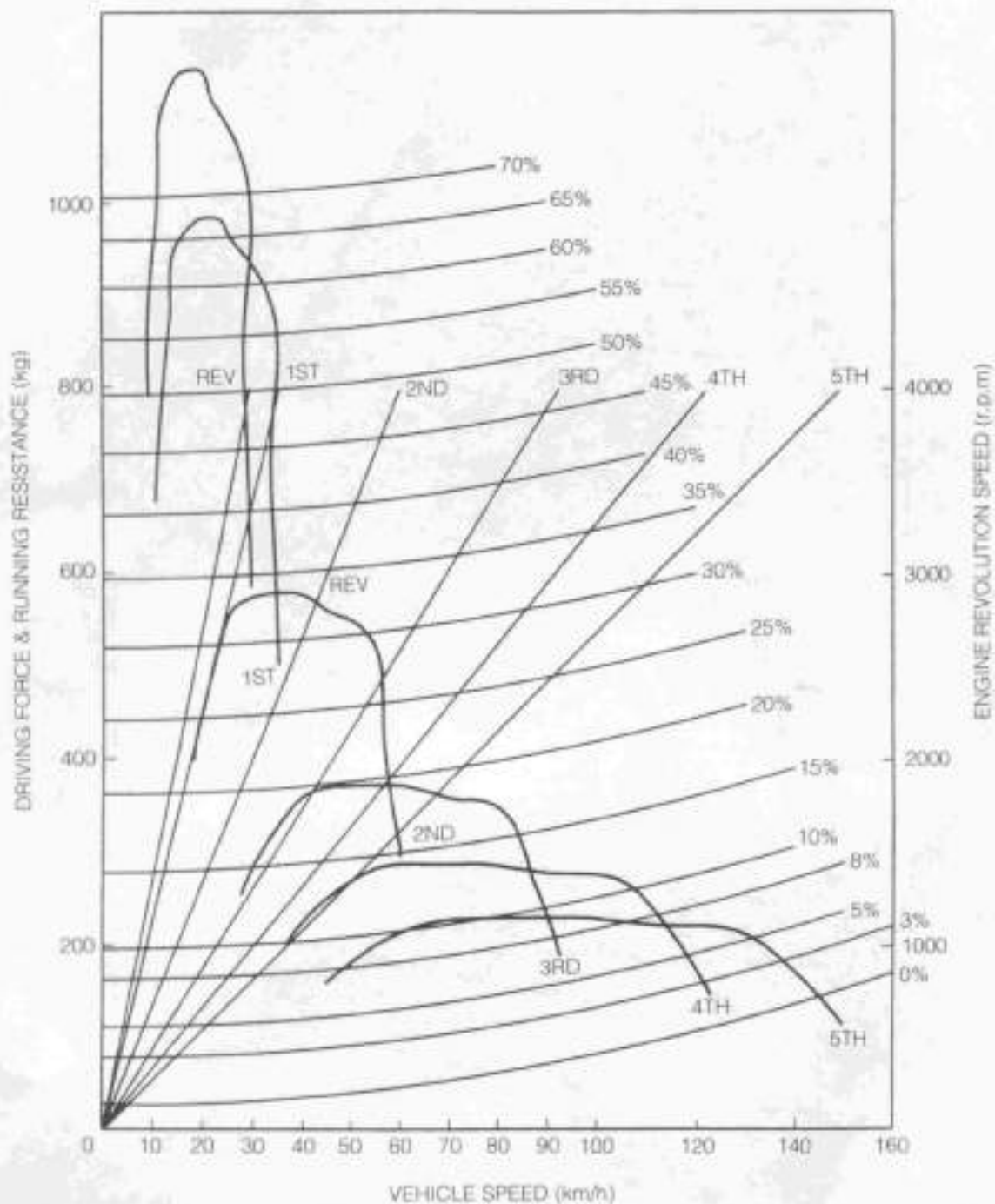


WRE91-G016

GENERAL INFORMATION

F75V

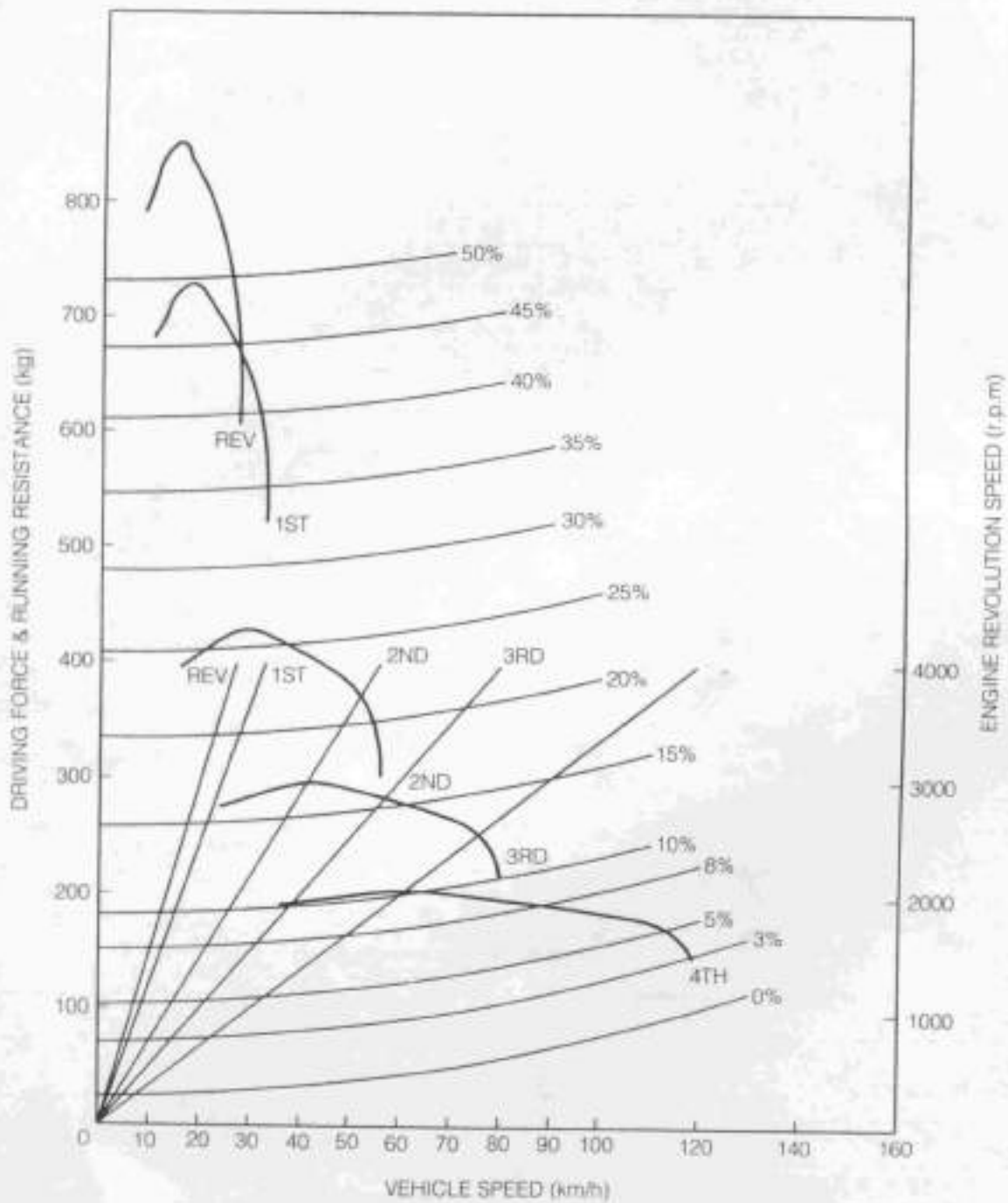
F75LV-MBHTW 255/70R15



WE91-0019

F77

F77L-PR 215/R15



WRE31-0125

GENERAL INFORMATION

8. SPECIFICATIONS

8-1. PRE-DELIVERY INSPECTION SPECIFICATIONS

Items		Specifications		
Tire inflation pressure Front/Rear	bar	6.00-16-4 (LUG)	STD: 1.6/2.1	Detail shows as follows: AUS market: The pressure level is on the glove compartment door. OTHERS market: The pressure level is on the lower part of the door pillar.
		6.00-16-6 (RIBLUG)	STD: 1.8/2.4	
		6.50-16-4 (SAND)	STD: 1.6/2.1	
		6.50-16-8	STD: 1.8/2.4	
		7.50-16-8 (SAND)	STD: 1.8/4.25	
		215/SR15	STD: 1.4/1.4	
		215/80R15	STD: 1.8/1.8	
		255/70R15	STD: 1.8/1.8	
		H78-15-4	STD: 1.4/1.4	
Spare tire inflation pressure		Same as above full load max. pressure.		
Wheel nut tightening torque		N.m (kgf-m)	88.2 - 117.6 (9 - 12)	
Accelerator cable free play		mm	1 - 5	
Engine idling speed	rpm	DL-42	650 ± 25	
		DL-52 (Turbo)	650 ± 25	
Engine oil	Capacity	ℓ	5.5	
	Grade		DL-42: CC or CD, DL-52: CD	
Transmission oil	Capacity	ℓ	4M/T: 2.0, 5M/T: 2.7	
	Grade		API GL-3	
	Viscosity		80W, 85W, 90	
Transfer oil	Capacity	ℓ	1.4	
	Grade		API GL-3	
	Viscosity		75W-85	
Differential oil	Capacity	ℓ	Front: 1.5 Rear: 1.5	
	Grade		API GL-5	
	Viscosity		80W, 85W, 90	
Brake fluid	Grade		FMVSS 116DOT3 or SAE J1703	
Brake pedal (While engine is running)	Free travel	mm	2 - 4 (Engine-off, with out vacuum)	
	Reserve travel	mm	Not less than 80 mm (Engine is running)	
Parking brake working travel			Should "set" within 5 - 8 notches when apply 25 kgf by hand.	
Clutch pedal free travel		mm	18 - 27	
Steering wheel play		mm	0 - 30	

WPE01-G021

8-2. VEHICLE SPECIFICATIONS

Items			Specifications	
ENGINE	Type	DL-42	Diesel, 4 cycle, in-line 4	
		DL-52	Diesel, Turbo charged, 4 cycle, in-line 4	
	Displacement (Bore x Stroke)		ℓ 2.765 (92.0 x 104.0 mm)	
	Compression ratio		21.2	
	Firing order		1-3-4-2	
	Combustion chamber type		Swirl chamber type	
	Injection timing	DL-42	1° B.T.D.C.	
		DL-52	1° B.T.D.C.	
	Valve mechanism		Self-driven, O.H.V.	
	Valve clearance	mm	Intake	0.25 (Hot)
			Exhaust	DL-42: 0.25 (Hot), DL-52: 0.35 (Hot)
	Valve timing	Intake	Open	25° B.T.D.C.
			Close	55° A.B.D.C.
		Exhaust	Open	60° B.B.D.C.
			Close	20° A.T.D.C.
	Injection pump		BOSCH VE Type	
	Cold start system		Glow plug	
	Coolant capacity		ℓ 10.6	
Max. output power	kw/rpm, *DIN	DL-42	54/3800 (EC)*, 56/3800 (AUS, GENE.)	
		DL-52	75/3400 (EC)*	
Max. output torque	N·m/rpm	DL-42	170/2200	
		DL-52	245/1900	
Fuel tank capacity		ℓ 60		
CLUTCH	Type		Dry Single plate, Diaphragm	
	Operation		Mechanical	
TRANSMISSION	Type		Manual, 4 or 5 forward speed, Synchromesh	
	Gear ratio	DL-42	1st	3.647
			2nd	2.136
			3rd	1.464
			4th	1.000
			5th	0.860
			Reverse	4.351
		DL-52	1st	3.477
			2nd	2.037
			3rd	1.317
			4th	1.000
		5th	0.820	
	Reverse	4.148		

GENERAL INFORMATION

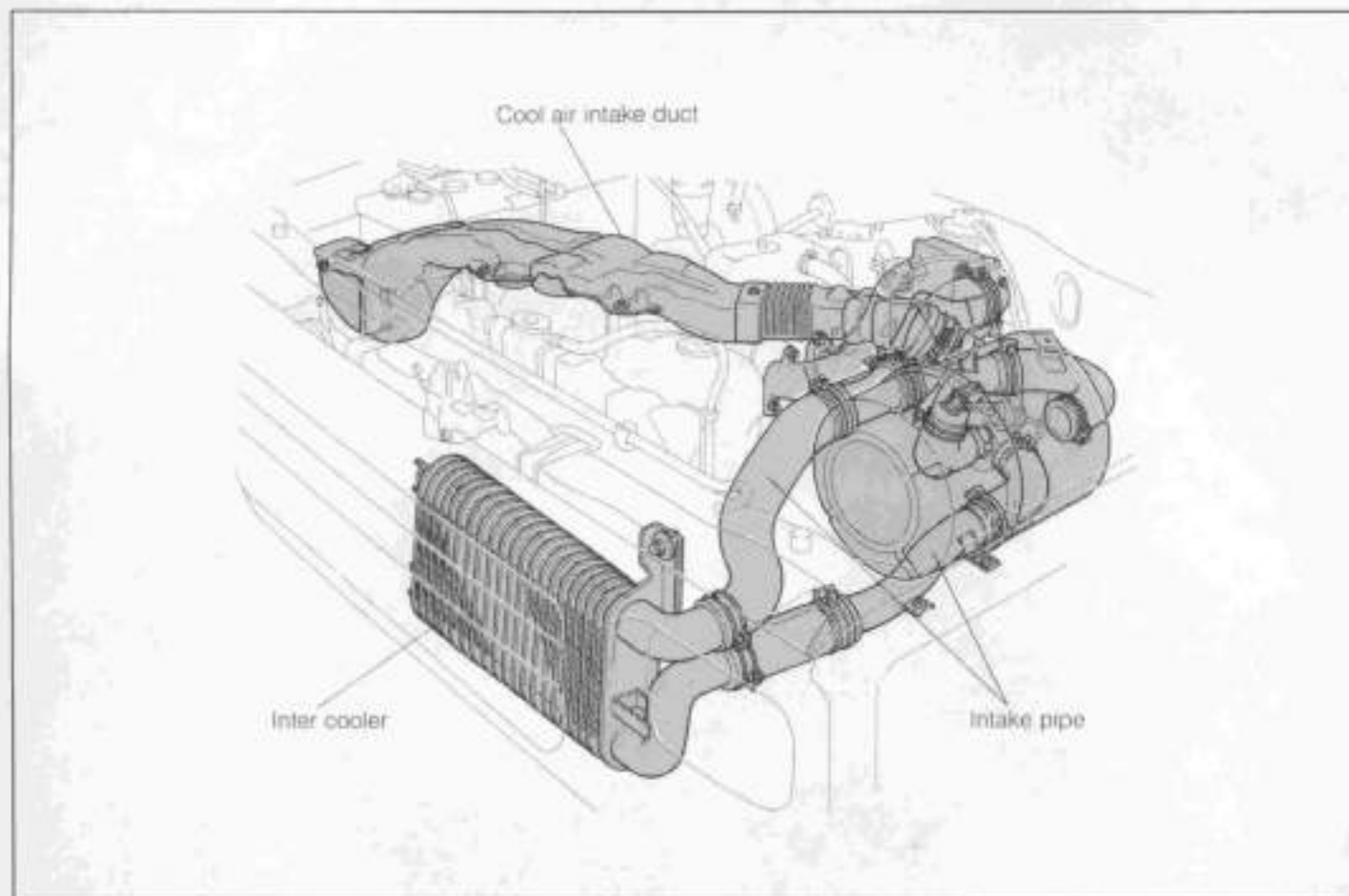
Items			Specifications	
TRANSFER	Type		Part-time, Manual, Constant mesh	
	Gear ratio	High	1.297	
		Low	2.370	
DIFFERENTIAL	Gear ratio		3.363	
AXLE & SUSPENSION	Axle	Front	Type	Full-floating axle tube
			Toe-in mm	(-3) -5 (H78, 215SR15 or 255/70R15) 0 - 8 (Other tires)
			Camber	1° ± 60'
			Caster	1°30' ± 60'
			King-pin angle	9°30' ± 60'
	Axle	Rear	Type	Semi-floating axle tube
			Toe-in mm	0
			Camber	0°
	Spring	Front	Semi-elliptical leaf spring	
		Rear	Semi-elliptical leaf spring	
	Shock absorber	Front	Double-acting telescopic, 3 stage: option	
Rear		Double-acting telescopic, 3 stage: option		
STEERING	Type		Ball-recirculation and nut	
	Over all gear ratio		24 - 28	
	Power assist		Integral, Hydraulic power	
BRAKES	Type	Front	Disc, ventilated disc: option	
		Rear	Drum, leading and trailing	
	Service brake system		Hydraulic tandem master cylinder	
	Power assist		Vacuum booster with vacuum pump	
	Emergency brake system		Dual hydraulic circuits	
Parking brake system		Mechanical hand operation, which applies to rear wheels		
DISC WHEEL	Off-set	mm	16 x 4.50 E	10 (6.00-16C-6)
			16 x 5.00 E	9 (6.50-16C-6, 6.50-16C-8)
			15 x 6 JJ	10 (H78-15-4, 215SR15, 215R15)
			15 x 7 JJ	-15 (255/70R15)
BULB	Head lights	W	Candescient	45/40
			Halogen	60/55
			Yellow	45/40
	Front combination	W	Clearance lights	5 (White)
			Turn signal lights	21 (Amber)
	Rear combination	W	Stop/Tail lights	21/5 (Red)
			Turn signal lights	21 (Amber)
	Back up light	W	21	
	License plate light	W	5	
Rear fog light	W	21 (Red)		
Interior light	W	10		
Luggage room light	W	8		

WRES1-G-022

9. SUMMARY OF ENGINE CONSTRUCTION

9-1. INTERCOOLER TURBOCHARGER (DL-52 Engine)

The turbocharger is equipped with an air-cooled intercooler, thereby increasing the maximum horsepower and torque output.



