



# EMERGENCY



# SERVICE GUIDE



Hybrid

series

300



The purpose of this manual is to provide basic knowledge and understanding of the **300 Series Hybrid vehicle high voltage system**

For the assistance of  
**SPECIAL EMERGENCY SERVICE PERSONNEL**  
in the rescue of Hino 300 Series motor vehicles.  
Rights for alteration to data and specification, at any time, are reserved.  
Any such alteration will be advised by the Product Support Division via Bulletins

It is important to note, that the following information contained in this document is correct to our best knowledge, however errors may have occurred in its transcription. HMSA will not accept any liability for such errors.

This document is only intended as a guide.  
**Special Emergency Service Personnel** must also refer to **Hino Workshop Service Manuals**, where applicable.



Hino Motor Sales Australia  
6-10 Parraweena Road, Taren Point, NSW 2224  
Sydney Australia  
@ 2008

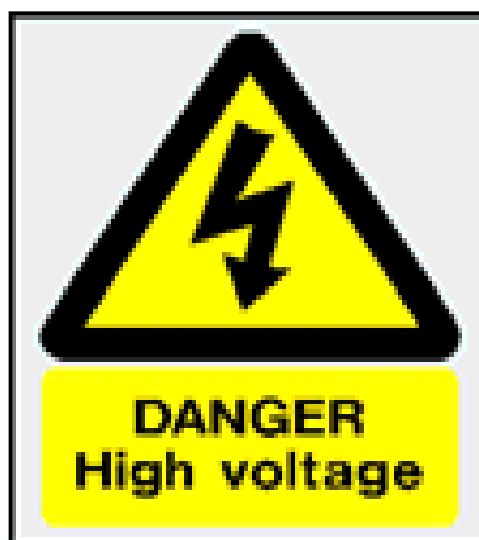
Publication # HMSA/EMERGENCYSERVICEGUIDE300HYBRID/0908  
Version 1.2

# CAUTION

It is imperative that **SPECIAL EMERGENCY SERVICE** personnel read and follow the correct safety guidelines, instructions and procedures contained herein before attempting to rescue the 300 Series Hybrid vehicle.

The 300 Series hybrid vehicle utilises a high voltage system (**300 Volts**) to assist the Diesel engine as a mean of propulsion. In the event rescue personnel fail to follow the correct safety guidelines, precaution and instructions provided herein, have a greater risk of receiving an electrical shock, personal injury or even death.

It is also important to note, that, the 300 Series Hybrid vehicle can only be serviced or repaired by trained personnel. Other parties involved in the service, repair or mounting body to this vehicle **MUST** have had an induction training prior to commencement of work. HMSA will not accept any liability for failing to follow the correct safety guidelines, instructions and procedures.



**HINO**

*driven to perfection*

Hino Motor Sales Australia

6-10 Parraweena Road, Taren Point, NSW 2224

Sydney Australia

@ 2008

Publication # HMSA/EMERGENCYSERVICEGUIDE300HYBRID/0908

Version 1.2



# CONTENTS

- 1) 300 SERIES HYBRID BROCHURE
- 2) EMERGENCY GUIDELINES.....Pg 01
- 3) 24 VOLT CIRCUIT .....Pg 12
- 4) 300 VOLT CIRCUIT.....Pg 20
- 5) HYBRID BATTERY.....Pg 29
- 6) LEAD-ACID BATTERY.....Pg 36
- 7) SUPPLEMENTARY RESTRAINT  
SYSTEM.....Pg 38
- 8) HYBRID VEHICLE RECOVERY.....Pg 49

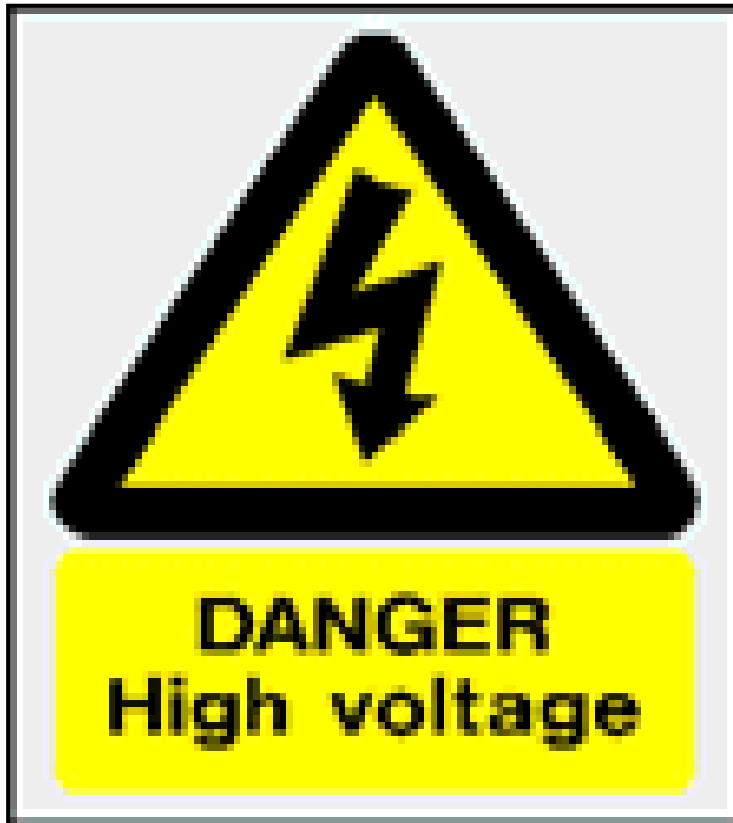


300  
*Hybrid*





# ISOLATION OF



# HYBRID BATTERY

*Hybrid*

series

**3000**





# CAUTION

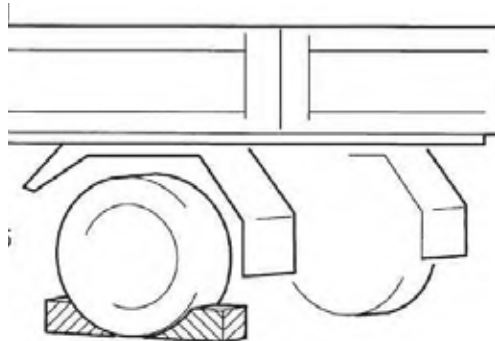


## ■ EMERGENCY RESPONSE GUIDELINES

- On arrival, emergency personnel should follow their standard operating procedure to assist the vehicle involved in the accident. Emergency procedures involving the 300 Series vehicle Hybrid may be handled like other light duty trucks, however additional notes may assist the special service services personnel while dealing with Hino Hybrid vehicles.

### **Warning !**

- **Never assume** the 300 Series Hybrid vehicle electrical power is completely OFF because the vehicle is silent.
  - **Always observe** the combination meter warning lights status to verify whether the ignition switch is set to the “ON” position.
- **Immobilizing Vehicle**  
Chock the vehicle’s wheel and apply the parking brake.



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**





# CAUTION



## ■ EMERGENCY RESPONSE GUIDELINES CONT'D

### Disabling the 24 Volt Vehicle System

Performing any of the two procedures below will disable the vehicle 24 Volt system.

- 1) Disconnecting the (-) negative battery terminal, followed by disconnecting the (+) positive battery terminal to interrupt power supply to the vehicle electrical system.
- 2) With caution, snip the (-) negative battery terminal and then snip the (+) positive battery terminal avoiding contacting the metal chassis of the vehicle to avoid electrical sparks and cause a fire.



