CARTECH

Report on the ability of independent repairers to access information and data to repair or service new cars

Signed: Rowan Carter

Rowan Carter – Cartech Pty Ltd

Date: 3 July 2017

Table of Contents

Executive summary

This report was commissioned by the ACCC, as part of its market study into the new car[1] retailing industry.

Focus

This report documents a project undertaken by Cartech to investigate the availability of the necessary information, data, and tools required to service and repair a selection of ten (10) new cars with prior reported issues by an experienced, qualified and well-resourced independent repairer.[2] Two (2) of the 10 new cars examined reported 2 separate repair issues, meaning this report examined a total of 12 reported problems.

Method

The investigation examined the 12 reported examples, which covered a wide range of car makes and issues, where the stakeholders reported to the ACCC that they were unable to independently obtain the servicing and repair information required at a prior point in time. The 12 examples provided to Cartech were selected by the ACCC from stakeholders' submissions to the market study.

The 12 example problems have been investigated by Cartech, which had access to a well-resourced independent workshop facility and qualified technical experts to complete the project using a 'simulation process'.

The simulation process involved the following steps:

1. Determining the service and/or repair requirements applicable to each case based on the facts presented (that is, what approach would be needed to undertake a repair of the issue described).
2. Gaining access (where required) to a sample car to assist with assessing the given problem example.
3. Investigating the availability of the required information, data and tools to complete the servicing and/or repairs.
4. Recording the time, costs, inconvenience and risks (if any) associated with obtaining the necessary information, data and tools required to complete the servicing and/or repairs from formal (i.e. manufacturer or dealer sources or third-party data aggregators) or informal sources (such as industry contacts or informal internet sources).

As noted in the detailed findings, Cartech has sought to provide a robust assessment of available information, it may be that the time and extent of searches conducted by Cartech may be higher than would be conducted by an independent repairer faced with commercial time constraints. Cartech notes that this should be taken into account in considering these findings.

[1] For the purposes of the ACCC's market study (and as used in this report), a 'new car' is defined as any passenger vehicle, four wheel drive vehicle, or van which is purchased by an Australian consumer and which has not previously been registered to anyone else.

[2] For the purpose of this project, an independent repairer was defined as a qualified repairer who is independent of a car manufacturer and not part of an authorised dealer.

Key findings

For the given examples, the study found that:

- In 5 of the 12 examples, Cartech was able to access the required information from the manufacturer or dealer to facilitate a repair of the reported issue in the car.[3]
    - In 2 of these 5 examples it took over two weeks to gain access to the information required.[4]
    - In 1 of these 5 examples, access to required information would require access to a manufacturer approved interface tool which would cost an estimated $5,000 (with the addition of an enabling device at additional cost).[5]
    - In 2 of these 5 examples the information could be obtained without significant delay.[6]
- In 7 of the 12 examples, Cartech was unable to access sufficient information from the manufacturer or dealer to facilitate a repair of the reported issue in the vehicle. This ranged from gaining (needed) access to either on-board diagnostic data, scanning/diagnostic tools to receive/interpret data or special tools in order to undertake the repair.[7]
    - In 1 of these 7 examples, Cartech was able to use a formal third-party source (such as VACC TechOnline, scan-tool/suppliers) to gain access to the needed information to facilitate a repair of the reported issue in the car.[8]
    - In 1 of these 7 examples, Cartech was able to get information from an informal source (such as private eBay sellers of copies of manuals) to address the reported issue. However, in cases where Cartech found a such a source, Cartech's view was that a competent independent repairer would likely not use this information (as in most cases it was not authorised and/or was for overseas models) out of caution for ensuring a quality repair for the consumer.[9]
    - In 1 of these 7 examples, some repair and service information was available from the manufacturer, but was assessed by Cartech as being insufficient to enable a repair of the reported issue.[10]
    - In 1 of these 7 examples, repair and service information was not provided by the manufacturer on security grounds.[11]
    - In 2 of these 7 examples, repair and service information was not provided by the car manufacturer, without any reasons provided.[12]

The project's focus was on identifying the need, if any for the following types of data/information to repair a new car being:

[3] Nissan X Trail (2016) — Body repair and Idle Calibration; Mazda6 (2015) — oil specifications; Mazda CX5(2013) — Oil Light; Holden Barina (2011) — ECU update.

[4] Nissan X Trail (2016) — Body repair and Idle Calibration examples.

[5] Holden Barina (2011) — ECU update.

[6] Mazda6 (2015) — oil specifications; Mazda CX5 (2013) — oil light.

[7] VW Golf (2015) — cluster programming, Mazda CX5 (2013) — headlight and radio, Mitsubishi Triton (2014) — heating system, Chery J1 (2013) — ABS fault, Ford Fiesta (2012) — automatic transmission, Subaru Impreza (2012) — immobiliser, Nissan Navara (2012) — fuel pump removal tool.

[8] Nissan Navara (2012) — fuel pump removal tool.

[9] Mitsubishi Triton (2014) — heating system.

[10] Mazda CX5 — headlight and radio.

[11] Subaru Impreza (2012) — immobiliser.

[12] VW Golf (2015) — cluster programming; Ford Fiesta (2012) — automatic transmission.

- Repair and service information,[13] and/or
- On-board diagnostic data,[14] and/or
- Scanning/diagnostic tools (to receive/interpret data),[15] and/or
- Any other relevant material.

For the 7 of the 12 examples where Cartech was unable to obtain the required information from the manufacturer or dealer, the following was the type of information that could not be obtained for the relevant makes/models:

Example	**Data category needed for repair**
Mazda CX5 2013 — headlight and radio	Scanning/diagnostic tools (to receive/interpret data)
Mitsubishi Triton 2014 — heating system	Repair and service information
Chery J1 2013 — ABS fault	Repair and service information / On-board diagnostic data
Volkswagen Golf 2015 — cluster programming	Scanning/diagnostic tools (to receive/interpret data)
Ford Fiesta 2012 — automatic transmission	Scanning/diagnostic tools (to receive/interpret data)
Nissan Navara 2012 — fuel pump removal tool	Repair and service information
Subaru Impreza 2012[16] — immobiliser	Repair and service information (security related)

Further detail of what specific information could not be obtained is outlined in **Appendix B**.

About Cartech

Cartech is an established consultancy with over 35 years' experience in the automotive industry. It has had a broad involvement in many different aspects of the industry. The principal expert in the study, and author of the report, was Rowan Carter (Chartered Professional Engineer). In informing this report, Rowan drew on the expertise of staff of Cartech including Max Carter (Certified Mechanic). Further information about Cartech is outlined below.

[13] This may refer all information required to repair or service a car. This information is generally controlled by the car manufacturer and includes: collision repair methods and dimensions, component specifications, maintenance specifications, safety instructions, wiring diagrams, diagnostic and testing procedures, the meaning of diagnostic/fault codes, re-initialisation codes, calibration codes (such as for electronic control units that regulate emissions), technical service bulletins, service schedules, oil/lubricant specifications, recommended repair times, overhaul procedures, pass-thru information and software updates for the car and scanning tools.

[14] 'On-board diagnostic data' may refer to data captured and reported by a car's internal sensors, such as fault codes, and information about the performance of the car.

[15] 'Scanning/diagnostic tools' may refer to plug-in devices into a specialised port in the car (blue tooth or USB) that allows the car to communicate with a specialised computer (a secondary tool) that contains software able to interpret data collected by the car and may assist in diagnosing problems, faults or servicing needs. It may also refer to systems which allow a plug-in to communicate with a PC with manufacturer approved enabling software downloaded to it.

[16] Note that for the purpose of Cartech's analysis, due to identifying the appropriate model of Impreza that would encounter the reported problem, the G2 model (built between 1999–2007) was used.

Background

Cartech was commissioned by the ACCC, as part of its market study into the new car retailing industry, to provide technical expertise in relation to accessing information to assist the repair and/or servicing of new cars.

The purpose of this research was to provide the ACCC with technical advice from an expert with relevant experience in relation to the process a competent and experienced independent repairer, with relevant trade qualifications operating in a well-resourced workshop, would undertake to repair or service a 'new car' using 12 given examples.

For the purpose of its market study, the ACCC has defined a 'new car' as any passenger vehicle, four wheel drive vehicle, or van, which is purchased by an Australian consumer and which has not previously been registered to anyone else. The exclusions to the study are outlined in the issues paper to the study.[17]

The 12 given examples were selected by the ACCC from submissions made to its market study by industry associations representing interests in the independent automotive repair and maintenance sector or independent repairers. These are discussed in greater detail below.

This report:

- outlines Cartech's experience and Rowan Carter's qualifications to conduct this project (Section 1)
- explains the project's scope and the methodology used to test the 12 examples (Section 2 and 3)
- details Cartech's findings on the 12 examples (Section 4).

[17] The issues paper to the study can be found at: https://www.accc.gov.au/about-us/market-studies/new-car-retailing-industry-market-study.

1. Qualifications of Rowan Carter and Cartech's technical experts used in this study

This report is authored by Rowan Carter (Principal of Cartech), a Mechanical Engineer with over 35 years' experience in the automotive industry. In forming the advice outlined in this report, Rowan drew on technical experts of Cartech, including Max Carter, a current trade qualified motor mechanic with over 10 years' experience in the car repair and service industry. Further information on Cartech and the author of this report is outlined below.

The advice contained in this report remains the responsibility and views of the author, Rowan Carter.

Cartech's background

Cartech was established by Rowan Carter in the early 1980s and provides a range of consulting services, which includes expert witness services to the legal profession and insurance industry; compliance and certification of road vehicles; project management; engineering support for specialised vehicle build programs; root cause analysis of component failures and many other vehicle related assessments and testing services. Cartech also provides vehicle compliance and workshop services to the vehicle importing and modification industry.

Rowan Carter's key qualifications, experience and professional memberships

- Bachelor Mechanical Engineering - B(Mech)Eng 1976
  Monash University
- Registered automotive consultant
  Commonwealth Department of Infrastructure and Regional Development (DIRD)
- Engineering Signatory (VASS)
  Level 1 VASS # 1023 VicRoads (since 1983)
- Approved Vehicle Examiner (AVE)
  National Heavy Vehicle Regulator (NHVR)
- Specialist Design Engineer (1995-2006)
  GM Holden
- Member of the Institute of Engineers (Aust)
- Chartered Professional Engineer CPEng #145980
  Engineers Australia
- Member of the Society of Automotive Engineers - Australasia
  SAE-A # 1002347
- Member of the Victorian Automotive Chamber of Commerce (VACC)

Max Carter's qualifications and experience

- Certificate III in Light Vehicle Mechanical Technology
- Current trade qualified motor mechanic (over 10 years' experience with late model cars and specialisation in car diagnostics using a wide range of scan tools available to independent repairers)

2. Project scope

This project involved determining the process a competent and experienced independent repairer with relevant trade qualifications, operating in a well-resourced workshop would undertake to repair or service a 'new car' using the 12 given examples, related to 10 cars, outlined in Appendix B. The examples in Appendix B were derived from issues reported by independent repairers to the ACCC in accessing vehicle repair information and data as part of its market study into the new car retailing industry.

Accordingly, this project has focused on the availability of the following information and data that may be needed to repair or service a new car being:

- Repair and service information,[18] and/or
- On-board diagnostic data,[19] and/or
- Scanning/diagnostic tools (to receive/interpret data),[20] and/or
- Any other relevant material.

The project has also included documenting any issues which arose during the process of obtaining the information and/or data needed for the repair of the vehicle types outlined in Appendix B. The project also involved assessing whether the information was required for the repair stated in the example.

The following questions were used to guide the research process and reporting of the findings of this project:

1) What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?

2) What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:

   (a) from a manufacturer?

   (b) from the dealer? (eg. purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)

   (c) from a formal[21] third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)

[18] This may refer all information required to repair or service a car. This information is generally controlled by the car manufacturer and includes: collision repair methods and dimensions, component specifications, maintenance specifications, safety instructions, wiring diagrams, diagnostic and testing procedures, the meaning of diagnostic/fault codes, re-initialisation codes, calibration codes (such as for electronic control units that regulate emissions), technical service bulletins, service schedules, oil/lubricant specifications, recommended repair times, overhaul procedures, pass-thru information and software updates for the car and scanning tools.

[19] On-board diagnostic data may refer to data captured and reported by a car's internal sensors, such as fault codes, and information about the performance of the car.

[20] 'Scanning/diagnostic tools' may refer to plug-in devices into a specialised port in the car (blue tooth or USB) that allows the car to communicate with a specialised computer (a secondary tool) that contains software able to interpret data collected by the car and may assist in diagnosing problems, faults or servicing needs. It may also refer to systems which allow a plug-in to communicate with a PC with manufacturer approved enabling software downloaded to it.

[21] A 'Formal' third party source refers to a source for which payment/consideration has been made for the service or is a manufacturer authorised Australian source for an independent repairer to obtain technical information. It would generally exclude a source which is not readily verifiable (like internet forums), is through a personal relationship rather than one facilitated by the manufacturer (for example a friend who is a dealer) or is a source which is not geo-blocked/restricted by a manufacturer within Australia.

(d) informal/other source? (eg. internet forums, personal informal relationships with dealers)

3) What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics). Please specify whether the information related to:

   (a) 'Repair and service information' and/or

   (b) 'On-board diagnostic data' and/or

   (c) 'Scanning/diagnostic tools' and/or

   (d) Any other relevant material.

4) Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed?

5) For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds'[22] were used (detail step-by-step specifics)?

6) How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:

   (a) How long did it take seeking information via the manufacturer and dealer?

   (b) How long did it take seeking information via a formal third party source?

   (c) How long did it take from an informal third party source?

   (d) How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?

7) What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?

8) If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?

9) What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?

[22] For the purpose of this project, a 'work around' refers to any process for repair the expert may have found that was not (or would not be) consistent with the information contained in or from the manufacturer's authorised Australian channels or a formal third party/process. For example, using 'informal' channels such as an industry colleague, local dealer (via informal personal relationship), online forum or an online mechanism that allows the expert to obtain information not consistent with or through a process not consistent with a manufacturer's authorised Australian sources or a formal third party or process. This may include, but not be limited to, circumventing geo-blocking to obtain information about similar overseas model cars (i.e. left hand drive) or finding a repair process that is not recommended by the manufacturer through an online forum or personal relationship.

3. Methodology

Repair simulation process

Cartech utilised the resources available to a well-resourced independent repairer, to investigate and simulate the activities associated with accessing the information, data and tools required to complete the repairs described in the 12 given examples from 10 cars provided for in this study. The 12 examples were selected by the ACCC from stakeholders' submissions to the market study. The reason for the simulation was to identify the information, data or tools required to complete the repair, without the need for the car to be taken to the manufacturer's authorised dealer.

The repair simulation process involved reviewing each of the examples and consolidating the best method of approach for each case. Where a lack of detail was provided, assumptions were made about the issue involved to facilitate the process. Sample cars were sourced or identified where required, to assist in the simulation process. The simulation process did not involve the physical replication of the repair process associated with each example.

The simulation was based on the independent repairer having the following attributes:

- Competent and experienced with new cars
- Employees with the appropriate trade qualifications
- Member of the VACC (with access to 'TechOnline'[23])
- Access to current model aftermarket scan tools suitable for the makes serviced, e.g. Autologic, Snap-on, G-Scan, Launch, Bosch, Autoland, Autel and Hanatech etc.

The study was conducted in Melbourne, Victoria, however, where relevant, it also identifies circumstances where independent repairers may have a different experience in accessing repair and service information in regional/rural areas or in other states and territories.

Sources of information

Due to the focus of the study being on the availability of information, data and tools required for the proper diagnosis, repair and service of new cars by independent repairers, a desk-based investigation was conducted to substantiate the availability of the required information for the specific repair. This process involved trying to contact (or use) the following sources where applicable to the repair of the relevant vehicle.

- Car manufacturer
  - E.g. links from the FCAI website, or Customer service and authorised websites
- Scan tool manufacturers
  - E.g. Autologic, G-Scan and Snap-on
- Specialised tool and equipment suppliers to the trade
  - E.g. Logicar, Car-O-Liner
- Other third-party sources of information
  - E.g. VACC (Tech Online), Autodata, AutoMate, Thatcham Research, Haynes Manuals

[23] See: https://www.tech-centre.com.au/.

- Informal sources of information
  - E.g. Internet (Google)
  - Known independent repair specialists with brand associations
  - Known industry contacts.

Records kept

For each given example problem, a log of the process involved in sourcing the required information has been kept. This includes screenshots, emails and a record of time involved in following up the relevant sources available to the independent repairer.

This information has been used in the process of determining the time attributed to source data and information to undertake the repair including from manufacturer authorised sources, informal sources or work-arounds to complete the repair.

4. Findings

Table 1, below, summarises what information/data/tools could or could not be accessed from the manufacturer, dealer or a formal third-party source, and the cost and time associated with obtaining this information from a manufacturer, formal third party source or informal source. The detailed evidence and findings can be found in Appendix B.

Table 1: Summary of findings

Make and model	Reported information required to undertake repair	Findings: Information / data and tools (not) available from manufacturer (or dealer)	Findings: Costs from formal, third party and informal source	Findings: Time to investigate/remedy
Holden Barina 2011	ECU update file and version information about the file, and which type of interface tool was required to upload the file to the car.	Could not get access to a Holden Barina 2011 specific technical service bulletin (assessed as likely needed to assist diagnosis for the repair). Although could access an ECU file for the Barina (through the ACDelco website) it was unclear what version this was and whether it was an update. AC Delco indicated that could use Tech 2/Tech2Win programming for repair. However, Bosch Diagnostics indicated Tech2Win not able to support Barina for PC to enable pass-thru repair (Attachment B1.E). The only option left would have been to purchase a Tech2 device with CANDI interface.	Access to the ACDelco site was US$20/3-days. Access to the Tech2Win emulation software to interface with the car was $55/3-days (cost incurred before further investigation into exemption from Bosch diagnostics). An ECU file was available from Holden's ACDelco website for a further US$55/2-days. Access to Tech2 interface tool estimated at $5,000 (plus additional cost to purchase CANDI interface).	6 hours in total, which was spread out contacting Holden, ACDelco and Bosch (Holden's supplier of technical equipment) over a 2-week period, and primarily using their ACDelco website (although further investigations undertaken with informal sources, Bosch website etc).
Mazda CX5 2013	Headlamp and radio wiring diagrams	Access to Mazda's M-MDS diagnostic tool was not available from Mazda. Mazda stated they only	Access to the Mazda Manuals website was available for $19.95/day, however, the	4 hours in total, which was spread out contacting Mazda over a 1-week period and using their Mazda

		sold the M-MDS tool to dealers. Some schematics were available on their Mazda Manuals website.	schematics were not sufficient without the M-MDS tool.	Manuals website.
	Procedure for resetting oil light	The information was available through a dealer (verbally).	The procedure was available from the dealer for free. It was also available via VACC (VACC subscription cost is $650 per year).	1 hour in one sitting reviewing the Mazda Manuals website, calling a dealer and viewing the VACC Tech Online website.
Nissan X-Trail 2016	Body repair procedures	The procedure was available from Nissan (workshop manual).	The workshop manual cost was $110 from Nissan, however, it took Nissan 2-weeks to respond to initial email contact for the manual, and a further 3-days for it to arrive by post.	5 hours in total, which was spread out over 2-weeks waiting for replies to email correspondence from Nissan and a further 3-days waiting for the manual to arrive by post.
	Idle recalibration procedure	The procedure was available from Nissan (workshop manual).		
Mitsubishi Triton 2014	Repair manual	The repair manual was not available from the manufacturer or dealer.	Could not get information from formal third-party source. However, manual was available on eBay from a private seller for overseas models of the car for $10.	3 hours in total, which was spread out over 2-days contacting Mitsubishi and a further 7-days waiting for the manual to arrive by post from the eBay seller.
Chery J1 2013	Repair manual and information on the ABS fault codes	The repair manual and manufacturer's fault codes for ABS (brake) were not available from any source (including manufacturer or dealer).	The repair manual and manufacturer's fault codes for ABS were not available from any source. However, a 3rd party source indicated a generic scan tool that could read the ABS fault codes was potentially available but that source had not replied at the time of this report.	3 hours in total, which was spread out over 1-week attempting manufacturer/dealer contact and other formal 3rd party sources.
Volkswagen Golf 2015	Programming information for a new instrument cluster	Access to VW's online portal for programming of ECMs was not available. This information was not available from any other source.	n/a (not available from third party sources).	7 hours in total, which was spread out over 1-week trying to contact VW and other sources for information. No response has yet been received to

				email correspondence from VW at the time of writing.
Ford Fiesta 2012	Programming information for a new transmission ECU (TCM)	Access to Ford's online portal for programming of the TCM was not available. This information was not available from any other source.	n/a (not available from third party sources).	5 hours in total, which was spread out over 2-days waiting for correspondence from Ford and using their Motorcraft website.
Mazda Mazda6 2015	Transmission oil specification	Oil specifications were available from the Mazda Manuals website, a dealer and VACC.	$19.95 in accessing the Mazda Manuals website or $650 per year for access to the VACC's Tech Online. Or free from the dealer.	1/2 hour in one sitting using the Mazda Manuals, contacting a dealer or using the VACC Tech Online site, and additional time to compare the prices of oil.
Subaru Impreza 2012[24]	User code for the immobiliser	The user code for the immobiliser was not available (only available to dealer due to security reasons).	The user code for the immobiliser was not available to third party sources (only available to dealer due to security reasons).	3 hours in total investigating issue, which was spread out over 2-weeks waiting for correspondence from Subaru and Brant (supplier of the immobiliser to Subaru). No responses have been received at the time of writing.
Nissan Navara 2012	Repair manual and special tool to facilitate removal of the fuel pump.	Repair manual to facilitate removal of pump was made available by the manufacturer. However, the special tool to facilitate the removal of the fuel pump was not available from Nissan or Bosch (Nissan's supplier of the tool). Nissan stated the tool was out of stock. It was, however, available to hire from a private shop in Melbourne.	The tool would have cost $50/week for hire.	6 hours in total, spread out over 2-weeks waiting for a response from Nissan and Bosch.