WRE91-G023

P.C.S. (Power Control System)

(1) Transmission shift position: 1st gear

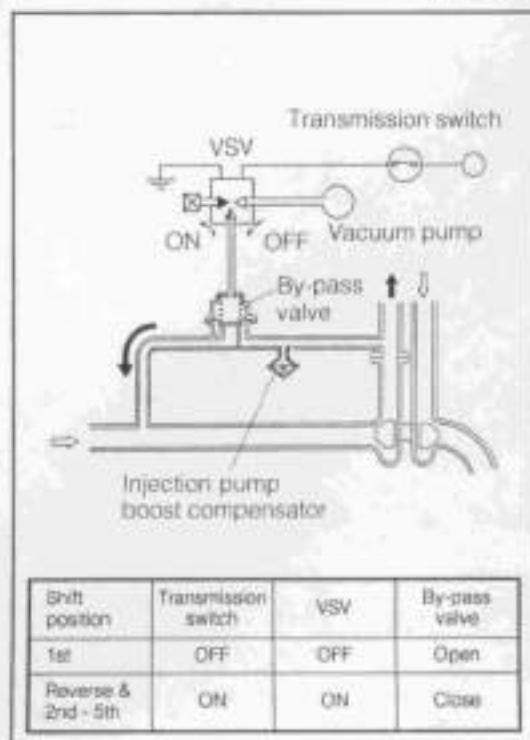
When the pressure of the air pressurized from the turbocharger exceeds 300 mmHg, part of the air is by-passed to the air cleaner side.

(2) Transmission shift position: 2nd gear to 5th gear

The by-pass port is closed.

NOTE:

- If the supercharging in excess of the specified level is likely to take place, the waste gate valve opens to release the pressure so as to prevent excessively high supercharging.

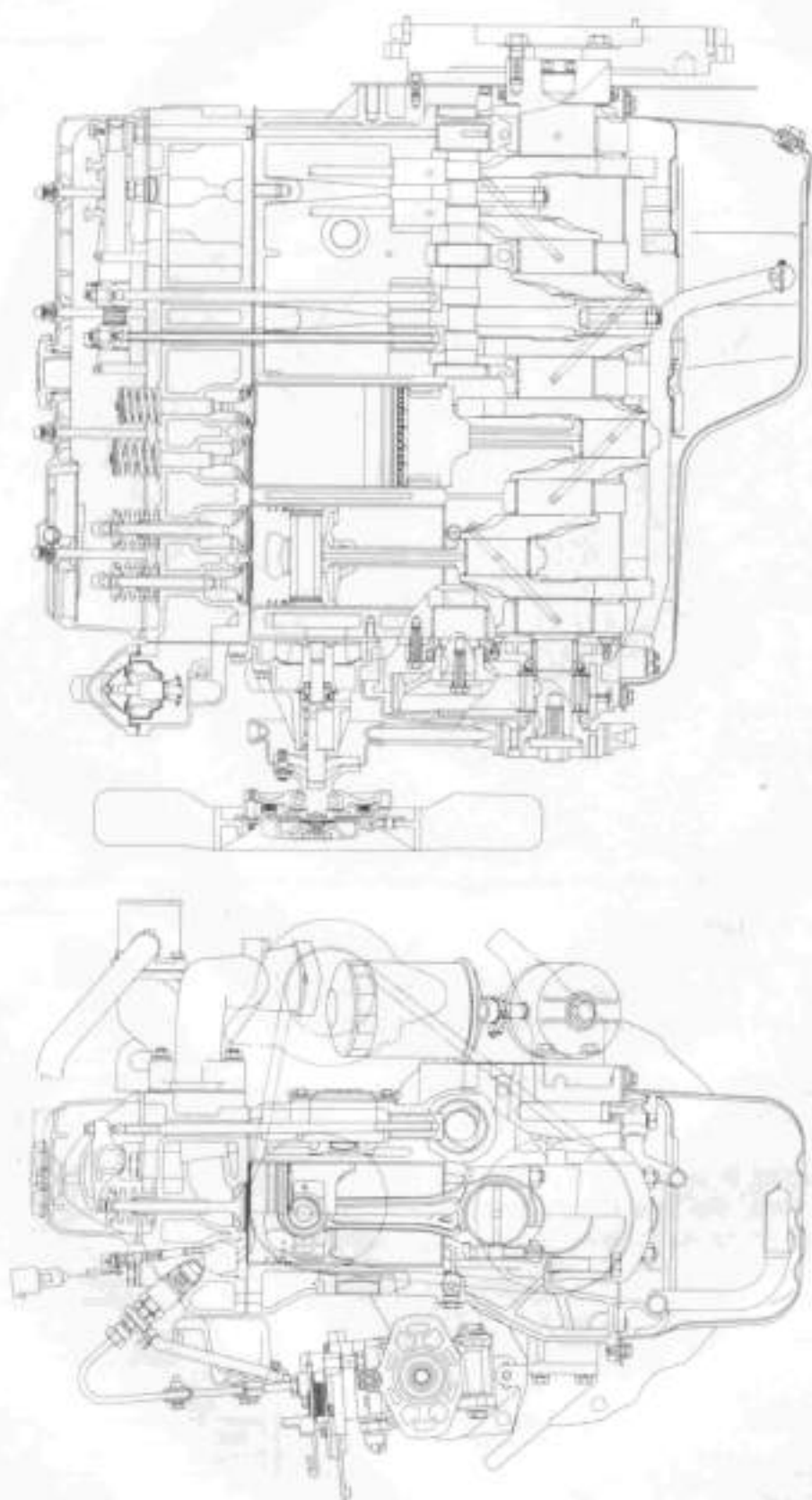


WRE91-G024

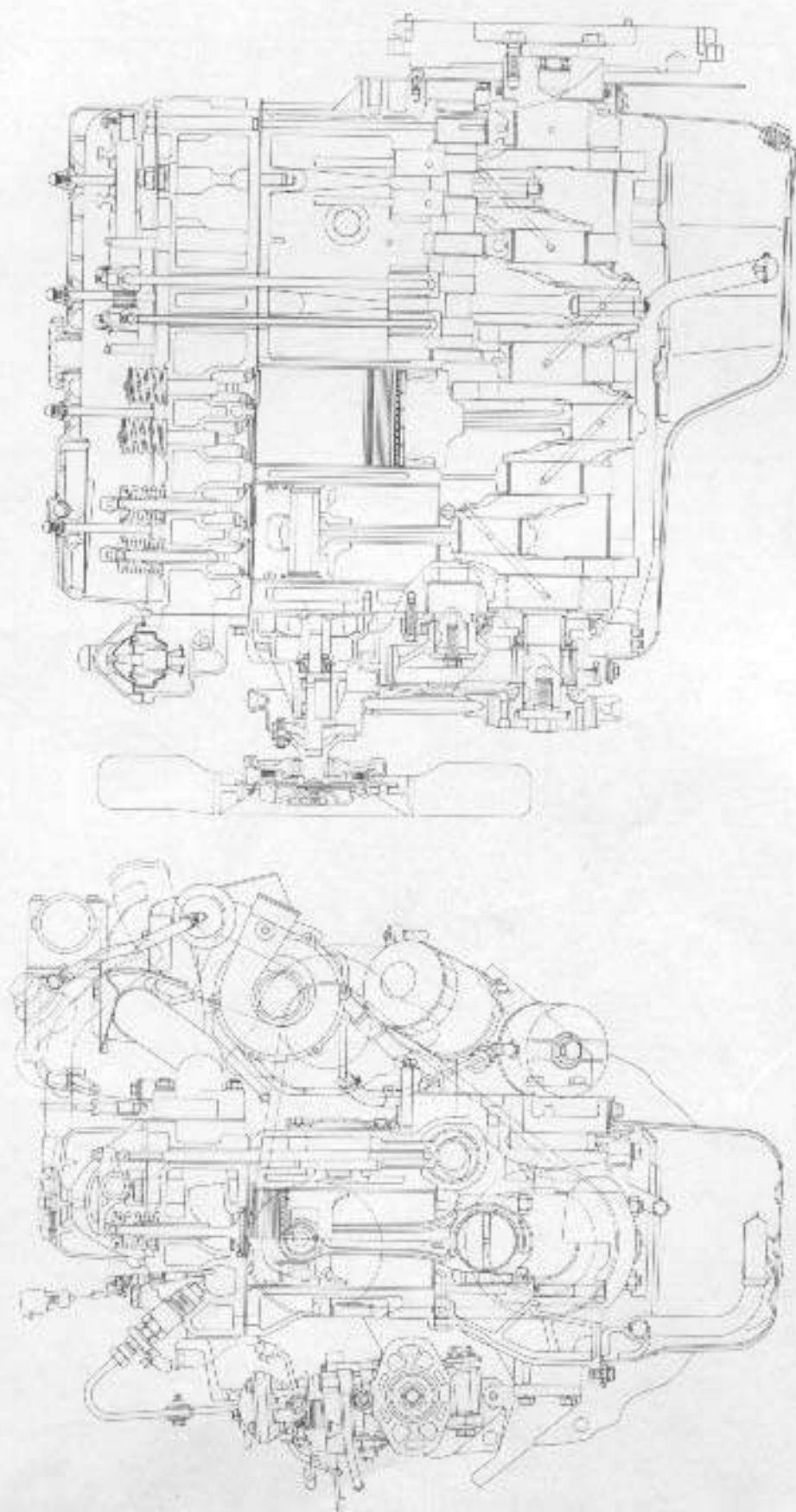
GENERAL INFORMATION

9-2. ENGINE SECTIONAL VIEWS

Type DL-42 engine



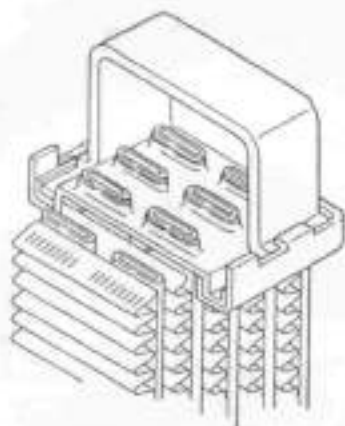
Type DL-52 engine



GENERAL INFORMATION

9-3. COOLING SYSTEM

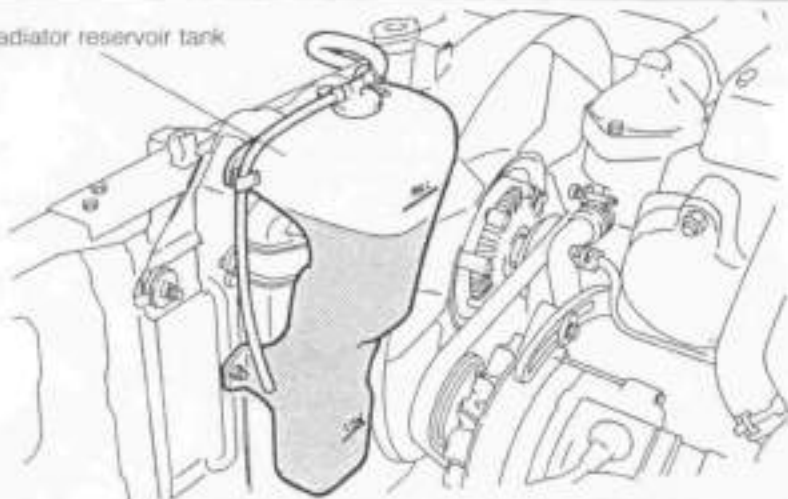
In accordance with the employment of the water-cooled turbocharger, the radiator construction has been changed.



WRE91-G027

The radiator reservoir tank has been modified in its shape. Furthermore, the reservoir tank is now attached to the radiator. (DL-52 Only)

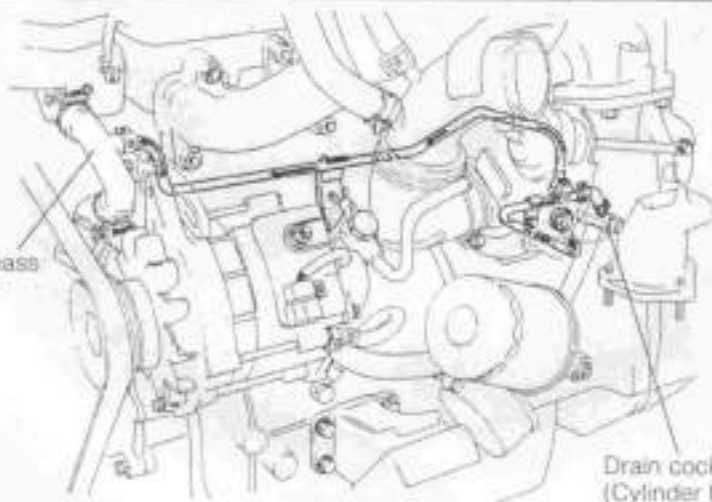
Radiator reservoir tank



WRE91-G028

Modification has been made so that the bearing of the turbocharger is now cooled by the engine cooling water.

Water by-pass hose



Drain cock
(Cylinder block)

WRE91-G029

10. SUMMARY OF BODY AND OTHER CONSTRUCTIONS

10-1. BASIC DESIGN

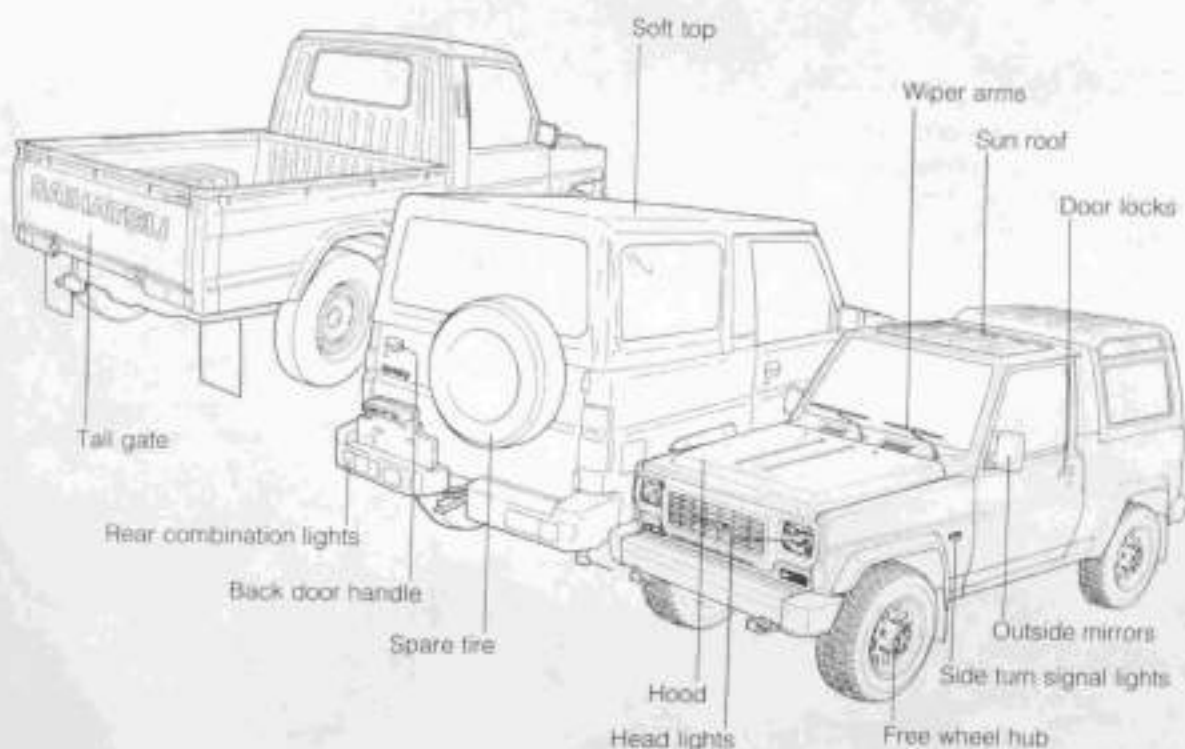
SOFT TOP
(Short & Long)



PICKUP



Exterior view

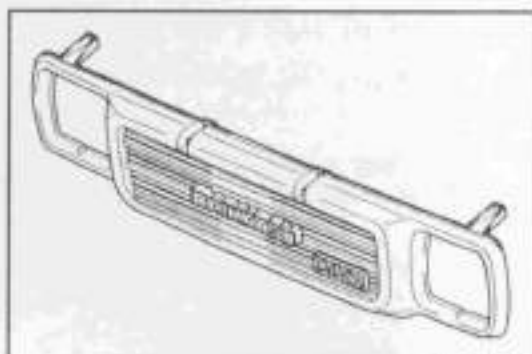


GENERAL INFORMATION

10-2. EXTERIOR MODIFICATION

(1) Front grille

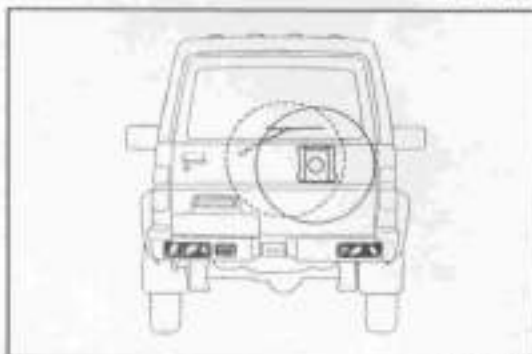
A new front grille design with a wider top-to-bottom width has been adapted to give the Rocky a "tough" look.