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**





# CAUTION



## EMERGENCY RESPONSE GUIDELINES CONT'D

### Disabling the 300 Volt Hybrid System

Performing procedure (2) only will disable Hybrid system.

- 1) In the event the Safety Plug can not be reached, disconnect the (-) negative battery terminal, followed by disconnecting the (+) positive battery terminal to interrupt power supply to the vehicle electrical system and Hybrid system.



- 2) When removing the Control Power Unit Safety Plug, allow 5 minutes for the system capacitor to discharge. After this time period, the vehicle can then be rescued.



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**





# CAUTION



**PLEASE READ THIS SECTION  
BEFORE ANY TYPE OF RESCUE  
IS COMMENCED ! ✓**

**Appropriate Rubber Gloves, rated  
at 600 volts must be worn at all  
times while working with the  
Hybrid Control Power Unit ! ✓**

It is imperative that the Hybrid Battery be isolated before any type of work is commenced with the Hybrid vehicle (e.g. Vehicle servicing, removal of manual transmission, clutch replacement, repair to the Hybrid Control Power Unit or any other work while the vehicle is being serviced / repaired at the Dealership). It is also important to note that the Dutro Hybrid vehicle must be serviced only by authorised Hino Dealerships and authorised trained service personnel.

The failure to follow this guidelines may result in damage to the vehicle and personal injuries, resulting in death !



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**

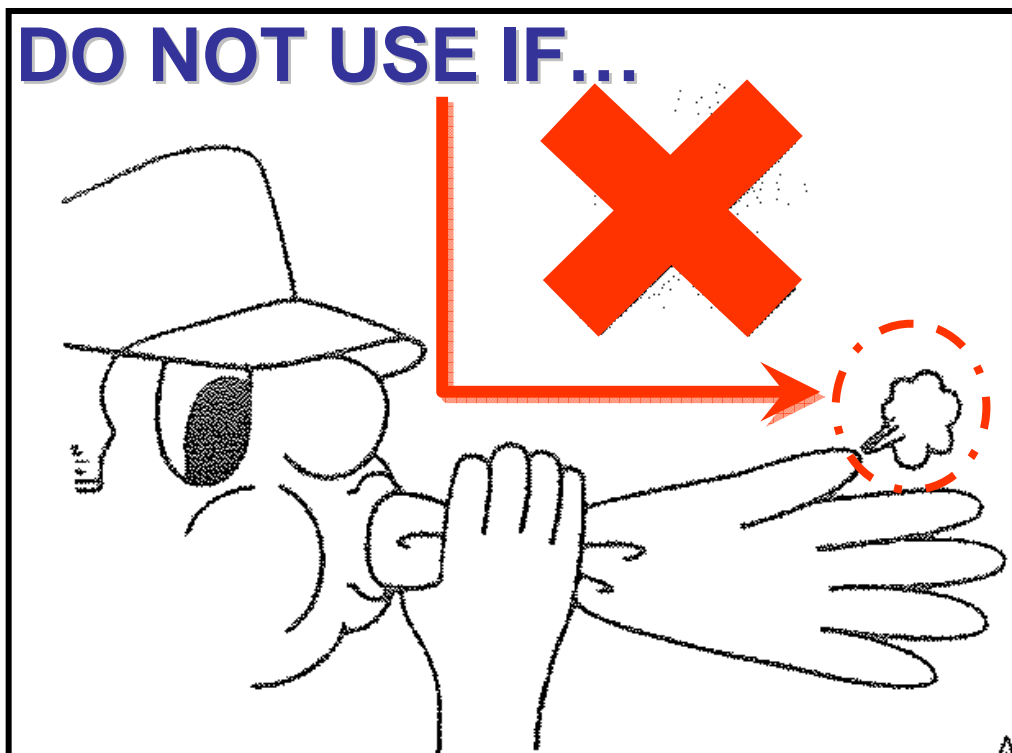




# CAUTION



**Before wearing insulated rubber gloves, check for cracks, flaws, tear. Avoid using wet insulated rubber gloves. ✓**

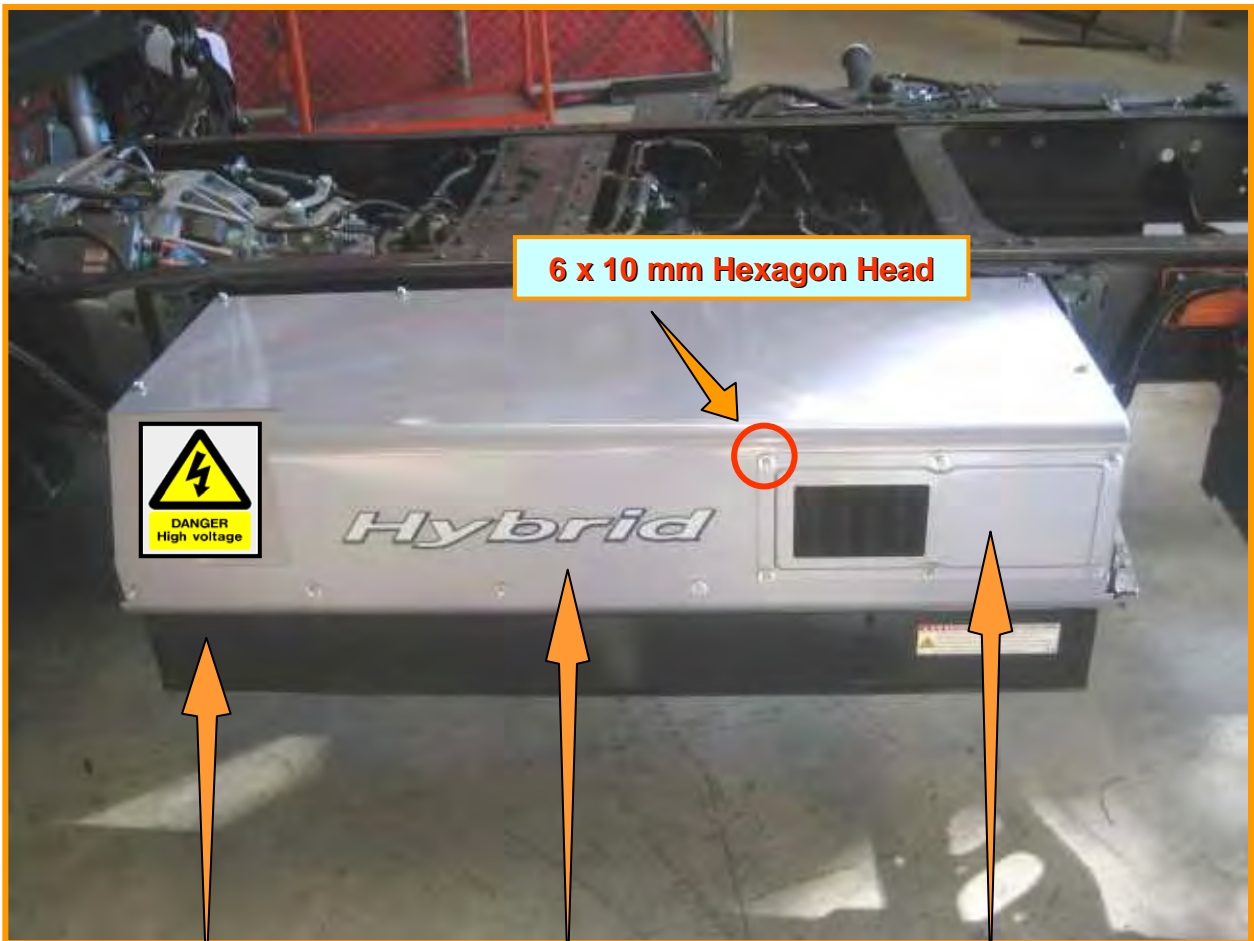


**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





# CONTROL POWER UNIT



**CPU BOTTOM COVER    MAIN CPU COVER    SAFETY PLUG COVER**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





### Step 1

Wearing Rubber Gloves  
Remove Service Plug Cover



### Step 2

Slide Service Plug  
Lever to the right to  
unlock



### Step 3

Rotate Safety plug Lever  
to the left to detach from  
connector !