[24] Note that for the purpose of Cartech's analysis, due to identifying the appropriate model of Impreza that would encounter the reported problem, the G2 model (built between 1999–2007) was used.

For the makes/brands used in the given examples, some of the manufacturer's online websites contained information which may have assisted the independent repairer. However, as shown in table 2 below, for the given examples examined, not all the required information was available from these sites, and not all the car manufacturers had information available to independent repairers online. These web addresses were primarily sourced through the FCAI's manufacturer repair information portal.[25]

Table 2: Contents of manufacturer's technical websites as observed for the given examples

Brand	Website	Notes on access to information
Holden	https://www.acdelcotds.com/acdelco/action/home	Provides Service Information and Calibration and Diagnostic Software, for a fee (not all Australian vehicles appear to be covered). Appears to provide access to technical service bulletins. However, it does not appear to provide access to some information about programming files for some models of Holden cars.
Mazda	https://mazdamanuals.com.au/manuals	Provides detailed information for a fee, however refers to the use of Mazda's M-MDS system for diagnostic and programming operations, which, as has been confirmed by Mazda and its dealers, is not available to independent repairers.
Nissan	No repair information website however email address available from FCAI site	Provides an email address only. In the instances I sent an email to request information, responses took at least 2-weeks.
Mitsubishi	No repair information website or email address on FCAI site	Provides an an online form only on its manufacturer website. In the instances I sent an email to request information, responses took at least 2-days.
Chery	No repair information website or email address on FCAI site	Provides an email address only on its manufacturer website. In the instances I sent an email to request information, no response was received.
Volkswagen	https://erwin.volkswagen.de/erwin/showHome.do	Provides comprehensive repair information, however does not allow access for diagnostic or programming operations.
Ford	https://www.motorcraftservice.com	Provides comprehensive repair information, however does not allow access for diagnostic or programming operations.
Subaru	https://www.subaru.com.au/service/service-and-repair-manuals	Provides an online form only. In the instance I sent an email to request information, no response was received.

Other observations

- Cartech notes that although in some of the examples it was eventually able to be locate the required information from a manufacturer, dealer or other source, the time

[25] FCAI, FCAI member service and repair information, https://www.fcai.com.au/service-repair/member-service-repair, accessed 30 June 2017.

taken to search for and obtain information for these examples (for example, requiring a wait of up to two weeks to gain access to a manual from a manufacturer via post) would not likely be suitable to the commercial arrangements of a repair shop and the requirements of a consumer. That is, in Cartech's assessment, a number of examples examined which resulted in extended wait times to gain information would likely have resulted in a workshop referring the vehicle to an authorised dealer for repair. This could, however, be different where a workshop specialised in that vehicle type or brand (so may already have access to that information from previous repairs).

- The extent and form of information available from manufacturers in each of the 12 examples differed substantially. In some cases, information was available via a manufacturer's online portal, in others, information could only be obtained by email contact and in some cases no online information was available at all. Where online portals were available, these differed in layout and availability of information.
- The extent to which authorised dealers (representing the manufacturer of the example in consideration) would provide information to Cartech differed not only between manufacturers but also within manufacturers themselves. That is in some cases, Cartech could gain the information from a dealer instantly, in others it was eventually able to locate the required information from an authorised dealer for the particular car brand through the process of calling a number of dealers of the same brand (that is until a dealer agreed to provide the information). In some other cases, a number of other car dealers provided a response that they didn't know how to gain the information required but recommended it be referred to them for repair.
- In some cases, formal third-party sources of aggregated information (such as VACC, Snap-on, G-scan, Autologic) were able to provide some of the required information to undertake the repair. However, in a number of cases these sources indicated they could not provide this information. Reasons given included that they didn't provide information for a particular manufacturer or the information was unavailable from their sources.
- The cost to obtain information (where it was able to be obtained) was generally limited to the cost of subscription to manufacturer portals or in accessing third party subscription services. In some circumstances, substantial one-off costs for diagnostic tools may be required. Cartech views that these one-off capital costs and on-going subscription costs would likely be expected by a well-resourced independent repairer. However, the costs associated with the labour required to locate information in some of the examples could (particularly where that time was spread over a length of time awaiting a reply) could lead to a decision to refer to the repair to an authorised dealer (see first point).

5. Conclusion

The results from this investigation have identified that the 'independent repairer' in 7 of the 12 problems presented, could not have obtained sufficient information required to repair or service the car from the manufacturer, such as through a car manufacturer's authorised channel for providing information (e.g. a technical website or the service or parts department of a dealer). In 1 of 7 of these problems where sufficient information could not be obtained from the car manufacturer, the information could be obtained from a formal third-party source. In a further 1 of 7 of these problems where sufficient information could not be obtained from the car manufacturer, the information could be obtained informally, for instance, through a private seller on eBay. In 1 of 7 of these problems where sufficient information could not be obtained from a car manufacturer, some repair and service information could be obtained from the car manufacturer, but it was not sufficient to enable repair of the reported issue. In 1 of 7 of these problems, a car manufacturer claimed security-grounds for not providing the information.

In 5 of the 12 examples in total, it was possible to obtain the information required from the car manufacturer. However, in 2 circumstances it took over two weeks to obtain the information from the car manufacturer.

In a number of cases some level of information was available from the car manufacturer's website, accessible immediately, however, it was not detailed enough or required additional inputs (such as a proprietary tool) to be useful. Where an attempt was made to obtain these additional inputs, such as the Mazda M-MDS tool, these were unsuccessful as the tools were not sold to independent repairers by the car manufacturer or their supplier of the tool.

This report should be taken as representing the results of the 10 given cars, totalling 12 reported issues, examined and should not be generalised to the availability of information and data from the manufacturers of these cars more broadly.

Appendix A — Given examples and request from the ACCC

The following material outlines the services requested by the ACCC and the 12 given examples from 10 cars. The examples were obtained by the ACCC from stakeholders who made submissions to the market study.

Services required by the ACCC

The ACCC requested technical expertise from Cartech to gain technical advice in relation to the process a competent and experienced independent repairer with relevant trade qualifications operating in a resourced workshop would undertake (as an 'example' of an independent repairer) to repair or service a 'new car' using 'given examples'.

The services requested were to include (if it occurred) documenting any issues which may arise in obtaining information and/or data needed to repair a 'new car' (as defined above).

- A particular focus of the analysis the ACCC required to be undertaken by the expert was to identify whether, for each example, the relevant repair and service information could be obtained from the car manufacturer/dealer or a formal source (e.g. VACC's 'OurAuto' or Haynes or an aftermarket scanning tool manufacturer such as Autologic, or Snap-on). If not, whether it could be obtained in other ways and what issues may be associated with obtaining the information that way.

The ACCC indicated that the expert would be required to detail what type of information was needed to repair or service a new car being:

- Repair and service information[26], and/or
- On-board diagnostic data[27], and/or
- Scanning/diagnostic tools (to receive/interpret data)[28], and/or
- Any other relevant material.

Simulation using 'given examples'

The ACCC had (12) examples provided by stakeholders to the ACCC's market study into the new car retailing industry of a repair or service issue arising in a particular brand and model of a 'new car' (see definition above in 'background'). The examples generally involved a repair or servicing task requiring access to information/data/codes or software to repair or address the servicing issue. These examples are outlined below.

The ACCC required an expert to examine the (12) examples and using their technical knowledge, expertise and experience undertake a simulation of the process needed to obtain information/data to address each of the repair/service issues for each given car.

[26] This may refer all information required to repair or service a car. This information is generally controlled by the car manufacturer and includes: collision repair methods and dimensions, component specifications, maintenance specifications, safety instructions, wiring diagrams, diagnostic and testing procedures, the meaning of diagnostic/fault codes, re-initialisation codes, calibration codes (such as for electronic control units that regulate emissions), technical service bulletins, service schedules, oil/lubricant specifications, recommended repair times, overhaul procedures, pass-thru information and software updates for the car and scanning tools.

[27] On-board diagnostic data may refer to data captured and reported by a car's internal sensors, such as fault codes, and information about the performance of the car.

[28] 'Scanning/diagnostic tools' may refer to plug-in devices into a specialised port in the car (blue tooth or USB) that allows the car to communicate with a specialised computer (a secondary tool) that contains software able to interpret data collected by the car and may assist in diagnosing problems, faults or servicing needs. It may also refer to systems which allow a plug-in to communicate with a PC with manufacturer approved enabling software downloaded to it.

As part of this process, the ACCC requested the technical expert, Cartech, to advise of the best process to undertake a 'simulation' that would best represent the situation of a 'competent and experienced independent repairer with relevant trade qualifications operating in a resourced workshop would undertake'. The ACCC indicated that this could include, but not be limited to, gaining access to a workshop (if not already accessible).

Table 1: Twelve reported examples where the independent repair and service sector has been unable to access repair and service information from car manufacturers

Problem(s) the car presented with and further problems during diagnosis/repair	Action taken to obtain information	Information required to conduct diagnosis and service/repairs	Outcome
Example 1: Holden Barina (2011)[29]			
Car presented with engine warning light on and not running as well as usual. **Mechanic used a diagnostic tool to scan the OBD and ECUs of the car.** **An ECU had logged a fault with the catalytic converter. Relevant components were free of physical damage. Live test with all sensor inputs were recorded as the car was driven. Output range from two emission control sensors appeared to be wrong.**	Manufacturer's specifications on the two emissions control sensors were not available direct from the manufacturer or from sources other than the dealer. Two new sensors were installed to provide a known good comparison. New sensors showed outputs were the same as with the old sensors. Mechanic contacted a former colleague who shared the problem required an update of the ECU software.	Output range of the two emission control sensors. Software update for the ECU.	ECU software update was not available to the mechanic; the car had to be taken to a dealer, who had the ECU software update, to complete the repairs. Customer was left without the car for an additional day. Additional costs for taking the car to dealer for software update.
Example 2 (a and b): Mazda CX-5 (2013)[30]			
(a)Malfunctioning radio system.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Radio and infotainment wiring diagram	Unknown.
(a)Headlight problem.	Contacted VACC, no information available online, checked online for OEM websites,	HID headlight wiring diagram.	Unknown.

[29] ACCC New Car Retailing Industry Market Study, Kmart Tyre & Auto Services, supplementary submission, p. 1.

[30] ACCC New Car Retailing Industry Market Study, VACC supplementary submission, Attachment A, pp. 1 (radio system issue) and 7 (headlight issue); and Ultra Tune, supplementary submission, p. 21 (oil light issue).

	blocked from accessing US and EU technical information.		
(b)Oil light needs to be reset.	Contacted Mazda, who did not release the information.	Oil light reset information.	Car taken to dealer to be reset, cost was $110.
Example 3 (a and b): Nissan X-Trail (2016)[31]			
(a) Collision repair.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Body dimension specifications.	Unknown.
(b)Battery replacement. Replacing the battery, however, causes the car's accelerator and other systems to require recalibration (idle recalibration procedure).	Contacted Nissan and sought information from other official sources. Limited information from Nissan Australia's website or email contact. Unable to access EU or US technical sites.	Idle recalibration procedure.	Found information on a website on the internet — not officially from Nissan.
Example 4: Mitsubishi Triton (2014)[32]			
Heating system problems.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Heater core and dash removal procedure.	Unknown.
Example 5: Chery J1 (2013)[33]			
Antilock braking system issues.	Contacted VACC, no information available, checked online for OEM website — no website available. Contacted dealer who had no listing for workshop manuals.	ABS fault codes, diagnostic information and wiring diagram.	Unknown.
Example 6: Volkswagen Golf (2015)[34]			
Cluster failure in vehicle.	Contacted Volkswagen, not given access to the tools and information needed to code the new cluster into the car (through a connection to Volkswagen Germany) and to update the odometer reading to	Tools and information needed to code the new cluster and to update the odometer reading by connection to Volkswagen's server.	New cluster was installed. Car was towed to a Volkswagen dealer for coding of the cluster.

[31] ACCC New Car Retailing Industry Market Study, VACC supplementary submission, Attachment A, p. 11 and ACCC site visit to Kmart Tyre & Auto, 22 March 2017.

[32] ACCC New Car Retailing Industry Market Study, VACC supplementary submission, Attachment A, p. 13.

[33] ACCC New Car Retailing Industry Market Study, VACC supplementary submission, Attachment A, p. 15.

[34] ACCC New Car Retailing Industry Market Study, Ultra Tune supplementary submission, p. 26.

	be correct for the car.		
Example 7: Ford Fiesta (2012)[35]			
Car towed to mechanic with a no drive fault. No communication with the car's automatic transmission ECU. Automatic transmission ECU replaced, but had no software access to reprogram the ECU.	Attempted to access programming data.	Software/diagnostic tool required to access the ECU and to reprogram it.	Car was towed to a Ford dealer to install and reprogram the new ECU.
Example 8: Mazda 6 (2015)[36]			
Automatic transmission lubricant required replacement during a service.	Mechanics contacted Mazda and oil suppliers to try to determine the lubricant needed. Oil suppliers could not confidently state what lubricant was needed. Mazda was of no assistance.	Automatic transmission lubricant specifications.	Able to get lubricant after contacting multiple sources. Could not charge the additional time taken to the customer.
Example 9: Subaru Impreza (2012)[37]			
During a repair, it was necessary to disconnect the battery. Once the battery was reconnected, a code was required to be entered into the immobiliser to start the car.	Immobiliser system codes were not provided by the car manufacturer or a local dealer.	Immobiliser system code.	Code was obtained from a Subaru specialist 150km from the original repairer who could obtain the code from Subaru International, but not Subaru Australia. Workshop absorbed labour costs and costs of towing the vehicle 150km.
Example 10: Nissan Navara [diesel] (2012)[38]			
Faulty fuel pump, replacement required. Special tool needed to replace the pump.	Contacted Nissan dealer for the special tool — told it is made exclusively by Bosch for Nissan. Neither Nissan nor Bosch would sell it to the independent repairer.	Special tool to replace the fuel pump.	No work around was available. Time spent looking for the tool could not be recovered. Car had to be towed to a Nissan dealer."

[35] ACCC New Car Retailing Industry Market Study, Ultra Tune supplementary submission, p. 20.

[36] ACCC New Car Retailing Industry Market Study, Ultra Tune supplementary submission, p. 37.

[37] ACCC New Car Retailing Industry Market Study, GPC Asia Pacific, supplementary submission (April 2017), row 2.

[38] ACCC New Car Retailing Industry Market Study, GPC Asia Pacific, supplementary submission (April 2017), row 27.

Appendix B — 12 assessed problems from 10 cars

B1 - Holden Barina 2011 - TK 1.4

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
1	Holden	Barina	2011	Car presented with engine warning light on and not running as well as usual. Mechanic used a diagnostic tool to scan the OBD and ECUs of the car. An ECU had logged a fault with the catalytic converter. Relevant components were free of physical damage. Live test with all sensor inputs were recorded as the car was driven. Output range from two emission control sensors appeared to be wrong.	Manufacturer's specifications on the two emissions control sensors were not available direct from the manufacturer or from sources other than the dealer. Two new sensors were installed to provide a known good comparison. New sensors showed outputs were the same as with the old sensors. Mechanic contacted a former colleague who shared the problem required an update of the ECU software.	Output range of the two emission control sensors. Software update for the ECU.	ECU software update was not available to the mechanic; the car had to be taken to a dealer, who had the ECU software update, to complete the repairs. Customer was left without the car for an additional day. Additional costs for taking the car to dealer for software update.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Conducting basic checks of the related components:
    - Read the on-board diagnostic trouble codes (DTCs)
    - Physical examination of the related components
    - Continuity check of the related electrical circuits
    - Odometer reading to assess the amount of usage
- These steps would be undertaken using a scan-tool, component checking tools, wiring diagrams and workshop manual (see below).

If no obvious diagnosis could be made using the above checks, the following steps would likely be undertaken:

- Reference to GM Holden's Service Bulletins for in-service problems related to a flagged catalytic converter fault code. If the Service Bulletin refers to an in-service Electronic Control Unit (ECU) update applicable to the vehicle, continue with the following steps.
- Log into the AC Delco website (the portal for GM Holden products at www.acdelcotds.com) and download the ECU file for the subject vehicle.
- The following tool would be required to update the ECU module:
    - GM Tech2 with interface adaptor, or
    - GM Tech2Win PC software with suitable interface adaptor
- The above tool would be used to:
    - Re-program the ECU
    - Clear the fault codes and re-check the system.

Other assumptions

For this example, it was assumed that the efficiency of the catalytic converter was still within serviceable limits and the statement relating to an ECU program update by GM Holden is correct.

Access to a vehicle acquired or desk-based analysis

It was not necessary to obtain an equivalent model sample car to the one presented in the example for the simulation, as the problems reported were assumed to be correct and the purpose was to access the ECU update and verify the availability of information and tools to complete the ECU update. To obtain access to technical information, however, such as the ECU file from the AC Delco site, a representative vehicle identification number (VIN) was used to facilitate the investigation.

Results

Questions	**Findings**

What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue the following information or tools would be needed:
	• An aftermarket or GM Holden scan-tool to read the manufacturer's fault codes (DTCs).
	• Access to:
	  ○ Wiring diagrams
	  ○ Workshop manuals relating to the operation of the vehicle's emission control system
	  ○ Manufacturer's technical service bulletins for in-service updates (if applicable)
	  ○ Updated ECU program file
	  ○ GM Holden diagnostic tools or aftermarket tools needed to reprogram the ECU and recheck the system.