WRE91-G001

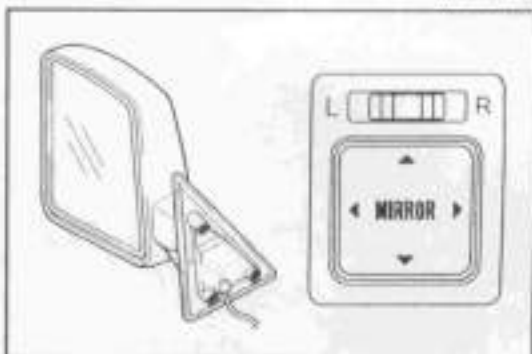
(2) The spare tyre position has been shifted 190 mm to the right and 30 mm lower to improve the rear view.

(3) The new rear combination lamps built into the rear bumper enhance visibility and can be seen even when the backdoor is fully open. This modification is for the European and Australian markets, and pickup model excepted.



WRE91-G002

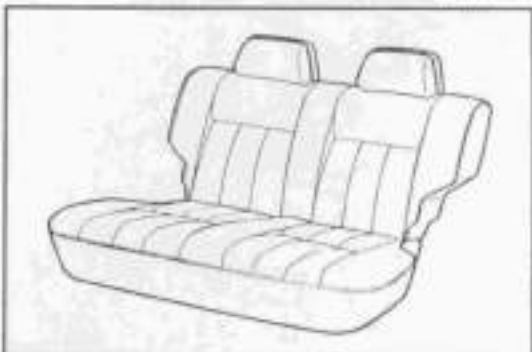
(4) Electrically operated outer mirror is available for optional equipment. (except AUS). A switch located on the dashboard below the instrument cluster.



WRE91-G003

10-3. INTERIOR MODIFICATION

(1) 3-point ELR rear seat belts are available for the Wagon model (F75L(R)V) for optional. When the seat belts are installed, the seat back with armrests will be replaced with a large seat back without armrests.



WRE91-G004

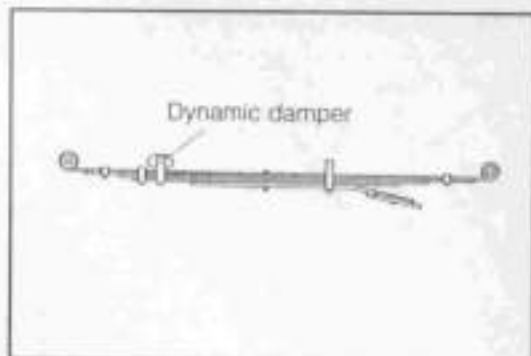
(2) 3-point ELR rear seat belts are also available for the Soft top model (F70L(R)) as a set option with a rear roll bar.



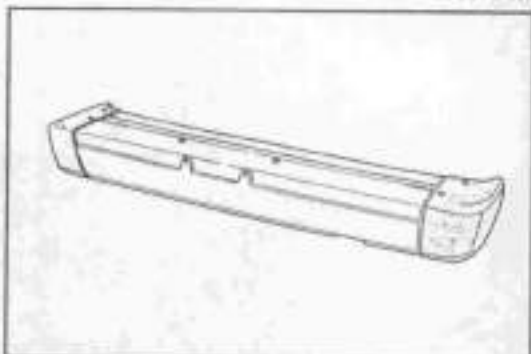
WRE91-G005

10-4. OTHER MAJOR CHANGES

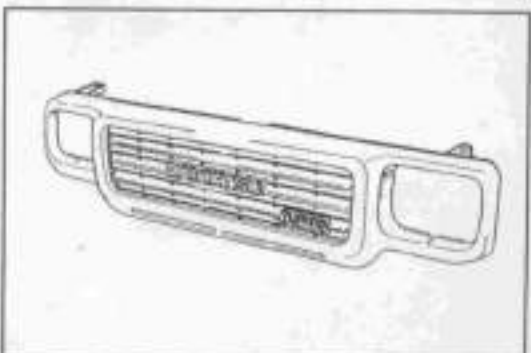
- (1) The mass dampers for the rear springs have been replaced with new dynamic dampers for reduced noise.
- (2) The large front bumper formerly standard in the European markets except on the pickup models is now standard on all models.
- (3) In keeping with the change to the intercooler turbocharger, the front grille has been modified to include an INTER-COOLER TURBO mark.
- (4) The rear mudguards have been moved to the rear wheel arches. (Except for pickup model).
- (5) The skeleton-type head restraints have been replaced by the fabric-covered, full form type.



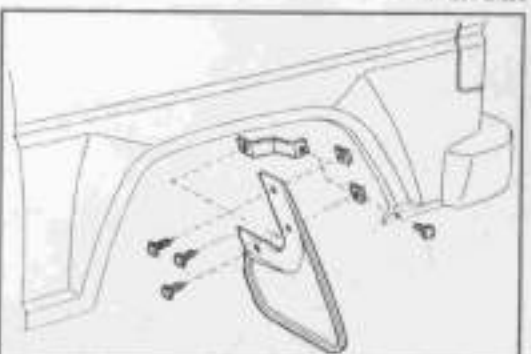
WRE91-G006



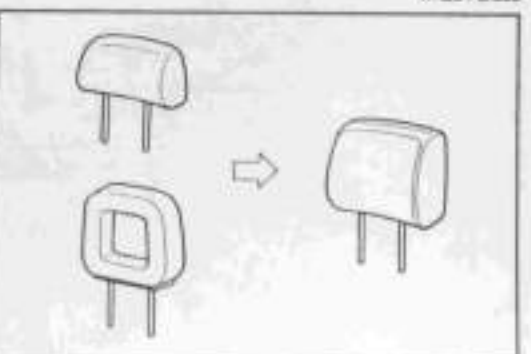
WRE91-G007



WRE91-G038



WRE91-G039

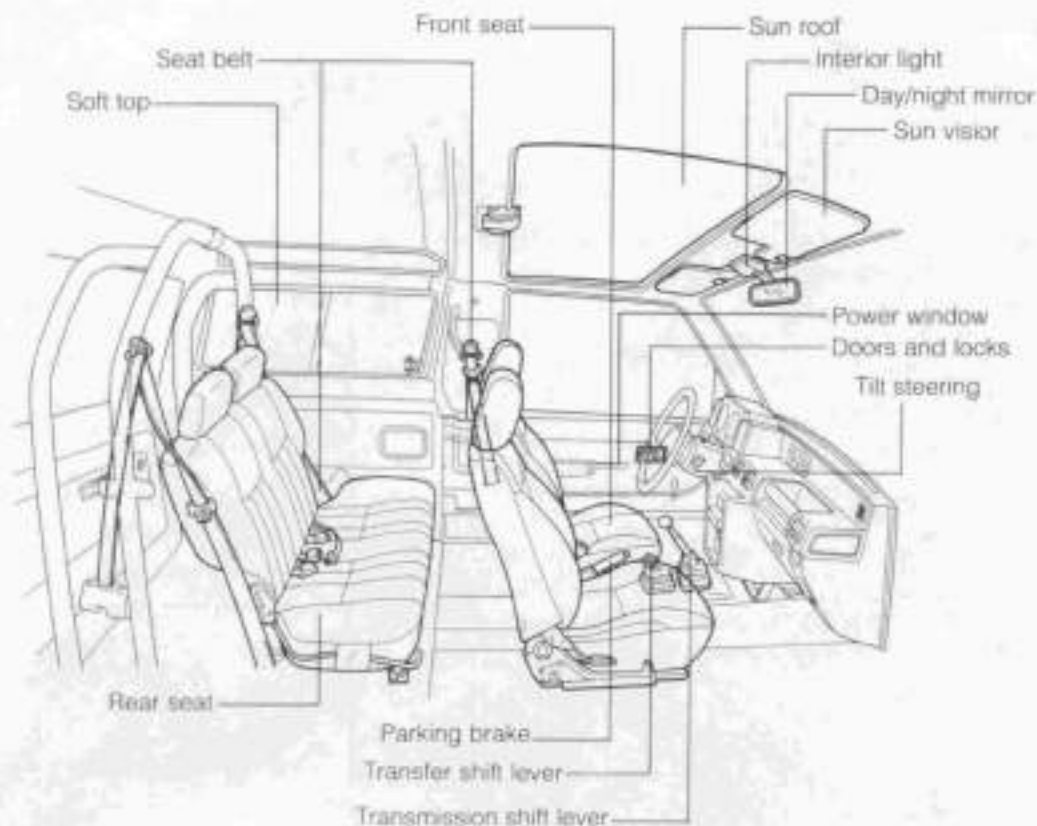


WRE91-G040

GENERAL INFORMATION

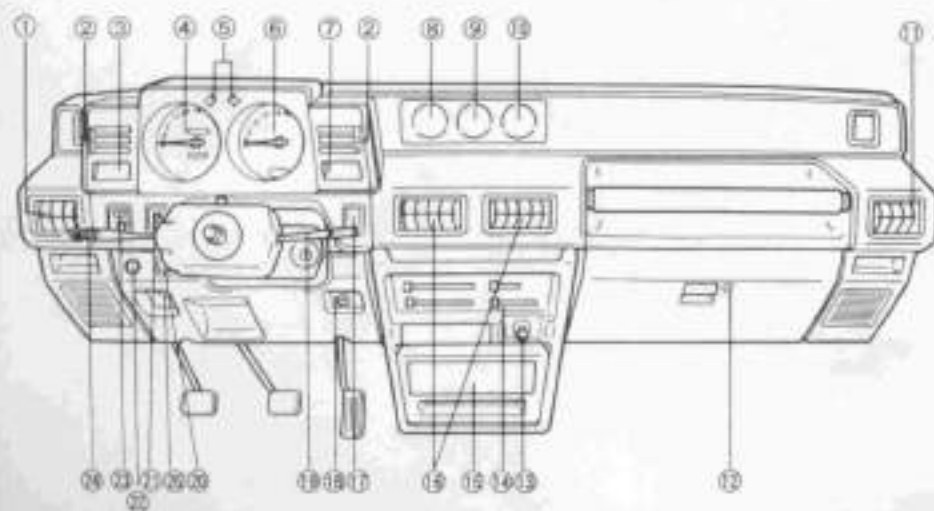
10-5. INTERIOR VIEW

Interior View



WFE91-G041

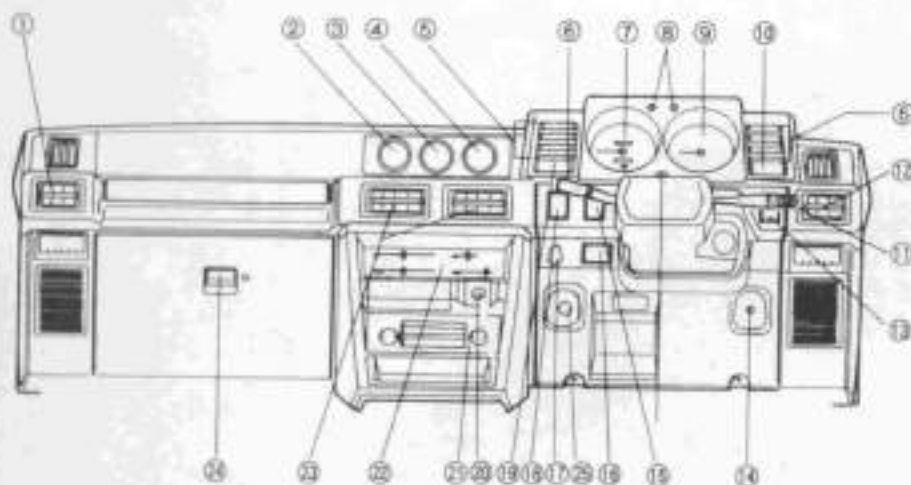
For L.H. Drive Vehicle



- ① Ventilator
- ② Warning panel
- ③ Water temperature gauge
- ④ Speedometer
- ⑤ Turn signal indicator lamp
- ⑥ Tachometer
- ⑦ Fuel gauge
- ⑧ Voltmeter
- ⑨ Clinometer
- ⑩ Digital clock
- ⑪ Ventilator
- ⑫ Glove compartment box
- ⑬ Cigarette lighter
- ⑭ Heater control panel
- ⑮ Radio
- ⑯ Ventilator
- ⑰ Rear window defogger switch
- ⑱ Throttle knob (Diesel engine)
- ⑲ Front wiper switch
- ⑳ Rear heater switch
- ㉑ Power shift switch
- ㉒ Fog lamp switch
- ㉓ Rear wiper switch
- ㉔ Multi-use switch
- ㉕ Choke knob (Gasoline engine)
- ㉖ Headlamp leveling control switch (For Germany)

WFE91-G042

For R.H. Drive Vehicle

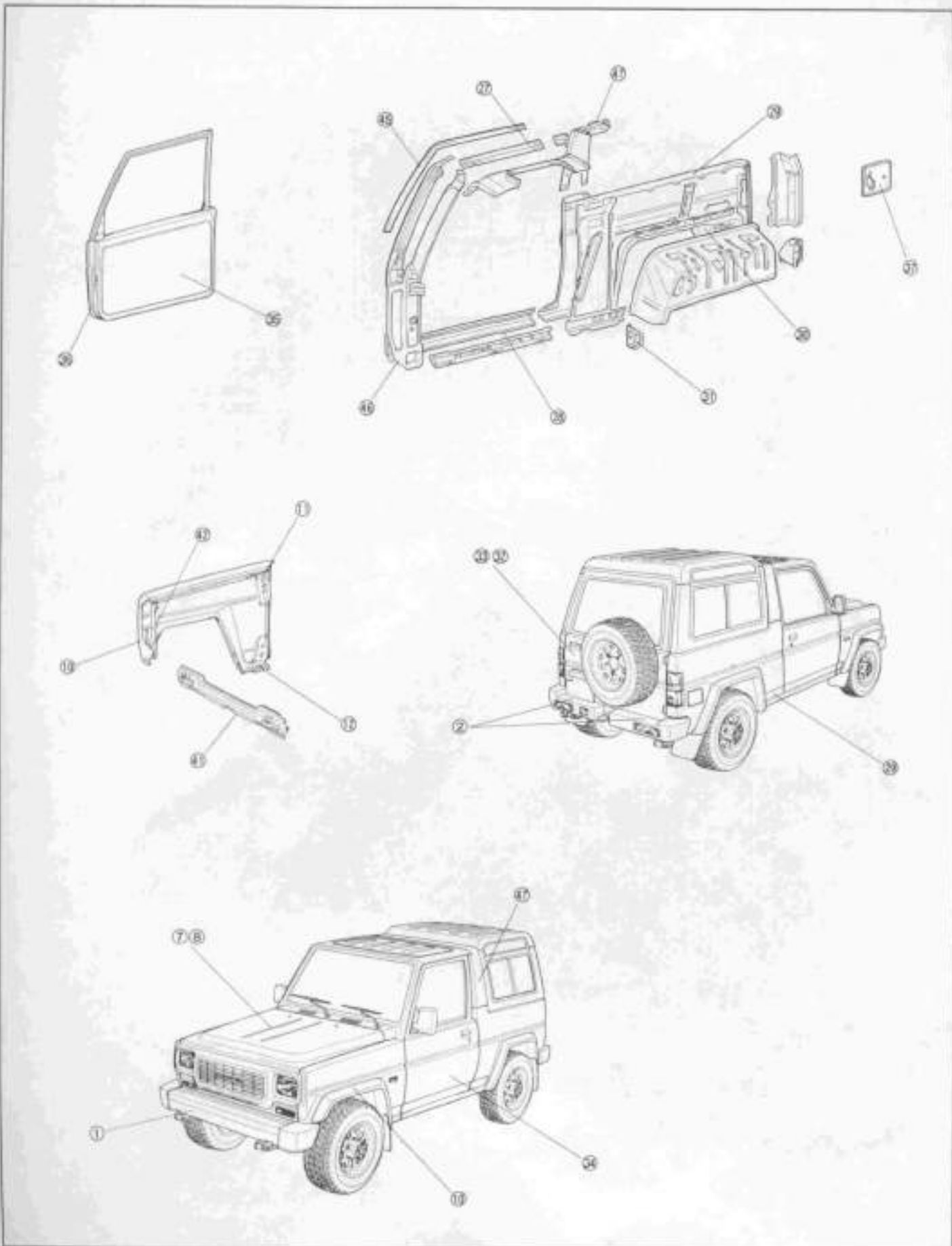


- ① Ventilator
- ② Digital clock
- ③ Clinometer
- ④ Voltmeter
- ⑤ Warning panel
- ⑥ Front wiper switch
- ⑦ Speedometer
- ⑧ Turn signal indicator lamp
- ⑨ Tachometer
- ⑩ Fuel gauge
- ⑪ Multi-use switch
- ⑫ Ventilator
- ⑬ Rear window defogger switch
- ⑭ Throttle knob (Diesel engine)
- ⑮ Rear wiper switch
- ⑯ Rear heater switch
- ⑰ Fog lamp switch
- ⑱ Power shift switch
- ⑲ Water temperature gauge
- ⑳ Cigarette lighter
- ㉑ Radio
- ㉒ Heater control panel
- ㉓ Ventilator
- ㉔ Glove box
- ㉕ Choke knob (Gasoline engine)

