

15 Evaluation of the Systems and Measures put in place by the Car Manufacturers

15.1 Evaluation for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

15.1.1 Registration and Access

Access to technical repair information is provided via Internet-based systems, CD/DVD's, paper or a combination of these media. Apart from Peugeot (94%), each manufacturer has made information available for independent repairers relating to 100% of their models produced within the last 10 years. On the other hand this information is not always available on a single information source. BMW, Ford, Jaguar, Volvo, Mercedes/Smart, Opel, Toyota, VW and Citroën provide more than 90 % of their information on a single medium. For Fiat/Alfa (40 % CD, 60 % paper), Renault (50 % Internet, 30 % CD, 20 % paper), Peugeot (75 % Internet/CD, 25 % paper) different media are used, which leads to additional costs. For an effective and economic access to technical repair information independent repairers require all information on a single information system.

Independent workshops, operators who offer inspection and testing services and, to some degree, roadside assistance operators¹¹ require immediate access, especially if they are about to repair a specific vehicle, for which technical information is needed. If the repair information is only available on CD or paper (Fiat/Alfa, Mercedes/Smart, Citroën and Toyota), immediate access is not possible, since the delivery of such media takes several days. The delivery times for the non-Internet media used by Fiat/Alfa (30 days), Toyota (<15 days), Citroën (60 days) and Peugeot (15 - 45 days) are extraordinarily long. Peugeot provides also a website with immediate access. All other manufacturers who provide their technical repair information on CD or paper deliver their information within a few days, but also do not grant instant access.

Immediate access to technical repair information can only be guaranteed by an Internet system or a CD solution where the CD's itself are delivered in advance, and access is granted by a separate license key, which could be sent by email. Therefore the Internet systems of Ford, Jaguar, Opel, Peugeot, Renault and VW are in line with the requirements of an independent workshop. To some extent the long-lasting registration process for Volvo (max. 48 hours) is acceptable, since a registration to the website is free of charge and an independent repairer could register to the website without any scheduled repairs. The registration process for BMW is not satisfying. Due to a 3 - 4 days lasting registration procedure, an independent repairer has to subscribe in advance to get immediate access, if

¹¹Roadside assistance operators often use their own technical information systems, which are purchased from an independent publisher or from part of a multi-brand diagnostic tool.

required. But whereas a registration for other manufacturers is free of charge, BMW demands a basic access fee of EUR 180,- annual, which prohibits a registration in advance.

For automobile clubs and spare part distributors immediate access is of minor relevance. For these operator groups only the delivery times of Fiat/Alfa, Citroën and Peugeot are unsatisfactory.

All groups of independent operators have an interest in obtaining very specific information for a single repair or a maintenance job and should not be obliged to buy the complete repair information for a single brand. This requirement is also set out in the Regulation, which stipulates that independent operators should not be obliged to buy more than the information, which is necessary to carry out the work in question. In addition the possibility to subscribe for a very short period of time should be possible.

Only the Internet-based systems of BMW, Ford, Jaguar, Volvo, Opel, Peugeot and Renault are designed accordingly. To a limited extent, this request has also been considered by the CD based system of Citroën, where the user can subscribe for certain pieces of information and via the paper-on-demand options of Opel and Toyota (UK). The systems put in place by Fiat/Alfa (CD for single models), Mercedes/Smart (CD for all models) and Toyota (books for single models and systems) do not fulfil this requirement. Due to the obligation of purchasing complete workshop manuals Volkswagen's Internet-based system, ErWin, does not satisfy this requirement.

15.1.2 Prices for technical repair information

With regard to the price of the technical information, three different options are analysed in the following three sub-chapters. The evaluations, which are relevant for all operators, except spare parts distributors¹², consider the least possible prices, which occur, if an independent operator wants to buy technical repair information, for a one-year subscription and an analysis, which is based on two different repair jobs.

According to the results of the questionnaire, no manufacturer offers any price discounts or rebates to their authorised repairers.

15.1.2.1 Minimum Prices

The minimum price for the technical information (see Fig. 15-1) is related to the possibility of only purchasing the relevant information for a certain repair and also to the minimum subscription periods, which are offered. The least possible prices of the Internet systems vary between EUR 8,- - 25,- for Ford, Jaguar, Opel, Peugeot and Renault; EUR 83,- for

¹² The prices for spare part information which is the most important issue for spare parts distributors are considered in chapter 15.1.3.