What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:	
from a manufacturer?	To search for the relevant information, listed above, two steps were initially undertaken: • I contacted GM Holden Customer support via email • I accessed the AC-Delco website that provides files/information for GM Holden products (accessible from the FCAI website). <u>GM Holden Customer Support (Australia):</u> GM Holden Customer support advised me that the only option was for the vehicle to be taken to a dealer. They did not provide information about software updates relating to the ECU and could not provide assistance relating to using the information and data from the AC Delco website. <u>AC-Delco website (United States):</u>

	I accessed the AC-Delco website after identifying it as the relevant source of information and data for GM Holden brands from the FCAI website. I logged onto the AC-Delco website (Attachment B1.A), and subscribed to the following: • Service information (US$20 3-days): The website has Service Information (SI section) relating to campaigns or bulletins. However, there is no information listed for the subject model [Refer to attachments B1.B and B1.F] • Calibration & Diagnostic Software: o Service Programming Only (US$55 2-days) o Downloaded ECU file (Attachment B1.B) There was no evidence provided to suggest that this was an updated version of the ECU program. o Tech2Win – emulation software for PC (US$55 3-days). The website information advised that the subject model requires a Tech2 tool or Tech2Win software for programming purposes (Attachment B1.C). However, there was a contradiction between the information from ACDelco & Bosch Diagnotics regarding the compatibility of GM Tech2Win with this example model. [Refer to attachments B1.D & B1.E below for details]. The Bosch Diagnostics (US) website indicated that the GMTech2Win tool was not compatible with this car. Accordingly, only a Tech2 tool could be used with the car (however, as indicated below, another source stated that a further CANDI interface device would be required). <u>AC Delco website customer service hotline (United States):</u> I was unable to use the online 'Contact Us' page due to it not accepting an Australian mobile number in a required field. I called the listed assistance number USA 800-825-5886 and was advised that the GM tool 'MDI' and Bosch tool 'M VCI' are the interface adaptors required for Tech2Win. <u>Bosch Australia:</u> I subsequently contacted Bosch Australia by email regarding gaining access to the GM Tech2 equipment required (as I was told by ACDelco that they ae the manufacturer/agents of GM diagnostic equipment). They were not able to immediately advise what diagnostic equipment was required for programming of the ECU on this model Barina. They advised they would get back to me – however, I have not received a response at the time of preparing this report.
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for	I contacted my workshop's local Holden dealer by telephone regarding the issue and asked what information they could provide. Both their service department and parts department were not aware of an engine ECU update for the subject vehicle, and suggested that the vehicle be brought in (to the dealer) for a diagnostic check. They also advised that they were not at liberty to supply GM Holden Service Bulletins to independent repairers. The dealer contact also indicated that he was not aware of the AC Delco website access for independent repairers.

distributing the information, rather than through informal personal relationships)	
from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	I contacted two third-party sources to find information on undertaking the repair, in particular, to determine whether an ECU update was required. These were the VACC and the scan-tool suppliers Snap-on and Autologic. VACC: I logged on to VACC's Tech-Online source and no relevant information was available from this source. Snap-on: Snap-on advised that their equipment could only assist with obtaining the manufacturer's fault codes and testing of the oxygen sensors and wiring etc. Their diagnostic team can assist with the problem solving, however no assistance could be provided regarding the status of the ECU program or the re-programming of it. Autologic: Autologic advised that they do not support Mazda vehicles.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Google: I conducted a Google search and found a document on the Bosch Diagnostics website; (https://www.boschdiagnostics.com/pro/sites/pro/files/Tech2Win_exceptions.pdf), which outlines what vehicles are not covered by Tech2Win, and includes the subject example vehicle. Trade contacts: I contacted one trade colleague and two ex-Holden mechanics. One of the ex-Holden mechanics was aware that similar models of Barina, which are manufactured by Daewoo in Korea, may experience these types of problems. However, the mechanic was unable to provide specific information on the process and equipment required for the model of car given in the example. The mechanic mentioned that a GM Tech2 tool with a 'CANDI' interface device was used during the development and servicing of Daewoo-manufactured Barinas from Korea. However, the mechanic did not know what interface device was required for the PC based Tech2Win diagnostic system (which would be the preferred diagnostic tool for the independent repairer due significantly less financial outlay involved). Trade contacts also indicated I could purchase the Tech2 tool and CANDI interface from Holden.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service**	As per the above, GM Holden's authorised sources for data/information, a Holden dealer and formal third-party sources (such as the VACC's tech Online and Snap-on) were unable to advise whether the model of car in the example had been subjected to an ECU program update, which would be relevant to the subject issue. The dealer contact was not aware of the AC Delco website and was not able to assist with information. The GM Holden formal sources of information and equipment could not specifically advise what interface device was required for the PC based GM Tech2Win software when interfacing with the example vehicle. The GM Tech2Win software was purchased and downloaded from the ACDelco website for reprogramming of the ECU. However, further investigation revealed only the Tech2 tool and a CANDI interface would be suitable.

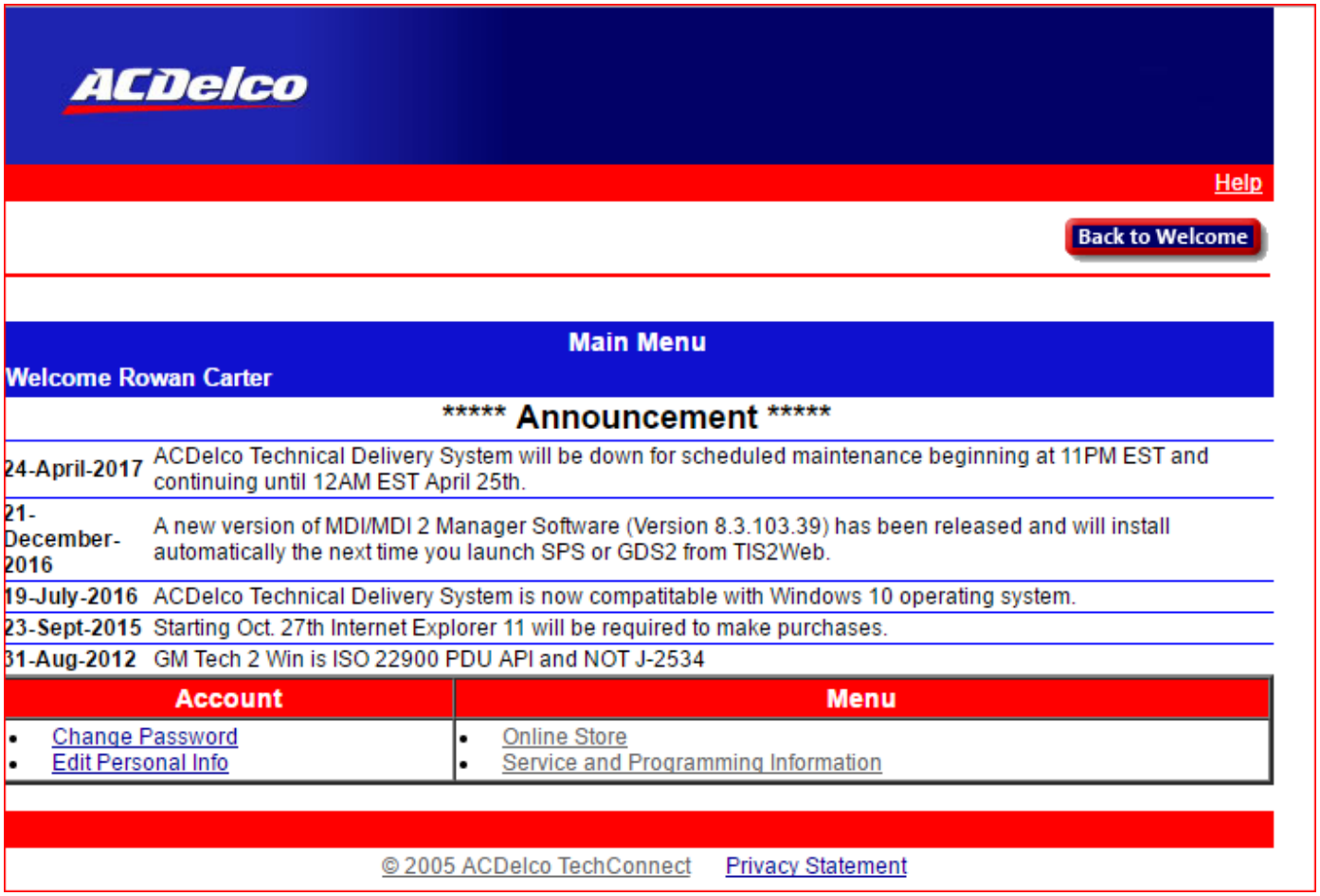
information' and/or • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	These information categories required; **'Repair and service information'** **'Scanning/diagnostic tools'**
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	In aggregate, it was only after consulting a number of sources, including the Bosch Diagnostics (US) website and informal sources that it became clear the Tech2Win program could not communicate with the car and a Tech2 tool and CANDI interface would be required to upload the ECU file available from the ACDelco website. It continued to be unclear, however, whether the ECU file was an update.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	No work arounds were required.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	GM Holden Customer Support (Australia): ½ hour of labour was spent on this task. However, this involved sending 4 emails over a 2-week period. ACDelco website (United States): About 2 hours of labour was spent on this task involving 3 logins over a 1-week period. During these sessions I applied to be a user, searched for and reviewed information and downloaded the ECU file. ACDelco customer service hotline (United States): ½ hour of labour was spent on this task involving 2 telephone calls (after-hours) over 1 week. Dealers: ½ hour of labour was spent on this task for 3 phone calls to both parts and service departments in one sitting. I was unsuccessful in obtaining all the information needed from these sources. However, I was able to obtain the ECU file from ACDelco.

• **How long did it take seeking information via a formal third party source?**	VACC Tech Online: ½ hour of labour was spent on this task in one sitting. Snap-on tools and Autologic: About 1 hour of labour was spent on this task in total over a 1-week period. Bosch Australia: ½ hour of labour was spent on calls, and text messaging over 2 weeks. I was unsuccessful in obtaining the information needed from these sources.
• **How long did it take from an informal third party source?**	Google search: ½ hour of labour in 2 sittings, including access to the Bosch Diagnostics site based in the US. Three trade associates: About 1½ hours of labour in total over a 1-week period. I was unsuccessful in obtaining all the information needed from these sources.
How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?	No work around was attempted (see reasons above).
What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?	Monetary Costs (excluding labour costs): I estimate the total non-labour monetary costs an independent repairer would incur in this process was US$130 for the ACDelco access and ECU file (not including the subscription costs to the VACC's Tech Online service)[39]. A Tech2 tool would cost an estimated $5,000 (verbal estimate from a trade contact), plus a further amount for the CANDI interface. Labour (hours): I estimate the total labour hours spent on this to be about 6 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Contacting Holden Customer Service: over 2 weeks • Accessing the ACDelco website: over 1 week • Contacting ACDelco assistance by telephone twice: in 2 sittings (after-hours) • Contacting Bosch Australia on 2 occasions: over 1 week • Accessing VACC Tech-Online: in one sitting

[39] The VACC subscription service is used to obtain information for other examples in this simulation. The subscription to VACC Tech-Online is $650/year plus a joining fee of $110.

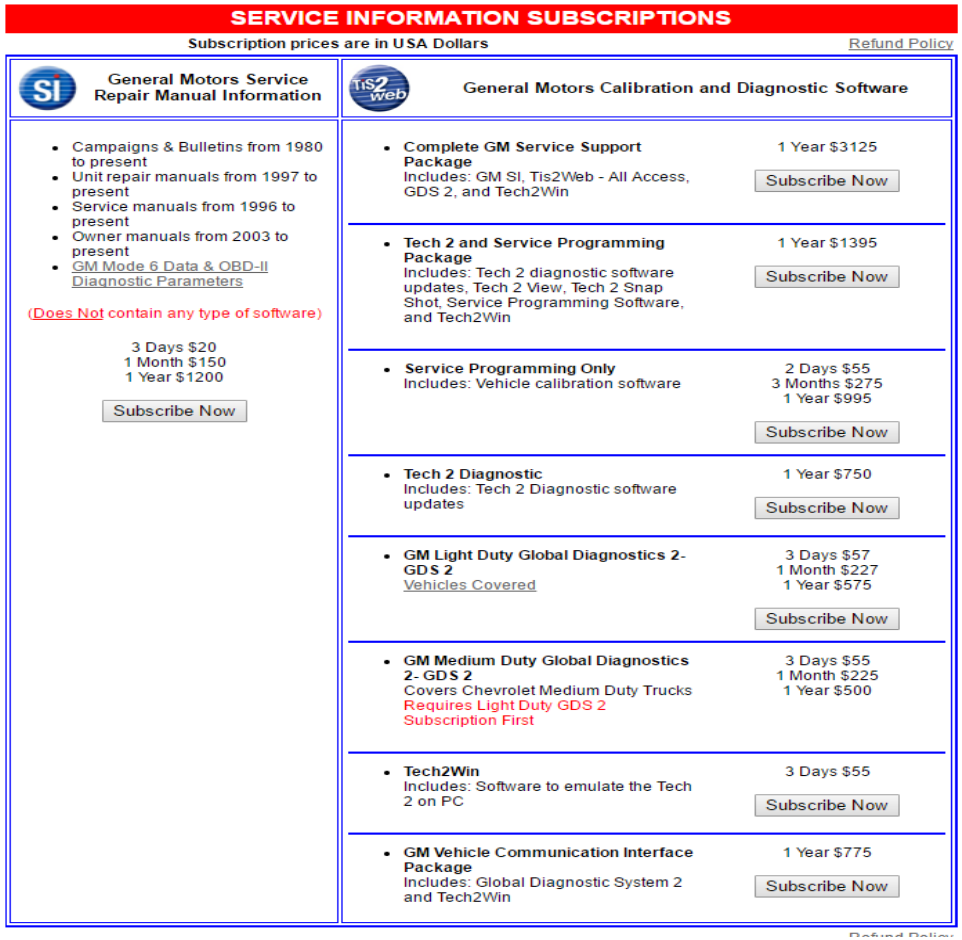
	• Contacting Snap-on and Autologic: over 1 week • Contacting 2 dealers: in one sitting • Contacting 3 trade colleagues: over 1 week • Google search and review of Bosch Diagnostics (US) website: in one sitting. <u>Other:</u> There are likely potential costs in inconvenience to the customer due to delays in diagnosing and repairing the car, as well as potential reputational and financial risks for the independent repairer. There is also a potential for the repairer to replace components unnecessarily in the first instance, due to not having access to the latest information regarding the in-service updates.
If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?	No work arounds were required.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information required to repair the car was available from at least one source: • An ECU file • Tech2 tool and CANDI interface (Pass-Thru) This would be sufficient for uploading the ECU file to the car. However, the following information to verify the need for the above process was not available from any sources: • Information on the status/version of an ECU update for the subject model/vehicle and whether the ECU file on the ACDelco website was an update. • Manufacturer's Technical Service Bulletins relating to in-service ECU updates for the subject vehicle.

Attachment B1.A — AC Delco website



Attachment B1.B — Subscription costs

This AC Delco menu was used to facilitate the downloading of a list of vehicles covered by GDS 2 and downloading the engine calibration software applicable to the sample vehicle. No Service or Repair Manual information was found for the subject vehicle in the 'SI' section.



SERVICE INFORMATION SUBSCRIPTIONS

Subscription prices are in USA Dollars — Refund Policy

General Motors Service Repair Manual Information

- Campaigns & Bulletins from 1980 to present
- Unit repair manuals from 1997 to present
- Service manuals from 1996 to present
- Owner manuals from 2003 to present
- GM Mode 6 Data & OBD-II Diagnostic Parameters

(Does Not contain any type of software)

3 Days $20
1 Month $150
1 Year $1200

Subscribe Now

General Motors Calibration and Diagnostic Software

Complete GM Service Support Package Includes: GM SI, Tis2Web - All Access, GDS 2, and Tech2Win	1 Year $3125 Subscribe Now
Tech 2 and Service Programming Package Includes: Tech 2 diagnostic software updates, Tech 2 View, Tech 2 Snap Shot, Service Programming Software, and Tech2Win	1 Year $1395 Subscribe Now
Service Programming Only Includes: Vehicle calibration software	2 Days $55 3 Months $275 1 Year $995 Subscribe Now
Tech 2 Diagnostic Includes: Tech 2 Diagnostic software updates	1 Year $750 Subscribe Now
GM Light Duty Global Diagnostics 2-GDS 2 Vehicles Covered	3 Days $57 1 Month $227 1 Year $575 Subscribe Now
GM Medium Duty Global Diagnostics 2- GDS 2 Covers Chevrolet Medium Duty Trucks Requires Light Duty GDS 2 Subscription First	3 Days $55 1 Month $225 1 Year $500
Tech2Win Includes: Software to emulate the Tech 2 on PC	3 Days $55 Subscribe Now
GM Vehicle Communication Interface Package Includes: Global Diagnostic System 2 and Tech2Win	1 Year $775 Subscribe Now

Attachment B1.C — AC Delco software support for relevant car model

This screenshot is from the AC Delco website, which indicates that the subject model vehicle is not supported by GM's GDS2 diagnostic system and requires Tech2 or PC software Tech2Win to reprogram the ECU. The example vehicle is also not listed on the referenced Tech2Win exceptions (see Attachment B1.D)

Model Year 2011
GDS2 Supported Vehicles
Buick LaCrosse
Buick Regal
Cadillac SRX
Chevrolet Beat
Chevrolet Camaro
Chevrolet Captiva**
Chevrolet Cruze
Chevrolet Equinox
Chevrolet Orlando
Chevrolet Sail
Chevrolet Spark
Chevrolet Tavera
Chevrolet Volt
Daewoo Alpheon
GMC Terrain
Holden Barina Spark
Holden Captiva 5
Holden Captiva 7
Holden Cruze
Saab 9-4
Saab 9-5
*ALL Others Tech 2 / Tech2Win Supported**

Attachment B1.D — Tech2Win exceptions from the ACDelco website

This is the list of cars not supported by the Tech2Win tool, as reported by the ACDelco website. The 2011 Holden Barina does not appear on this list, implying it is supported. However, on review of the Bosch Diagnostics (US) website (see Attachment B1.E), the 2011 Holden Barina is listed as not being supported. This means it is only supported by the physical Tech2 tool.

GM North American Tech2Win Supported Vehicle Exceptions

Model Year	Vehicle Series	Systems	Remarks
2011	Buick Lucerne	CCSM	SDL - not implemented
	Cadillac DTS		
	Chevrolet Optra	PSCM	Kw94 - not implemented
	Workhorse 6 - W22 Series	EBCM	4WAL - not implemented
2010	Buick Lucerne	CCSM	SDL - not implemented
	Cadillac DTS		
	Cadillac Incomplete Hearse, Limousine		
	Chevrolet Optra	PSCM	Kw94 - not implemented
	Holden Viva		
	Workhorse 6 - W22 Series	EBCM	4WAL - not implemented
	Buick Lucerne		

Attachment B1.E — Tech2Win exceptions from Bosch Diagnostics (US)

This is the list of cars not supported by the Tech2Win tool, as reported by the Bosch Diagnostics (US) website. This information indicates the 2011 Holden Barina is not supported by the Tech2Win tool. This means it is only supported by the physical Tech2 tool.

Model Year	Vehicle Series	Systems	Remarks
2011	Chevrolet Optra, Spark,Epica,Aveo	RKE\RFA	ISO-9141 \ KW08\SDLISO - Not Implemented
	Holden Epica, Barina		
2009-2011	Chevrolet Optra	SIR	ISO-9141 \ KW08\SDLISO - Not Implemented
	Holden Viva		
2009-2010	Chevrolet Optra, Spark,Epica,Aveo	RKE\RFA	ISO-9141 \ KW08\SDLISO - Not Implemented
	Holden Epica, Barina		
	Pontiac G3,Wave,Matiz		
			ISO-9141 \

Attachment B1.F – ACDelco SI (Service information page)

There is no reference to the 2011 Barina model

Service Information

Unit Repair Manual

To view a manual, click on a link from the list below:

Unit Repair Manual:

- 1997 Transmissions
- 1998 Transmissions
- 1999 Transmissions
- 2000 Transmissions
- 2001 Unit Repair
- 2002 Unit Repair
- 2003 Unit Repair
- 2004 Unit Repair
- 2005 Unit Repair
- 2006 Unit Repair

Performance Parts Manual:

- 2008 Marine Engines Manual
- 2008 Performance Engines Manual
- 2010 Marine Engines Manual
- 2011 Performance Parts Manual
- 2012 Performance Parts Manual
- 2015 Marine Engines Manual
- 2017 GM Globally Approved Refinish Materials

Supplemental Transmission Technical Guides (US Engli:

- 8L90 Hydraulic Circuits
- GF6 GEN3 Hydraulic Circuits
- 2ML70 Tech Guide 2-2008
- 4ET50 Tech Guide 2-2011
- 4L30E
- 4L60E
- 4L80E
- 4T40E
- 4T60E
- 4T65E
- 4T80E
- 5L40E
- 6 Spd RWD Tech Guide 10-2005
- 6T30_40_45_50 Gen2 Tech Guide 3-2012
- 6T40_45 Tech Guide 5-2008
- 6T70_75 Tech Guide 6-2008
- 6T70_75_80 Gen2 Tech Guide 9-2012
- 8 Speed RWD Tech Guide 3-2016
- AF23_33-5 Tech Guide 7-2002
- Understanding Hybrid Electric Vehicles 6-2006
- VT20_25-E Tech Guide 4-2002

B2 - Mazda CX–5 2013 – KE 2.0 Petrol

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
2	Mazda	CX-5	2013	Malfunctioning radio system.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Radio and infotainment wiring diagram	Unknown.
				Headlight problem.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	HID headlight wiring diagram.	Unknown.
				Oil light needs to be reset.	Contacted Mazda, who did not release the information.	Oil light reset information.	Car taken to dealer to be reset, cost was $110.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

<u>For – malfunctioning radio and headlight problems:</u>

With no information on the symptoms being supplied for the given radio system and headlamp problems, the following procedure would initially be followed by a competent independent repairer:

- Scan for diagnostic trouble codes using a current generic scan tool, eg. Snap-on. Utilise the guided diagnostic facilities available on the scan tool, or assistance from the scan-tool supplier.
- Investigation would include: checking fuses, test for power (12v, ground, switched 12v etc), check for bad connections (loose pins in plugs etc) and checking for damage or modifications to the systems involved.