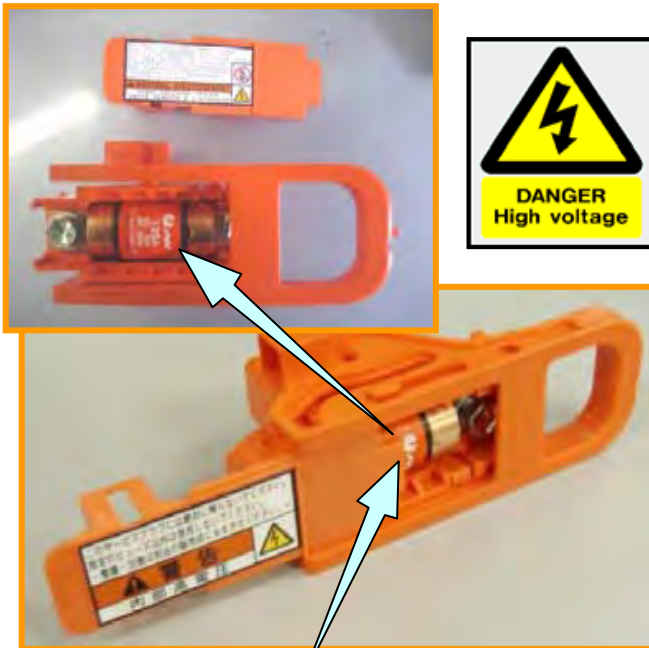


**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**





**Step 4**  
Remove Service Plug  
from Control Power Unit !



**Step 5**  
Place the Service Plug  
in a safe place while  
the vehicle is being  
serviced or repaired !

**150 A  
Fuse**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





# Step 6



**Once the Safety Plug has been removed,  
wait for a period of five minutes  
before any work can be  
commenced on the vehicle.  
This is required to allow the  
system capacitors to discharge.**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





# Step 7



**Once the service / repair has been completed on the vehicle, reinstall the Service Plug - reverse procedure.**

**Note: Insert, Rotate and slide it to the left to lock it in place**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





# NOTE !



**Repairs relating to the Hybrid Control  
Power Unit, refer to the Hybrid Mechanical  
System and Hybrid Control System in  
this training manual.**