Volvo and EUR 180,- for BMW. Whereas the BMW price of EUR 180,- annual is only a basic fee and the information units have to be purchased separately. Volkswagen only provides complete packages with all information for a specific system (prices between EUR 4,60 and EUR 107,40). Those manufacturers, whose technical information is mainly available on CD (Fiat, Mercedes/Smart, Citroën, Toyota (Italy)) have lowest prices of EUR 80,- for Toyota (Italy), approx. EUR 150,- for Citroën, EUR 243,- for Fiat and from EUR 934,- to EUR 1.274,- for Mercedes and Smart. In addition the Mercedes prices show a significant difference in different countries (from EUR 967,- for GER and NL to EUR 1.274,- for PL). Toyota is the only company, whose technical information is provided on paper only (except Italy). Here the prices lie between EUR 11,- and EUR 90,-.

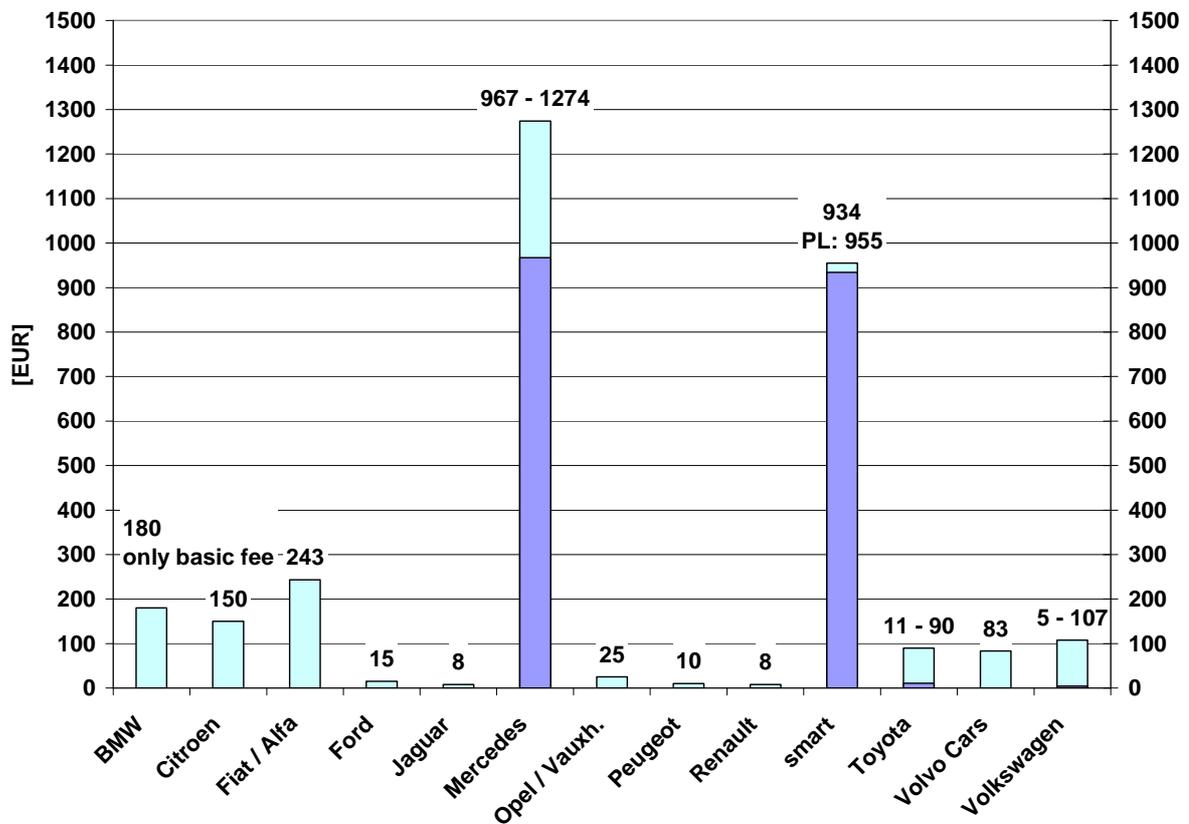


Fig. 15-1: Lowest prices for access to technical repair information (all information systems)

For independent operators who want to have access to technical repair information for single repair jobs, only the cost models of Ford, Jaguar, Peugeot, Renault and Toyota show competitive prices. If one considers that the customer pays an average price of EUR 245,- for a maintenance job and approximately EUR 185,- for a repair job¹³, the repair cannot be

¹³ Source: DAT Report 2004

performed under competitive conditions with the lowest prices for information from BMW, Citroën, Fiat/Alfa, Mercedes/Smart, Volvo and Volkswagen.