WRE31-5043

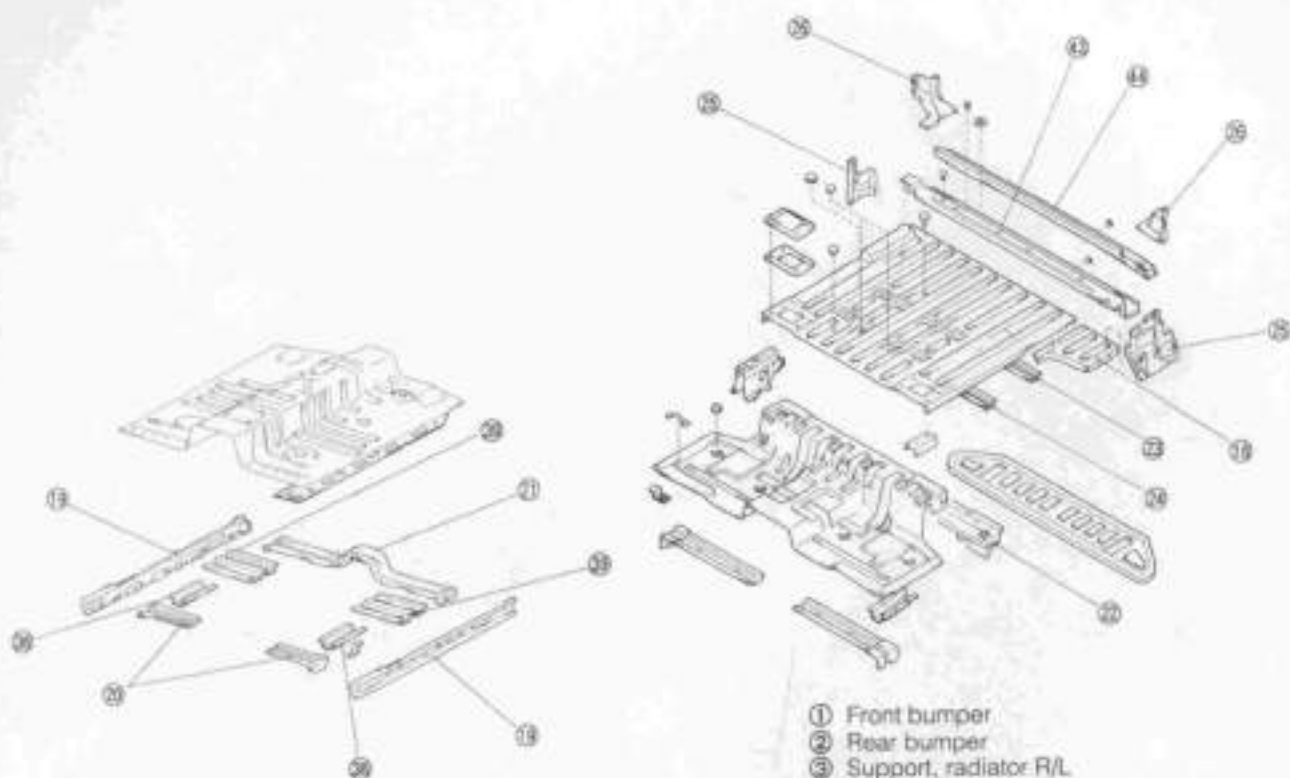
GENERAL INFORMATION

10-6. PARTS WHERE GALVANIZED STEEL SHEETS ARE USED

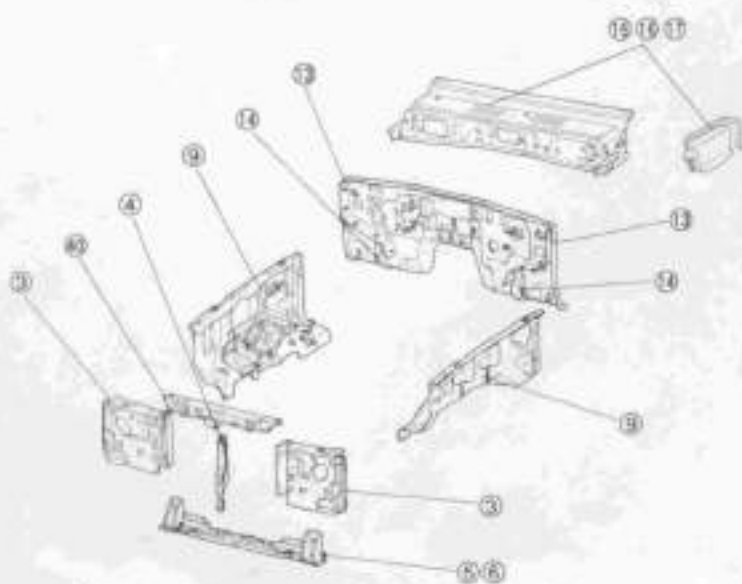


WRE91-004

(Continued)

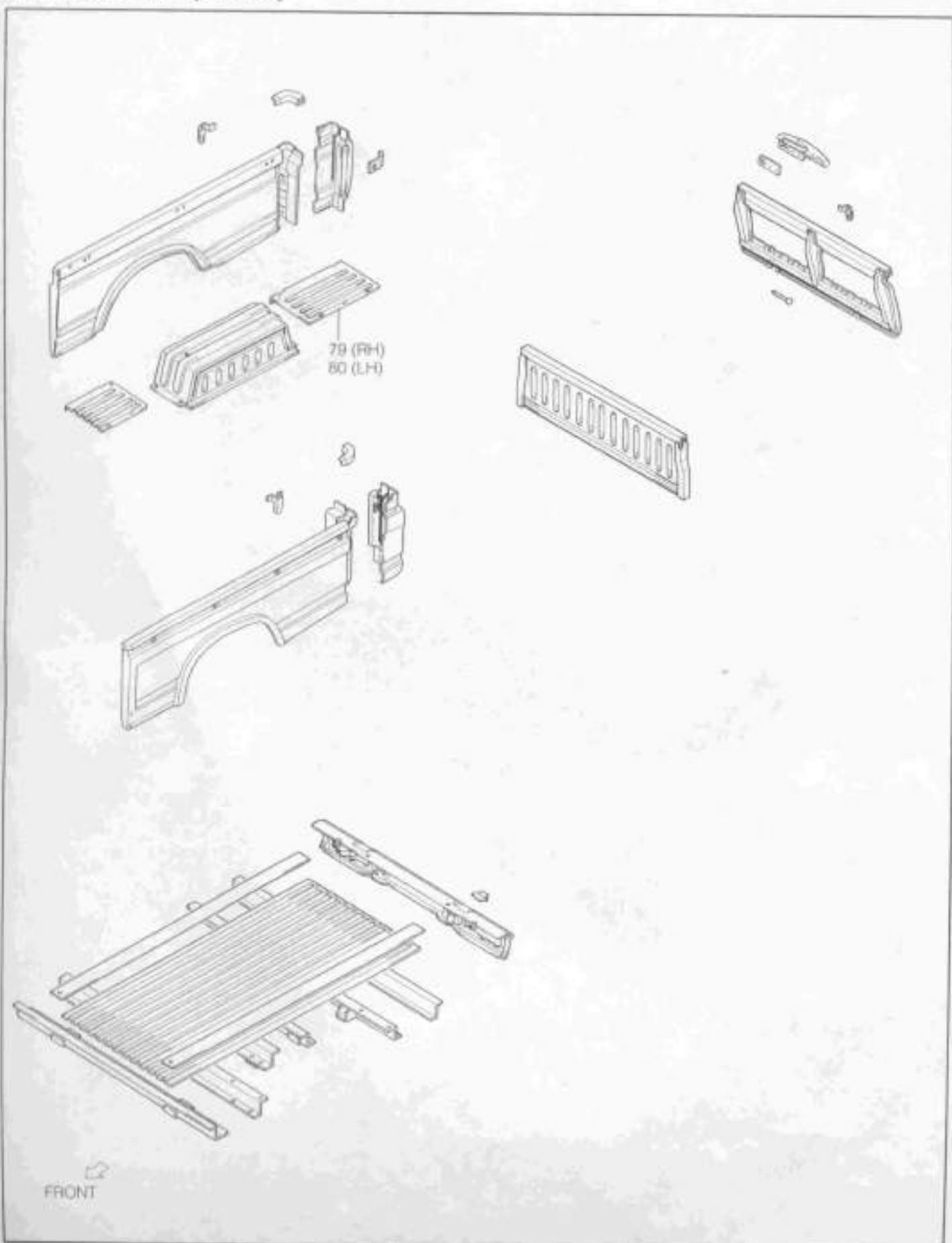


- ① Front bumper
- ② Rear bumper
- ③ Support, radiator R/L
- ④ Support, hood lock
- ⑤ Member, front cross outer
- ⑥ Member, front cross inner
- ⑦ Panel, hood outer
- ⑧ Panel, hood inner
- ⑨ Apron, front fender R/L
- ⑩ Panel, front fender R/L
- ⑪ Bracket, front fender rear upper R/L
- ⑫ Bracket, front fender rear lower R/L
- ⑬ Support, apron fender to dash R/L
- ⑭ Reinforcement, dash to floor
- ⑮ Panel, cowl top outer
- ⑯ Panel, cowl top inner
- ⑰ Panel, cowl top outside corner R/L
- ⑱ Panel, rear floor side, LH
- ⑲ Member, floor side inner R/L
- ⑳ Member, front floor cross No. 1
- ㉑ Member, front floor cross No. 2
- ㉒ Member, center floor cross
- ㉓ Member, rear floor cross No. 1
- ㉔ Member, rear floor cross No. 2
- ㉕ Panel, rear floor side rear R/L
- ㉖ Brace, rear floor panel R/L
- ㉗ Rail, roof side outer R/L
- ㉘ Panel, rocker outer R/L
- ㉙ Panel, quarter outer R/L
- ㉚ Panel, quarter wheel house outer R/L
- ㉛ Extension wheel house R/L
- ㉜ Panel, back door outside
- ㉝ Panel, back door inside
- ㉞ Panel, front door outside R/L
- ㉟ Panel, front door inside R/L
- ㊱ Panel, front door hinge side R/L
- ㊲ Lid, fuel filler opening
- ㊳ Reinforcement, front floor under
- ㊴ Reinforcement sub assy, front floor



GENERAL INFORMATION


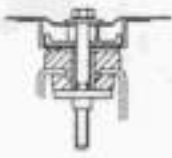
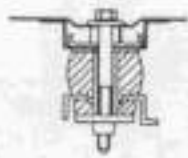


(Continued — Pickup model)




FRONT

10-7. BODY MOUNTS

The mounts where vehicle body and frame are coupled is fitted in such a manner as effectively reduce the vibration from the suspension and drive system.

No.	1	2	*3	4	5
Hardness	46°	60°	42°	46°	60°
Color code	Yellow	White	Two lines	Yellow	White
Configuration			(Except for hard top) 		

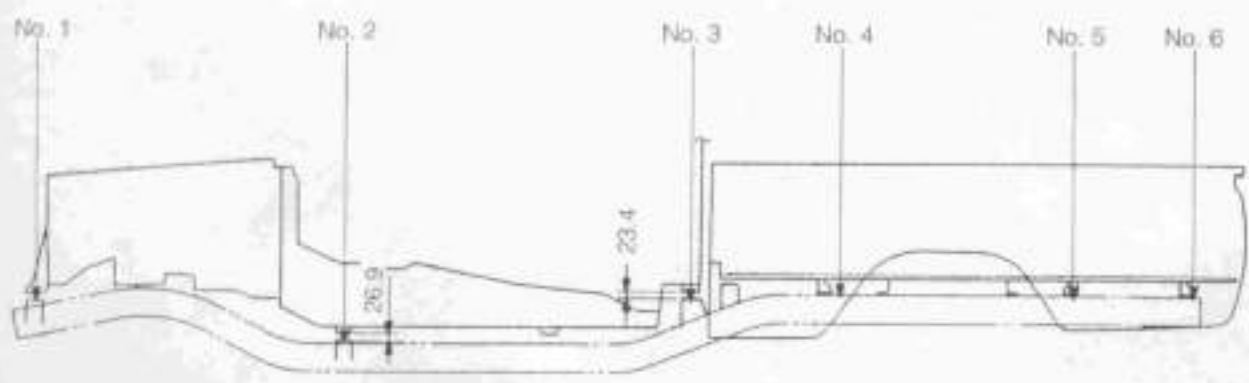
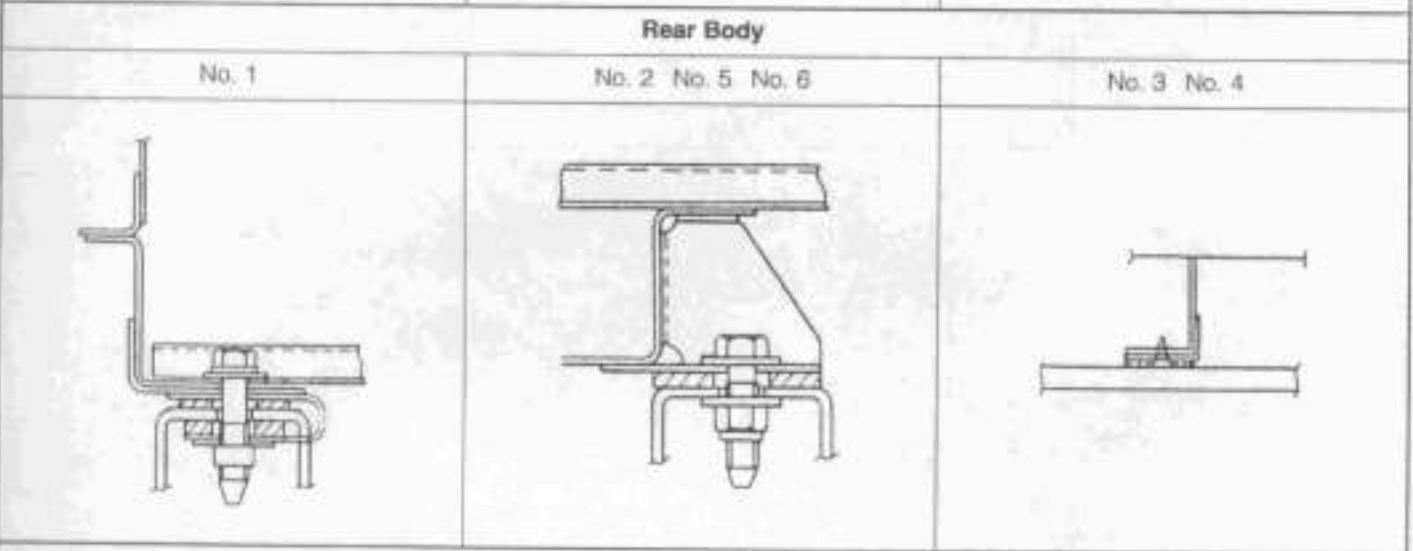
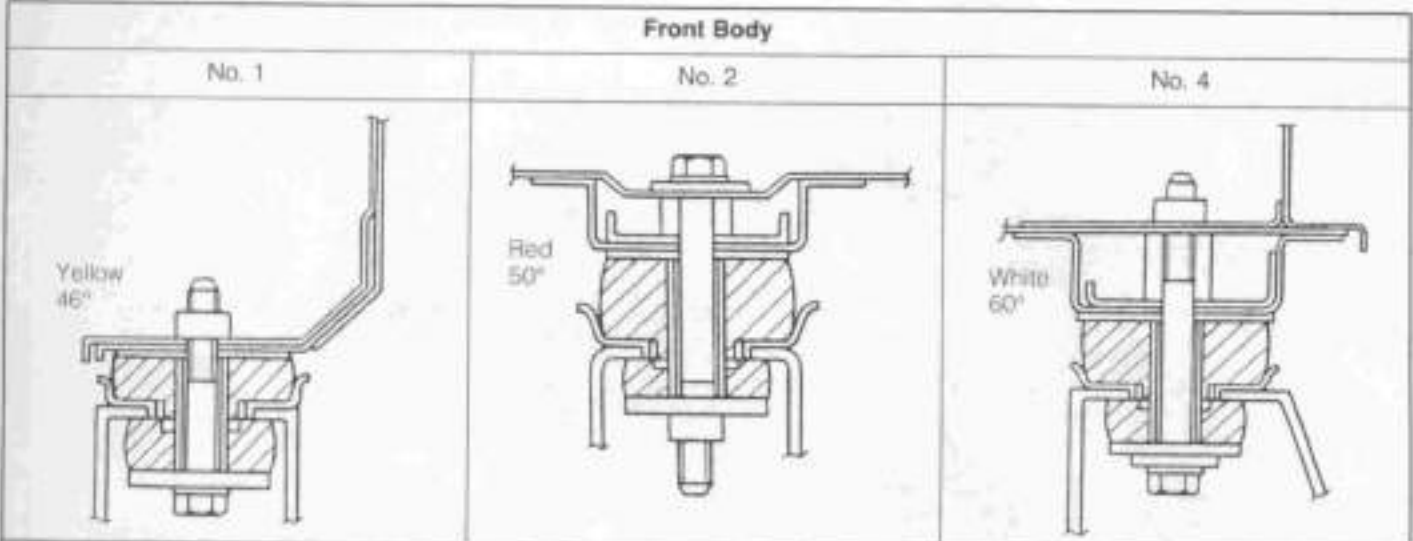


*Hard top (F70V and F80V) are free mount.

