

Safety Tips for Repairing Electric Vehicles/Hybrid Vehicles

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2-3. Safety Tips for Repairing Electric Vehicles/Hybrid Vehicles

In recent years, environment-friendly vehicles have become more popular, major vehicle manufacturers have launched high-performance electric vehicles (EVs) and hybrid vehicles (HVs) one after another, while the maintenance of EVs and HVs has too become a focus of the trade. Compared with conventional vehicles, the technical requirements involved in repairing EVs and HVs are more complicated; in particular, vehicle mechanics need to know the safety tips for repairing the electric propulsion systems well. To this end, we are specifically introducing to readers keys to the safe repair of EVs and HVs.

As the voltage of the electrical devices of EVs and HVs can reach 400V (volts) direct current, it is essential to read the manufacturer's maintenance documents carefully to learn about the safety measures to be taken during the entire maintenance process before repairing EVs and HVs, including:

- Warning signs shall be displayed in the vicinity of the vehicle repair work, strictly forbidding others from entering the works area and coming in contact with live parts to avoid danger.
- Suitable personal protective equipment (such as insulating gloves, insulating mats, insulating tools, insulating shoes, safety helmets and protective goggles, etc.) shall be used as advised by the manufacturer. Put on/use such equipment only after checking its condition (for example, whether the insulated gloves are damaged) and confirming that it functions properly.

The most noticeable difference between conventional vehicles and EVs is that the latter are equipped with high-voltage devices. To avoid electric shock, mechanics should pay attention to the followings when they are preparing to repair EVs:

- Cut off the power source of the vehicle to avoid live maintenance work.
- The steps and requirements of cutting off the power source vary according to the design of the vehicle. Mechanics shall follow the instructions set out in the manufacturer's maintenance documents.
- The removed service plug should be properly stored or locked to prevent others from re-connecting the plug and causing danger.
- For safety reasons, mechanics should only repair a vehicle after the power source has been cut off for at least ten minutes (or in accordance with the time specified in the manufacturer's maintenance documents).
- Any cut power lines should be wrapped up immediately with insulating tape or the manufacturer's specified envelope to ensure complete insulation.
- Under no circumstances should a person disassemble or repair a vehicle's high-voltage battery pack on his/her own unless he/she has received specialised training.

Upon completion of the vehicle repair work, mechanics shall re-connect the high-voltage power source and the vehicle battery, and connect them to the diagnostic computer for fault code detection or programming after maintenance to ensure that the vehicle operates normally.

As EVs and HVs differ from conventional vehicles in various maintenance aspects, employers should provide appropriate and adequate training and guidance for personnel engaged in the maintenance of EVs and HVs, as well as monitoring whether employees are working in compliance with the requirements. It is also necessary for mechanics to understand and implement thoroughly the relevant guidelines at work to ensure safety.

The Pro-Act Training and Development Centre of the Vocational Training Council (VTC) offers courses on EVs and HVs from time to time. For details, please refer to the following website: <http://www.proact.edu.hk/proact/html/en/centres-and-programmes/automobile/information/index.html>.



Pro-Act Training and Development Centre (Automobile)

4-5. Four-Panel Photo Story Telling Competition - Master Group

The Four-Panel Photo Story Telling Competition, held last November, was divided into Open Group and Master Group, each participant was required to create a four-panel story with four photos to promote the quality services of the Voluntary Registration Scheme for Vehicle Maintenance Workshops (VRSVMW) and the Voluntary Registration Scheme for Vehicle Mechanics (VRSVM). The prize presentation ceremony was already held at the Electrical and Mechanical Services Department (EMSD) Headquarters Building on 19 July 2019. Due to limited space, winning entries of the Open Group have been published in Issue No. 26 of the RVM Newsletter. In this issue, the entries of the champion, first and second runners-up of the Master Group are showcased. The Vehicle Maintenance Technical Advisory Committee will soon organise a poster design competition too. For details, please refer to page 9 of this Newsletter.

Master Group

Champion
1st Runner-up
2nd Runner-up

Mr NG Siu-fai
Mr MAK Siu-man
Mr LAU Wing-yin

6-7. Learning about Chemical Labels

Different types of chemicals are placed in a garage, such as lubricating oil in car engines, petrol/diesel oil in fuel tanks, refrigerants in air-conditioning systems, acetylene in compressed gas cylinders, etc. Before using and handling these chemicals, we should make sure that safety precautions listed on the chemical labels have been taken to prevent accidents.