15.1.2.2 Subscription Prices

With a larger customer basis for a certain brand the costs can be spread over many consumers. These repair shops might subscribe to the whole technical information for one year. The costs for a one-year subscription are shown in Fig. 15-2.

The manufacturers, who offer a fixed one-year fee have a quite large range from approximately EUR 1.000,- (Jaguar, Mercedes/Smart) to over EUR 2.500,- (Fiat/Alfa (Italy), Ford, Opel, Peugeot, Volvo). Only BMW charges each information unit separately, after an annual access fee of EUR 180,- has been paid.

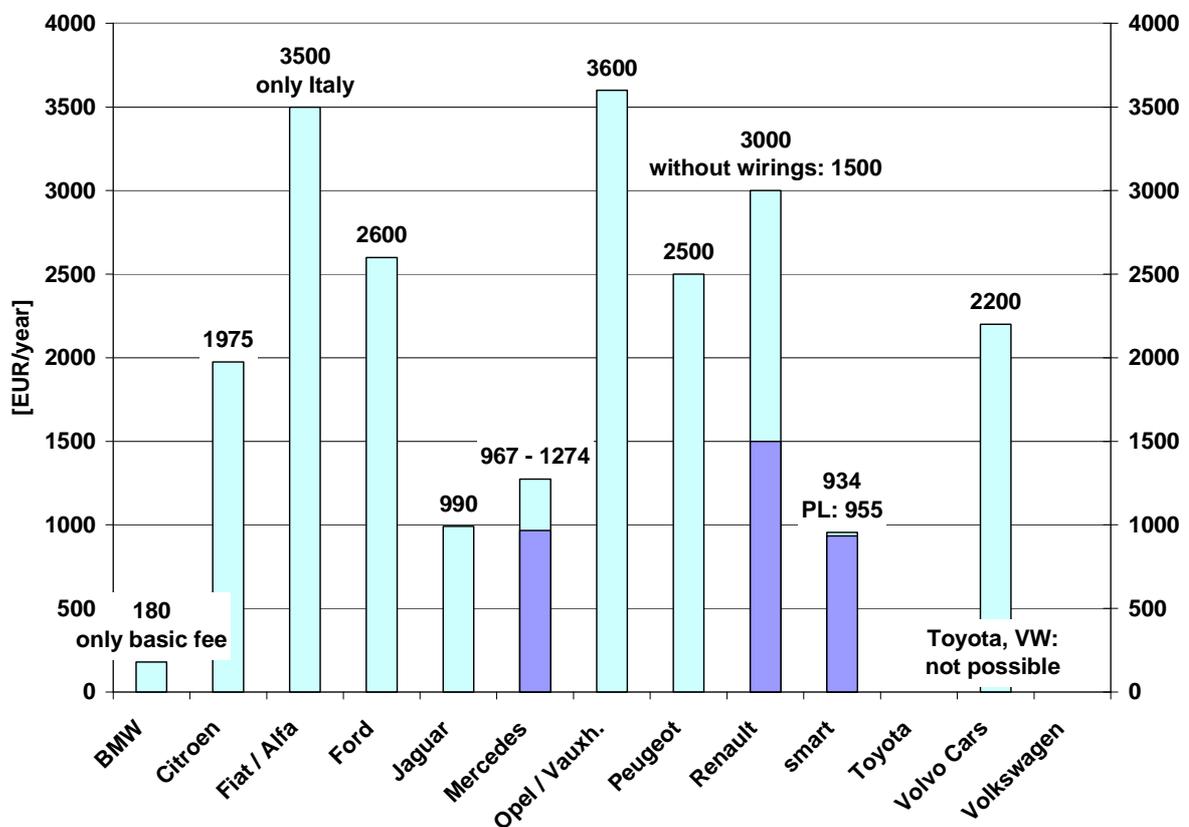


Fig. 15-2: Subscription for all models and one year (all information systems)