- Disconnect the battery and reconnect to reinitialise the systems.
- Obtain wiring diagrams and a description of the system and its associated components, ie. workshop manual. Further investigate using this information.
- If the fault could not be rectified using the above methods, the car would need to be checked using Mazda's M-MDS diagnostic system to determine the root cause of the problem and rectify as required.

For – resetting the oil light:

The following sources of information would be consulted by a competent independent repairer until the relevant information was found:

- Read the Owner's Manual;
- Access VACC-Online for reset procedures;
- Ring the local Mazda dealer;
- Ring an associate in the trade;
- Ring a scan-tool supplier;
- Access Mazda's online manuals

Other assumptions

For – malfunctioning radio and headlight problems:

The information provided with the example appears to be from a workshop which may not have access to current model aftermarket scan-tools which can read the manufacturer's on-board trouble codes, as this would normally be the first step in the problem investigation process.

For – resetting the oil light:

For the purposes of this example, I have assumed this to be the resetting of the oil service interval warning ('oil light') on the instrument cluster.

If the example was referring to the oil pressure light staying on, this is a much more significant issue and potentially related to an engine or sensor issue, and therefore not a 'resetting' procedure.

Access to a vehicle acquired or desk-based analysis

A desk-based analysis was used for this example, as having access to a sample vehicle would not have provided further information, than that already known by Cartech's investigating team. A VIN of a sample car was obtained and used for reference purposes.

Results

Questions	Findings
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue the following information or tools would be needed: <u>For - The headlamp and radio problems:</u> • Access to the manufacturer's fault codes relating to the headlamp and radio systems. • Suitable aftermarket scan-tool, e.g. late models from Snap-on, G-Scan & Launch etc. • Wiring diagrams, system description, initialisation procedures and warnings relating to the safety or incorrect repair procedures – ie. HID headlamps operate at high voltages etc., which would normally be found in the workshop manual. • If the faults are not found or repairable using the above procedures, further investigation using a Mazda M-MDS diagnostic system would be required to root-cause the problem(s), and program replacement control modules, as required. <u>For – resetting the oil light:</u> • Service procedures, ordinarily from the owner's manual, a third-party source or repair manual.
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics)? In particular, was it sought/required:	

from a manufacturer?	<u>For – malfunctioning radio and headlight problems:</u>
	• Mazda website – "Mazda Manuals" via FCAI website:
	  ○ I logged onto Mazda Manuals and obtained 24-hour access to the subject model workshop manual for $19.95.
	  ○ Initialisation procedures and repair information is provided for the subject vehicle, however without access to the Mazda M-MDS diagnostic equipment, a full diagnosis and repair may not be achievable. [Refer to attachments B2.B where M-MDS is required]
	• Mazda Australia customer support:
	  ○ I rang Mazda Australia on 1800 034 411 and was advised that the Mazda M-MDS diagnostic system is only available for dealer use.
	  ○ I used the "Get In Touch" page on their website regarding the purchasing of the Mazda M-MDS diagnostic equipment. I subsequently received a call after 1-week, advising that the M-MDS equipment was only available to dealers.
	<u>For – resetting the oil light:</u>
	• I reviewed the owner's material and Mazda manuals websites.

from the dealer? (eg	I contacted a Melbourne based Mazda dealer's service department, which were unable to provide support for the **headlamp and**

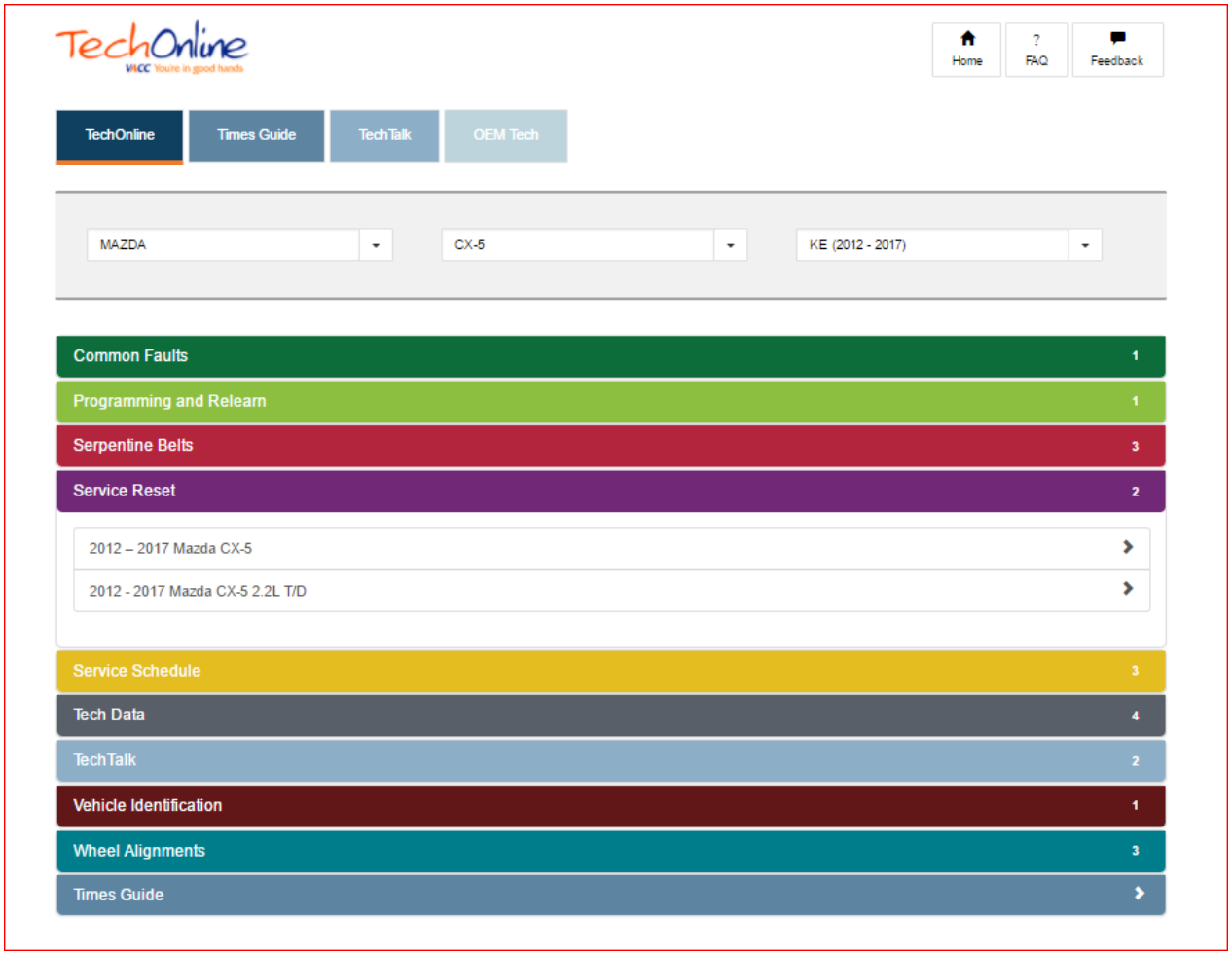
purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	**radio problems** without more information. They recommended that the vehicle be brought in for a diagnostic check and quotation to repair. The dealer also advised that the resetting of the **oil light** could be easily performed from the instrument cluster menu (verbally).
from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	I also contacted three third party sources — VACC, Snap-on and Autologic — to assist with diagnosis and repair. VACC: I logged onto the VACC's tech-online resource: • No relevant or helpful information relating to the **headlamp and radio system** fault diagnosis was found. • Information on resetting the **oil light** was found (see Attachment B2.A). Snap-on: I rang Snap-on and they advised me that their equipment would read the manufacturer's on-board fault codes and provide some guided diagnostics for the **radio and headlamp system** problems. However, the initialisation and re-programming of any control modules would need to be done by a Mazda dealer. Autologic: I rang Autologic and they advised me that their scan-tool products do not support Mazda vehicles.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	I conducted a Google search for both types of information: Headlamp and radio problems: I was unable to find specific information to assist in resolving the headlamp and radio problems. Resetting the oil light: A USA version of the owner's manual was found via Google search. However, it did not contain information about resetting the oil light.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source? (detail step-by-step specifics)	For - the headlamp and radio problems: The Mazda M-MDS diagnostic tool for problem diagnosis, programming or updating control modules was unavailable from Mazda Australia or local Mazda dealers.

Please specify whether the information related to: • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	For – resetting the oil light: In terms of resetting the oil light, I was able to find this information from VACC. However, I was unable to find information relating to resetting the oil lamp on the Mazda's website: 'Mazda Manuals'. Also, under scheduled maintenance [Refer to attachment B2.B], it refers to using Mazda's M-MDS to perform a check on the vehicle's management and safety systems, as part of the schedule maintenance requirements. These information categories relate to: **'Scanning/diagnostic tools'**
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	No reasons were offered why I could not purchase the Mazda M-MDS diagnostic equipment.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	For - the headlamp and radio problems: No work-around was available. If the problem could not be diagnosed or rectified without access to Mazda's diagnostic system (M-MDS), it would involve taking the vehicle to a Mazda dealer for a diagnostic check of the car's systems and ongoing retification requirements. For – resetting the oil light: No work around was needed, the information was available from the VACC.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
How long did it take seeking information via the manufacturer and dealer?	Mazda website portal – "Mazda Manuals" via FCAI website: 1 hour of labour was spent on this task over a 1-day period seeking information relating to the diagnostics of the radio and headlamp problems, and the resetting of the oil light. Mazda Australia customer support: ½ hour of labour was spent in 1 sitting in a telephone call to Mazda Australia seeking availability of the Mazda M-MDS system to independent repairers. A further ½ hour of labour was spent submitting a request via the Mazda website about the availability of the Mazda M-MDS diagnostic system and service bulletins.

	Dealers: ½ hour of labour was spent on this task over 1-day ringing two Mazda dealers seeking assistance with diagnosing the radio and headlamp problems and seeking information on resetting the oil light. I was unsuccessful in obtaining the information needed about either the headlight and radio issue from these sources. I was able to find some information about the oil light issue from the dealer.
How long did it take seeking information via a formal third party source?	VACC: ½ hour of labour was spent on this task in one sitting relating to all the example problems. I was unsuccessful in obtaining information about the headlight and radio issue from this source, however, this source provided the information needed to reset the oil light. Snap-on and Autologic: 1 hour of labour over 1 week seeking diagnostic support for the headlamp and radio problems. I was unsuccessful in obtaining the information needed about either issue from these sources.
How long did it take from an informal third-party source?	For – the headlamp and radio problems and resetting of the oil lamp Google: ½ hour of labour spent in one sitting. I found some information on issues associated with the headlamp and radio system on forums; however, it was not specific enough to be of any use to a repairer. A copy of the USA 2013 CX-5 Owner's Manual was downloaded and reviewed – No information for the example problems was found.
How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?	Not applicable.
What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?	For – the headlamp and radio problems Monetary Costs: I estimate the total non-labour monetary costs an independent repairer would incur in this process would be $19.95 (not including the subscription costs to access the VACC's Tech Online service) without obtaining the information required. This is composed of: • Mazda Manuals (online) $19.95) Labour (hours): I estimate the total labour hours spent on this was about 4 hours. In addition to these labour costs, there were also periods of

	waiting for responses, which are outlined below. This is composed of: • Contacting Mazda Australia: over 1-week • Contacting 2 dealers: in one sitting • Contacting scan-tool suppliers: over 1-week Other costs: Business reputation may be affected with a customer due to increased time and inconvenience involved. For – resetting the oil light Monetary costs: I estimate the total non-labour monetary costs an independent repairer would incur in this process was $0, as this information was obtained from a dealer for free. However, other repairers may choose to use the VACC's Tech Online service, the subscription costs of which are outlined in footnote 1. Labour (hours): I estimate the total labour hour spent on this to be ½ hour in one sitting to either contact a dealer or log in and find the information on the VACC site.
If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?	No work arounds were needed or available.
What information was unavailable from the manufacturer authorised channel, reputable third-party sources or informal/other sources?	For – the headlamp and radio problems: The following information to complete the repair was not available from any sources: • Workshop manuals with detailed service and repair procedures relating to the subject problem areas • Mazda M-MDS diagnostic system to diagnose the system and reprogram and reset, as required. If the independent repairer could not diagnose the car, they could not repair it. It is likely the car would need to be taken to a dealer for diagnosis and subsequent repairs. For – resetting the oil light: The required information was available from a dealer or the VACC.

Attachment B2.A — VACC Tech-Online information relating to the oil light (service) reset


TechOnline
Home
FAQ
Feedback
TechOnline
Times Guide
TechTalk
OEM Tech
MAZDA
CX-5
KE (2012 - 2017)
Common Faults 1
Programming and Relearn 1
Serpentine Belts 3
Service Reset 2
2012 – 2017 Mazda CX-5
2012 - 2017 Mazda CX-5 2.2L T/D
Service Schedule 3
Tech Data 4
TechTalk 2
Vehicle Identification 1
Wheel Alignments 3
Times Guide

CARTECH

Attachment B2.B – Mazda Manuals (reference to M-MDS)

Scheduled Maintenance Table for Australia

Maintenance Interval		Number of months or kilometers, whichever comes first															
	Months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	×1000 km	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
GASOLINE ENGINE																	
Fuel filter		Replace every 150,000 km															
Spark plugs		Replace every 120,000 km															
Air cleaner element*1				C			R			C			R			C	
Evaporative system (if installed)		I		I		I		I		I		I		I		I	
DIESEL ENGINE																	
Fuel filter					R				R				R				R
Fuel injection system*2			I						I						I		
Air cleaner element*1			C		C		R		C		C		R		C		C
GASOLINE AND DIESEL ENGINE																	
Drive belts*3		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Engine oil*4*5		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter*4		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Cooling system			I		I		I		I		I		I		I		I
Engine coolant	FL22 type*6	Replace at first 200,000 km or 10 years; after that, every 100,000 km or 5 years															
	Others	Replace every 2 years															
Fuel lines and hoses		I		I		I		I		I		I		I		I	
Battery electrolyte level and specific gravity		I		I		I		I		I		I		I		I	
Brake lines, hoses and connections		I		I		I		I		I		I		I		I	
Brake fluid*7		I	I	I	R	I	I	I	R	I	I	I	R	I	I	I	R
Parking brake		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Power brake unit (Brake booster) and hoses		I		I		I		I		I		I		I		I	
Disc brakes		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Steering operation and linkages			I		I		I		I		I		I		I		I
Manual transaxle oil											R						
Rear differential oil		*8*9															
Transfer oil		*9															
Front and rear suspension, ball joints and wheel bearing axial play		I		I		I		I		I		I		I		I	
Drive shaft dust boots					I				I				I				I
Exhaust system and heat shields		Inspect every 80,000 km															
Bolts and nuts on chassis and body			T		T		T		T		T		T		T		T
All electrical system*10		I		I		I		I		I		I		I		I	
Cabin air filter (if installed)					R				R				R				R
Tires (including spare tire) (with inflation pressure adjustment)		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Tire rotation*11		Rotate every 10,000 km or 6 months															
Brake test		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
M-MDS check of Vehicle Management and Safety Systems			I		I		I		I		I		I		I		I

Chart symbols:
I: Inspect: Inspect and clean, repair, adjust, fill up, or replace if necessary.
R: Replace
C: Clean
D: Drain
T: Tighten

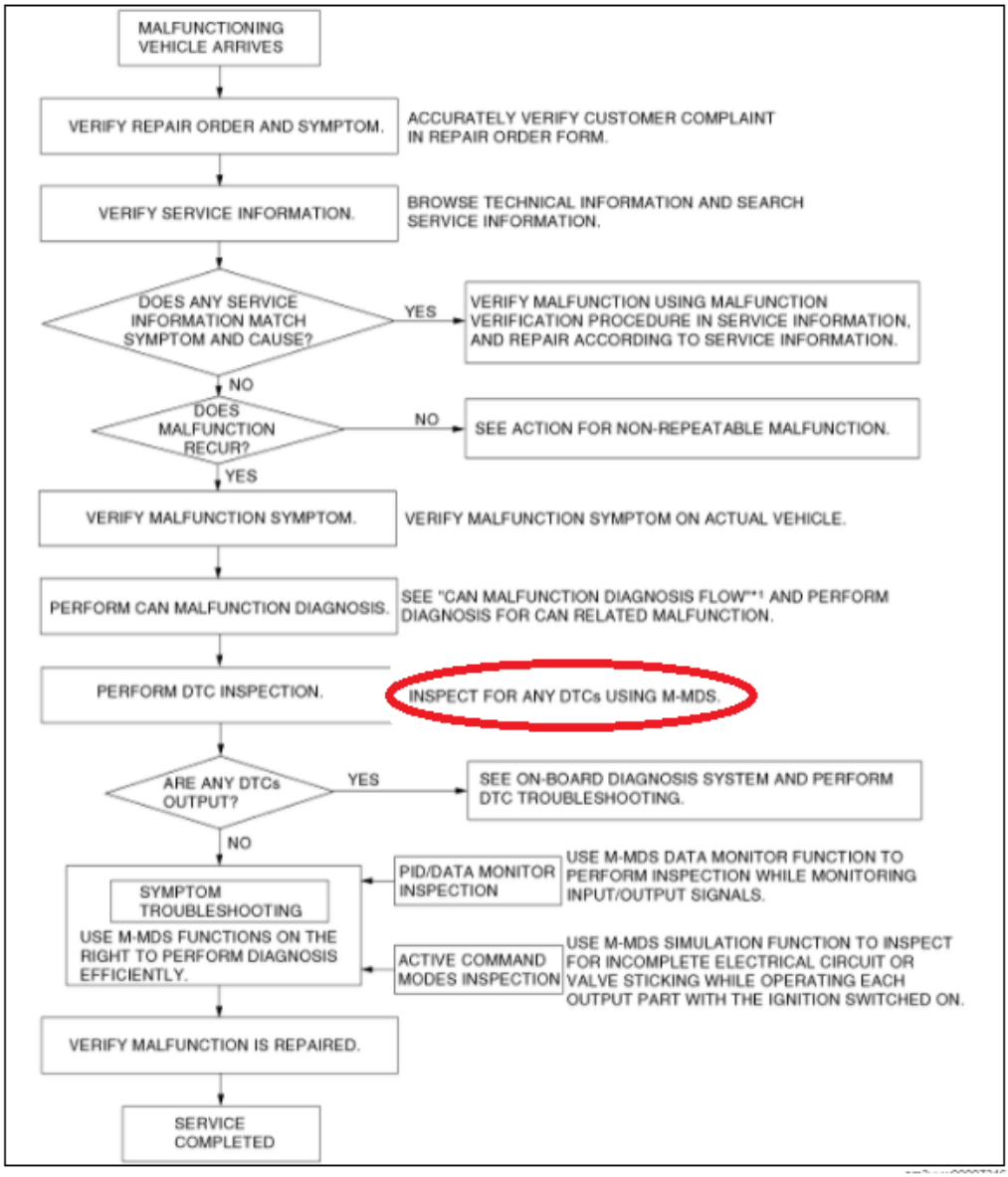
Note

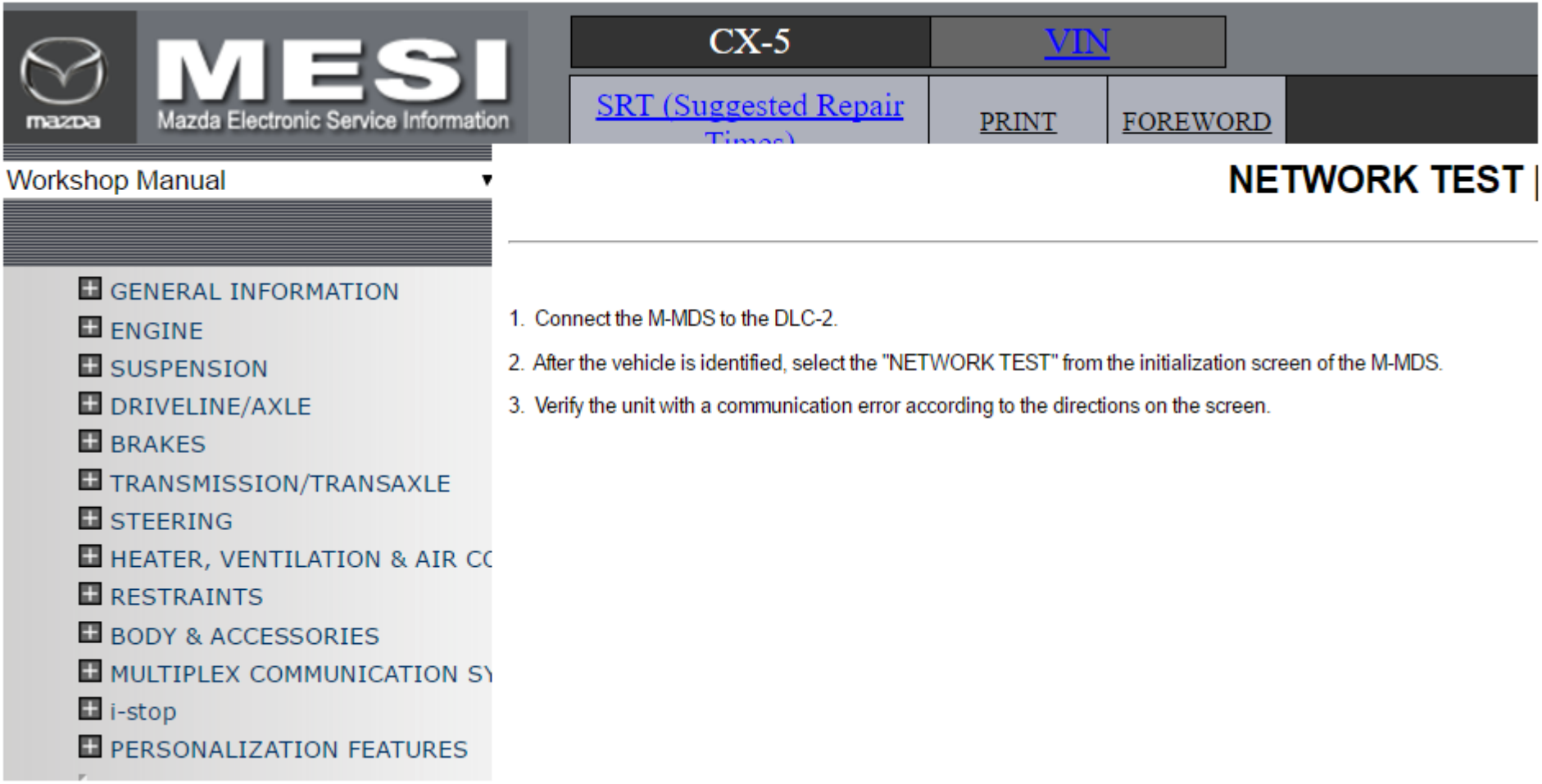
- Please ask Mazda dealer to check Mazda computer network to ensure there are no outstanding campaign or recall actions on the vehicle.