WR91-G047

GENERAL INFORMATION

(Continued — Pickup model)



Unit: mm

Unit: mm

WRE31-G048

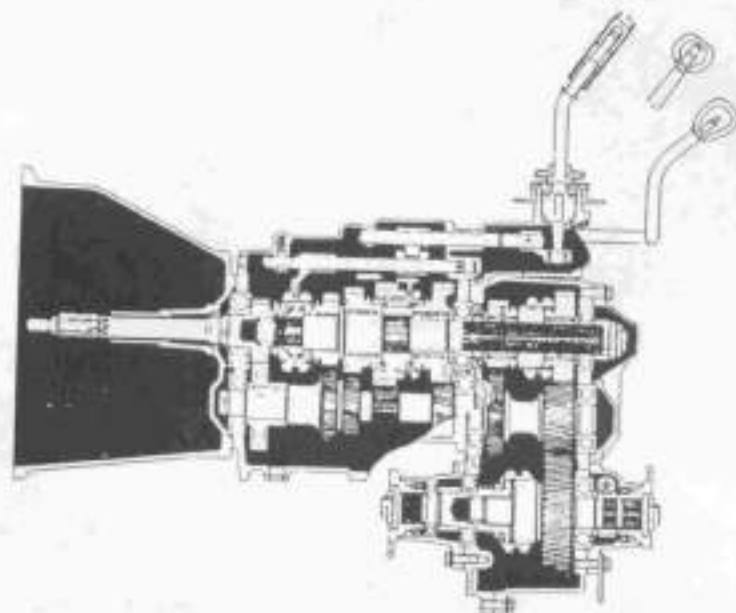
11. SUMMARY OF POWER TRAIN CONSTRUCTION

11-1. TRANSMISSION & TRANSFER

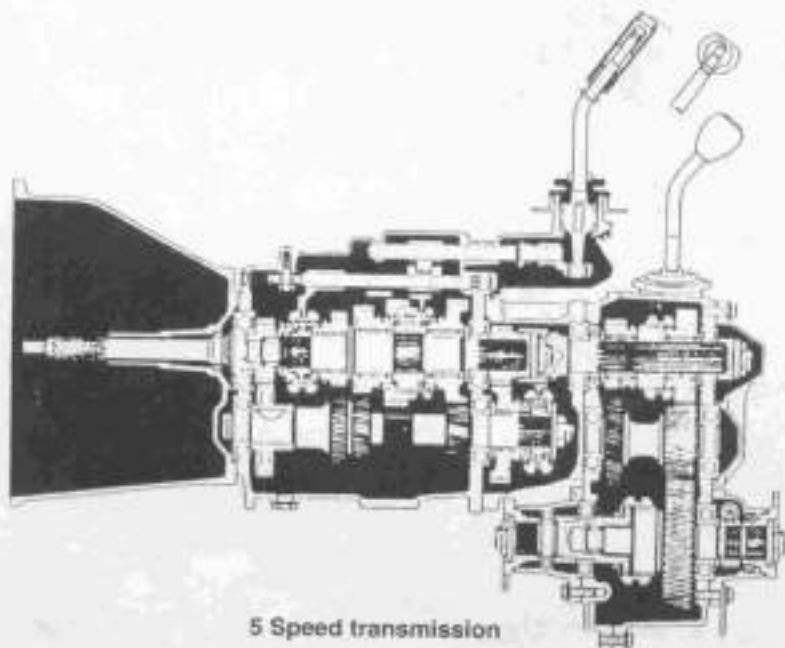
There are two transmission types, 4 speed and 5 speed.

The shift lever incorporating vibration-proof system provides smoother and more quiet shifting. The 5 speeds transmission is equipped with a mis-shift preventive mechanism to prevent direct shifting from the 5th to Reverse.

On the transfer, there are two speeds gear ratio, high and low with mechanical shifting or power shifting (optional equipment).



4 Speed transmission



5 Speed transmission

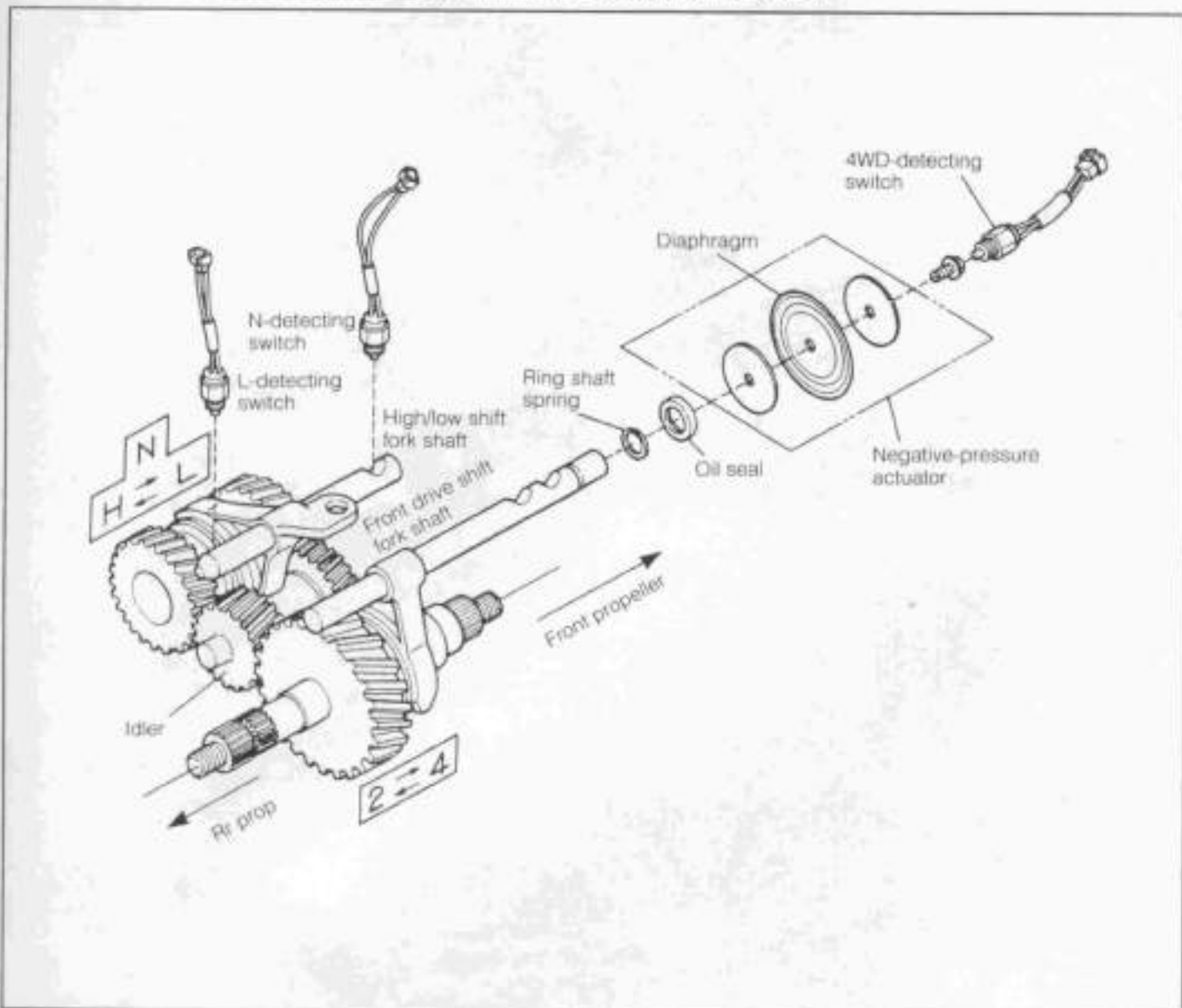
GENERAL INFORMATION

11-2. POWER SHIFT MECHANISM

The shift from the two-wheel drive to the four-wheel drive and vice versa can be performed by means of power shift switch which utilizes a negative pressure actuator.

The negative pressure which has been generated by the vacuum pump is transmitted to a diaphragm actuator provided inside the transfer case. Consequently, the thrust generated by the actuator is transmitted directly to the drive shift fork shaft. In this way, the shift from the two-wheel drive to the four-wheel drive and vice versa is performed.

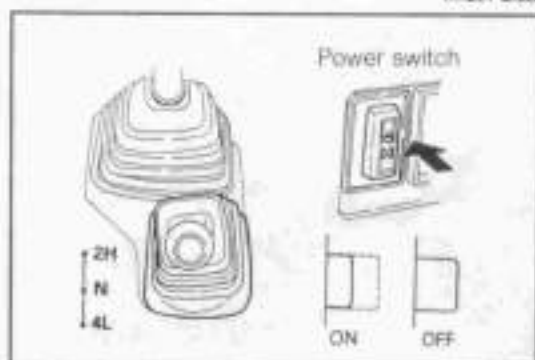
This device is available as optional equipment with 5-speed transmission.



WRE91-GR00

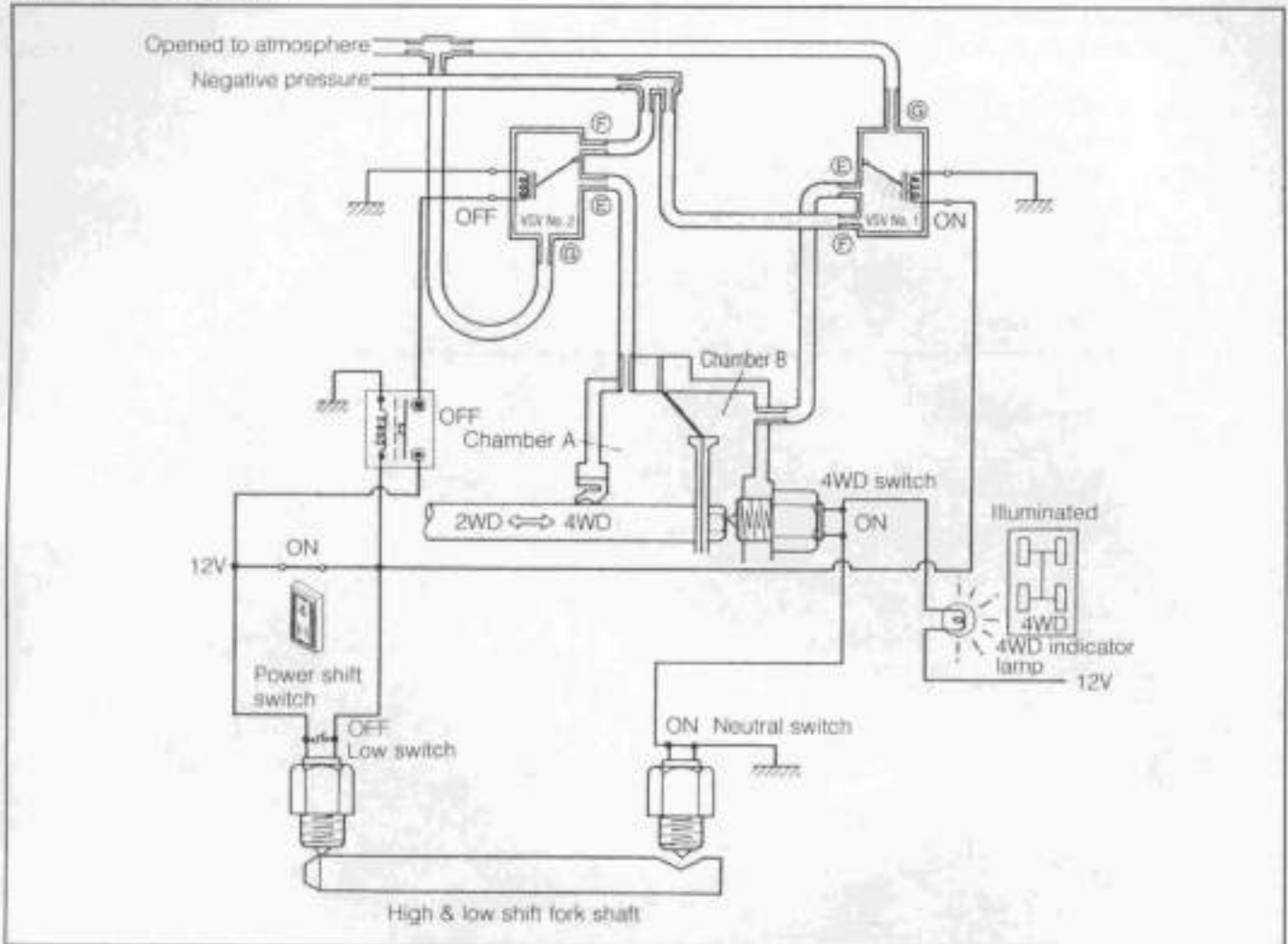
(1) Power switch operation

- 2H: 2-wheel drive, high speed range.
Shift the transfer shift lever into 2H position and turn OFF the power switch.
- 4H: 4-wheel drive, high speed range.
Shift the transfer shift lever into 2H position and turn ON the power switch.
- 4L: 4-wheel drive, low speed range.
Shift the transfer shift lever into 4L position, even if the turn ON the power switch, do not operate to shift 4H.



GRE91-0001

(2) Operation diagram



WRE91-G1052

(3) Operating conditions of each switch

	2H		N		4L
Power switch	ON	OFF	ON	OFF	ON/OFF
VSV No. 1	ON	OFF	ON	OFF	ON
VSV No. 2	OFF	ON	OFF	ON	OFF
Low SW	OFF	OFF	OFF	OFF	ON
Neutral SW	ON	ON	OFF	OFF	ON
4WD SW	ON	OFF	ON	OFF	ON

WRE91-G1053

(4) Description

- High speed range (2H)
A negative pressure is applied to the chamber B of the actuator through the VSV No. 1. At this stage, the atmospheric pressure is applied to the chamber A of the actuator from the VSV No. 2. Consequently, because of the difference in pressure being applied to the diaphragm, the front drive shift fork which is connected directly to the diaphragm will be shifted to the four-wheel drive side.
- Low-speed range (4L)
The negative pressure is transmitted in the same way as with cases where transfer shift lever is in the 2H position with the power switch turned ON. Since the low switch is turned ON, the VSV No. 2 is OFF regardless of the state of the power shift switch. As a result, the vehicle is driven on the four-wheel drive.

WRE91-054

11-3. AUTOMATIC LOCKING HUB (ALH)

(1) Objective of setting

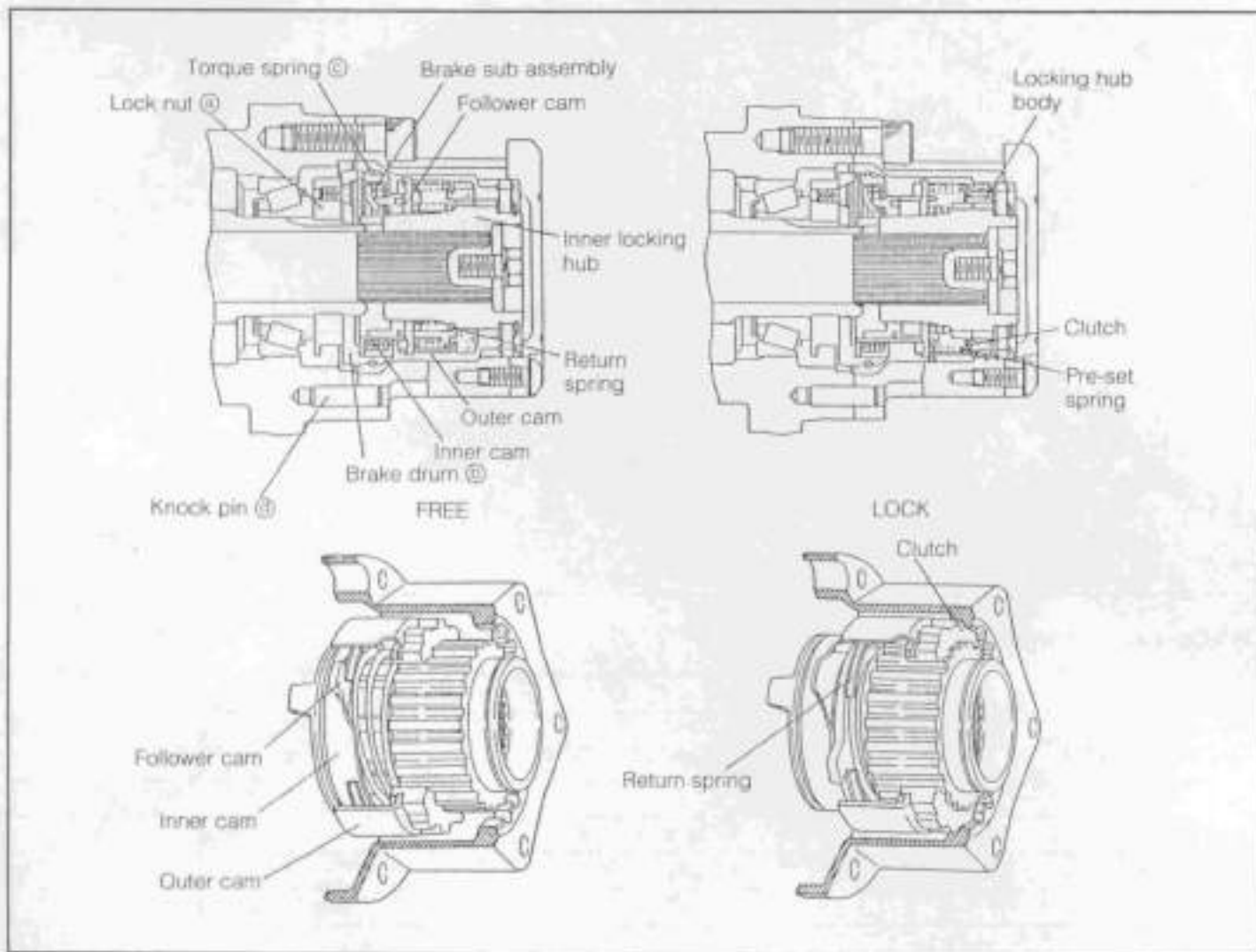
The ALH is set for improving the free ↔ lock switching operability from the conventional manual free wheel hub.

Namely, the ALH is capable of automatic switching by just starting the car while the free ↔ lock switching is to be done manually in the manual free wheel hub.

The ALH is mounted at the same position as the manual free wheel hub.