With respect to the average price of approximately EUR 2.000,-¹⁴ the one-year costs of Fiat/Alfa, Ford, Opel, Peugeot and Renault (if wiring is included) are quite expensive. Due to the expensive information units, which are charged separately, BMW's offer is not attractive,

¹⁴ Based on the manufacturers who offer a one-year subscription for all models (see Fig. 15-2).

either. For all other brands it depends on the number of repairs to evaluate, whether these prices are affordable for an independent repairer. In fact, such a subscription is only acceptable for very large repair shops (who usually purchase technical information from a third-party company) or those repairers, who are specialised on a specific brand¹⁵ and are therefore comparable to a franchised workshop.

15.1.2.3 Test cases

For a comparison of different motor vehicle manufacturers on certain repairs, two different test cases have been developed¹⁶. Test case 1 describes the replacement of an engine ECU whereas test case 2 asks for the technical information to perform a standard maintenance or service job. Both test cases enquire the lowest possible price of all required information for a single repair.

The replacement of an engine ECU involves the vehicles security or anti-theft system. For Citroën, Opel and Peugeot security devices or re-programming devices are not available to independent operators. Therefore test case 1 is not possible or cannot be completed. For those manufacturers no costs have been identified. For Mercedes/ Smart the access to theft relevant functions and information is restricted. Based on the information given in part A of the questionnaire, it is with regard of the limited ECU operations also unlikely that such a repair can be performed for Ford. Since no information is given an independent operator could not complete test case 1, the prices for Mercedes/Smart and Ford are still considered.

Apart from Citroën, Opel and Peugeot the lowest costs for technical information for test case 1 are displayed in Fig. 15-3¹⁷. The CD- based systems of Mercedes/Smart, where all technical information has to be purchased for one year, show the highest costs with approx. EUR 1.600,-. Both brands show different prices in different countries. Whereas for Smart a different price exists for Poland only, the Mercedes prices vary quite a lot (see Tab. 15-1). Since the same media are sold in all countries, such differences are implausible.

Compared to Mercedes/Smart the system of Fiat/Alfa with the option to buy technical information for only one model is significantly cheaper (EUR 829,- to 870,-) but still rather high. Toyota is the only manufacturer, whose information is sold on paper only (exception: Italy on CD). With a quite large range from EUR 80,- – 408,- the technical information is offered for a different price in different countries. In Denmark and Ireland the technical repair

¹⁵ Independent workshops spend approx. EUR 2.000,- annual for technical information (Source: ZDK survey for Germany).

¹⁶ The description of the two test cases can be found in chapter 14.

¹⁷ If job times are charged separately these prices have been neglected because job times are not required by the BER. Prices for the software of diagnosis tools have been added to the tool costs.

information can be obtained for free (based on the information Toyota gave in the questionnaire).

Country	DK	F	GER	IRE	I	NL	PL	UK
Mercedes	1.533,-	1.514,-	997,-	1.597,-	1.143,-	997,-	1.695,-	1.364,-
Toyota	0,-	220,-	229,-	0,-	80,-	120,-	243,-	408,-

Tab. 15-1: Minimum prices for technical repair information in test case 1 (Mercedes, Toyota)

Those manufacturers, whose information is provided via Internet, have significantly lower prices. Due to the very inflexible purchase options on the website, Volkswagen shows the highest prices (EUR 193,-). The Volvo website can only be used on a minimum one week subscription base. Therefore the costs are also quite high (EUR 83,-). Because of the quarterly access fee of EUR 50,- and relatively expensive information units also the BMW information is costly (EUR 68,-). Renault calculates EUR 23,- with EUR 8,- for the technical repair information and EUR 8,- for the Electronic Parts Catalogue (EPC).