FC

- If there is any vehicle malfunction complaint lodged by a customer, perform malfunction diagnosis according to the Troubleshooting Procedure. (

Troubleshooting Procedure




MESI
Mazda Electronic Service Information
CX-5
VIN
SRT (Suggested Repair Times)
PRINT
FOREWORD
Workshop Manual
NETWORK TEST |
GENERAL INFORMATION
ENGINE
SUSPENSION
DRIVELINE/AXLE
BRAKES
TRANSMISSION/TRANSAXLE
STEERING
HEATER, VENTILATION & AIR CO
RESTRAINTS
BODY & ACCESSORIES
MULTIPLEX COMMUNICATION SY
i-stop
PERSONALIZATION FEATURES
1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the "NETWORK TEST" from the initialization screen of the M-MDS.
3. Verify the unit with a communication error according to the directions on the screen.

DTC INSPECTION [ADAPTIVE FRONT LIGHTING SYSTEM (AFS)]

CMDTC Self Test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
   (1) Select "Self Test".
   (2) Select "All CMDTCs".
3. Verify the DTC according to the directions on the screen.
   • If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the AFS control module. (See CLEARING DTC [ADAPTIVE FRONT LIGHTING SYSTEM (AFS)].)

ODDTC Self Test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
   (1) Select "Self Test".
   (2) Select "Modules".
   (3) Select "AFS".
3. Verify the DTC according to the directions on the screen.
   • If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
4. After completion of repairs, clear all DTCs stored in the AFS control module. (See CLEARING DTC [ADAPTIVE FRONT LIGHTING SYSTEM (AFS)].)

B3 - Nissan X-Trail 2016 – T32 2.0 Petrol

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
3	Nissan	X-Trail	2016	Collision repair.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Body dimension specifications.	Unknown.
				Battery replacement. Replacing the battery, however, causes the car's accelerator and other systems to require recalibration (idle recalibration procedure).	Contacted Nissan and sought information from other official sources. Limited information from Nissan Australia's website or email contact. Unable to access EU or US technical sites.	Idle recalibration procedure.	Found information on a website on the internet — not officially from Nissan.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair these reported problems, the following steps would be assumed to be undertaken by a competent repairer:

<u>For – collision repair</u>

- Obtain the body repair procedures and dimensional data from the manufacturer.

<u>For – idle recalibration procedure</u>

- Refer to the workshop manual for engine recalibration procedures.
- If unable to recalibrate or perform the re-learn operations without a scan-tool, use the Nissan diagnostic system 'Consult' or suitable aftermarket scan-tool, to perform these procedures.

Other assumptions

For – idle recalibration procedure

In the example given, it was confirmed that disconnecting or replacing the battery by itself would not create the need to perform an idle recalibration procedure. However, further research suggested that disconnecting engine sensors or actuators may require the process to be completed. This simulation was therefore conducted on the basis that it was an engine sensor or actuator was disconnected or replaced, and an idle recalibration procedure was required for the car to operate properly.

For – collision repair

No other assumptions were made.

Access to a vehicle acquired or desk-based analysis

For the availability of body repair procedures and dimensional data, the VIN of a sample vehicle was used to make a request for this information from Nissan Australia and dealer.

A vehicle was accessed to investigate the problem associated with replacing the battery. Due to there being no repeatable symptom, it was assumed that the example was referring to the disconnection/replacement of engine related sensors or actuators, e.g. electronic pedal and throttle.

Results

Questions	**Findings**
What information/data/codes/ software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issues the following information or tools would be needed: Collision repair: • Body repair procedures and body dimensional information from the manufacturer. Idle recalibration procedure: • Repair manual information with the recalibration procedures outlined. • Access to Nissan's diagnostic tool or suitable generic scan-tool to perform the re-calibration procedures, if required.

What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics)? In particular, was it sought/required:	
from a manufacturer?	To obtain information on the issues above, I contacted Nissan Australia via an email address obtained from the FCAI website. I requested information relating to the following: • Body repair procedures and dimensional data • Recalibration requirements associated with replacing the battery • Recalibration requirements relating to disconnecting/replacing engine sensors and actuators etc. Over a number of exchanged emails, I was advised that it does not provide diagnosis or repair assistance and that it can only supply repair manuals from the FCAI linked mailbox. I was sent a request form to facilitate this [see attachment B3.A]. I submitted requests for the workshop manuals and after 2 weeks, received a quote of $111.40 for the complete manual. This manual includes both the body repair and engine control sections related to this example. I paid this amount and was advised that the manual would be sent via TNT Express – a USB memory stick was delivered 3 days after payment [Refer to attachment B3.B — Extract outlining the on-board recalibration procedures].
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	<u>Collision repair:</u> I contacted a number of local dealers and was given conflicting advice, i.e. 'Can't supply to independent repairers'; 'Need to approach Nissan Australia', to actually being supplied the electronic file immediately via email, without a fee. <u>Idle recalibration procedure after disconnecting the engine sensors or actuator</u> I contacted local dealers and was advised both verbally and by email that disconnecting or replacing the battery would not require the engine system(s) to be recalibrated. As per my assumption above, I then contacted the dealers again about the problem associated with disconnecting or replacing engine sensors or actuators. I was advised that a re-calibration shouldn't normally be required, and that there may be another problem causing the issue with the car. They recommended that the vehicle be brought in to the dealer for a diagnostic check.
from a formal third party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	<u>Collision repair</u> I was able to obtain the information from a dealer, above. However, for completeness, I contacted two known body repairers who provided conflicting information. One advised that the dimensional data was readily available from their local dealer. The other repairer tried to obtain the subject information from a local dealer and was advised that they could not supply the body repair procedures directly to him, and that he would need to approach Nissan Australia. **VACC:** Tech-Online service had no information available for downloading. I rang their Technical Department and they confirmed that did not have the Nissan body repair procedures for the example vehicle.

	Thatcham escribe (UK based - suppliers of body repair procedures and dimensional information to the body repair industry): I contacted Thatcham, which advised that it did not have information and data for the subject vehicle. Idle recalibration procedure **VACC:** Tech-Online service had no information **Autologic:** Advised that it does not cover Nissan vehicles **Snap-on**: Advised that its equipment would perform the air volume relearn operation. **Logicar** (scan-tool agents): Confirmed that scan-tools can perform the re-calibrations and that not all aftermarket scan-tools will perform these operations.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Collision repair A known body repairer advised me that the dimensional information is available from the body measuring equipment suppliers. A sample was supplied which was obtained from Car-O-Liner. The same repairer advised that their Nissan dealer would supply body repair procedures to them, free of charge. I conducted a **Google search** for information and found copies of Nissan's repair manuals on-line from a private seller. A copy could be obtained for about $20; a 203MB zip file (1 hour to download). This provided Body Repair Procedures for RHD European variants (ie. UK), which may differ from the Australian version in some respects. Idle recalibration procedure I conducted a **Google search** for information and found copies of Nissan's repair manuals on-line from a private seller. A copy could be obtained for about $20; a 203MB zip file (approximately 1 hour to download). This provided information on the recalibration (re-learn) procedures for the following items; accelerator pedal, throttle position, idle air volume and mixture ratio. The information provided procedures for conducting these procedures, with and without the Nissan diagnostic tool 'Consult'. I also found an X-Trail internet forum with information on the recalibration procedures relating to the 2.5 petrol variant. [Refer to attachment B3.C].
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party	Collision repair Initially, it appeared that the information was not readily available from the manufacturer or its dealers. However, after more investigation and contacting more dealers, it was obtained from both the manufacturer and a dealer.

source? (detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	<u>Idle recalibration procedure</u> The manufacturer was able to supply the workshop manual. However considerable time and communication with the manufacturer was required before this eventuated. The dealer offered no information on the recalibration procedures when the problem was outlined. These information categories relate to: **'Repair and service information'**
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	No reasons were offered as to why there was a delay in responding to the requests for information, or the conflicting advice from the dealers on the availability of the body repair procedures to independent repairers.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	<u>Collision repair</u> No work arounds were necessary. However, the information was found using Google — the complete Repair Manual could be purchased online for about $20, in less time and cost, than it took from Nissan Australia. This information is however an unauthorised copy and not specifically written for the Australian variant. <u>Idle recalibration procedure</u> The information was found using Google. The complete Repair Manual was purchased online for about $20, in less time and cost, than it took from Nissan Australia. This information is however, an unauthorised copy and not specifically written for the Australian variant.

How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	<u>For both collision repair and idle reset procedure</u> **Nissan Australia:** About 1 hour was spent on this task sending emails to Nissan and filling out forms sent from the manufacturer's online technical email address. This process took about 2 weeks, as it required waiting for responses from Nissan. In addition, once payment was made for the workshop manual, it took an additional 3 days for it to arrive by mail. **Dealers**: About ½ hour of labour was spent on this task involving telephone calls to three dealers over 2 weeks, due to the conflicting responses obtained. I was able to obtain the information required from these sources.
• **How long did it take seeking information via a formal third party source?**	<u>Collision repair</u> **VACC:** ½ hour for online access and a telephone call to the technical department to confirm whether they could provide the body repair procedures and dimensional data. **Thatcham escribe:** ½ hour to research their services to the industry, emailing and a telephone call to confirm if they could provide the body repair procedures and dimensional data. I was unable to obtain the information required from these sources. <u>Idle recalibration procedure</u> **VACC:** ¼ hour for online access to Tech-Online to confirm the availability of the required information. **Scan-tool suppliers:** About 1 hour of telephone calls to Snap-on, Autologic and Logicar (in total for all sources, noting that this was in some cases over a week in waiting for responses etc) to obtain information and capability of their diagnostic tools with respect to the idle calibration procedures. Snap-on confirmed their scan-tool could perform the idle air volume calibration procedure.
• **How long did it take from an informal third party source?**	<u>For both collision repair and idle recalibration procedure</u> **Google search:** 1½ hours to search for information on both the problems. The searches were performed over 1 week, as the initial searching did not provide ready and reliable information. On the second search, it was decided to download an overseas complete workshop manual which took over an hour to download due to its size. **Known repairers:** 1 hour of telephone calls Due to known contacts in the industry, access to the required repair information was obtainable within 2 days. I was able to obtain the information required from these sources.

• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	There was no work around available or necessary.
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	<u>For both collision repair and idle reset procedure</u> <u>Monetary Costs:</u> I estimate that the total non-labour monetary costs an independent repairer would incur in this process would be $111 (not including the subscription costs to access the VACC's Tech Online service). This is composed of: • Repair Manual from Nissan Australia - $111.40 (Chosen because it's the most reliable and accurate source of information for the Australian variant). <u>Labour (hours):</u> I estimate the total labour hours spent on this was about 5 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Contacting Nissan Australia: 2 weeks due to delayed responses • Contacting three dealers: 1 week due to conflicting advice • Contacting scan-tool suppliers: 1 week due to inaccessibility of the representatives • Contacting third-party information sources: 1 week due to delayed responses and access <u>Other costs:</u> <u>Business reputation may be affected with a customer, due to delayed completion of the repair and inconvenience involved.</u>
• **If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced**	Work-arounds not required. However, to obtain the information in a more timely manner, a repairer may choose to download the information from the internet, rather than waiting for a response from Nissan. However, there may be risks in using unofficial sources, where cars sold on the Australian market may differ slightly from those sold in other markets.

(please distinguish if opinion or fact)?	
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	As identified above, the information could be sourced from a variety of manufacturer, dealer and informal sources, however, it took at least two weeks to do so. The information required to repair the car was being: • Body repair procedures and dimensional data • Engine recalibration procedures

CARTECH

Attachment B3.A — Nissan Australia's request form

Applicant's Details			
Applicant Name	**Address (City and State)**	**ABN / ACN**	**Motor Vehicle Repairer's License (NSW applicants)**
Individual applying for the information			
Name	**Email**	**Telephone**	**Certification level**
Information requested			
Describe the requested Information	**Area of vehicle concerned**	**Information is being used for what purpose**	
Vehicle Detail			
Vehicle type	**VIN**	**Vehicle modification/s that may affec the use of the information to be provided**	
Any specific information relating to request			

Terms and conditions

1. The information (Information) provided by Nissan Motor Co. (Australia) Pty. Ltd. (NMA) pursuant to this request is provided solely for the purposes outlined in this request and subject to these terms and conditions. By signing below, you represent and warrant that you have authority to bind the applicant, and on behalf of the applicant, you accept these terms and conditions.
2. The applicant will only use the Information for the purpose outlined in this request and in any event only for the repairing, servicing or investigating of Nissan motor vehicles.
3. Whenever the applicant uses the Information in repairing, servicing or investigating a vehicle, the applicant will inform the owner of the vehicle whether any part(s) to be used in the repairing, servicing or investigating of the vehicle are genuine (ie recommended by Nissan) or non-genuine, fit for purpose, compatible with the operating systems of the vehicle, and compliant with all regulatory requirements. The applicant must keep documentary evidence demonstrating compliance with this provision for a period of not less than three years from the date the applicant repaired, serviced or investigated the vehicle, and must allow NMA access on reasonable notice to audit such evidence.
4. The applicant represents and warrants that it holds all necessary licenses and

necessary equipment and facilities, and that the people utilising the Information are appropriately skilled, qualified and trained. The applicant must allow NMA access on reasonable notice to audit its facilities to determine whether the applicant is in compliance with this provision.

5. **Unless otherwise specifically agreed to by NMA, NMA will not update the Information once it has been provided to the applicant.**
6. **NMA may refuse to provide Information containing trade secrets (whether of NMA or another entity) or that could bypass or affect the integrity of a vehicle's security, design standards, regulatory compliance, performance, or legislated requirements, or information which NMA is restricted from distributing due to confidentiality obligations.**
7. **The applicant acknowledges that it has made its own enquiries and has formed its own views about the suitability of the Information for the purpose for which the applicant intends to use the Information.**
8. **To the maximum extent permitted by law, NMA makes no, and expressly disclaims any, representations or warranties, express or implied, regarding the accuracy of the Information or its suitability for any purpose.**
9. **NMA has no liability or responsibility for any work done in reliance on or incorporating the Information.**
10. **To the extent permitted by law, the applicant indemnifies NMA and its affiliates, against any damage, whether direct, indirect, special or consequential damage arising from or in connection with the use of the Information by the applicant.**
11. **The applicant will not reproduce, republish, distribute, transmit, display, broadcast or otherwise exploit the Information.**
12. **NMA's and its affiliates names and logos and all related trademarks (including Nissan Part Numbers), trade names, and other intellectual properties are the property of NMA or the respective affiliate and will not be used by the applicant without NMA's express prior written permission.**
13. **The applicant must not represent that it represents or is authorised, or endorsed by NMA or Nissan.**
14. **NMA respects and upholds the applicant's rights under the Australian Privacy Principles contained in the Privacy Act 1988 (Cth) (Privacy Act). In accordance with the Australian Privacy Principles and Nissan's privacy policy, this Privacy Collection Statement describes how NMA manages any personal information NMA collects from the applicant when the applicant makes a technical information purchase request.**
15. **When the a technical information purchase request is made, NMA will collect the following details in relation to the person who will use the Information: name, email address, telephone number, and certification details by asking the applicant to complete this application. The applicant represents and warrants that it has the permission of this person to disclose this personal information to NMA for the purposes described in these terms and conditions.**
16. **NMA will use this personal information for the purposes of verifying the applicant's eligibility to receive the requested information, for administering the provision of the information to the applicant, and for any other purpose to which the applicant has consented and/or is required or authorised by law.**
17. **NMA may disclose the applicant's personal information to its related companies and/or to any relevant Government authority in any Australian State/Territory.**
18. **If the applicant has any questions about NMA's privacy policy or any complaint regarding treatment of its privacy by NMA or any request to arrange access to its personal information or to advise it if you think your personal information is inaccurate or out of date, please contact:**

Nissan Privacy Officer
Nissan Motor Co (Australia) Pty Ltd
Locked Bag 1450
DANDENONG SOUTH VIC 3164
Phone: (03) 9797 4111

Fax: (03) 9797 4400

19. **If in NMA's opinion the applicant has failed to comply with the terms and conditions, or is unable to comply with the terms and conditions, NMA may refuse to provide the requested information.**
20. **The applicant will pay to NMA the amount calculated in accordance with this request. Upon receipt of the amount, NMA will provide the Information to the applicant.**

Name of applicant	Signature of authorized representative

Please refer to the below table regarding cost associated for provision of technical information:

Information delivery method cost		
E-mail file transfer (Files < 2 MB)	**USB file transfer device (files 2MB >)**	**Paper copy by surface mail**
2 cents per Kilobyte for data	2 cents per Kilobyte for data	2 cents per Kilobyte for data
$ 20 data retrieval and transfer fee	$ 20 data retrieval and transfer fee	$ 20 data retrieval and transfer fee
	$15 – USB device	50 cents per printed page
	Mail costs to preferred address	Mail costs to preferred address

Remittance Details				
Account Name	**Account Number**	**BSB**	**EFT transaction number**	**Bank Nme**
Nissan Motor Co. (Australia) Pty. Ltd	100185016	244 000		Citibank

Send completed form to techdata@nissan.com.au and NMA will endeavour to process your request within 48 hours.

Attachment B3.B – Extract from the Repair Manual (2.0 Petrol) obtained Nissan Australia (Idle recalibration)

On Board Diagnosis Function

INFOID:0000000010575836

ON BOARD DIAGNOSIS ITEM

The on board diagnostic system has the following functions.

Diagnostic test mode	Function
Bulb check	MIL can be checked.
Malfunction warning	If ECM detects a malfunction, it illuminates or blinks MIL to inform the driver that a malfunction has been detected.
Self-diagnostic results	DTCs or 1st trip DTCs stored in ECM can be read.
Accelerator pedal released position learning	ECM can learn the accelerator pedal released position. Refer to EC-143, "Description".
Throttle valve closed position learning	ECM can learn the throttle valve closed position. Refer to EC-144, "Description".
Idle air volume learning	ECM can learn the idle air volume. Refer to EC-145, "Description".
Mixture ratio self-learning value clear	Erase the air-fuel ratio learning value. Refer to EC-147, "Description".