WRE91-G055

(2) Outline of structure



Major differences with manual free wheel hub (Assembly parts)

- (i) A bearing lock nut (A) is provided. (The existing bearing nut is not required.)
- (ii) A brake drum (B) is provided to also replace the claw washer. (A claw washer is not required.)
- (iii) (A) and (B) are tightened and fixed by the torque spring (C).
- (iv) A knock pin (D) is set instead of the axle hub and ALH socket joint.
All of (A) - (D) are ALH-dedicated parts.
- (V) Drive shaft is also required for automatic locking hub, when modification from manual to auto locking hub.

WRE91-G056

(3) Operation method**FREE → LOCK**

1. Stop the car and change the T/F to 4WD.
2. Start the car slowly holding the steering wheel in a straight forward travelling condition. (Note 1)
3. Run about 3 m or more, and the system will lock automatically.

LOCK → FREE

1. Stop the car and change the T/F to 2WD.
2. Back up the car slowly holding the steering wheel in a straight forward travelling condition. (Note 2)
3. Run about 3 m or more, and the system become free automatically.

Notes

1. It doesn't matter whether forward or backward.
2. Strictly speaking, start the car in the opposite direction to the direction of travelling just before changing the T/F to 2WD.

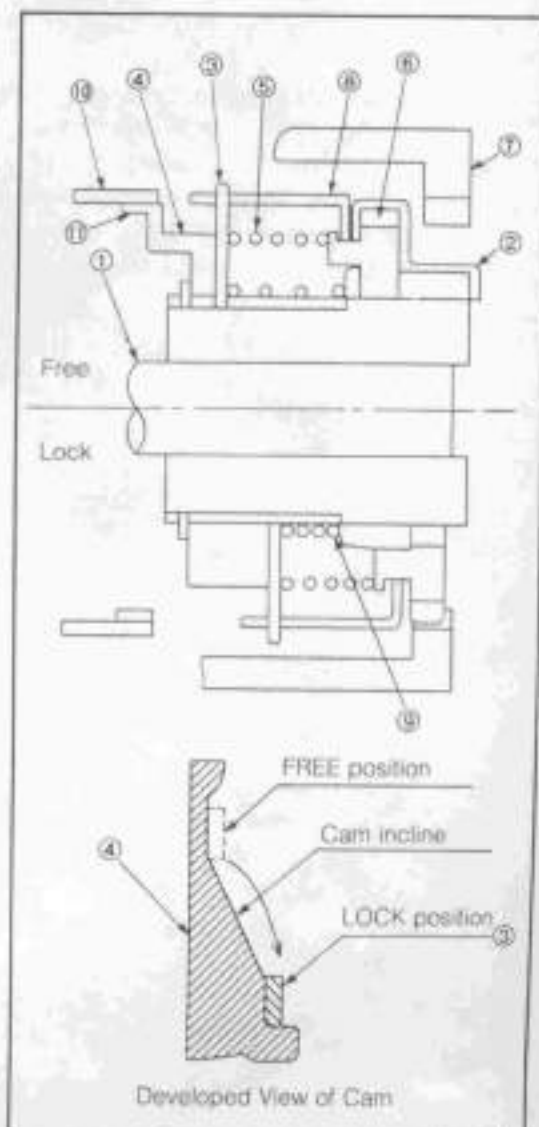
WRE31-G057

(4) Operating principle**FREE → LOCK**

1. When the car is started after changing the T/F to 4WD, the drive shaft ① turns to turn the inner ② and the cam follower ③ as one.
2. The brake drum ⑩, which is fixed to another part (bearing lock nut), does not turn. The brake sub-assembly ⑪ is suppressed from turning by the frictional force with ⑩. ④, which is engaged with the claw of ⑪, is also suppressed from turning. (Note 1)
3. As a result, ③ climbs the cam incline of ④ while turning to move to the right-hand side of the diagram. (See the developed view of the cam.)
4. As ③ moves to the right-hand side, the clutch ⑥ attached to the preset spring ⑤ also moves to engage the hub body's ⑦ inner teeth to lock.

Note 1.

- When locked, ⑪ starts turning to slide along the frictional face of ⑩.



WRE31-G058

GENERAL INFORMATION

LOCK → FREE

1. When the car is backed up after changing the T/F to 2WD, the system is driven backward from the wheel side to turn ⑦, ⑥ and the hub joint ⑧, ③ backward as one. (② and ① also turn as one until unlocked.)
2. ③, which is pressed onto the cam incline of ④ by the return spring ⑨, goes down the cam incline of ④ to move to the left-hand side of the diagram.
3. As ③ moves to the left-hand side, ⑥ is pulled to the left-hand side by ⑧ to free the system.

WRE91-G069

Cautions on user handling

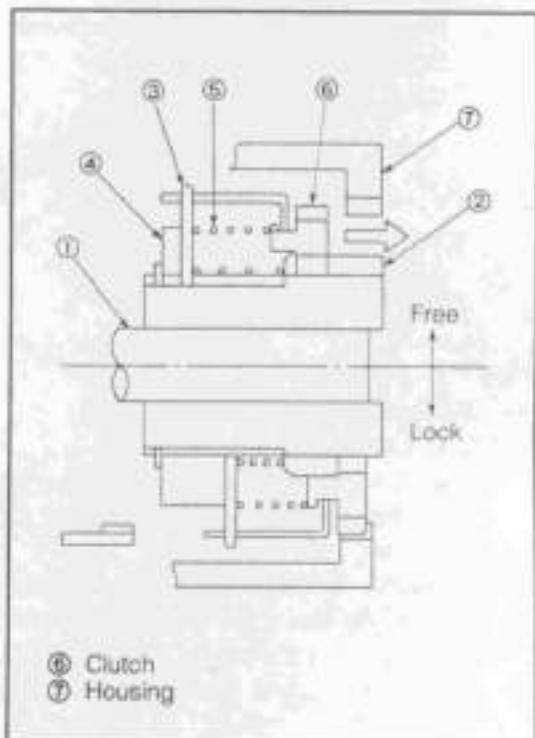
In the event of ratcheting, stop the car once, change the T/F to 4WD, and then start the car.

1. Avoidance of Ratcheting

The gear noise that occurs when the clutch and the housing are about to lock while there is a difference between the speeds of the two.

2. Prevention of T/F Operation during Travelling Ratcheting occurs if the T/F is shifted 2WD → 4WD by mistake while travelling with the T/F at 2WD and the ALH free. In that case, take the disposition of 1.

3. Observance of Straight Forward Starting at ALH Change when changing the ALH free ↔ lock, hold the steering wheel in a straight forward travelling condition and run about 3 m or more. (If the steering wheel is turned before running a minimum of 3 m, one of the ALH's on both sides locks while the other becomes free to cause ratcheting.)



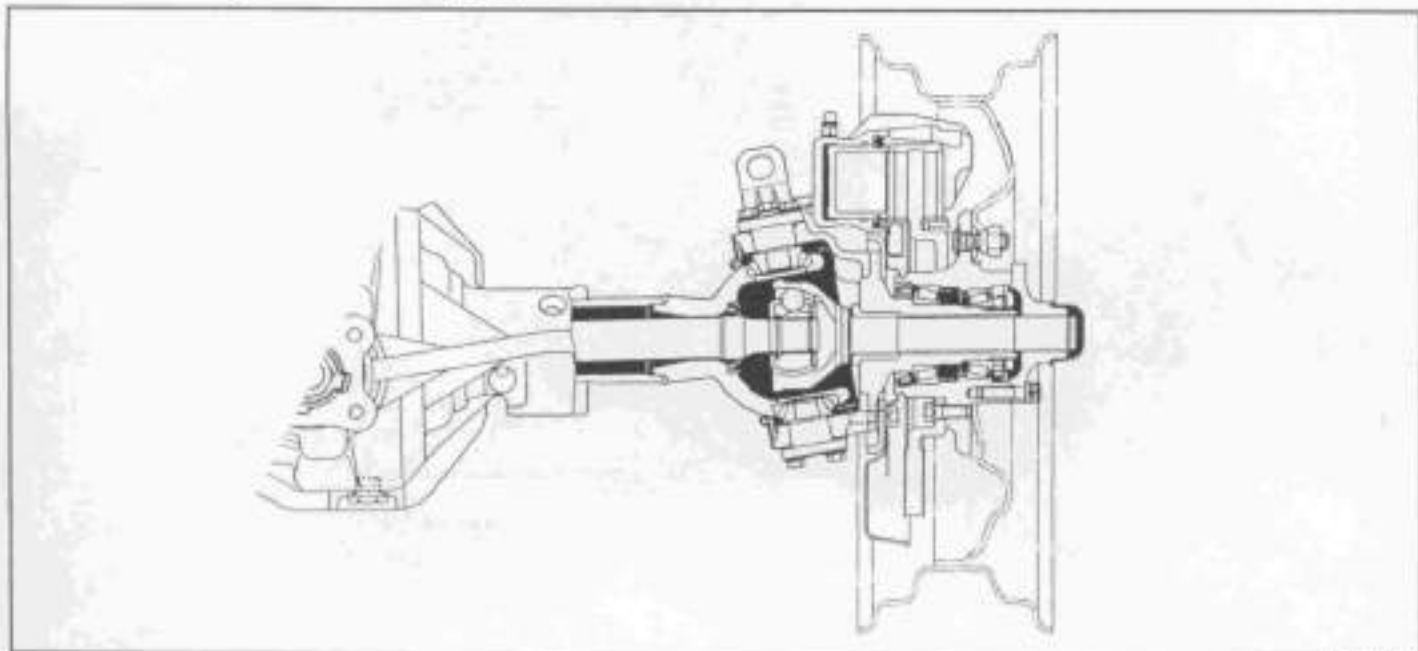
WRE91-G069

12. SUMMARY OF CHASSIS CONSTRUCTION

12-1. FRONT AXLE

The front axle is of the full floating shaft tube type. It consists of Birfield type constant velocity ball joints, which make possible simultaneous front wheel driving and steering simultaneously and the steering knuckles, which also serve as the ball joint cases.

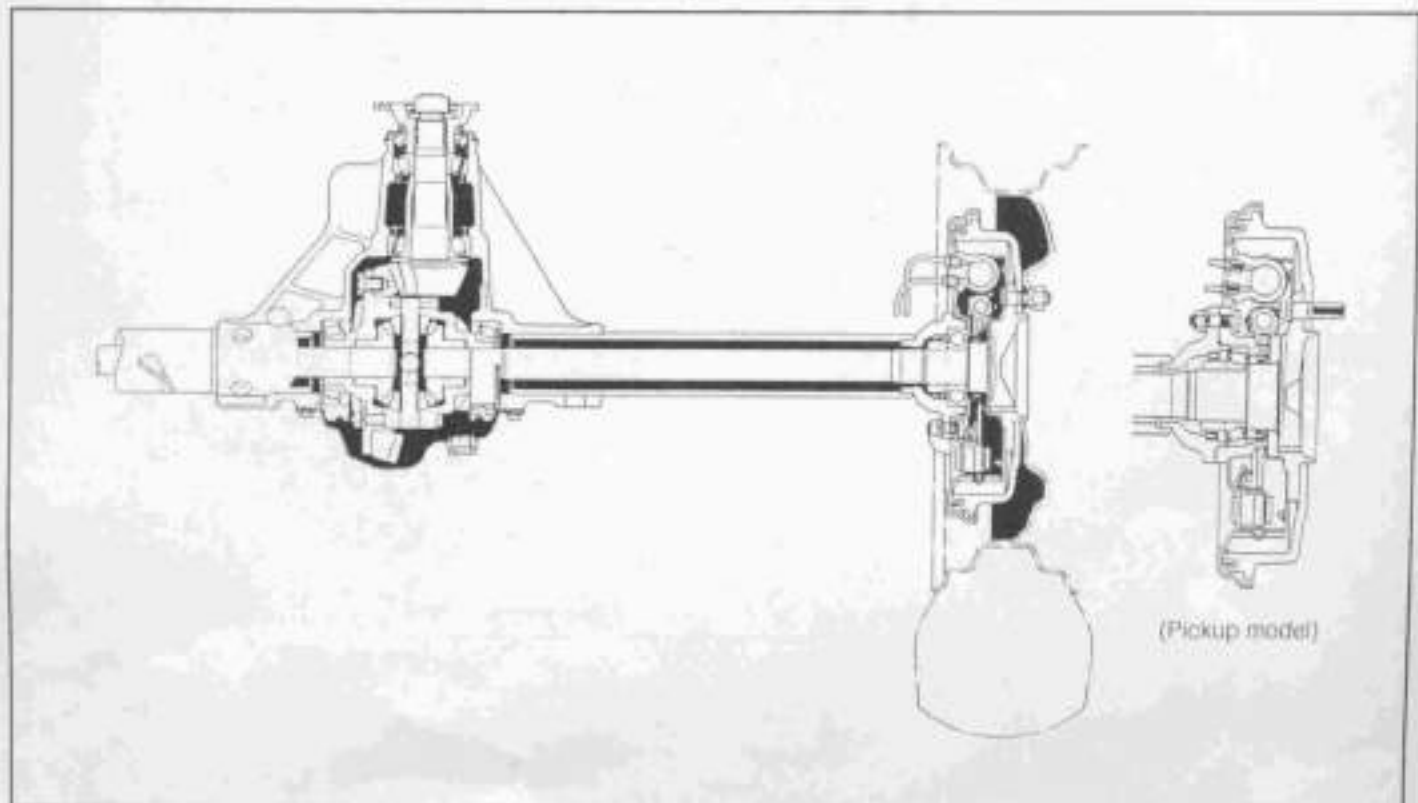
The steering knuckle is connected to the front axle housing through the tapered roller bearings at the upper and lower steering knuckle bearing caps.



WFE91-G101

12-2. REAR AXLE

The rear axle is of the semi-floating type with a built-up type housing. The differential has been mounted off-center toward the right side in relation to the longitudinal center of the vehicle.

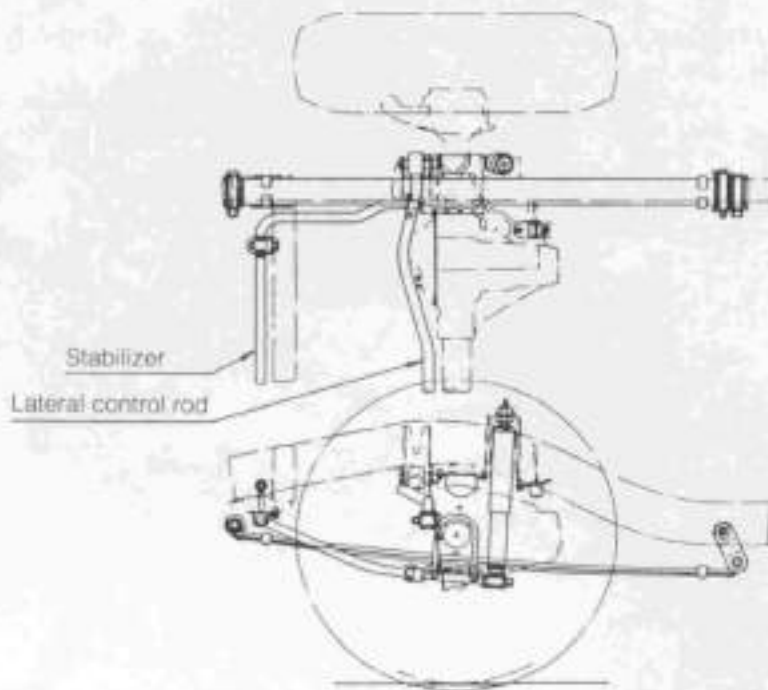


WFE91-G102

GENERAL INFORMATION

12-3. FRONT SUSPENSION

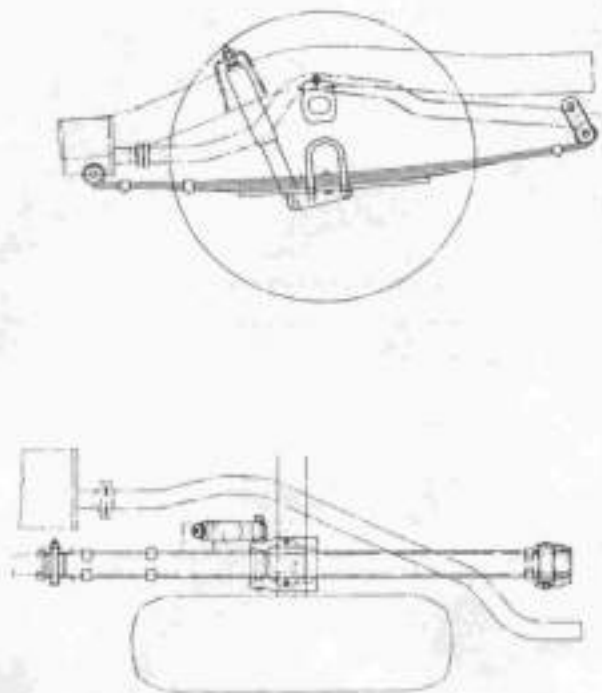
For greater riding comfort and operational safety, the front suspension features stabilizer, lateral control rods, gas-loaded shock absorbers and rear shackles.



WRE91-G1063

12-4. REAR SUSPENSION

The rear suspension features large-size gas-loaded shock absorbers and spring dumpers, both fabricated of rubber for greater riding comfort.



WRE91-G1064

12-5. THREE-STAGE DAMPERS

The three-stage dampers allows switching the damping force of the shock absorbers in three steps depending on the road and traveling conditions. It is used in the F70 and F75 as optional equipment. The dampers are operated from the switch in the center console box.