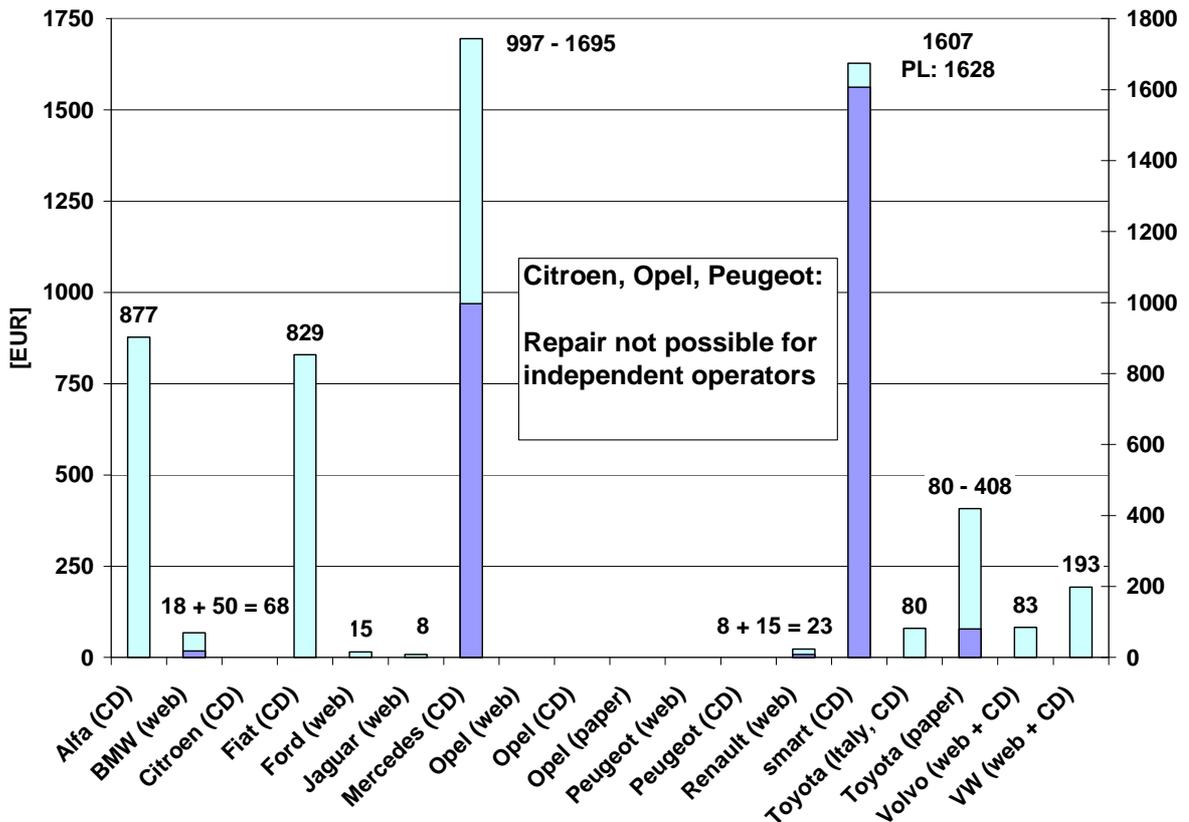


Fig. 15-3: Minimum prices for technical repair information in test case 1

Because of the relatively flexible purchase options Ford, Jaguar and Renault show the lowest prices. Based on the amount a customer shall pay in test case 1 these manufacturers are the only ones, for whom it is possible to perform test case 1 in an independent workshop and who offer their technical repair information for an acceptable price.

The minimal costs for test case 2 are displayed in Fig. 15-4. Test case 2 (maintenance and service) can be completed with all brands, but Ford and Renault do not provide service information in their Internet-based information system. Although the provision of service information was affirmed in the questionnaire, no such documents could be found in the Toyota repair documentation. Those figures have been put in brackets.

The price structure is nearly identical to test case 1. Assuming that that a customer pays an average price of EUR 245,- for a maintenance job¹⁸ only Ford, Jaguar, Opel (website or paper-on-demand), Peugeot and Renault show acceptable prices. For all other brands (Alfa/Fiat, BMW, Citroën, Mercedes/Smart, Toyota, Volvo and Volkswagen) the costs are not affordable for one certain job.