Several chemical labels are commonly seen in a garage, including “harmful”, “toxic”, “flammable”, “corrosive” and “irritant”. In addition to relevant safety precautions, chemical labels also list the potential risks, reminding mechanics to pay extra attention to avoid fire, explosion and personal injury resulting from negligence. Take acetylene as an example, its chemical label is “flammable”, indicating that this gas is flammable in air at normal pressure. Hence, as shown on the label, the gas should be prevented from being heated and coming into contact with air, otherwise an explosion may occur. Mechanics should also take appropriate safety precautions, such as banning smoking, avoiding static discharges, and keeping containers in a well ventilated place. Careful reading of chemical labels can safeguard the lives and properties in a garage and should in no way be overlooked.

Chemicals are very dangerous substances. Mechanics and persons-in-charge of garages must exercise extreme care when handling chemicals and take adequate safety precautions to avoid accidents!

Flammable	Name of Substance
	Acetylene
	Particular Risks
	★Heating may cause an explosion
	★Explosive with or without contact with air
	★Highly flammable
	Safety Precautions
	★Keep container in a well ventilated place
	★Keep away from sources of ignition-No Smoking
	★Take precautionary measures against static discharges

Toxic	Name of Substance
	Rodenticide
	Particular Risks
	★Danger of cumulative effects
	★Toxic by inhalation, in contact with skin and if swallowed
	Safety Precautions
	★Keep away from food, drink and animal feeding stuffs
	★After contact with skin, wash immediately with plenty of _____ (to be specified)
	★If you feel unwell, seek medical advice (show the label where possible)

Harmful Irritant	Name of Substance
	Engine lubricating oil
	Particular Risks
	★Harmful if swallowed
	★Irritating to eyes and skin
	Safety Precautions
	★Keep container tightly closed and dry
	★Wear suitable protective clothing, gloves and eye/face protection (appropriate wording to be specified)

Harmful	Name of Substance
	Spent lubricating oil
	Particular Risks
	★Harmful if swallowed
	★Irritating to eyes and skin
	Safety Precautions
	★In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

Corrosive	Name of Substance
	Electrolyte
	Particular Risks
	★Cause burns
	★Irritating to respiratory system and skin
	Safety Precautions
	★In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	★Avoid contact with skin and eyes

Photos are for reference only. Labels will be based on the safety precautions and particular risks listed for actual chemicals.

8. New Arrangements for Continuing Professional Development

At present, vehicle mechanics who file new registration or apply for registration renewal are both required to have completed a minimum of 20 hours of continuing professional development (CPD) in the past three years. Applicants may participate in the following courses or activities to accumulate CPD hours:

- 1) Training/courses organised by the Department of Automotive Engineering of the Hong Kong Institute of Vocational Education or other relevant educational institutions
- 2) Training/courses organised by the VTC's Pro-Act Training and Development Centre (Automobile)
- 3) Training/courses provided for transportation and support services under the Skills Upgrading Scheme Plus by the Employees Retraining Board
- 4) Technical training/courses for the automobile trade or internal staff provided by vehicle suppliers
- 5) Training/courses/seminars organised by professional societies or automobile trade associations/unions
- 6) Technical talks/seminars for the automobile trade
- 7) Training/courses/seminars that can enhance personal knowledge of the automobile trade, including such areas as legislation, language, customer service, management skills, occupational safety and health, etc.
- 8) Technical visits related to the automobile trade
- 9) Take the quiz in or submission of articles to the RVM Newsletter

Apart from the above, starting from 1 November 2019, vehicle mechanics may accumulate training hours by answering the quiz in each issue of the RVM Newsletter. Participants who answer all the questions correctly before the deadline will earn one CPD hour. Participation is simple. Simply scan the QR code on the page of the quiz in the RVM Newsletter with your mobile phone, and you will be navigated to the "Take the Quiz" page. Follow the instructions on the page, answer the questions and fill in your personal information, then tap on "Submit" to complete. For more details on the quiz, please refer to page 11 of this Newsletter.

Besides, the EMSD will organise a series of five seminars on vehicle maintenance technology free-of-charge from November 2019 to December 2020 mainly to introduce the latest information on vehicle maintenance to vehicle mechanics, persons-in-charge of vehicle maintenance workshops and those who would like to enhance the relevant skills as well as service culture and standards of the trade. Details will be disseminated to registered vehicle mechanics via e-mail or WhatsApp.

9. Voluntary Registration Scheme for Vehicle Maintenance Poster Design Competition

Content:

Participants are required to design a poster to promote the VRSVM or VRSVMW. The poster should introduce the registration requirements, objectives and benefits of the Scheme to the trade and the public. Slogan(s) can be added to the entries to help deliver the desired message.