Attachment B3.C – Information obtained from an X-Trail internet forum (Idle recalibration 2.5 Petrol)

QR25DE Engine Idle Re-Learn Procedure

Accelerator Pedal Released Position Learning

DESCRIPTION
Accelerator Pedal Released Position Learning is an operation to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected.

OPERATION PROCEDURE
1. Make sure that accelerator pedal is fully released.
2. Turn ignition switch ON and wait at least 2 seconds.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON and wait at least 2 seconds.
5. Turn ignition switch OFF and wait at least 10 seconds.

Throttle Valve Closed Position Learning

DESCRIPTION
Throttle Valve Closed Position Learning is an operation to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time harness connector of electric throttle control actuator or ECM is disconnected.

OPERATION PROCEDURE
1. Make sure that accelerator pedal is fully released.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.

Make sure that throttle valve moves during above 10 seconds by confirming the operating sound.

Idle Air Volume Learning

DESCRIPTION
Idle Air Volume Learning is an operation to learn the idle air volume that keeps each engine within the specific range. It must be performed under any of the following conditions:
_ Each time electric throttle control actuator or ECM is replaced.
_ Idle speed or ignition timing is out of specification.

Without CONSULT-II
NOTE:
_ It is better to count the time accurately with a clock.

B4 - Mitsubishi Triton 2014 – MN

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
4	Mitsubishi	Triton	2014	Heating system problems.	Contacted VACC, no information available online, checked online for OEM websites, blocked from accessing US and EU technical information.	Heater core and dash removal procedure.	Unknown.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Check all related systems, e.g.
  - Scan to retrieve trouble codes (DTCs) using a suitable scan-tool
  - Engine cooling system integrity
  - Flow rate of coolant through the heating system
  - Operation and performance of the heating system air flow
  - Evidence of leaking coolant.

If the evidence indicates that there is a problem with the internals of the heater system, the dash and heater unit would need to be removed from the vehicle.

To facilitate this and to minimise the time required to perform this operation, access to the repair procedures would normally be required.

Other assumptions

It has been assumed that the problem does not relate to the electrical control systems associated with the heater operation, and the only steps needed for this repair relate to replacing or repairing heater components.

Access to a vehicle acquired or desk-based analysis

A desk-based analysis was used, as the problem only relates to the sourcing of information required.

Results

Questions	**Findings**
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue, the following information or tools would be needed: o Manufacturer's repair procedures for removal of the dash assembly and HVAC unit (heater assembly).
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics)? In particular, was it sought/required:	
from a manufacturer?	<u>FCAI portal</u> No link to a Mitsubishi technical website was available on the FCAI website. <u>Mitsubishi Motors Australia website</u> I made contact via a page on Mitsubishi's website requesting information on how to obtain instructions relating to the removal and replacement of the heater assembly. Mitsubishi replied in an email after 2 days to say that they cannot assist. [Attachment B4.A].

from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	I contacted a local Melbourne Mitsubishi dealer and received verbal advice from their spare parts department that Mitsubishi does not provide information relating to mechanical repairs.
from a formal third party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	I contacted three third-party sources to find information on undertaking the repair, in particular, to access the manufacturer's repair procedures for replacing the heater. VACC I logged on to VACC's Tech-Online source and no relevant information was available from this source. I called VACC's technical department and was advised that it does not have information on the subject vehicle. Haynes I logged on to Haynes online and no relevant information was available from this source. Autodata I subscribed and logged on to Autodata's website and only found information on repair times — 3.6 hours for removal of the heater core.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Google search A Google search found that a seller on eBay was offering workshop manual CDs relating to the subject model vehicle for sale for $10. eBay seller A copy was purchased and delivered within 7 days. It is a copy of the Mitsubishi workshop manual, with details relating to the subject information required. Potentially, not specifically relating to the Australian variant.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?	I was not able to obtain a copy of the workshop manual or the relevant repair procedures relating to removal of the dash assembly and heater from these formal sources. I was, however, able to obtain it from other sources, such as on eBay.

(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	These information categories relate to: **'Repair and service information'**
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	The manufacturer provided a brief explanation in their response email. [Refer to attachment B4.A]. No reasons were given by the Mitsubishi dealer for not being able to provide information.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	I purchased a copy of the Mitsubishi workshop manual on eBay for $10. However, as a private seller unaffiliated with Mitsubishi, the market applicability of the information is not known, i.e. Which country it was written for.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	Mitsubishi Australia: ½ hour of labour was spent on this task over 2-days due to response time. Dealer: ½ hour of labour was spent on this task over one sitting.

	I was unsuccessful in obtaining the information needed from this source.
• **How long did it take seeking information via a formal third party source?**	VACC: ½ hour to conduct an online check and ring their technical department**.** Haynes: ¼ hour in one sitting. Autodata: ½ hour (includes calling & subscribing to their information service) in one sitting. I was unsuccessful in obtaining the information needed from these sources.
• **How long did it take from an informal third party source?**	Google search: ½ hour of labour was spent on this task in one sitting. eBay: 1/4 hour of labour was spent on this task in one sitting. In addition, it took 7 days for the CD purchased on eBay to arrive by post. I was able to find the information needed from these sources.
• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	Not applicable.
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	**Monetary costs (excluding labour costs)** I estimate the total non-labour monetary costs an independent repairer would incur in this process was $10 in the form of an eBay purchase of the CD of the workshop manual (not including the subscription costs to the VACC's Tech Online service and Autodata subscription). Additional costs were incurred, but would be defrayed with ongoing use, on: ○ VACC subscription: $767.80 with ongoing annual fee of $658. ○ Autodata subscription: Introductory offer for 1 month $56.65

	Labour (hours) I estimate the total labour hours spent on this to be about 3 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: ○ Mitsubishi Australia over 2 days ○ eBay CD purchase over 7 days **Other** May cause a significant inconvenience to the customer due to the longer repair time involved.
• **If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?**	The work around would involve obtaining the information from eBay. There are risks in using the CD from eBay, such as the content not being relevant to Australian right-hand drive cars, or the CD not containing the information required. The CD would also take a long time to arrive via post and the CD may be an unauthorised copy. A work-around would delay the delivery to the customer, due to the time searching for information and the ongoing issue of having to conduct the repair without the repair instructions on-hand.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information to complete the repair was not available from formal sources: • The required workshop manual for the Australian version containing repair instructions for removal of the dash assembly and the heater. However, a copy on a CD was obtained from an informal source, eBay (however note discussion above relating to the applicability of this information to Australian vehicles).

Attachment B4.A – Email response from Mitsubishi Motors Australia

Private and Confidential

Ref: 402769424

Dear Mr Carter

Subject: Web Enquiry - Triton - Other - VIN: [redacted]

Mitsubishi Motors Australia Limited (MMAL) acknowledges receipt of your recent correspondence.

Please be aware that MMAL, as a wholesaler of vehicles and related products, are unable to offer Technical assistance directly to our valued customers. This is due to the fact that we are unable to make an accurate assessment over the phone or via e-mail without inspecting, or having first-hand knowledge of your vehicle.

We respectfully suggest that you discuss your concerns with the Service Manager at an authorised Mitsubishi Dealership, as they are empowered to make decisions where appropriate and have access to the Technical Support team at MMAL Head Office if required.

Please note all Mitsubishi Dealerships are responsible for providing customer's the necessary customer care. We have policies and procedures in place to assist the Dealer where necessary.

A full list of our Dealerships is available on our website (www.mitsubishi-motors.com.au).

MMAL trust the above is of assistance.

Thank you for your enquiry.

Regards

[redacted]
Customer Care Assistant | Dealer Improvement and Customer Care
customerservice@mmal.com.au

MITSUBISHI MOTORS
Mitsubishi Motors Australia Limited
PO Box 8 | MELROSE PARK SA 5039 | Australia

B5 - Chery J1 2013 – S2X

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
5	Chery	J1	2013	Antilock braking system issues.	Contacted VACC, no information available, checked online for OEM website — no website available. Contacted dealer who had no listing for workshop manuals.	ABS fault codes, diagnostic information and wiring diagram.	Unknown.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Use a suitable scan-tool to access the manufacturer's fault codes related to the problem
- Based on the fault codes found, investigate the components identified.
- If unable to identify the cause of the problem using the above procedure, seek access to Chery's diagnostic system to further investigate the cause of the problem.

Other assumptions/notes

Based on the enquiries I made, the number of dealers is rapidly reducing, due to poor sales and Chery's plans to discontinue production of its right-hand drive variants.

Access to a vehicle acquired or desk-based analysis

Access to a vehicle was needed for this example, as there is little information on the suitability of the generic scan tools for use on the subject vehicle. However, this was not achieved, due to the small quantity of cars in Victoria. This was attributed to the J1 model not being sold in Victoria, due to the mandating of Electronic Stability Control on new cars sold at the time.

Results

Questions	**Findings**
What information/data/codes/ software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue the following information or tools would be needed: • A diagnostic scan-tool which will read the manufacturer's fault codes for the braking system, and perform other recycling and resetting operations as required. • Workshop manual to provide guided diagnostics to facilitate determining the root cause of the problem, if not easily identified. • Factory diagnostic equipment to further assist with determining the root cause, if required. Also for programming a new ABS control module, if one is required.
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics)? In particular, was it sought/required:	
from a manufacturer?	I checked the following sources to see whether Chery had an online technical website or if the information was available from their technical website: • FCAI website: There was no link to a Chery technical website • Ateco (Importer): It linked to the Chery global website • Chery website: I made a request for information via email, however, no response had been received by the time of writing this report [Attachment B5.A]
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather	I contacted several of the dealers listed on the Ateco website, with some having discontinued being Chery dealers. The dealers advised that they would not support independent repairers with repair information or diagnostic equipment. They advised that all the information is online and only accessible by dealers. One dealer also advised that the Chery diagnostic equipment has been problematic when used with the J1 model.

than through informal personal relationships)	
from a formal third party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	I contacted a number of formal third-party sources, such as the VACC, Snap-on, Autologic and G-Scan. VACC**:** I used the VACC Tech-Online Tool, which was unable to assist. Snap-on and Autologic: I contacted Snap-on and Autologic which stated they did not support Chery. It was suggested that other brands, such as Launch, Autel or G-Scan may work. G-Scan: I contacted G-Scan by telephone and was advised that its equipment would read Chery J1 fault codes and perform basic service operations on the vehicle, however, they did not provide a response to a follow up email requesting verification of this.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Google search**:** I conducted a Google search and was unable to find further information to assist.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source? (detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant**	As above, I was unable to access workshop manuals or diagnostic tools in relation to the car in this example. These information categories related to: **'Repair and service information'** **'On-board diagnostic data'** **'Scanning/diagnostic tools'**

material.	
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	No reasons were offered by the dealers.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	To diagnose the car, an independent repairer would need to try a number of the aftermarket scan tool brands like Autel, Launch and G-Scan, to see if manufacturer's fault codes could be read. The repairer could also replace the component(s) flagged as being faulty. If the fault relates to the ABS control module, the vehicle would need to be taken to a dealer for re-programming of the replacement module.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	FCAI, Ateco and Chery websites: ½ hour of labour was spent on this task over two sittings Dealers: About 1 hour of labour was spent on this task. I was unsuccessful in obtaining the information needed from these sources.
• **How long did it take seeking information via a formal third party source?**	VACC: ¼ hour – Online access in one sitting. Snap-on: ½ hour – Telephone call over a week. Autologic: ¼ hour – Telephone call in one sitting. G-scan: ½ hour – Telephone call in one sitting — I was advised that its scan-tool would access the manufacturer's fault codes and perform basic functions. (the cost of the tool would be about $5,000).

	I was unsuccessful in obtaining all the information needed from these sources.
• **How long did it take from an informal third party source?**	Google: ¼ hour of labour was spent on this task using Google. I was unsuccessful in obtaining the information needed from this source.
• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	Work arounds may have included testing other aftermarket scanning tools in an attempt to find one that worked with this car by trial and error, as the scanning tool maker G-Scan did not verify by email that their scanning tool would work. It is unknown how long such a process may have taken.
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	Monetary costs (excluding labour costs): I estimate the total non-labour monetary costs an independent repairer would incur in this process, without obtaining all the information required, was $0, however, using a trial and error method may have cost up to an estimated $5,000 for the purchase of a G-Scan generic scan-tool. Labour (Hours): I estimate the total labour hours spent on this to be about 3 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Chery Australia – ongoing wait as no response had been received at the time of writing • Snap-on – 1 week Other: Potential for significant delays in delivery of the repaired vehicle to the customer.
• **If 'work arounds' were used, are there any risks to the repairer or customer of using**	Trial and error approach may still not have resulted in finding a scanning tool that could communicate with the car or obtain the manufacturer diagnostic trouble codes. The delay and capital outlay for the scan tool may adversely affect the customer and the repairer's profit.

the repair and service information that were sourced (please distinguish if opinion or fact)?	
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information to complete the repair was not available from any sources: • Manufacturer's diagnostic tool • Diagnostic trouble code information • Workshop manual

Attachment B5.A

Request for information from Chery Australia – No reply received before compiling this report.

Thu 18/05/2017 11:12 AM

C

CARTECH - Rowan Carter <info@cartech.com.au>

Chery Motors Australia Contact

info@cherymotors.com.au

Hello,

I'm looking for service information for a 2013 J1 we have in the workshop.

Are you able to supply me a wiring diagram which would assist me with diagnostics checks etc?

Is there a workshop manual available on-line and what dealers in Melbourne would be able to assist me?

Thanks.

Kind regards
Rowan Carter

CARTECH®

Tel +61 (0) 419 313 113

Cartech accepts no liability for the content of this email, or for the consequences of any actions taken on the bas
taking any action in reliance on the contents of this information is expressly prohibited and may be unlawful.

B6 - Volkswagen Golf 2015 - AU

Scenario

#	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
6	Volkswagen	Golf	2015	Cluster failure in vehicle.	Contacted Volkswagen, not given access to the tools and information needed to code the new cluster into the car (through a connection to Volkswagen Germany) and to update the odometer reading to be correct for the car.	Tools and information needed to code the new cluster and to update the odometer reading by connection to Volkswagen's server.	New cluster was installed. Car was towed to a Volkswagen dealer for coding of the cluster.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To finalise the repair of this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Adapt the new instrument cluster to the vehicle and ECU
- Adapt the keys to the new instrument cluster
- Adapt the vehicle's odometer reading to the new cluster
- Hard code the new instrument cluster for the actual vehicle configuration and options

The above functions would require access to VW's erWin Online vehicle diagnostics facility, which requires the repairer to have a VW Offboard Diagnostic Information System (ODIS) licence, GeKo user licence and the Pass Thru-box to perform this task.

However, in Australia, these licences do not appear to be issued to independent repairers and therefore the repair would need to be completed by a Volkswagen dealer.

Access to a vehicle acquired or desk-based analysis

A sample vehicle was accessed for this study, and the VIN was used to facilitate the simulation. A generic Autologic scan-tool was used to access the vehicle's on-board diagnostic system; however, it was unable to perform the repair function required.

Results

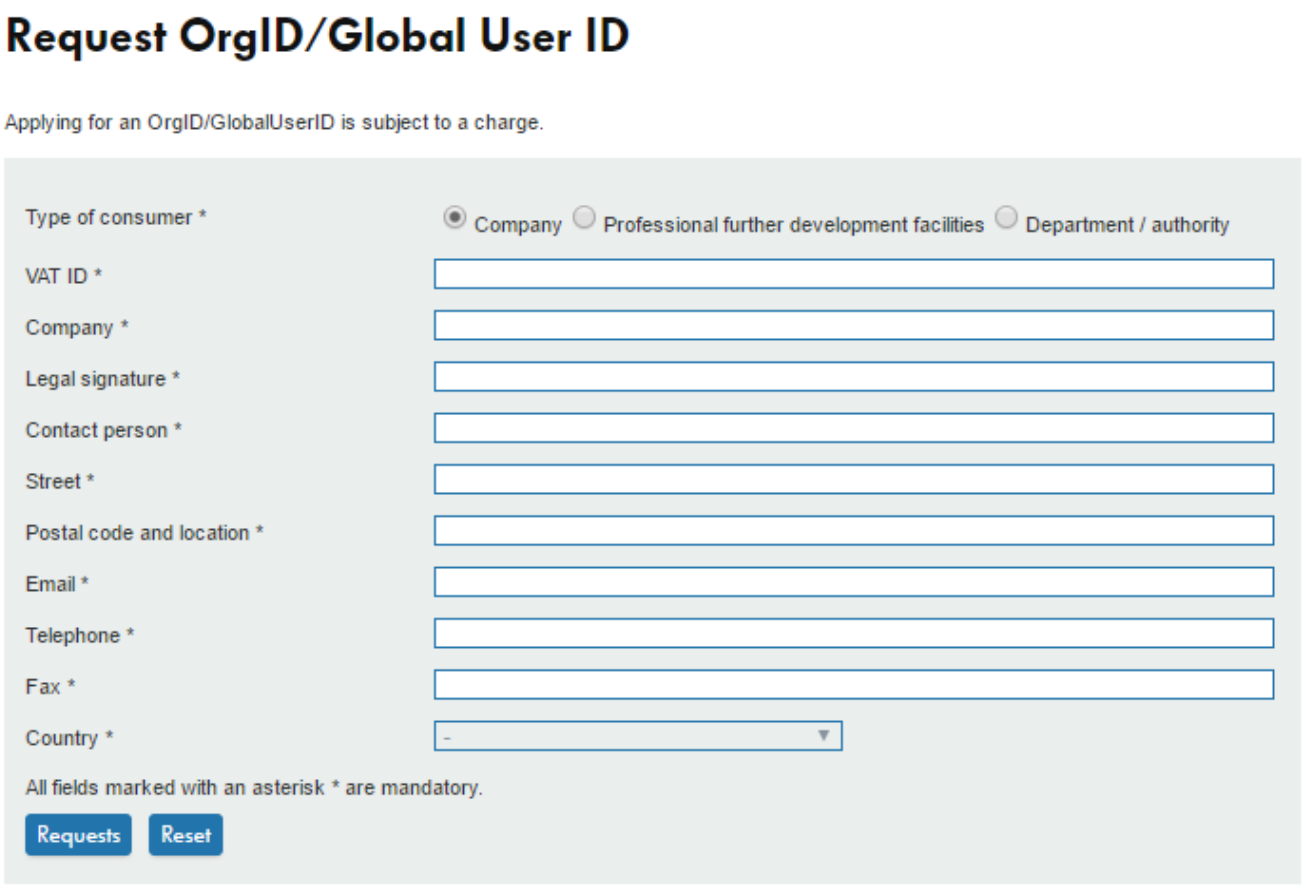
Questions	**Findings**
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue, the following information or tools would be needed: • Access to VW's erWin Online vehicle diagnostics facility, which requires the repairer to have a VW Offboard Diagnostic Information System licence and a VW GeKo user licence for the security-relevant tasks [refer to attachments B6.A and B6.B below]. • Hardware to connect between the laptop PC and the vehicle, i.e. cable and Pass Thru-Box.
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:	
from a manufacturer?	To undertake the above repair steps, I accessed the VW erWin website, which was linked from the FCAI website. The website provided instructions on how to gain access and facilitate the programming of the instrument cluster, however I was unable to obtain access to the VAS diagnostic system without first gaining the necessary licences. As the application requires a VAT ID (value added tax identification), it appears that this part of the website is only accessible to European repairers.
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	I contacted a local VW dealer and was advised that the only way in Australia to have a new instrument cluster programmed, is by taking the vehicle to a VW dealer.

from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	VACC: VACC TechOnline had limited information for the AU model (only refers up to MY 2014) – refer to the attachment B6.C below. There was no information found relating to the subject problem on their TechOnline tool. Autologic: I contacted Autologic, which specialises in generic scan-tools for Europeans makes, and was advised that Autologic could not assist with the programming of a new instrument cluster for this car. They were also able to confirm that it wasn't feasible to access the erWin portal for an Australian vehicle due to the associated security-related blocks that VW have in place.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Google search: A search was conducted; however, no useful information was obtained which would facilitate the completion of the subject repair without dealer assistance. This included reviewing websites like Ross-Tech in USA. Trade contacts: I investigated the option of using someone with an overseas key to facilitate access to the VW online portal for reprogramming purposes, ie. Pass-thru. However, due to the security aspects associated with the instrument cluster, I was advised by my source that access would be blocked for Australian vehicles.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	As per the above, access to VW's erWin Online vehicle diagnostics facility could not be achieved. This requires the repairer to have a VW Offboard Diagnostic Information System licence and a VW GeKo user licence for the security-relevant tasks, which is not available to Australian independent repairers. This information category relates to: • **'On-board diagnostic data'** • **'Scanning/diagnostic tools'**
Were any reasons given by the manufacturer, dealer or formal third	No reasons were given by VW dealers or the VW website.

party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	The only potentially feasible work-around would be to use a known European contact who already has erWin access, and access using a VPN to circumvent geo-blocking. However, given that the instrument cluster has security coding requirements, ie. needs a GeKo activation code, it is assumed that access would still be blocked, due to the vehicle having an Australian identifier, ie. Australian coded VIN structure. Also, given the high cost of a new instrument cluster, this option of trying to program by using an overseas ID, may invalidate warranties under VW's terms and conditions. Therefore, this option was not used in the research, as it was not considered a viable method for an independent repairer to use.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	Accessing erWin: 1½ hour of labour was spent on this task gaining access and reviewing the information available over a 2 week period. Contacting VW support: ½ hour of labour was spent on this task trying to access their customer service centre in one sitting. An email was sent requesting information regarding licences for access to VW's erWin portal for diagnostic and programming operations. No response had been received at the time of writing this report. Dealer: 1 hour of labour was spent on this task. It involved calling a number of dealers about the requirements, and ascertaining the costs and time associated with having this repaired performed, over a 1 week period
• **How long did it take seeking information via a formal third party source?**	VACC Tech Online: ½ hour was spent on this task accessing their website in 1 sitting. Autologic: 2½ hours were spent on this task reviewing the situation and the options available to the independent repairers, over a 1 week period.
• **How long did it take from an informal third party source?**	Google search: ½ hour was spent on this task looking for relevant material in 1 sitting. Trade contacts: 1 hour was spent on this task reviewing the options with Cartech's team and with known VW specialists over 2 sittings.

• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	We did not attempt to circumvent the geo-blocking, as it may have taken a significant period of time to complete this task and would require a known overseas contact who would be prepared to contravene VW's terms and conditions relating to their erWin licences. There is also the risk that the information would still be blocked due to the use of an Australian vehicle identification number (VIN).
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	Monetary Costs (excluding labour costs): I estimate that the total non-labour monetary costs an independent repairer would incur in this process, without obtaining all the information required, would be $22 for 2 hours to erWin information (not including the subscription costs to the VACC's Tech Online service, outlined above). Labour (hours): I estimate the total labour hours spent on this to be about 7 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Contacting VW support: 1 week – no response at writing this report. Other: Business reputation may be affected with a customer, due to delayed completion of the repair and inconvenience involved.
If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?	I did not attempt this, see above.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information to complete the repair was not available from any sources: • Access to VW's online Offboard Diagnostic Information System and GeKo, using the VAG erWin website.

Attachment B6.A – erWin online request form (VAT ID required)



Request OrgID/Global User ID

Applying for an OrgID/GlobalUserID is subject to a charge.

Type of consumer * ◉ Company ○ Professional further development facilities ○ Department / authority

VAT ID *

Company *

Legal signature *

Contact person *

Street *

Postal code and location *

Email *

Telephone *

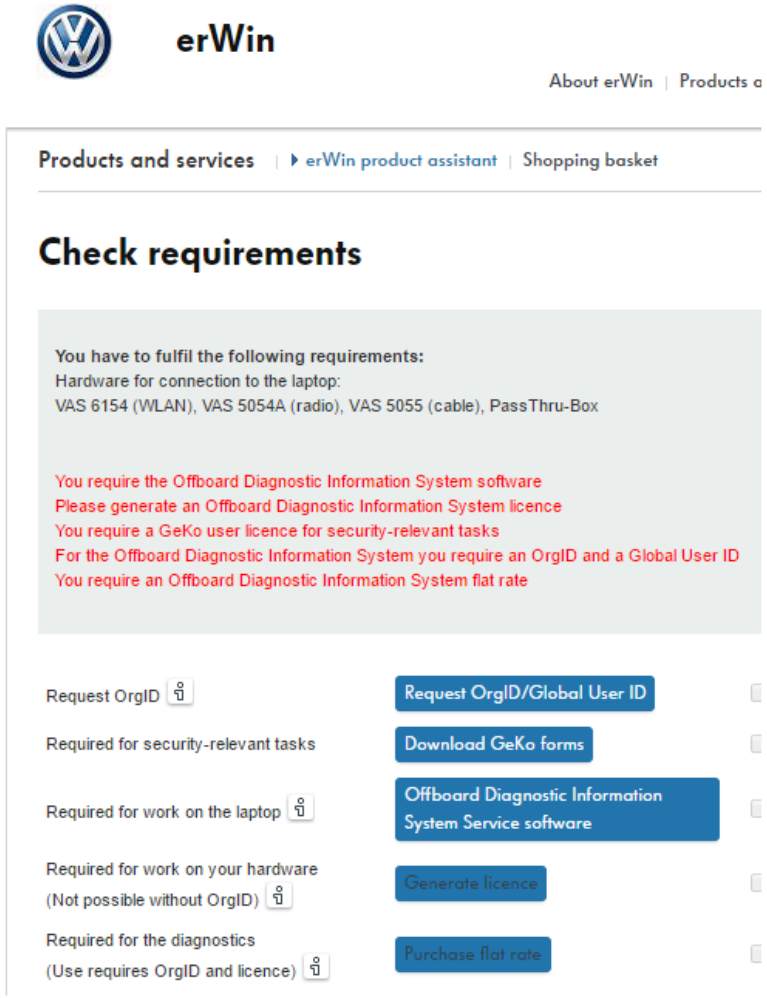
Fax *

Country * -

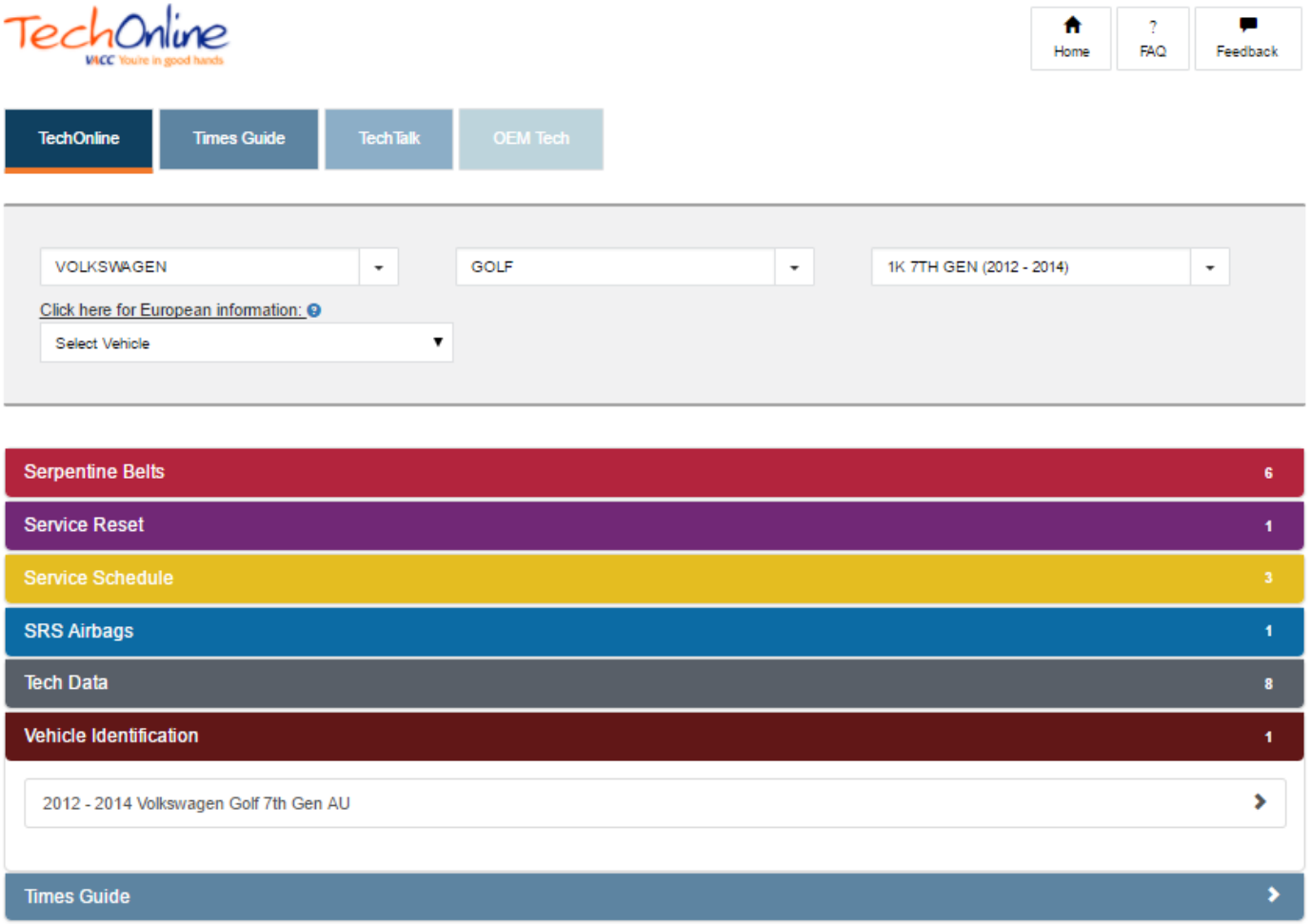
All fields marked with an asterisk * are mandatory.

Requests Reset

Attachment B6.B – VW VAS requirements



Attachment B6.C – VACC TechOnline



B7 - Ford Fiesta 2012 – WT

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
7	Ford	Fiesta	2012	Car towed to mechanic with a no drive fault. No communication with the car's automatic transmission ECU. Automatic transmission ECU replaced, but had no software access to reprogram the ECU.	Attempted to access programming data.	Software/diagnostic tool required to access the ECU and to reprogram it.	Car was towed to a Ford dealer to install and reprogram the new ECU.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Obtain access to Ford's online diagnostic system; IDS.
- Purchase the required laptop and interface hardware to perform the diagnostic tasks.
- Download the PC software from Ford's online diagnostic system.
- Perform the procedures related to the programming of the new transmission ECU (TCM).

Other assumptions/notes

The reference to transmission ECU was assumed to be referring to the Transmission Control Module (TCM).

Access to a vehicle acquired or desk-based analysis

Access to a sample vehicle was not required, as the programming of a new TCM (Transmission ECU) by an independent repairer is not feasible in Australia.

A sample vehicle identity (VIN) was used to assist in the search for information on the subject problem.

Results

Questions	**Findings**
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue the following information or tools would be needed: • Access to Ford's online diagnostic system – IDS • Software and hardware required, ie. suitable PC with software and interface (Pass-Thru box & cable etc.)
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:	
from a manufacturer?	Ford Motorcraft technical service website: I created an account on Ford's Motorcraft Service info.com website as an independent repair facility. By using a sample VIN from a local Fiesta, I conducted a search for the information available. I found that no diagnostic information or programming data was available [Refer to attachment B7.A] I found that all other references to diagnostic or programming operations refers to using Ford's diagnostic equipment. Ford customer service email: I emailed Ford Australia regarding access to their diagnostic tools, ie. IDS to facilitate diagnostics and programming of ECMs. I was advised that this was only accessible by authorised Ford dealers [Refer to attachment B7.B].
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's	Ford dealer: I contacted a local Ford dealer and was advised that Ford's IDS diagnostic system was only available to Ford dealers and that local vehicles were blocked from accessing Ford's portal in most cases where the vehicle's ID was applicable.

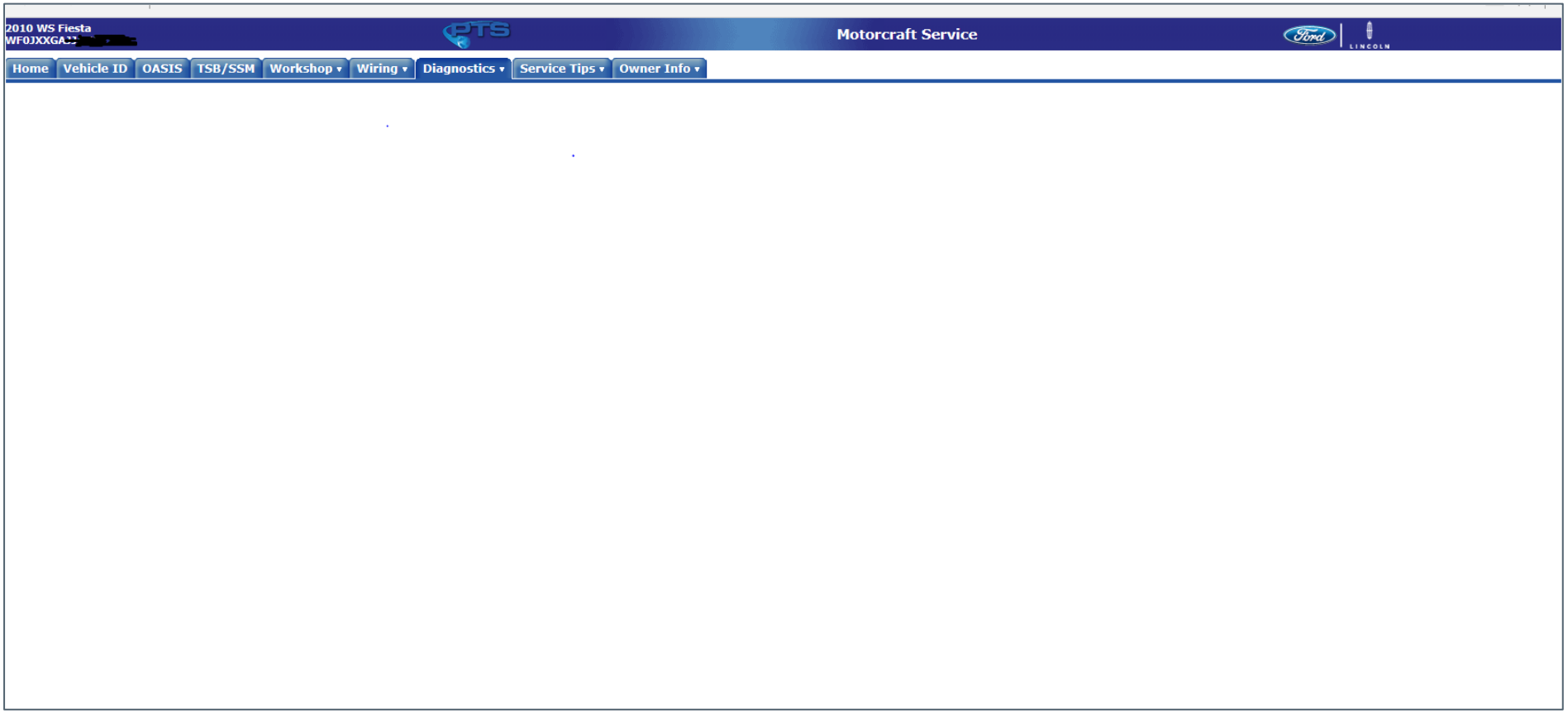
authorised channel for distributing the information, rather than through informal personal relationships)	
from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	VACC: I conducted a search on VACC's TechOnline tool and could not find any relevant information relating to programming of a new transmission ECU (TCM). Scan-tool suppliers: I contacted Snap-on and Autologic whose products offer diagnosis for this model of car. However, programming of the new Transmission Control Module (ECU) cannot be performed by their equipment.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Google search: I performed a Google search. There was a lot of global information on the problems associated with the TCM, however I found nothing which would assist in programming the TCM in Australia. Trade contacts: I contacted a repairer who specialises in Ford vehicles. I was advised that it is not feasible to use an overseas ID to access the Ford data due to risks (e.g. involving warranties) associated with the process. For the subject TCM program, he believes that the Ford system would probably block access anyway, due it being an Australian vehicle. I spoke to a colleague at Ford, who also confirmed the issues relating to using an overseas ID to access data from Ford's online diagnostic system.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics)	Access to the ECU data could not be obtained from any source. Related to: **'On-board diagnostic data' and** **'Scanning/diagnostic tools'**

Please specify whether the information related to: • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	No reasons were given.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	No work-arounds were considered, due to associated risks involved (refer above).
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	Ford Motorcraft technical service website: 1 hour of labour was spent on this task in 2 sittings over 1 week. Ford customer service email: ½ hour of labour was spent on this task in one sitting.

	Dealer: ½ hour of labour was spent on this task in one sitting.
• **How long did it take seeking information via a formal third party source?**	VACC: ½ hour of labour was spent on this task in 1 sitting. Snap-on tools: ½ hour of labour was spent on this task in 2 sittings over 1 week. Autologic: ½ hour of labour was spent on this task in 1 sitting.
• **How long did it take from an informal third party source?**	Google search: ½ hour of labour was spent on this task in 1 sitting. Trade contacts: 1½ hours of labour was spent on this task over 2 weeks.
• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	I did not attempt to work-around the problem by using an overseas access ID, due to the perceived significant time required and the potential risks associated with this method.
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	Monetary Costs (excluding labour costs): I estimate that the total non-labour monetary costs an independent repairer would incur in this process, without obtaining all the information required, was $22 for accessing information on Ford's Motorcraft Service info.com website (not including the subscription costs to the VACC's Tech Online service). Labour (hours): I estimate that the total labour hours spent on this to be about 5 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Ford Australia responded to my email request for information in 2-days. Other:

	Business reputation may be affected with a customer, due to delayed completion of the repair and inconvenience caused.
• **If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?**	Not attempted.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information to complete the repair was not available from any sources: • Access to Ford's online diagnostic system - IDS

Attachment B7.A – Diagnostic information available for the sample vehicle used (showing no information)



Attachment B7.B – Response from Ford regarding access to diagnostic system

Reply Reply All Forward

Wed 7/06/2017 9:22 AM

CM

Customer Mailbox, Ford (F.) <foacust1@ford.com>

RE: Purchase of Ford's IDS diagnostic system and online access for diagnostic and reprogramming purposes

To CARTECH - Rowan Carter

Dear Rowan,

Reference: 301016179

Thank you for your e-mail to Ford Motor Company of Australia Limited (Ford Australia).

In relation to your enquiry, we can advise that Ford Australia do not offer or provide technical advise or information online as all technical enquires are directed to our Ford Dealerships.

If you have any further queries, please do not hesitate to contact the Ford Customer Relationship Centre on 1 FORD (13 3673), between m and 6:00 pm (AEST), Monday to Friday, quoting your reference number.

We trust this is of assistance and thank you for taking the time to contact Ford Australia.

Kind regards,

[redacted]
Customer Service Representative
Ford Customer Relationship Centre
Ford Motor Company of Australia Ltd
Telephone: 13 36 73 (13 FORD) (Local Call)
Fax: +61 3 8301 3899
Email: foacust1@ford.com

B8 - Mazda Mazda6 2015 – GJ

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
8	Mazda	Mazda6	2015	Automatic transmission lubricant required replacement during a service.	Mechanics contacted Mazda and oil suppliers to try to determine the lubricant needed. Oil suppliers could not confidently state what lubricant was needed. Mazda was of no assistance.	Automatic transmission lubricant specifications.	Able to get lubricant after contacting multiple sources. Could not charge the additional time taken to the customer.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Refer to the Owner's Manual
- Refer to VACC Tech-Online
- Refer to trade suppliers of oil, i.e. Burson Auto Parts & Repco etc
- Refer oil suppliers/manufacturers, i.e. Penrite, Fuchs & Shell etc
- Refer to Mazda repair manual, i.e. Mazda Manuals online
- Ring a Mazda dealer parts department

Other assumptions/ notes

It is noted that the example problem may have occurred earlier than when this research was conducted, and the information may not have been available then.

Access to a vehicle acquired or desk-based analysis

Access to a sample vehicle was not required, as the research only relates to the availability of the specified information and product.