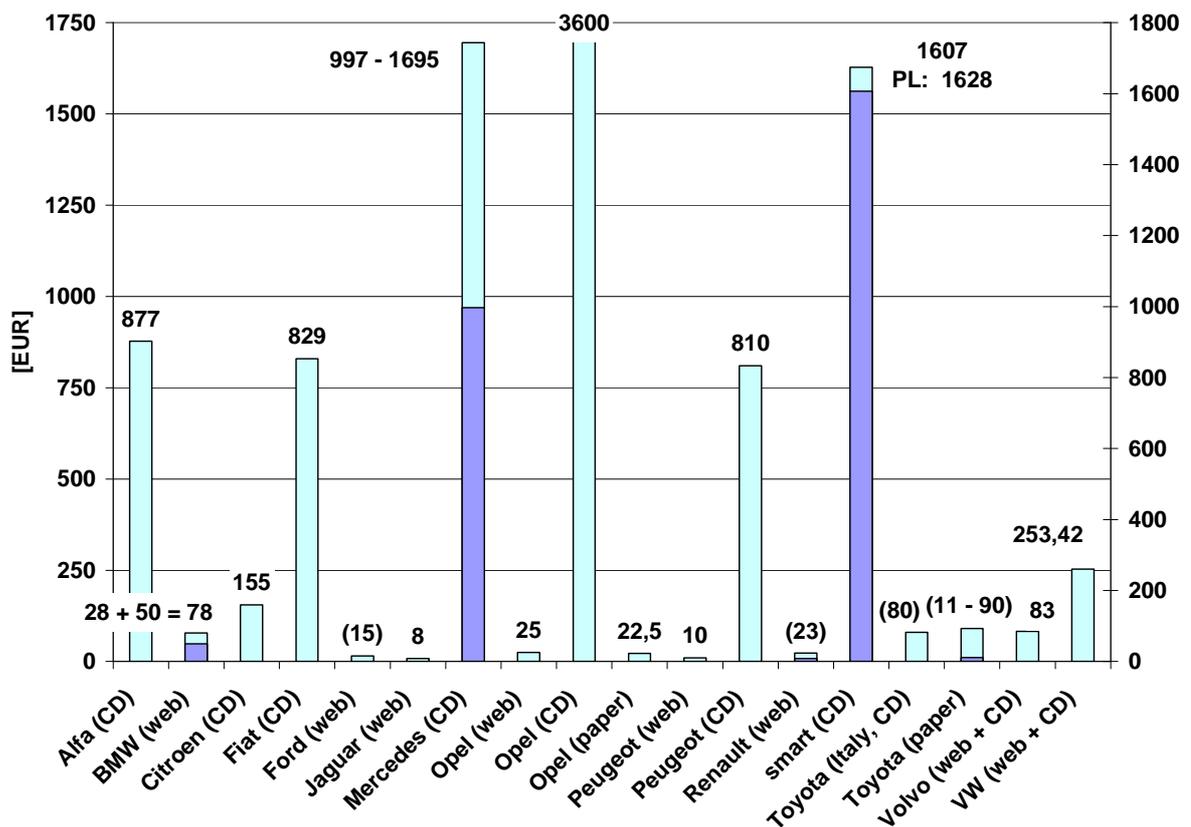


Fig. 15-4: Minimum prices for technical repair information in test case 2

¹⁸ Source: DAT Report 2004

15.1.3 Availability and prices for spare parts information

As described in Tab. 15-2 access to spare parts information is provided by the standard technical information system itself (Volvo, Peugeot and Citroën) or on a separate medium (all other manufacturers except Jaguar). In general, an Electronics Parts Catalogue (EPC) is offered on a separate CD for additional charges. The price range varies from free-of-charge, or included on the standard information medium, to EUR 421,- for the Mercedes, and EUR 147,-, plus annual costs of EUR 526,-, for Smart. Since some manufacturers provide this information for free, or at cost price, the offers of Mercedes/Smart, and in the future BMW, are not satisfactory for any group of independent operators. Peugeot only delivers this information in French and Jaguar does not provide any information at all. In contrast to the answers of the questionnaire, Opel's service centre replied that the CD is available for franchised partners only.

Company	Brand	Medium	Price
BMW	BMW	Separate website	Currently free of charge. Future: EUR 60,-/quarter
Fiat	Fiat/Alfa	Separate CD	EUR 65,-
Ford	Ford	Third-Party website	Free
Ford	Jaguar	Not available	-
Ford	Volvo	Standard website	Included
DC	Mercedes	Separate CD	EUR 421,-
DC	Smart	Separate CD	EUR 147,- + EUR 526,- annual
GM	Opel/Vauxhall	Separate CD	Not named (see text)
PSA	Citroën	Standard CD	Included (EUR 90,- if purchased separately)
PSA	Peugeot	Standard website	Included
Renault	Renault	Separate CD	Free
Toyota	Toyota	Separate CD	Not named
Volkswagen	Volkswagen	Separate CD	EUR 25,- per month

Tab. 15-2: Provision of spare parts information

Part distributors rely very much on spare part information to develop a cross-reference table from the parts they sell, to the spare parts sold by the vehicle manufacturer. From their point of view, a separate information medium (e.g. CD) without the necessity to buy any other repair information is favourable, but not provided by Volvo and Peugeot.