Prizes:

Champion (one) Supermarket cash coupons worth HK\$6,000

1st Runner-up (one) Supermarket cash coupons worth HK\$4,000

2nd Runner-up (one) Supermarket cash coupons worth HK\$2,000

*Each of the awardees will receive a merit certificate.

Eligibility:

Hong Kong permanent residents

Details and Entry Form:

Entry form can be obtained from the EMSD or downloaded and printed at the following web page: https://www.emsd.gov.hk/en/supporting_government_initiatives/registration_scheme_for_vehicle_maintenance/index.html.

Participants may visit the above web page to view the latest information about the voluntary registration schemes.



Submission Deadline

14 February 2020 (Friday)

Participants who, upon submission of their entries, upload the photos of their submitted work on their personal social media platforms (e.g. Facebook, Instagram, etc.) may make an appointment with the Vehicle Maintenance Registration Unit of the EMSD at 2808 3545 to redeem a souvenir during office hours (from 9:00 am to 4:30 pm on Mondays to Fridays, except public holidays) on or before 14 February 2020. Participants will be required to present the information of their personal social media platforms for confirmation.

10. Latest Developments of the Registration Schemes

1. Registered vehicle mechanics who have switched to work in another vehicle maintenance workshop should notify the VMRU by e-mail (vmru@emsd.gov.hk) or fax (3968 7646) the name, address and telephone number of the new workshop.
2. If there is any change in the information of the vehicle maintenance workshop (such as name of the workshop, registration number of the workshop, address, contact number and business registration certificate, etc.) or alteration in the type of workshop being registered, the person-in-charge of the workshop must, within 14 working days from such change, notify the VMRU of the change in writing, and submit the relevant documents for processing.

Information on the VRSVM:

Total number of vehicle mechanics	10 382 <small>Note 1</small>
Number of registered vehicle mechanics (as at end-September 2019)	9 307

Information on the VRSVMW:

Total number of vehicle maintenance workshops	2 783 <small>Note 2</small>
Number of registered workshops (as at end-September 2019)	2 055

Note 1: 2016 Manpower Survey Report (updated on 25 August 2017) by the VTC and the Automobile Training Board.

Note 2: Database of the VMRU (updated on 19 July 2019).

If you wish to help protect our environment by receiving the electronic version of RVM Newsletters and leaflets, please send us the completed reply slip by e-mail or WhatsApp (vmru@emsd.gov.hk or WhatsApp: 9016 3185). We will contact you by means of e-mail or mobile communication as far as possible.

Reply Slip

I / My company would like to receive the RVM Newsletters and other information leaflets by ☐ e-mail / ☐ WhatsApp.

Please provide the relevant contact details based on the above selected means of communication:

E-mail address: _____ WhatsApp: _____



The electronic version of RVM Newsletters is also available at the EMSD website:

https://www.emsd.gov.hk/en/supporting_government_initiatives/registration_scheme_for_vehicle_maintenance/publications_and_circulars/rvm_newsletter/index.html.

Use of “Ten-year Experience” for Registration Renewal

Please note: Registered vehicle mechanics are required to apply for renewal on time. Those who have successfully registered in the past with the “ten-year experience” criterion but have yet to renew their registration may be required to meet the new registration requirements, i.e. to renew their registered status by obtaining craft certificates or passing the trade test. If the registration has expired for more than four months, please call 2808 3545 to enquire the renewal details.

Note: The criterion of “ten-year experience” as the means for vehicle mechanics to obtain registration has been disused since 31 December 2016

11. Prize Quiz (Issue No. 27)

Q1. After the power source has been cut off, which of the following is the waiting time required (or the specified time as recommended by the manufacturer) before one can repair an EV/HV's high-voltage device?

- A. No waiting required
- B. At least 3 minutes
- C. At least 10 minutes
- D. At least 12 hours

Q2. As advised by the manufacturer, which of the following is the personal protective equipment to be put on for repairing the high-voltage devices of EVs/HVs?

- A. Slippers and gold-rimmed glasses
- B. Labour gloves and cycling pants
- C. Sunglasses and vests
- D. Insulating gloves, insulating shoes and protective goggles

Q3. What is the chemical label of acetylene in a garage?

- A. Corrosive
- B. Flammable
- C. Anesthetic
- D. Carcinogenic

Q4. It is mentioned in an earlier article that five chemical labels are commonly seen in a garage. Apart from "harmful", "flammable" and "irritant", which of the following items includes the other two chemical labels as suggested in the article?