(1) SOFT

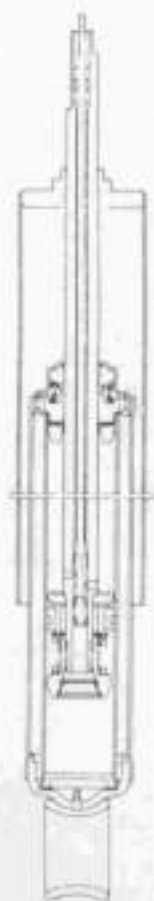
Both of the two holes provided in the control rod and the shaft align with each other. This increases the amount of gas which is passed, decreasing the damping force.

(2) NORMAL

Only one of the two hole align, increasing the damping force to the medium level.

(3) HARD

Both of the holes are out of alignment, maximizing the damping force. The damping force is generated by these holes and the piston valve section.

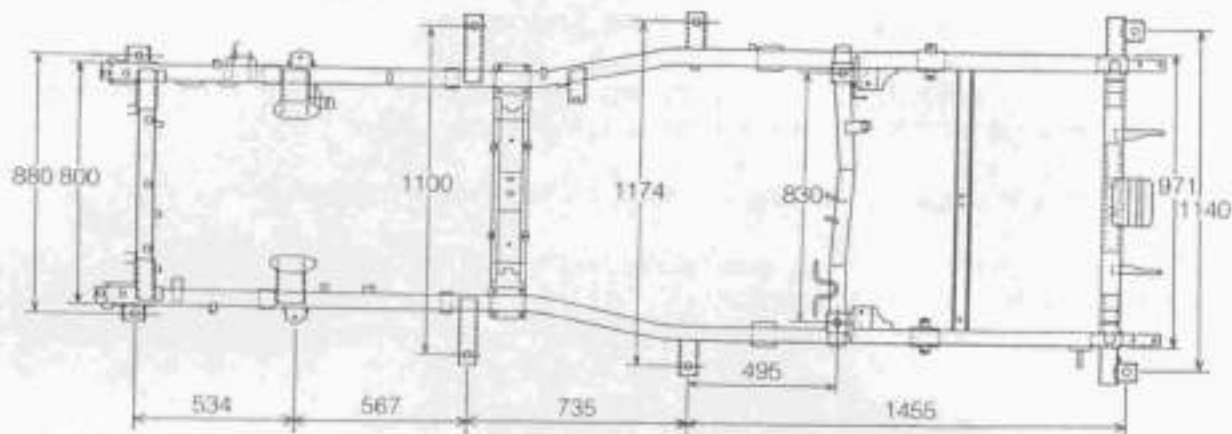


Selection Mode	Condition of gas holes		
	Shaft	Expand	Contact
SOFT			
NORMAL			
HARD			

GENERAL INFORMATION

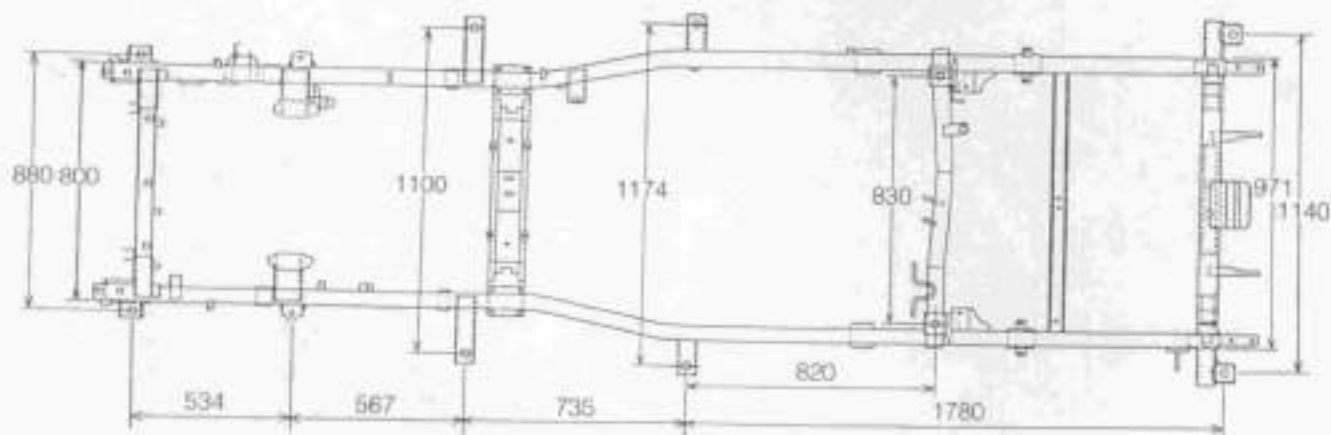
12-6. FRAME

F70



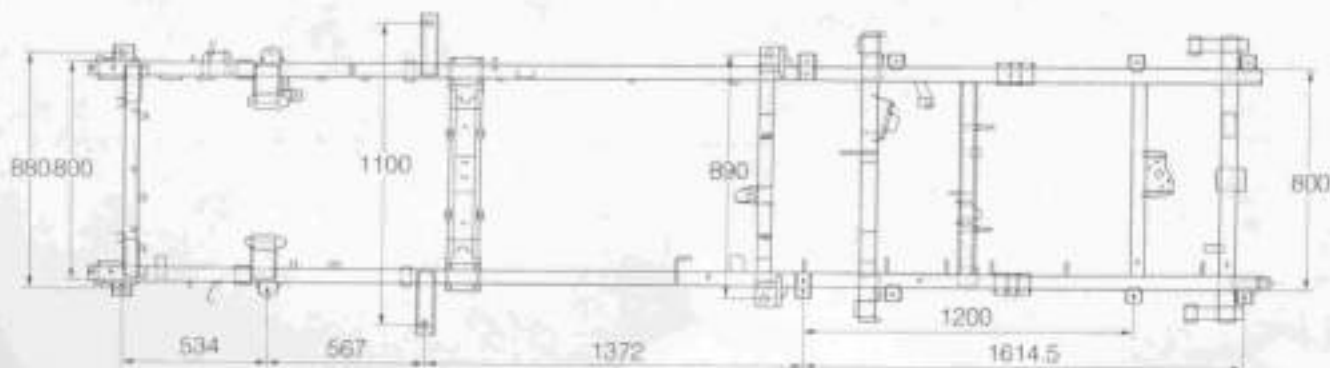
WRE91-G006

F75



WRE91-G007

F77



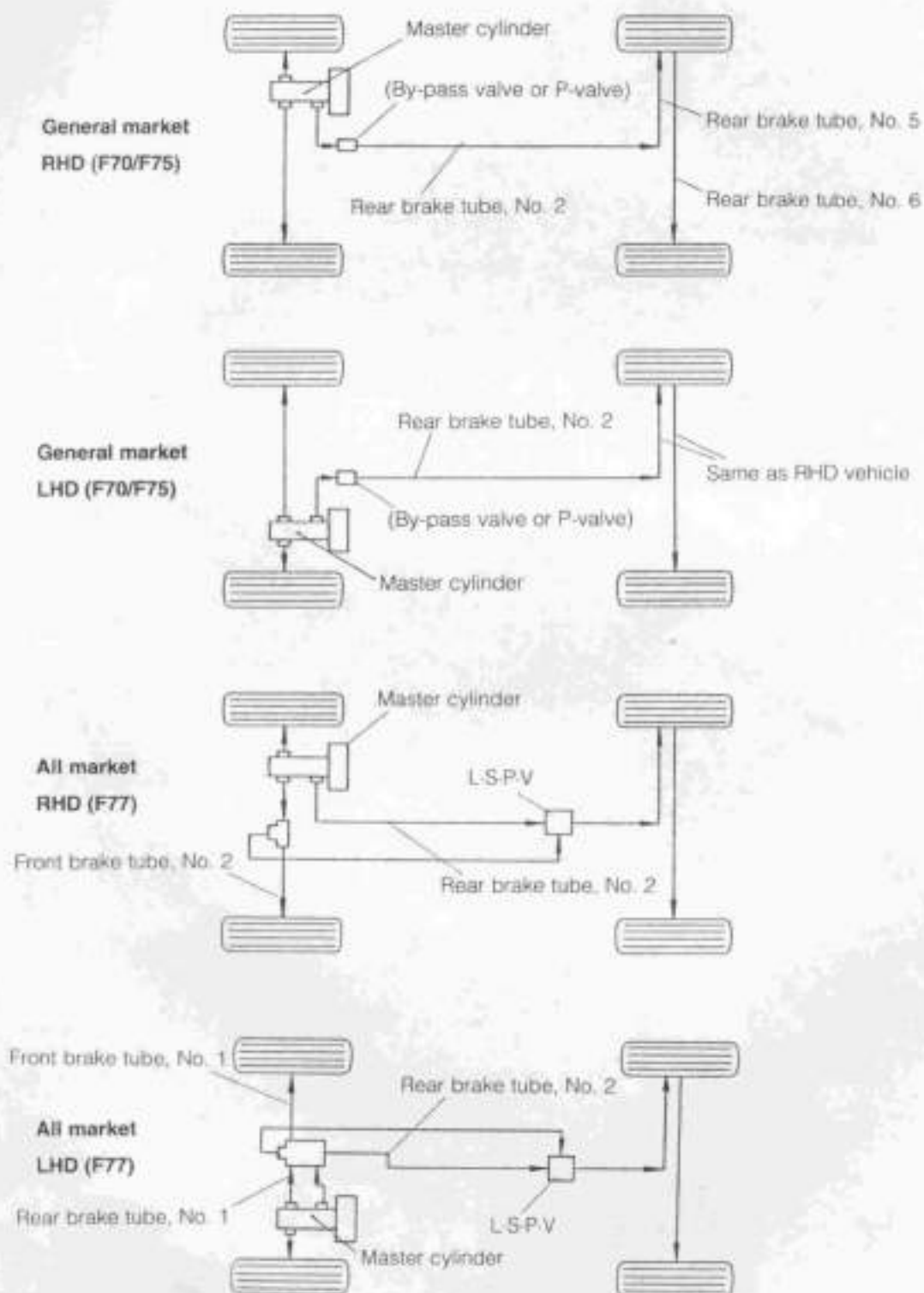
WRE91-G008

12-7. BRAKE

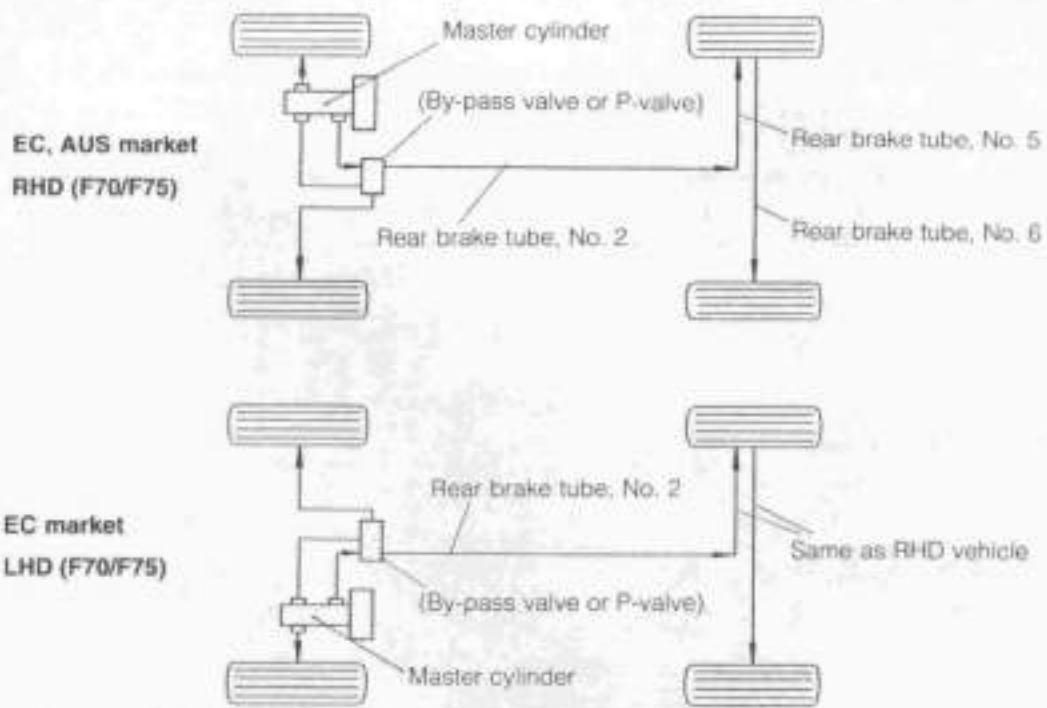
(1) Brake line

The brake line comes in two kinds; one for the R.H.D. vehicles and the other for the L.H.D. vehicles. On all models, the disc brake is provided at the front wheels, while the drum brake is installed at the rear wheels.

The rear brake systems are operated through a proportioning valve on General market, a by-pass valve on AUS and EC market, and a load sensing proportioning valve for F77 model.

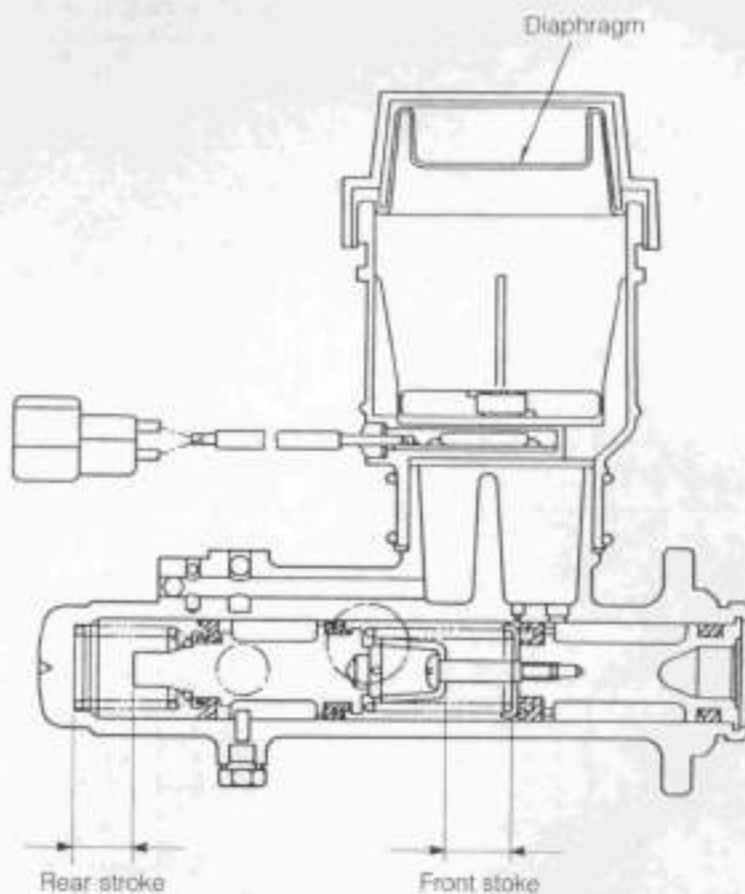


GENERAL INFORMATION



(2) Master cylinder and reservoir

The master cylinder is an aluminum casting. The reservoir is a sealed type which shuts off the brake fluid from the atmosphere with the diaphragm, thus preventing the fluid from deteriorating and maintaining high braking capacity for long periods of time.



Master cylinder specifications

Cylinder bore	mm	22.22	
Stroke	mm	Front	18.5
		Rear	11.5
Reserve tank capacity	cc	Front	16
		Rear	12
			114 (Common use as front and rear)

WRE91-G070

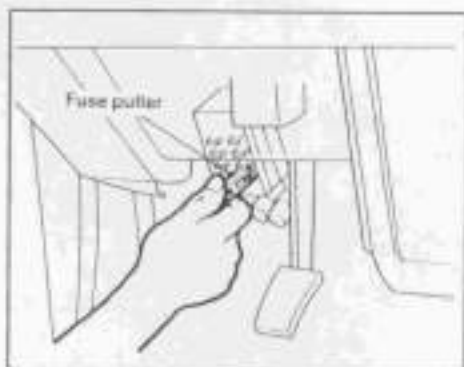
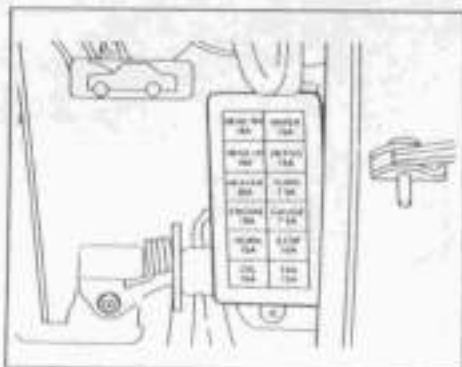
GENERAL INFORMATION

13. SUMMARY OF BODY ELECTRICAL

13-1. FUSE BLOCK & FUSIBLE LINK

The fuse block is located at the cowl side of the driver's side. Blade type fuses have been employed. A fuse is provided independently for each of the right and left headlamps in order that the load for each circuit may be reduced.

A sub-fuse block is installed below the instrument panel at the driver's seat side.