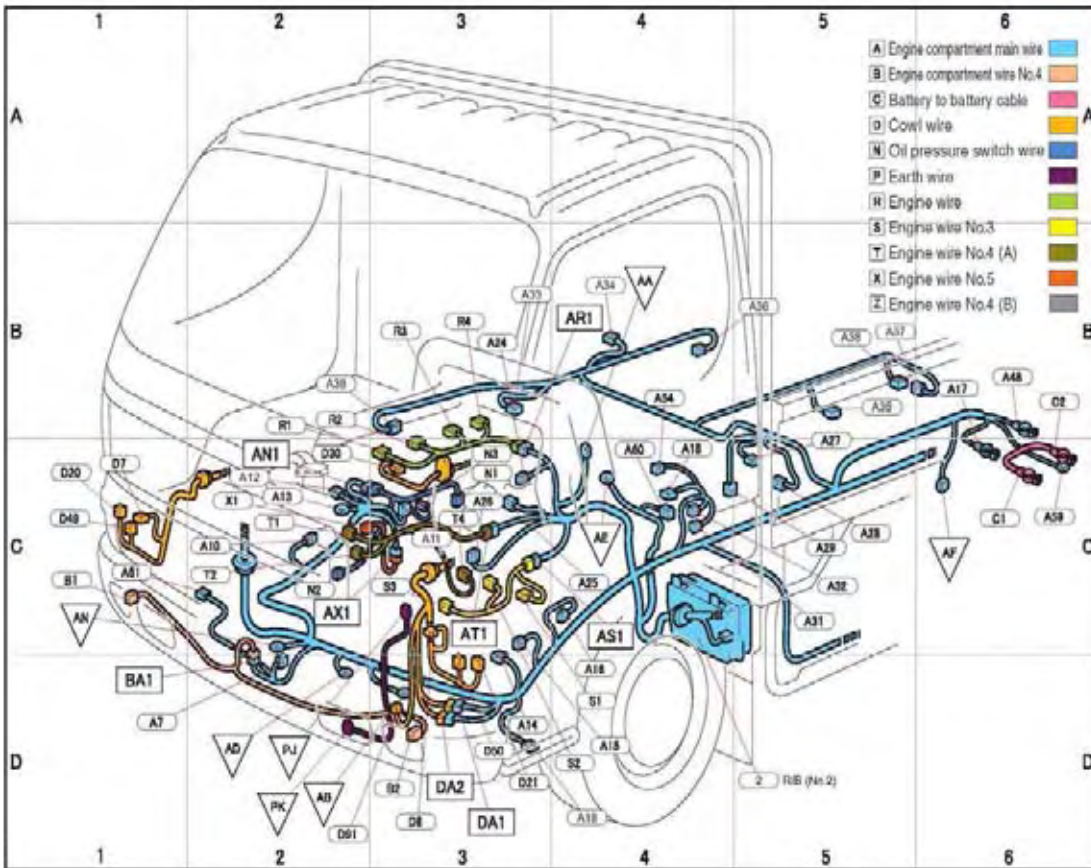


**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





# 24 VOLT



# CIRCUIT



Hybrid

series

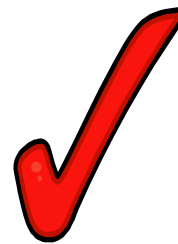
3000



## 24 VOLT SYSTEM

### ■ Hybrid Vehicle (HV) 24 Volt System

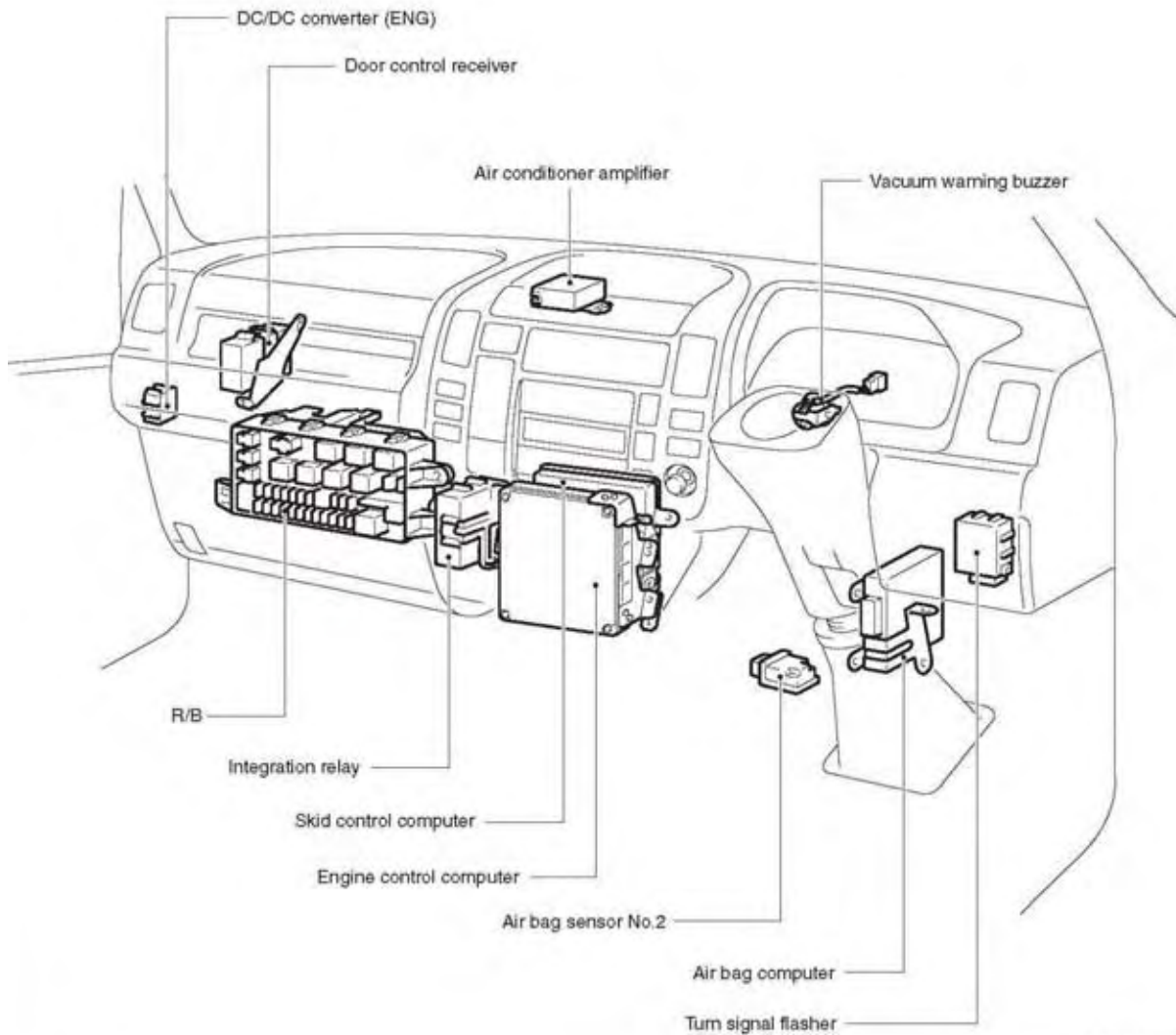
- **Wear Protective safety clothing at all times !**  
The 24 Volt system in the 300 Series vehicles is independent of the 300 Volt system. Although there are a number of components in the Hybrid Control Power Unit that is operated by a 24 / 12 Volt power supply, the Hybrid Control Power Unit must be treated as a high voltage system.
- **24 Volt Electrical Circuit**  
The electrical wiring diagrams included in this section relates to systems that operate with 24 / 12 Volt power supply.
- A **Red Tick** next to the electrical circuit description identifies circuits **that can be cut through with Jaws of Life**