- A. "Toxic", "corrosive"
- B. "Toxic", "anesthetic"
- C. "Carcinogenic", "flammable"
- D. "Radioactive", "drug-resistant"

Q5. Starting from Issue No. 27 of the RVM Newsletter, how many CPD hour(s) can a vehicle mechanic earn if he/she answers the five questions in each issue of the Newsletter correctly?

- A. 1 hour
- B. 5 hours
- C. 8 hours
- D. 10 hours

How to participate? (Issue No. 27)

Please submit the answers directly at the following website (<https://forms.gle/wZe1P7bdZAQKLWSU8>) by scanning the QR code. Vehicle mechanics may also complete the form below, circle the correct answers, and send it to the VMRU by fax or e-mail (fax: 3968 7646 or e-mail: vmru@emsd.gov.hk).

Deadline: 31 January 2020

Question	Answer
1	A. B. C. D.
2	A. B. C. D.
3	A. B. C. D.
4	A. B. C. D.
5	A. B. C. D.



Name: _____

Vehicle Mechanic Registration No.: VM_____

E-mail Address: _____

Contact Telephone No.: _____

- Participants who answered all the questions correctly will earn one CPD hour and be notified by the VMRU individually.
- Only registered vehicle mechanics with valid registration may participate, each not more than once in each quiz.
- If there are duplicate submissions, only the last submitted answers before the deadline will be accepted.
- The decision of the VMRU on the quiz will be final.
- The correct answers will be announced in the next issue of the RVM Newsletter.

Results of the prize quiz in RVM Newsletter Issue No. 26

The ten winners who answered all the questions correctly and were drawn by lottery are:

LAM Chi Ming, MAK Kam Cheung, KWOK Sui Tong, NG Pak Yeung, CHAN Kwan Kee, YEUNG Wai Keung Kelvin, LI Chun Yiu, LEUNG Yu Kwan, PANG Wing Cheong and WAN Kam Tong

The answers of the prize quiz in RVM Newsletter Issue No. 26 are as follows:

Question	1.	2.	3.	4.	5.
Answer	A	D	C	C	B

12. Training Institutes Providing Continuing Professional Development Courses for Vehicle Mechanics (in random order)

Name of Training Institute	Website / Contents	Enquiry Tel. No.	QR Code
Traffic Services Employees Association	http://www.facebook.com/tseahk The 68th-70th courses will be held from September to December. Please visit the Association's website for more details.	2575 5544	
Pro-Act Training and Development Centre (Automobile)	http://www.proact.edu.hk/proact The Certificate in Vehicle Mechanical Repair programme# run by the Pro-Act Training and Development Centre (Automobile) may serve as another means for qualifying as registered vehicle mechanics. Mechanics who are interested in enrolling in the above programme may visit the Centre's website. # For details and latest developments of the programme, the information issued by the Pro-Act Training and Development Centre shall prevail.	2449 1310	
The Institute of the Motor Industry Hong Kong	http://www.hkimi.org.hk/en The Institute of the Motor Industry Hong Kong (IMIHK), formerly known as the Institute of the Motor Industry (IMI) - Hong Kong Branch, brings the mission and vision of the IMI to the Hong Kong automobile industry. After the handover in 1997, the IMI - Hong Kong Branch applied to be renamed the IMIHK in Hong Kong. Eligible members of the trade are welcome to join the IMIHK or enrol in its courses or talks.	2625 5903	
Hong Kong Vehicle Repair Merchants Association Limited	https://www.facebook.com/HKVRMA/	2399 7977	
Hong Kong Vehicle Repairing Industry Employee General Union	http://www.vrunion.hk	2393 9955	
Occupational Safety and Health Council (OSHC)	http://www.oshc.org.hk The Safety Handling of Chemicals course aims to provide employees with basic knowledge of the safe handling of chemicals. The course content includes hazards of chemicals, labelling of chemicals, safety precautions, personal protective equipment, emergency procedures, etc. For more course details, please contact the OSHC's Training Centre.	2311 3322	

The Society of
Operations
Engineers (Hong
Kong Region)

<http://www.soe.org.hk>

2617 0311



Qualifications
Framework
recognised courses

<https://www.hkqr.gov.hk>

2836 1700



Gentle Reminder

The contents in each issue help you catch up on the development of the registration schemes and enhance the quality of service. Please stay tuned! Each issue can be downloaded from the EMSD website at:

https://www.emsd.gov.hk/en/supporting_government_initiatives/registration_scheme_for_vehicle_maintenance/publications_and_circulars/rvm_newsletter/index.html.



For enquiries on the contents of the RVM Newsletter, please contact the VMRU of the EMSD.

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