Besides from the part distributors, independent workshops need this kind of information. They are in favour of getting all necessary technical information on a single medium, which is fulfilled by Volvo, Citroën and Peugeot.

For automobile clubs, roadside assistance operators, operators offering inspection and testing services spare parts are of minor importance.

15.1.4 Scope of the information systems

The following six subchapters evaluate the scope and the content of the different information systems, which have been put in place for independent operators. The systems are designed with regard to the requirements of independent repairers, automobile clubs, roadside assistance operators and operators offering inspection and testing¹⁹. The analysis is based on vehicle identification options, search options, technical content, languages, usability and any differences to the systems of the authorised workshops.

15.1.4.1 Vehicle Identification

Since vehicles are delivered in different configurations and versions it is absolutely necessary to be able to identify a given vehicle in order to obtain the correct and relevant technical information. Therefore vehicle identification is not only important for repairers, but also for roadside assistance operators and operators offering inspection and testing. Such identification could be performed in different kind of ways. The best and easiest method to identify a vehicle is by using its vehicle identification number (VIN). Identification by VIN is possible within the systems of BMW, Ford, Mercedes/Smart, Peugeot (only CD, not Internet) Volvo and VW, but not for Fiat/Alfa, Jaguar and Renault. Toyota, who provides their technical information on paper, implemented an automatic identification by VIN on the Electronics Parts Catalogue (EPC). On the websites of Ford and Opel a VIN identification is implemented but does not work satisfying.

A second method to identify a vehicle is by using a selective list with several attributes (model, model year, engine, transmission, body style). Since this is the only way to identify a vehicle, which is not in the workshop, and therefore a vehicle identification number is not

¹⁹ Spare part distributors would also like to redistribute some of the manufacturer's repair information to independent repairers (enriched with additional information on the parts they sell), but in this context they are a sort of basic publisher and the evaluation in chapter 15.3 is also relevant for them.

known, this feature is also absolutely necessary. All manufacturers provide this method of identification.

With respect to vehicle identification by VIN, the requirements of the above named independent operators are not addressed by Fiat/Alfa, Jaguar, Renault and to some extent also not by Toyota, Ford and Opel.

The vehicle identification provided by Ford, Jaguar and Volkswagen is not able to definitely name all original spare parts of a given vehicle. This of course hampers the process of finding the correct spare parts.

15.1.4.2 Information Search

Different and efficient search criteria should be provided to find the necessary technical information. In this context the most important criteria are search by components and by systems (provided by all manufacturers)²⁰. An additional option, which is especially required by independent repairers and roadside assistance operators, is search by symptoms. This option, which could also be realised by a symptom chart, is important to identify faulty components and/or to detect faults, which could not be precisely described by the customer. Only BMW, Fiat/Alfa, Ford, Jaguar, Opel and Toyota provide fault identification by symptoms.

An efficient way is usually a full text search, where the user can search for specific words and phrases. Regarding the fact that vehicle manufacturers have their own vocabulary and use different terms for identical systems or components, the usability of a full text search is limited so far and a standard vocabulary or an automatic translator is necessary.

15.1.4.3 Content

The content or scope of technical information systems is substantial in many cases, but important information is missing from some manufacturers. Since maintenance and servicing are one of the main jobs in an independent repair shop, a lack in service information is hardly acceptable (Ford, Renault and Toyota). Body Repair shops rely on welding and body repair information. Fiat/Alfa and Toyota (Italy) do not provide welding instructions.

Other relevant documents are missing for Ford (operating fuels, DTC meanings), Citroën (emission-related information, diagnostic information) and Peugeot (DTC meanings, diagnostic information). DTC meanings and diagnostic information are also quite important for roadside assistance operators and operators offering inspection and testing services. Emission related information is also relevant for operators who offer inspection services.

²⁰ It depends also on the structure and the usability of the information system itself to evaluate whether the provided search criteria are sufficient (see chapter 15.1.4.5).