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**



# 24 VOLT EQUIPMENT



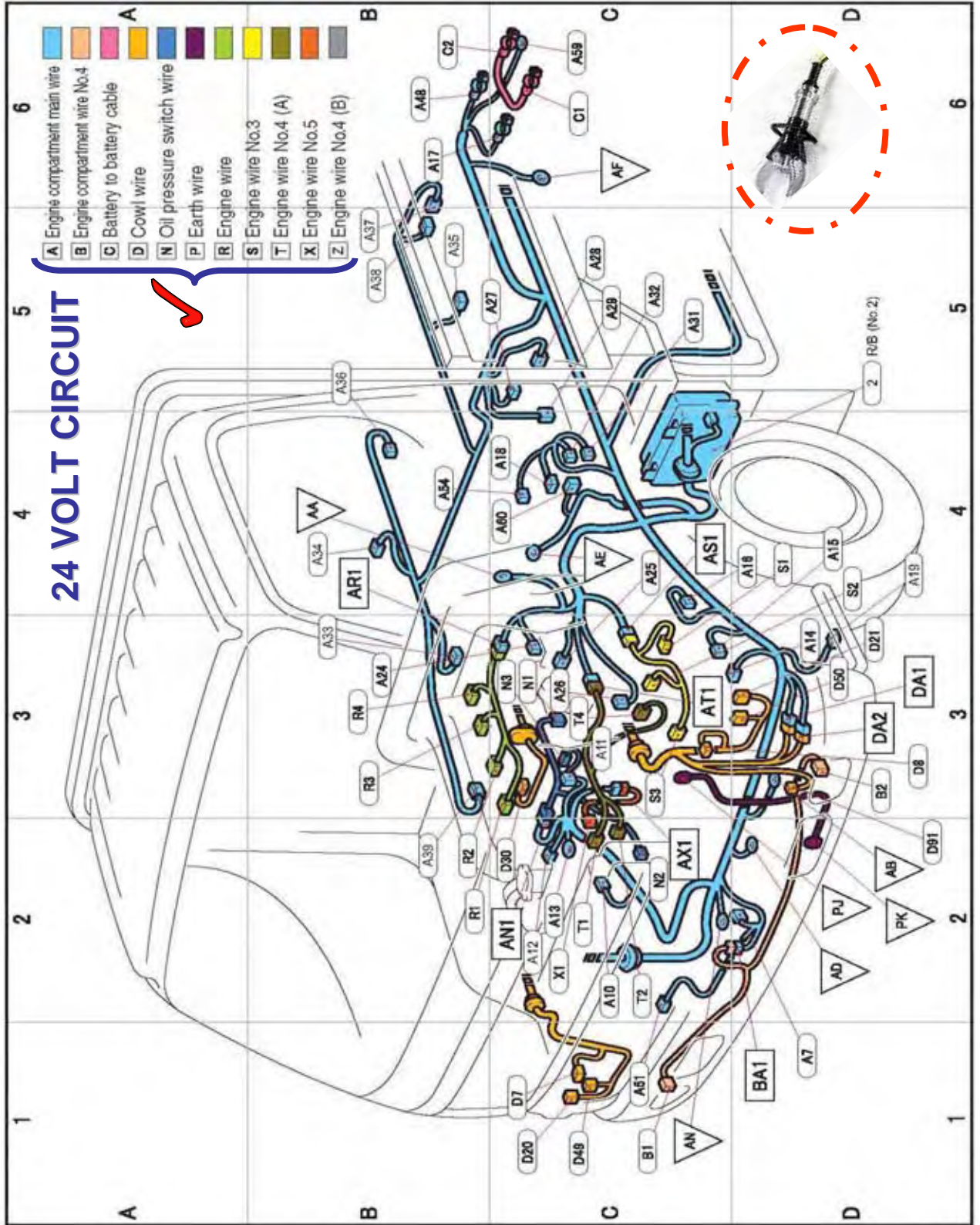
S4PHY061000100



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**



**JAWS OF LIFE CAN BE USED ON THIS CIRCUITS**



**JAWS OF LIFE CAN BE USED ON THIS CIRCUITS**

A 7	D-1	Pressure switch (A/C)	D 30	C-2	Front wiper motor	AE	C-4	Clutch housing (LH) ground
A 10	C-2	Speed sensor (Front-RH)	D 49	C-1	Turn signal light (Front-RH)	AF	C-6	Left frame (center) ground
A 11	C-3	Variable nozzle control with linear electronic control	D 50	D-3	Turn signal light (Front-LH)	AN	C-1	Cross member No.2 (center) ground
A 12	C-2	Alternator	D 91	D-2	Horn (Low)	PJ	D-2	Floor panel ground
A 13	C-2	Alternator (B)	N 1	C-3	Oil pressure switch	PK	D-2	Cross member No.1 (LH) ground
A 14	D-3	Intake air temperature sensor	N 2	C-2	A/C magnetic clutch			
A 15	D-4	Turbo boost sensor	N 3	C-3	VNT valve			
A 16	D-4	Speed sensor (Front-LH)	R 1	B-2	Injector (No.1)			
A 17	B-6	Battery (+)	R 2	B-2	Injector (No.2)			
A 18	C-4	Air flow meter	R 3	B-3	Injector (No.3)			
A 19	D-4	CDS fan & resistor	R 4	B-3	Injector (No.4)			
A 24	B-3	EGR valve lift sensor	S 1	D-4	Suction control valve			
A 25	C-4	Throttle position sensor	S 2	D-4	Fuel temperature sensor			
A 26	C-3	Rotary solenoid	S 3	C-3	Crank position sensor			
A 27	C-5	Speed sensor	T 1	C-2	Water temperature sender gauge			
A 28	C-5	Back-up light switch	T 2	C-2	Cam position sensor			
A 29	C-5	Neutral position switch	T 4	C-3	Rail pressure sensor			
A 31	C-5	Injector driver	X 1	C-2	Alternator			
A 32	C-5	Injector driver						
A 33	B-3	Exhaust retarder solenoid	ARI	B-4	Engine compartment main wire to engine wire			
A 34	B-4	Fuel sender gauge	AG1	C-4	Engine compartment main wire to engine wire No.3			
A 35	B-5	Exhaust temperature sensor (No.1)	ATI	C-3	Engine compartment main wire to engine wire No.4 (A)			
A 36	B-5	Fuel warning switch	AX1	C-2	Engine compartment main wire to engine wire No.5			
A 37	B-5	Differential pressure sensor	BA1	D-1	Engine compartment wire No.4 to engine compartment main wire			
A 38	B-5	Exhaust temperature sensor (No.2)						
A 39	B-2	Vacuum warning switch	DA1	D-3	} Cowl wire to engine compartment main wire			
A 48	B-6	Battery (-)	DA2	D-3		Engine compartment main wire to oil pressure switch wire		
A 51	C-1	Brake actuator	AN1	C-2				
A 54	B-4	Cab tilt switch						
A 59	C-6	Battery (+12V)						
A 60	C-4	Motor thermometer						
B 1	C-1	Fog light (Front-RH)	AA	B-4	Engine block (rear) ground			
B 2	D-3	Fog light (Front-LH)	AB	D-2	Cross member No.2 (center) ground			
C 1	C-6	Battery (-)	AD	D-2	Cross member No.2 (center) ground			
C 2	B-6	Battery (+)						
D 7	C-1	Head light (RH)						
D 8	D-3	Head light (LH)						
D 20	C-1	Clearance light (RH)						
D 21	D-3	Clearance light (LH)						



**24 VOLT CIRCUITS**



**JAWS OF LIFE CAN BE USED ON THIS CIRCUITS**

D 1	C-4	Center air bag sensor	D 55	B-3	Engine control computer
D 2	B-5	Oil pressure sensor	D 56	C-3	Engine control computer
D 3	C-5	Stop light switch	D 57	A-2	Junction connector (No.5)
D 4	C-5	Clutch stroke sensor	D 58	B-1	Junction connector (No.6)
D 5	D-5	Combination switch	D 59	B-1	Junction connector (No.7)
D 6	D-4	Combination switch	D 60	B-1	Junction connector (No.8)
D 9	B-3	Radio receiver	D 61	A-3	Junction connector (No.9)
D 10	B-3	Blower switch	D 62	A-3	Junction connector (No.9)
D 11	C-4	DLC 3	D 63	C-3	Junction connector (No.10)
D 12	B-5	Combination meter	D 64	C-3	Junction connector (No.10)
D 13	B-5	Combination meter	D 65	C-4	Junction connector (No.11)
D 14	B-4	Vacuum sensor	D 66	B-1	Junction connector (No.12)
D 15	C-2	Thermistor (evaporator backward sensor)	D 67	C-5	Junction connector (No.13)
D 17	B-5	Brake fluid level warning switch	D 68	A-2	Junction connector (No.14)
D 18	C-5	Turn signal flasher	D 69	B-4	Junction connector (No.15)
D 19	B-5	Vacuum warning buzzer	D 70	B-4	Junction connector (No.16)
D 22	B-6	Accelerator position sensor	D 71	B-5	Junction connector (No.16)
D 23	D-4	Ignition switch	D 72	A-4	Junction connector (No.17)
D 24	A-4	A/C (Air conditioner) switch	D 73	A-4	Junction connector (No.17)
D 25	A-3	A/C amplifier	D 77	A-1	Diode (PARK)
D 26	C-3	Integration relay (wide cab)	D 85	A-4	Junction connector (No.20)
D 27	C-2	Blower register	D 86	B-4	Junction connector (No.21)
D 28	C-1	Inflator (assistant side)	D 90	C-5	PTO CLT switch
D 29	D-5	Inflator (driver side)	1A	C-3	Cowl wire to relay box (R/B)
D 31	C-1	Blower motor	D02	B-5	Cowl wire to cowl wire
D 32	C-2	Washer motor	DG	C-2	Left hand cowl side ground
D 33	C-3	Skid control computer	DL	B-6	Right hand cowl side ground
D 34	B-3	Diode (A/C 1)			
D 36	C-4	Air bag sensor No.2			
D 37	A-1	Diode (CTY)			
D 38	C-6	Option connector (Power outlet 1)			
D 39	C-4	Clutch switch			
D 43	B-1	Door lock sub			
D 44	B-1	Buzzer (ABS, ES)			
D 47	A-2	Diode (STOP 2)			
D 48	A-2	Diode (STOP 1)			
D 51	A-3	Diode (DPF)			
D 52	B-6	Junction connector (No.2 Earth 1)			
D 53	A-1	Junction connector (No.3 Earth 2)			
D 54	A-3	Junction connector (No.4 Earth 3)			