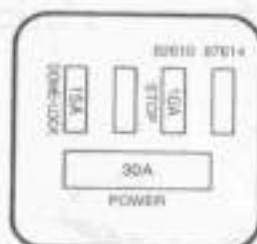
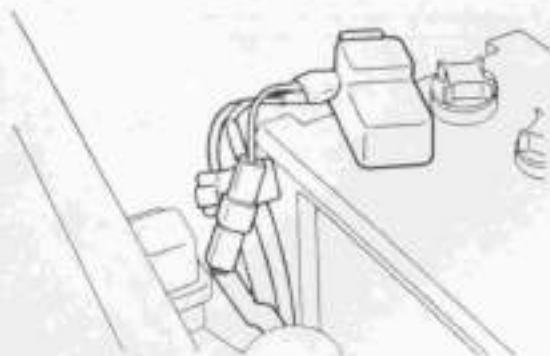


HEAD RH 15A	WIPER 15A
HEAD LH 15A	DEFOG 15A
HEATER 30A	TURN 7.5A
ENGINE 10A	GAUGE 7.5A
HORN 15A	STOP 10A
CIG 15A	TAIL LH 15A

Other than LHD/European

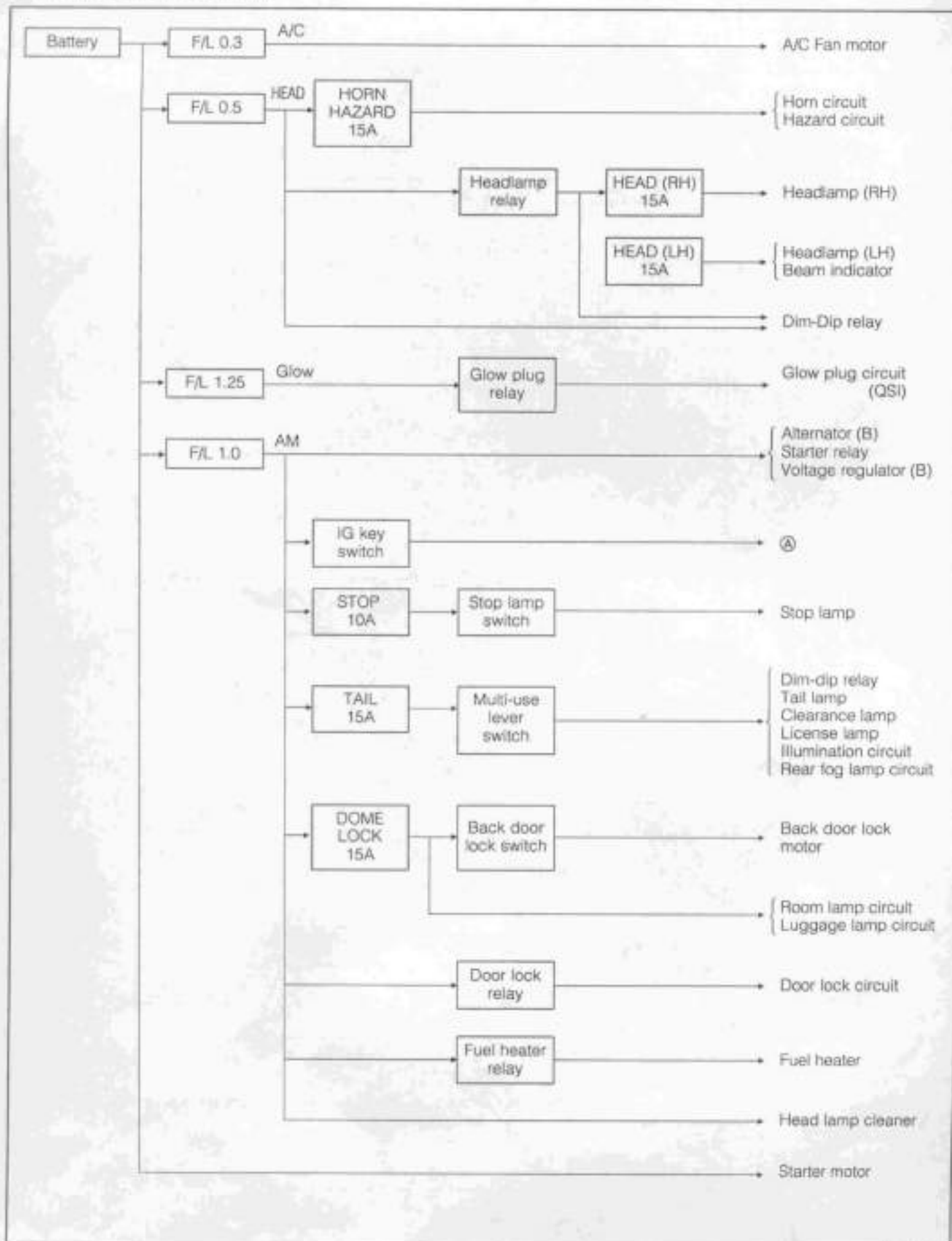
HEAD RH 15A	WIPER 15A
HEAD LH 15A	DEFOG 15A
HEATER 30A	TURN 7.5A
ENGINE 10A	GAUGE 7.5A
HORN 15A	TAIL RH 10A
CIG 15A	TAIL LH 10A

LHD/European spec.



Sub fuse block

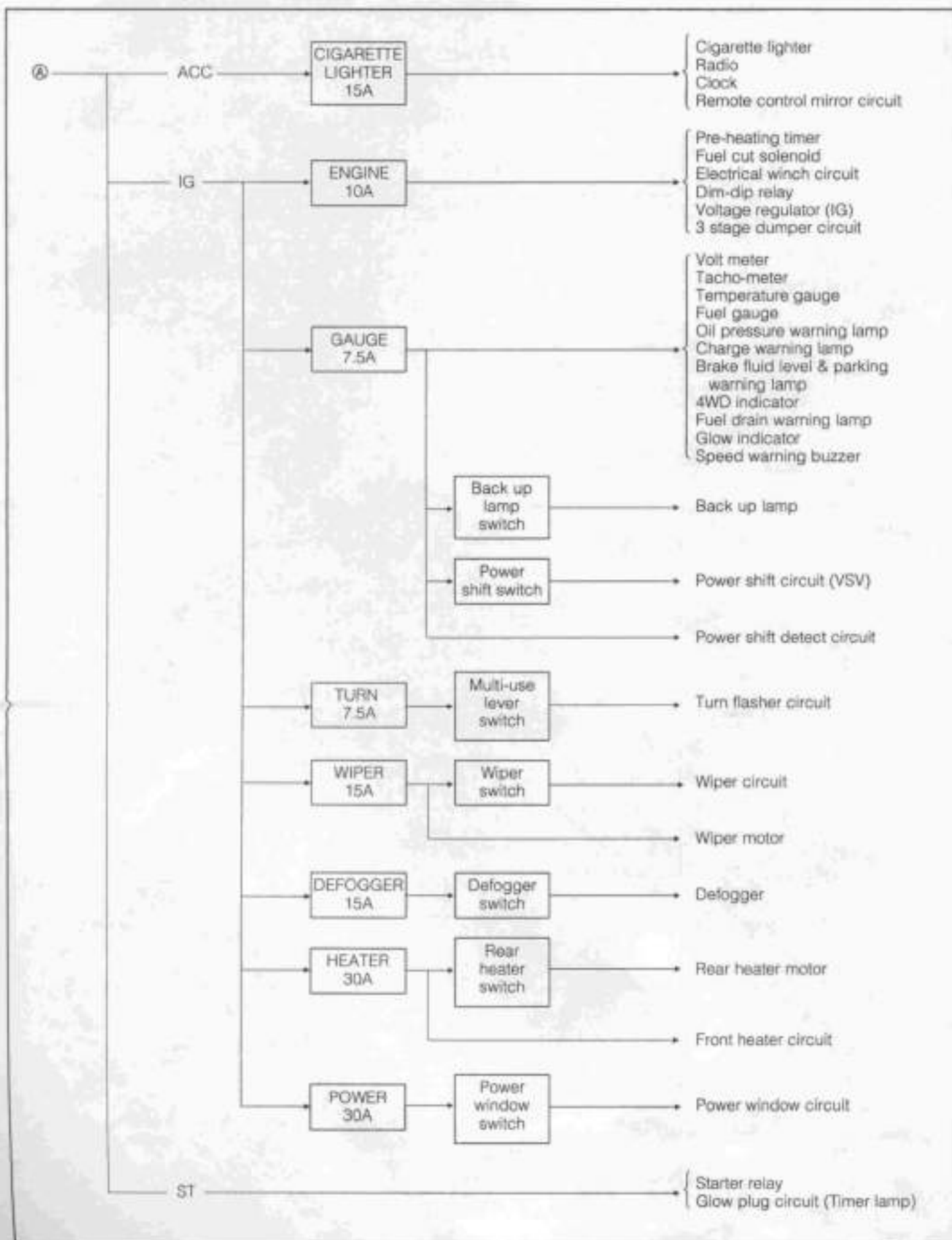
13-2. FUSE CIRCUIT (1)



WRE91-0072

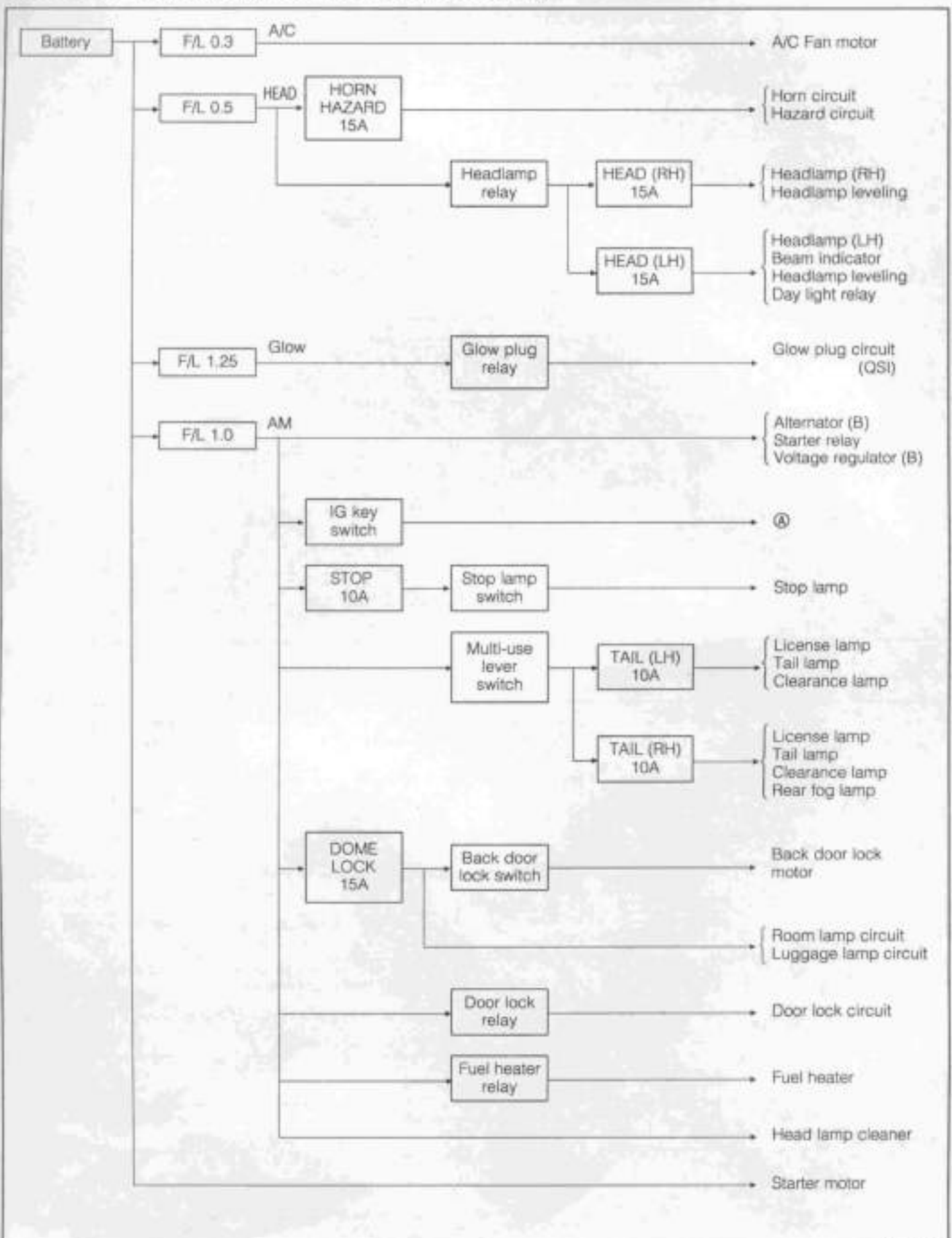
GENERAL INFORMATION

FUSE CIRCUIT (2)



WPEB1-G073

FUSE CIRCUIT (3) (Only for LHD European spec.)



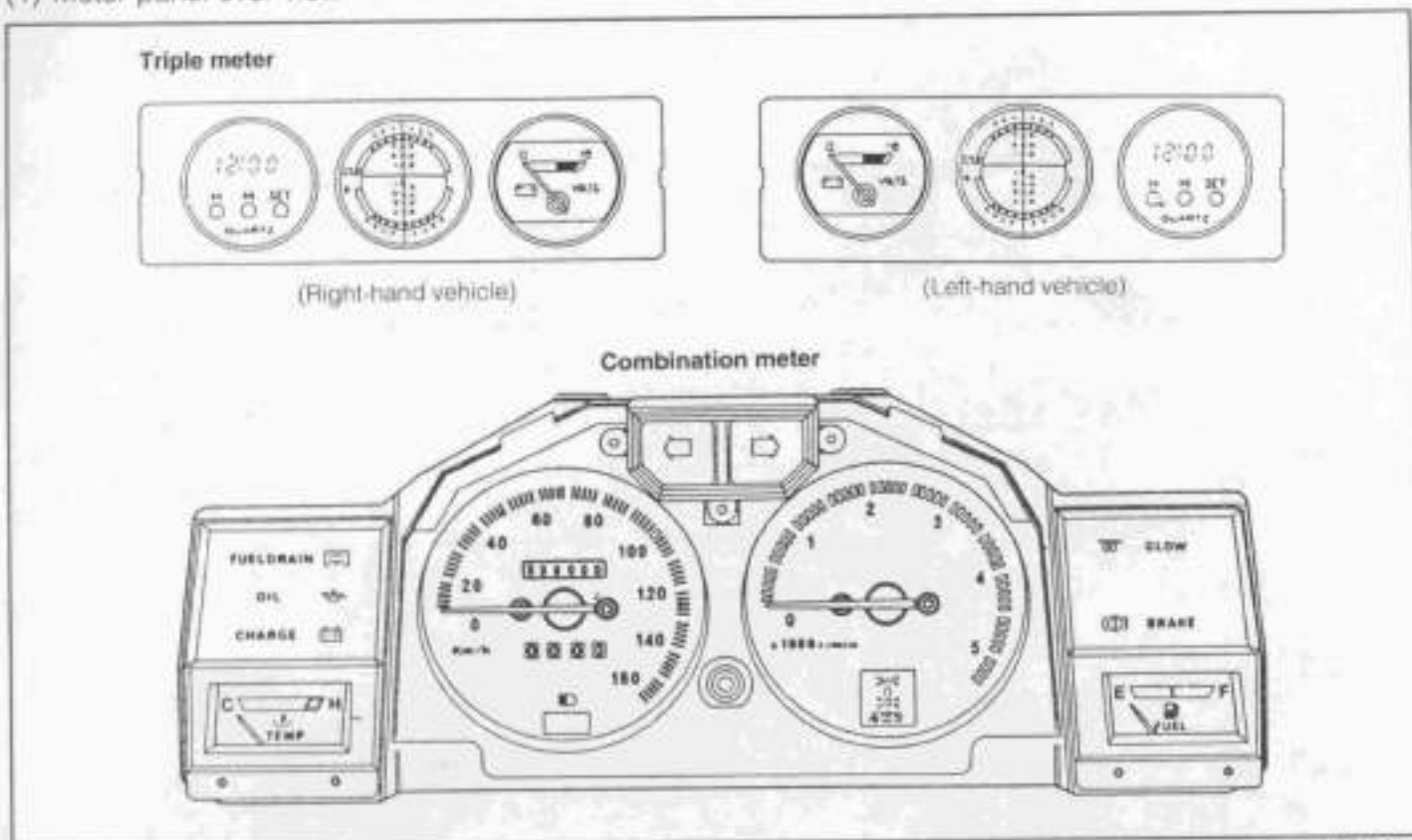
WRE91-0074

GENERAL INFORMATION

13-3. INSTRUMENT PANEL

A speedometer, warning lamp and indicators are incorporated in a combination meter, and voltmeter, clinometer and clock are combined into one triple meter.

(1) Meter panel over view



WR01-G075

(2) Warning & Indicator lamps

	Kind	Indication	Function
Warning lamp	Hazard warning	HAZARD	Flashes when hazard switch is turned ON. Indicating color: Red
	Brake warning	BRAKE	Glow when brake fluid becomes too low or empty, or when parking brake is applied. Indicating color: Red
	Parking brake warning	PARK BRAKE	Glow when parking brake is applied while the engine is running. Indicating color: Red
	Oil pressure warning	OIL	Glow when engine oil pressure system is encountered with abnormality while engine is running. Indicating color: Red
	Charge warning	CHARGE	Glow when engine charging system is encountered with abnormality while engine is running. Indicating color: Red
	Seat belt warning	FASTEN BELTS	Glow for about six seconds when driver fails to buckle up seat belt at driver's seat after ignition switch has been turned ON or engine has started. Indicating color: Red
	Fuel drain warning	FUEL DRAIN	Glow when the water in fuel is accumulated in the fuel filter in excess of the stipulated amount. Indicating color: Red
Indicator lamp	High beam indicator		Glow when upper beams of headlamps are turned ON. Indicating color: Amber
	Turn signal indicator		Flashes when turn signal switch or hazard warning switch is turned ON. Indicating color: Green
	4WD indicator		Glow when the transfer shift lever is moved to the 4H or 4L position with the engine switch turned ON. Indicating color: Green
	Glow plug indicator	GLOW	Glow when ignition key holds at the G position or ON position. Indicating color: Red

WR01-G076