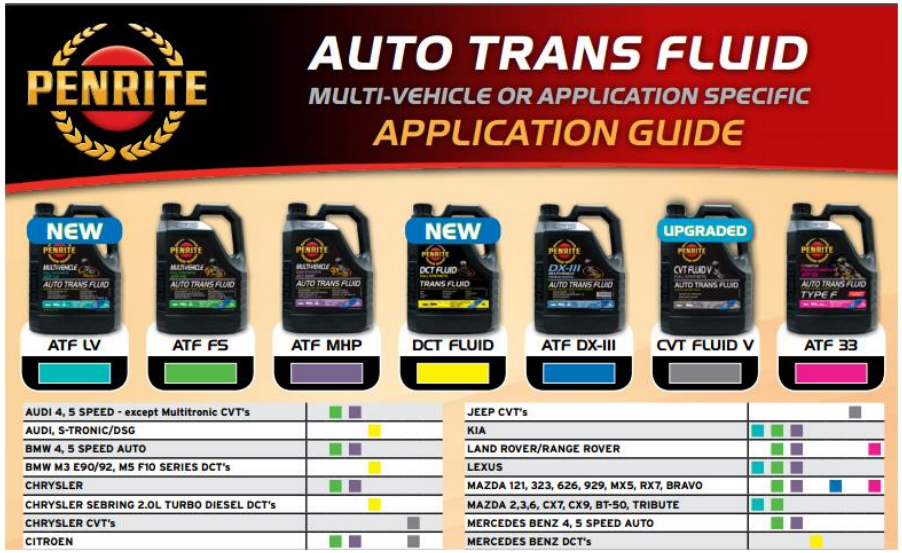
Results

Questions	**Findings**
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	The information required to address the problem: • Grade and source the correct grade of transmission oil.
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics)? In particular, was it sought/required:	
from a manufacturer?	To search for the relevant information, listed above, I accessed Mazda Manuals online. The information required was available – [refer to attachment B8.B].
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	I contacted the local Mazda dealer, and was advised of the grade and that the oil was in stock. They quoted $400 for 20 litres.
from a formal third party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	I contacted Burson Auto Parts (parts supplier to the car repair industry), which was able to provide information on the grade required and had suitable oil in stock from two suppliers, ie. from Penrite and Fuchs. Price $53.50 for 4 litres, ie. $268 for 20 litres. The Penrite website also provided the grade of oil required (Attachment B8.A)

informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Not required
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	I was able to obtain the information from multiple sources within short time-frames.
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	Not applicable.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	Not applicable.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	¼ of an hour of labour was spent on this task to access the Mazda manuals website in one sitting. ¼ of an hour of labour was spent on this task talking to a dealer in one sitting.
• **How long did it take seeking**	¼ hour of labour was spent on this task in one sitting

information via a formal third party source?	
• **How long did it take from an informal third party source?**	¼ hour of labour using Google in one sitting.
• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	Not applicable.
• **What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?**	Monetary costs (excluding labour costs): I estimate the total non-labour monetary costs an independent repairer would incur in this process was $0 from the Penrite website or $20 when accessed from Mazda Online Manuals. Labour (hours): I estimate the total labour hours spent on this to be about 1 hour, which included comparing prices of the oil. Other: Nil.
• **If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?**	Not applicable.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	Not applicable.

Attachment B8.A - Penrite transmission oil application guide – accessed online



Attachment B8.B – Information from the online 'Mazda Manuals'

Automatic Transaxle [FW6A-EL]

Item		Specification
ATF	Type	ATF FZ
	Capacity (approx. quantity)	7.8 L {8.2 US qt, 6.9 Imp qt}
	Added amount if ATF is drained from drain plug (approx. quantity)	3.5—4.9 L {3.7—5.1 US qt, 3.1—4.3 Imp qt}

B9 - Subaru Impreza 2012 – G3

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
9	Subaru	Impreza	2012	During a repair, it was necessary to disconnect the battery. Once the battery was reconnected, a code was required to be entered into the immobiliser to start the car.	Immobiliser system codes were not provided by the car manufacturer or a local dealer.	Immobiliser system code.	Code was obtained from a Subaru specialist 150km from the original repairer who could obtain the code from Subaru International, but not Subaru Australia. Workshop absorbed labour costs and costs of towing the vehicle 150km.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Contact the owner for the user code to disarm the immobiliser; or
- If the user code is unknown, request the owner to go to the dealer with proof of ownership, and request the user code; or
- If the dealer requires the car, transport the car to the dealer and have the owner repeat the above process.

If repairs are also required to the immobiliser unit, the owner would need to organise this in conjunction with the dealer, due to master reset codes required from Subaru Australia to initialise the system after repair.

Other assumptions/notes

Both the manufacturer and the dealer confirmed that the G3 Impreza model (which covers the 2012 example given) does not require a user code to be entered into the immobiliser system to control its functions — it is not fitted with a keypad.

However, some of the earlier model Subaru's from 1999 to 2007, are fitted with an aftermarket (Brant) immobiliser to improve their security, which requires the user to enter a 4-digit code into a keypad located on the centre console, to control its functions.

These immobiliser units can lose the user code or malfunction, if the immobiliser's built-in battery is weak and the main battery is disconnected.

Subaru Australia keep a record of the user code and the master reset codes required to reinitialise the unit after repair. Subaru Australia will only release the unique user code to a dealer, due to the security protocols involved.

From the problem description, it has been assumed that the repairer was not provided with the user code by the customer, and the immobiliser was left in 'Valet Mode'. The following description of 'valet mode' has been taken from the operating instruction manual for the Brant immobiliser.

4. *Valet Mode:* Valet mode allows the user to start the engine up to 9 times without having to enter the User Code. After this, the keypad will arm itself and require the User Code to start the engine. This feature is useful if you have to leave the vehicle in a parking station with valet parking or leaving it at a dealer for servicing, as it will maintain the secrecy of the User Code and still have some level of security on the vehicle.

Access to a vehicle acquired or desk-based analysis

Access to a 2012 year-model Impreza (G3) was obtained to investigate the given problem. However, as explained above, the vehicle does not have a keypad from which to enter a code.

It was not necessary to access an earlier model Impreza with the Brant immobiliser installed, to obtain the necessary information required for the repair simulation, as this information was not vehicle specific and readily available from multiple sources.

Results

Questions	**Findings**
What information/data/codes/ software (information)	To address the reported problem, the following information would be needed: • User code to disable the 'Brant' immobiliser unit.

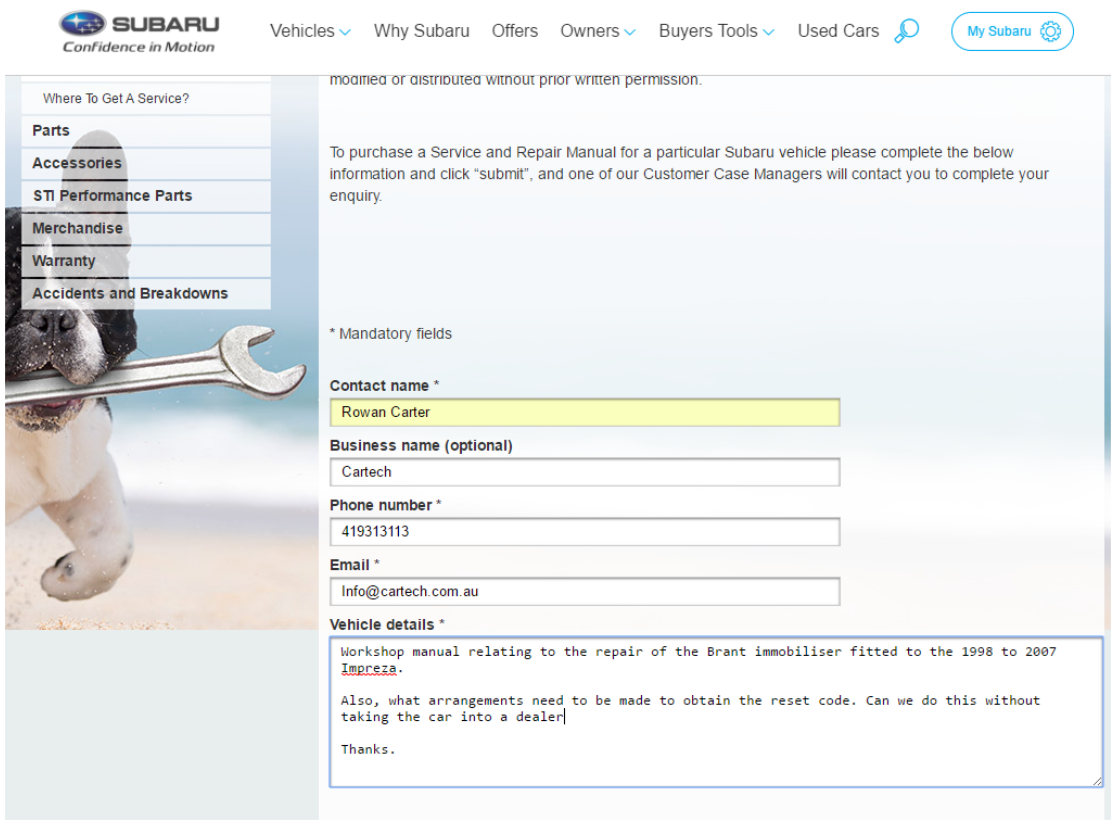
or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:	
from a manufacturer?	I rang Subaru Australia (Sydney) and was advised that the vehicle would need to be taken to a dealer to obtain the user code for the immobiliser. It was explained that for security reasons, the user code can only be supplied directly to their dealers from Subaru Australia. I requested information — the repair manual and specific information, using their website portal without a response at the time of writing [Refer to attachment B9.A].
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal personal relationships)	I rang a local dealer who advised that the car would need to be taken to them, and that the person representing the vehicle would need to provide proof of ownership before they would release the user code for the immobiliser. They also mentioned that they could organise for the immobiliser to be repaired and reset, if required.
from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	<u>Brant corporation (supplier of the immobiliser):</u> I rang the supplier of the immobiliser (Brant Corporation) and was advised that the user and reset codes can only be obtained through Subaru Australia or via a dealer. I also requested a copy of the owner's manual for this alarm system from Brant; however, this has not been received at the time of writing. <u>VACC:</u> A search of VACC's TechOnline tool provided no information on the Brant immobiliser fitted to some of the Impreza vehicles.
informal/other source? (e.g. internet forums,	<u>Google search:</u> I conducted a Google search and this provided links relating to the repair of the immobiliser unit, i.e. replacement of the built-in backup battery. However, no information on how to obtain the user code without using a dealer was found.

personal informal relationships with dealers)	I also found the operating instruction manual for the Brant immobiliser online, from a Subaru forum.
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** •	The user code for the immobiliser was not available to the repairer due to security reasons. This relates to: **'Any other relevant material'**
Were any reasons given by the manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	Vehicle security was the reason given for not releasing the user code to independent workshops.
For	No work-arounds were found, regarding the sourcing of the user code directly by a repairer.

information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	Manufacturer: 1 hour of labour was spent on this task over 2 separate sittings. Dealer: ½ hour of labour was spent on this task in 1 sitting.
• **How long did it take seeking information via a formal third party source?**	Brant Corporation: ½ hour of labour was spent on this task in 1 sitting. VACC: ½ hour of labour was spent on this task in 1 sitting.
• **How long did it take from an informal third party source?**	Google search; ½ hour of labour was spent on this task in 2 sittings.
• **How long would it be estimated to take if a work around was not needed (for example, if that information could have been directly obtained from the car manufacturer or dealer)?**	Not applicable as the user code was not available.
What are the total costs (monetary, time, inconvenience etc.)	Monetary Costs (excluding labour costs): There were no non-labour monetary costs to an independent repairer in the process of searching for the information required, except for

incurred in obtaining the information required to resolve the problem?	those relating to the subscription costs to the VACC's Tech Online service. However, the user code could not be obtained. Labour (hours): I estimate that the total labour hours spent on this to be about 3 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Using Subaru's online request service for repair manuals: At the time of writing I have not received the requested information, ie. workshop manual and specific information. (over 2-weeks) • Request for a copy of the immobiliser operating instruction manual from Brant (supplier of the immobiliser), has not been received at the time of writing. (over 2-weeks) Other: Business reputation may be affected with a customer, due to delayed completion of the repair and inconvenience caused.
If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?	Not applicable.
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information to complete the repair was not available from any sources: • Unique immobiliser user code for the subject vehicle.

Attachment B9.A – Request for information from Subaru



B10 - Nissan Navara 2012 – D40 Diesel 2.5

Scenario

	Make	Model	Model Year	Reported problem(s) the car presented with and further problems during diagnosis/repair	Reported action taken to obtain information	Reported information required to conduct diagnosis and service/repairs	Reported outcome
10[40]	Nissan	Navara (Diesel)	2012	Faulty fuel pump, replacement required. Special tool needed to replace the pump.	Contacted Nissan dealer for the special tool — told it is made exclusively by Bosch for Nissan. Neither Nissan nor Bosch would sell it to the independent repairer.	Special tool to replace the fuel pump.	No work around was available. Time spent looking for the tool could not be recovered. Car had to be towed to a Nissan dealer.

Rowan Carter's Assessment

Assumptions/notes

Service and/or repair steps required to repair issue

To repair this reported problem, the following steps would be assumed to be undertaken by a competent repairer:

- Source a copy of the repair manual from Nissan or suitable source.
- Source any special tools required to facilitate the repair.

[40] GPC Asia Pacific, supplementary submission (April 2017), row 27.

Other assumptions/notes

It was assumed that the problem relates to the removal/replacement of the engine mounted diesel fuel pump on the YD25 engine.

Given that the repairer had difficulty in completing the repair without dealer assistance, this would suggest that a repair manual was not used during the repair and should have been sourced before starting.

Access to a vehicle acquired or desk-based analysis

As the research only relates to the availability of a special service tool from Nissan, access to a 2.5 litre variant vehicle was not required.

Results

Questions	**Findings**
What information/data/codes/software (information) or tools are needed to address the issue (i.e. to diagnose the issue, undertake the fix, and get the car back to the customer)?	To address the reported issue the following information or tools would be needed: • Repair procedures, safety warnings, and special tool requirements • Special tools required to facilitate the repair, if any.
What steps were taken to find the information or tools to service/repair the car (detail step-by-step specifics from different sources)? In particular, was it sought/required:	
from a manufacturer?	I contacted Nissan Australia via their FCAI mailbox link, requesting a price and availability on the special tool required to facilitate the subject repair. Nissan provided a quote in 12 days, however, they stated it was out of stock [Refer to attachment B10.C]. I also requested a copy of the workshop repair manual for the subject repair, which was subsequently supplied for a fee. This involved a number of emails over a 2 week period.
from the dealer? (eg purchased or obtained from a dealer as part of a car manufacturer's authorised channel for distributing the information, rather than through informal	I contacted a Nissan dealership service department, which advised that there was a special service tool available to assist with the repair. However, advised that the repair could still be performed without it. They advised that the tool was available from Nissan Australia [Refer to attachment B10.A]. I contacted another Nissan dealership's Spare Parts department which advised that they could not supply the tool, and advised that Bosch Australia should be able to supply it. It was listed on their system at about $950, with none currently in Australia or

personal relationships)	ordered. They also advised me that the workshop repair manuals needed to be purchased from Nissan Australia.
from a formal third-party source? (eg. independent/commercial publisher or aftermarket scanning tool manufacturer)	Bosch Australia: I contacted Bosch Australia and they were not able to provide information immediately about the availability of the tool. They offered to investigate the situation and advise. However, no response was received at time of writing. VACC: I reviewed the TechOnline tool and there was no information regarding the subject repair. Haynes Online Manuals: An online search revealed that Haynes offer a condensed workshop manual for the subject vehicle. This was not considered, due the potential of it not covering the special tool(s) required. Ozwide tools: I contacted a local tool hire business, Ozwide Tools in Melbourne, which advised that it had the subject tool in stock and hired it out on a weekly basis at about $50/week. This service is offered Australia wide.
informal/other source? (e.g. internet forums, personal informal relationships with dealers)	Trade contact: I contacted a mechanic I know who works at a Nissan dealership, to obtain repair procedures for the replacement of the fuel pump. Copies of the internal workshop procedures were sent to us, which contained information regarding the procedures and the special service tool required. Google search: There is information on the Nissan Navara forums regarding the removal of fuel pump. One forum provided advice on how to fabricate a makeshift tool to facilitate the repair [Refer to attachment B10.B].
What information/data/tools (if any) could not be accessed from the manufacturer, dealer or a formal third party source?(detail step-by-step specifics) **Please specify whether the information related to:** • **'Repair and service information' and/or** • **'On-board diagnostic data' and/or** • **'Scanning/diagnostic tools' and/or** • **Any other relevant material.**	The special tool referenced in Nissan's repair procedures was not available from Nissan or their third-party tool supplier, in a timely manner to facilitate the repair. Relates to: **'Repair and service information'** **'Special Service Tool'**
Were any reasons given by the	The dealer advised that the tool was not available from Nissan anymore, and believed it should be available from Bosch. It was

manufacturer, dealer or formal third party source for why the information/data/tools could not be accessed? **If so what were they? (if any screen shots, emails given, please provide).**	also not available from Bosch, no reason was given.
For information/data/tools obtained informally or outside the manufacturer/dealer/formal third party sources, what 'work arounds' were used (detail step-by-step specifics)?	The work-around would be to fabricate a makeshift tool or perform the repair without the tool. The additional time to fabricate a makeshift tool or perform the task without it has been estimated at more than 3-hours.
How long did it take to seek and if successful, gain the information (from all categories sources?). In particular:	
• **How long did it take seeking information via the manufacturer and dealer?**	Nissan Australia: 2 hours of labour was spent on this task over 2 weeks Dealers: 1 hour of labour was spent on this task over 2 weeks
• **How long did it take seeking information via a formal third party source?**	Bosch Australia: ½ hour of labour was spent on this task in 1 sitting VACC: ¼ hour of labour was spent on this task in 1 sitting Haynes Online Manuals: ¼ hour of labour was spent on this task in 1 sitting Ozwide tools: 1 hour of labour was spent on this task in 2 sittings
• **How long did it take from an informal third party source?**	Google search; ½ hour of labour was spent on this task in 1 sitting Trade contacts: 1 hour of labour was spent on this task in 2 sittings
What are the total costs (monetary, time, inconvenience etc.) incurred in obtaining the information required to resolve the problem?	Monetary Costs (excluding labour costs): I estimate that the total non-labour monetary costs an independent repairer would incur in this process would be $40 for part of the repair manual relating to the removal of the fuel pump (not including the subscription costs to the VACC's Tech Online service). An independent repairer may pay a further $50 to hire the tool for a week from a third-party source.

	Labour (hours): I estimate that the total labour hours spent on this to be about 6 hours. In addition to these labour costs, there were also periods of waiting for responses, which are outlined below. This is composed of: • Nissan Australia: over 2 weeks (includes 12 days for an email response [attachment B10.C]) • Bosch Australia: 4-weeks and no response at the time of writing this report. Other: Business reputation may be affected with a customer, due to delayed completion of the repair and inconvenience caused.
If 'work arounds' were used, are there any risks to the repairer or customer of using the repair and service information that were sourced (please distinguish if opinion or fact)?	Increased job time due to the investigation required and the finding/sourcing of the special tool, eg. Fabricating it. If the workaround involved performing the repair without the special service tool, there would be an additional cost to the customer, due to having to also remove and replace the engine's timing chain or fabricate a makeshift tool (as stated above, this may be an additional 3 hours of work).
What information was unavailable from the manufacturer authorised channel, reputable third party sources or informal/other sources?	The following information required to repair the car was available from at least one source: • Workshop repair manual • Special tool specified in the Nissan workshop repair manual However, the special tool was not available from the manufacturer.

Attachment B10.A – Email response from Nissan dealer regarding the special service tool

Sent: Friday, 26 May 2017 10:39 AM
To: info@cartech.com.au
Subject: fuel pump

you can replace the fuel pump without a tool- but this requires you to pull the timing chains off

there is a tool available but you can only get it from Nissan

thanks

[redacted]
Service Advisor

NISSAN YARRA VALLEY NISSAN
Country Service at City Prices

Yarra Valley Nissan
460-462 Maroondah Hwy, Lilydale 3140
T +613 9735 6789 | F +613 9735 6772 | **M** +614
Facebook YouTube Google+

Attachment B10.B – Makeshift tool from online Nissan forum

Attachment B10.C – Email from Nissan Australia regarding the special service tool

Fri 16/06/2017 11:31 AM

techdata <techdata@nissan.com.au>

RE: Special Tool KV11106060 - Fuel pump removal on YD25 diesel

To 'CARTECH - Rowan Carter'

Hello Rowan,
The tool has a list price of $944.63 and we currently do not have stock.
If you wish to purchase this can be ordered through any Nissan Dealer Parts Department.

Nissan Techdata Team
Nissan Motor Co. (Australia) Pty. Ltd.
260-270 Frankston-Dandenong Road,
Dandenong South, Victoria, 3175, Australia

From: CARTECH - Rowan Carter [mailto:info@cartech.com.au]
Sent: Sunday, 4 June 2017 11:44 PM
To: techdata
Subject: Special Tool KV11106060 - Fuel pump removal on YD25 diesel

Please provide cost and availability of the subject tool KV11106060.

Used to support the timing gear when removing the diesel fuel pump on a 2.5L 2012 Navara.

Kind regards
Rowan Carter

CARTECH®