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**

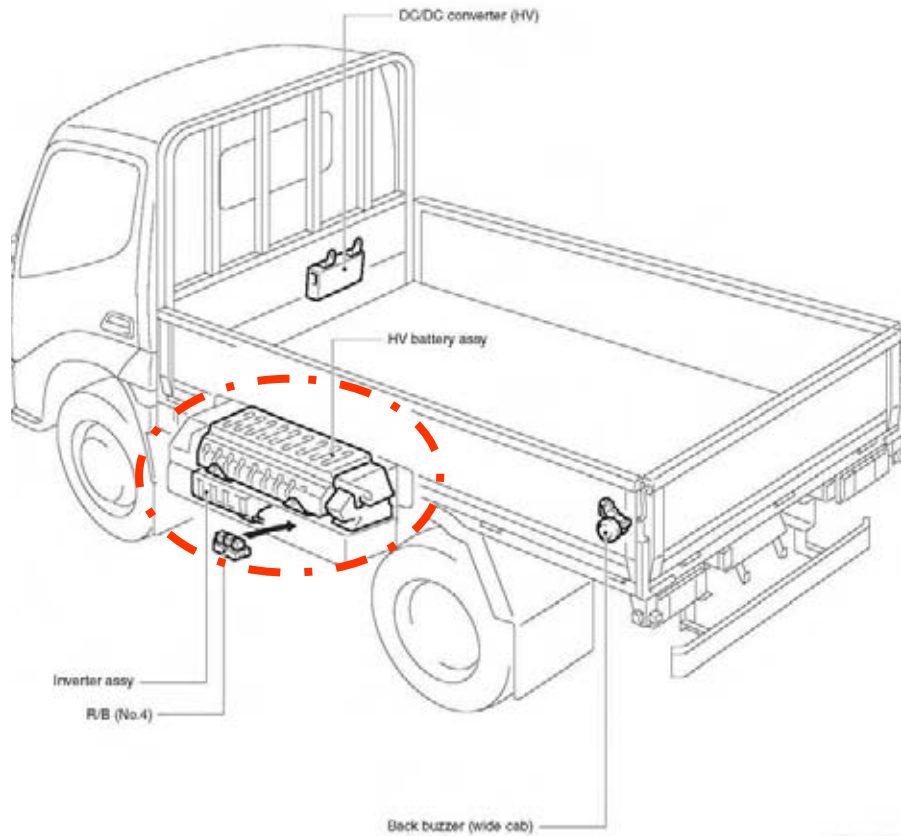








# 300 VOLT



# CIRCUIT



**Hybrid**  
**300** series

# 300 VOLT HYBRID SYSTEM

## ■ Hybrid Vehicle (HV) 300 Volt System

- **Wear Protective safety clothing at all times !**  
The 300 Volt system in the 300 Series vehicles is independent of the 24 Volt system. Although there are a number of components in the Hybrid Control Power Unit that is operated by a 24 / 12 Volt power supply, the Hybrid Control Power Unit must be treated as a high voltage system.
- **300 Volt Electrical Circuit**  
The electrical wiring diagrams included in this section relates to systems that operate with **HIGH VOLTAGE 300 VOLT POWER SUPPLY**.
- A **Cross** placed on top of the Jaws of Life and also next to the electrical circuit description indicate electrical circuits **that can NOT be cut through with Jaws of Life**

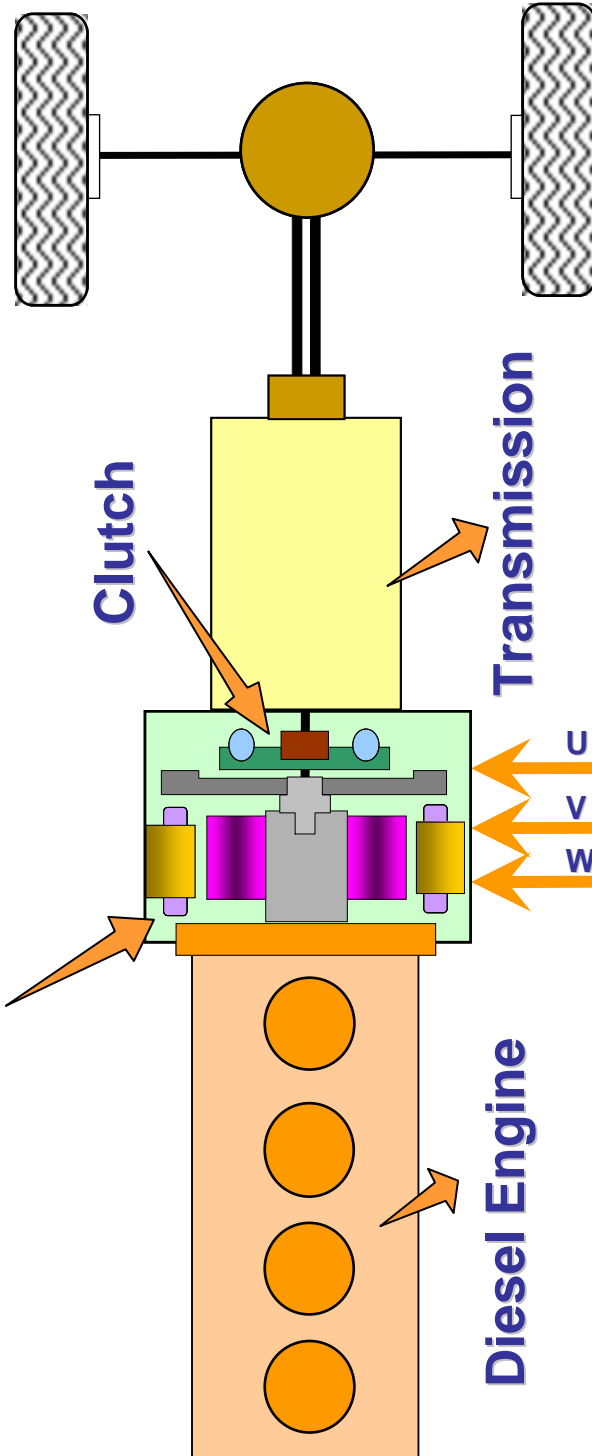


**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**



**Jaws of life "CAN NOT" be used**

**Synchronous  
Electric Motor**



**Clutch**

**Transmission**

**Nickel Metal  
Hydride Battery**

**300 Volts  
Inverter  
DC ~ AC**

**HV ECU**

**Diesel Engine**

**CPU (Control Power Unit)**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





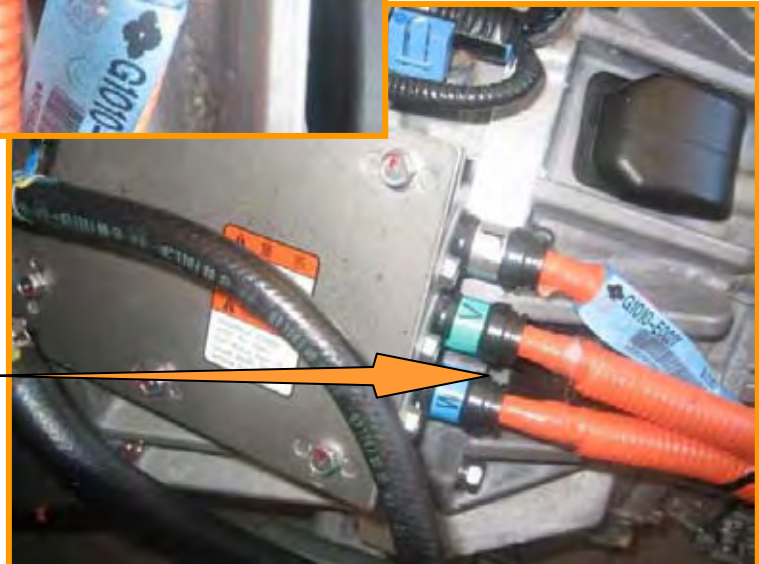
# CAUTION!

## 3 PHASE CIRCUIT



**300 VOLTS**

**300 VOLTS**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**

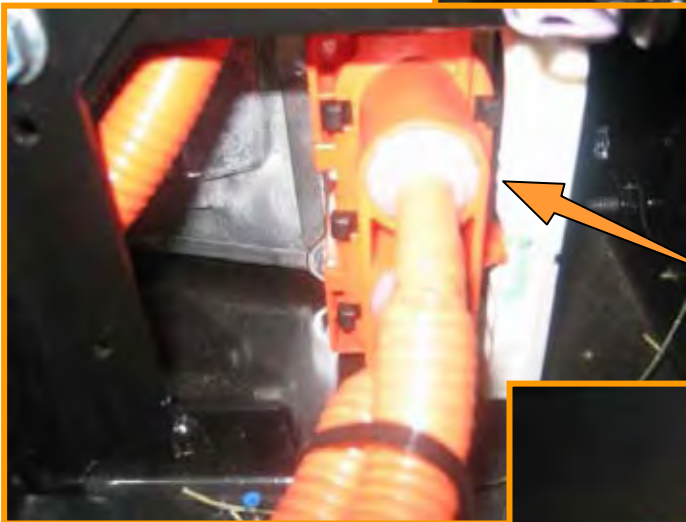




# CAUTION!

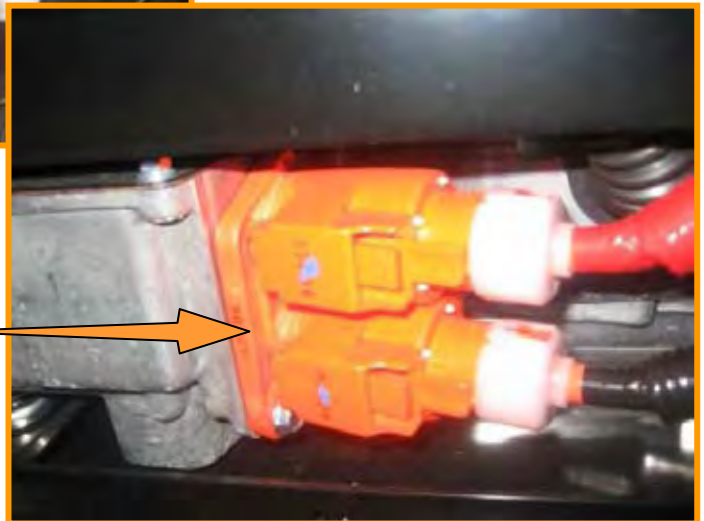


## 300 VOLTS



## 300 VOLTS

## 300 VOLTS

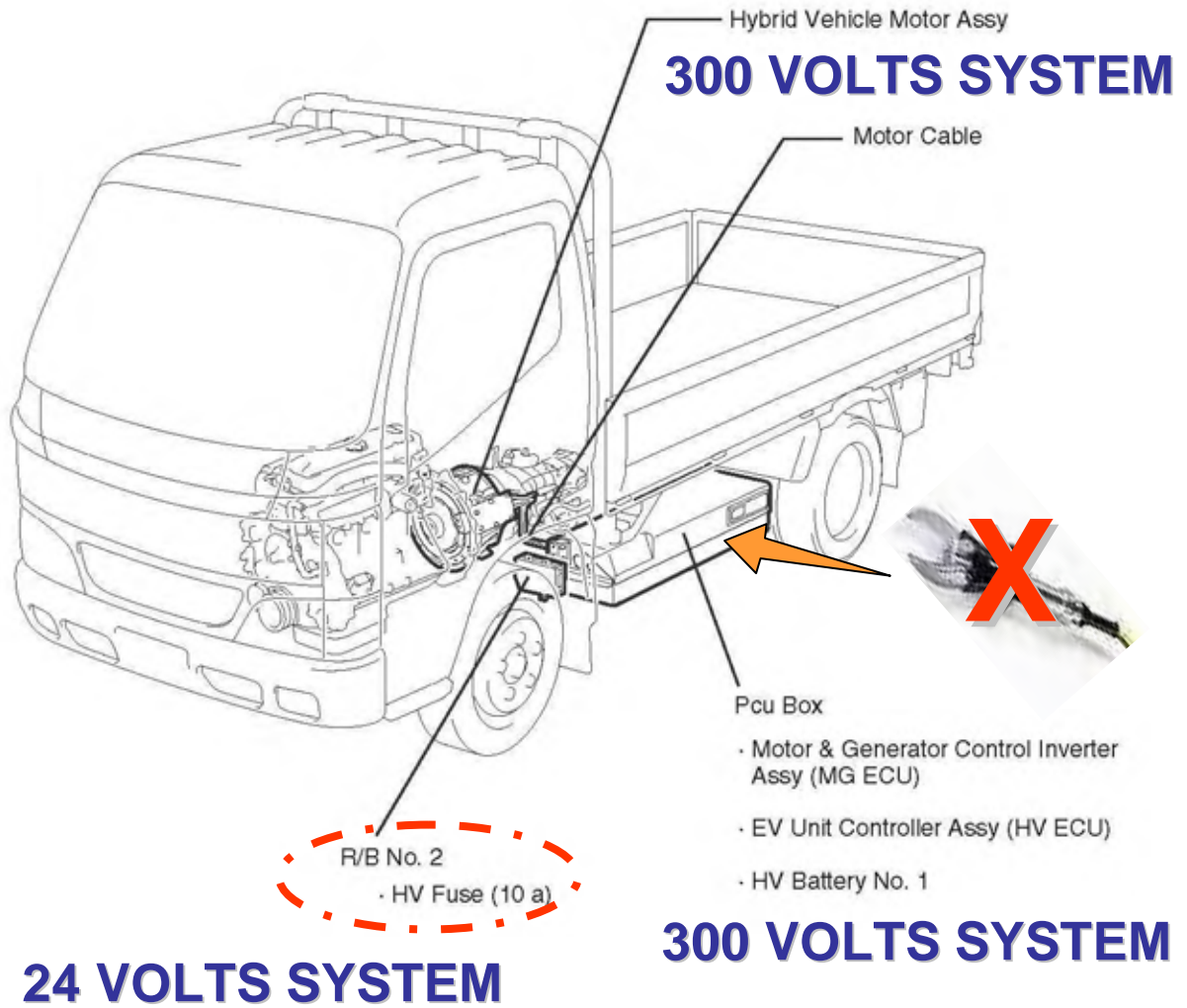


**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**



# COMPONENT LOCATOR

Jaws of life "CAN NOT" be used



**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**



Jaws of life "CAN NOT" be used



300 Volts



Nickel Metal Hydride Battery

24 Volts



HV ECU

300 Volts

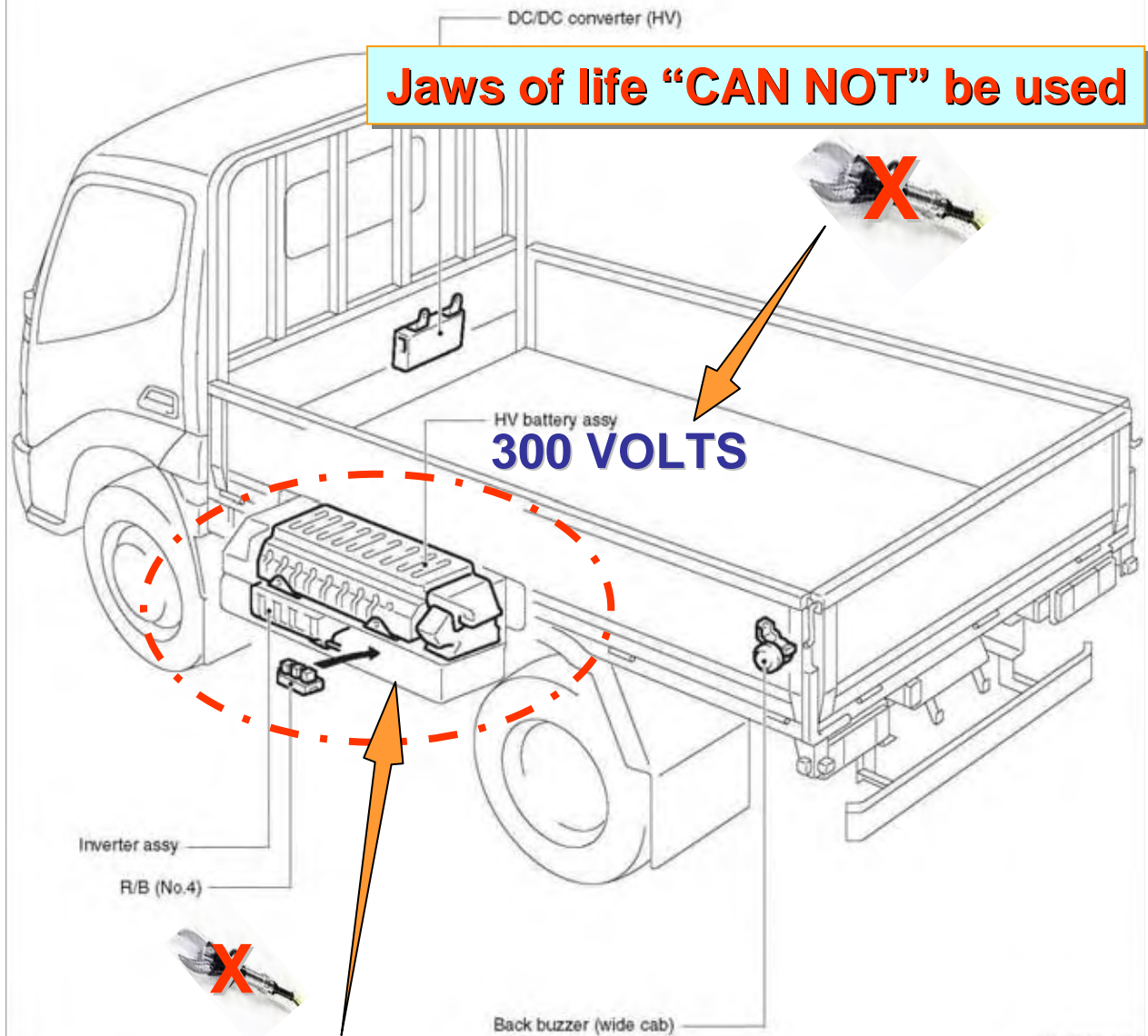


Inverter Assembly



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**





**CONTROL POWER UNIT**

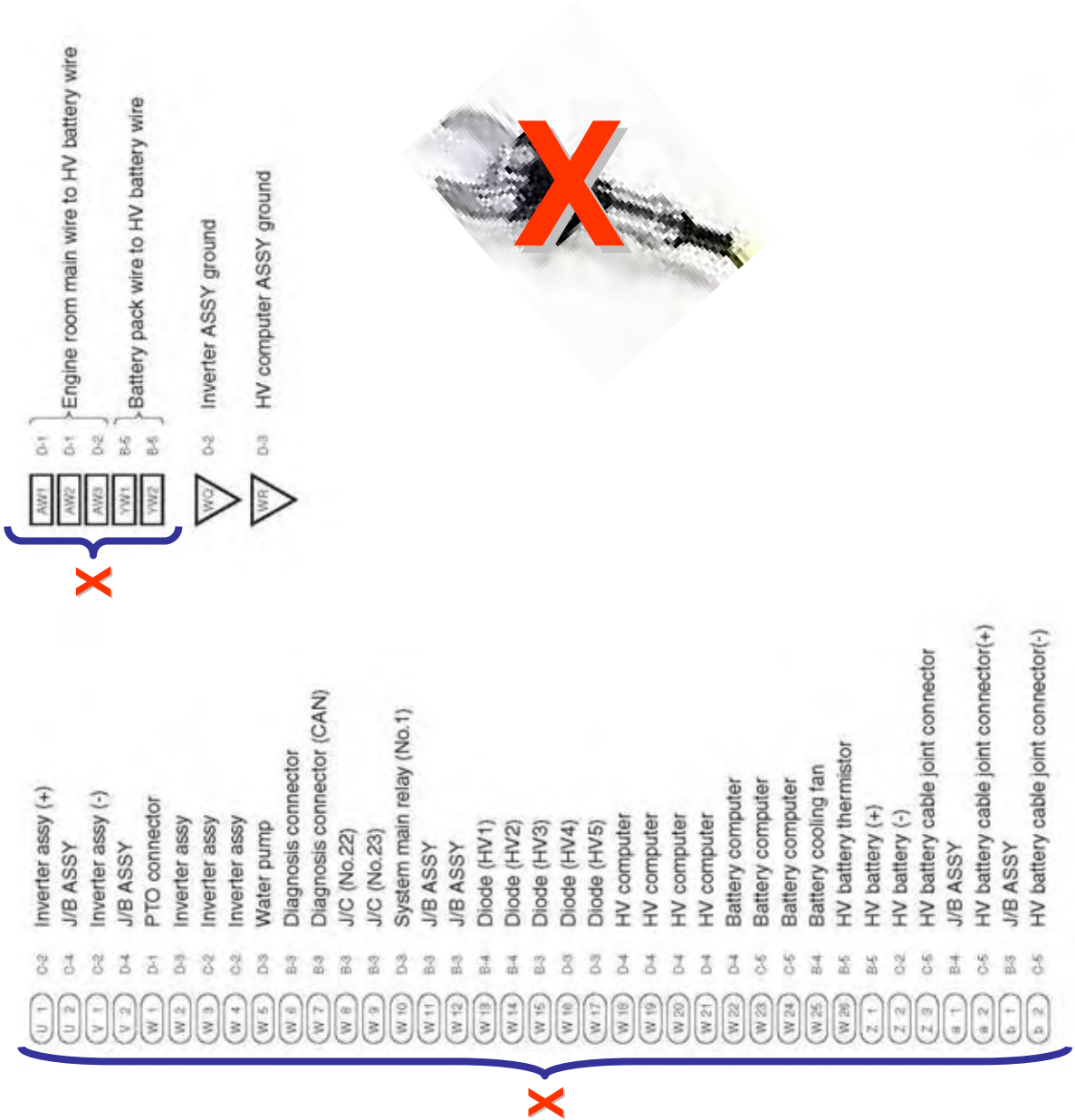


**CAUTION**  
**HIGH VOLTAGE - 300 VOLTS**





**Jaws of life “CAN NOT” be used**



**CAUTION  
HIGH VOLTAGE - 300 VOLTS**