It is essential, that free operators get information on common faults, recall campaigns or technical bulletins (refer to updates of and supplements to the existing workshop manuals), because otherwise well-known issues and/or safety related problems of specific vehicles could not be adequately considered. No manufacturer delivers the same information to independent operators as to its authorised network at the same time. Apart from Jaguar and DaimlerChrysler (Mercedes and Smart) all vehicle manufacturers withhold information on recall campaigns, for instance. Fiat/Alfa, Ford, Opel and Citroën do not provide common faults, whereas technical bulletins are missing for Fiat/Alfa and Ford. Regarding these topics especially the information policy of Fiat/Alfa, Ford and Opel is insufficient from an independent operator's point of view.

15.1.4.4 Languages

Technical repair information is provided in different languages. Except for Toyota, whose manuals are only available in English and Italy (CD version), all other manufacturers provide their information at least in Dutch, English, French, German, Italian, Portuguese (except Jaguar), Swedish (except Fiat/Alfa and Jaguar) and Spanish. Therefore the largest European markets are covered.

15.1.4.5 Usability of the information systems

Apart from the quantity and quality of the technical content the usability of the information systems is quite different amongst certain manufacturers. In case of the Internet-based systems, a few manufacturers provide extensive websites (BMW, Ford, Jaguar, Volvo, Opel). But with regard to e.g. limited search capabilities, bad structured information and/or programming faults (e.g. Opel) it could be difficult and time consuming to find the relevant piece of information. Only Volvo developed a satisfying Internet solution.

For BMW the limited search capabilities and an insufficient description of search results in combination with the pay-per-view cost model make it on the one hand time consuming but on the other hand it is very costly to obtain the needed information. From an independent operators point of view such a pay-per-view cost model could only be an attractive option if it is possible to navigate directly to the relevant documents.

Especially with the websites of the French car manufacturers Peugeot and Renault it is, due to the rudimental structure and an unclear arrangement of topics and items, nearly impossible to find the relevant technical information. On Volkswagen's website the user can only buy complete PDF manuals for certain systems (e.g. engine) and procedures (maintenance). These documents are quite large and also costly, if only certain parts of the documents are needed. The data amount, which has to be downloaded for test case 1 and 2, is about 100 MB, whereas all other manufacturers, who use an Internet-based system, are

below 5 MB. In general this is not possible with a standard modem²¹, but a high-speed Internet connection is needed to obtain the necessary information in a reasonable period of time. Since such a high-speed network is generally not available in an independent workshop it is difficult to obtain all necessary information.

The usability of the CD based system is different. Fiat/Alfa provide separate CD's for each model. Again the structure can be confusing, but generally the information was found within a reasonable amount of time. Mercedes/Smart provide the same system as for the authorised repairers. The structure is practical and the usability of this system is good. Due to an illogical arrangement of documents and a rudimentary structure, the system of Citroën makes it quite difficult to find the necessary pieces of information. Toyota provides workshop books for different models, vehicle systems and other topics. Due to the good overview of such paper documentation and the reproducible structure, information can be found within a reasonable amount of time.

15.1.4.6 Differences between the systems of authorised and independent operators

Independent and authorised operators should have access to the same scope of technical repair information for comparable conditions. Volkswagen (different vehicle identification), BMW (different search criteria and display of search results) and Peugeot (no information concerning the diagnosis on the independent repairers website, whereas it exists on the authorised repairers site) show significant differences. As already described before, no manufacturer delivers the same information on common faults or recall campaigns to the independent operators.

15.1.5 Prices and capabilities for manufacturer specific tools

The evaluation of the capabilities and prices for special manufacturer specific tools is divided into two subchapters: an analysis of diagnostic tools and one subchapter for other special tools. For a better comparison of the different tool costs amongst certain manufacturers, the costs are investigated on basis of the two test cases, which are described in chapter 14.

15.1.5.1 Prices and capabilities of manufacturer specific diagnostic tools

For an increasing number of repairs special diagnostic tools are needed. Passenger Car manufacturers offer different diagnostic tools for independent operators. Due to the high prices, it is unlikely that a multi-brand workshop will purchase different manufacturer specific tools. For those workshops multi-brand diagnostic tools are needed.

²¹ Download would require several hours with a 46,6 kBit/s Internet connection.

Therefore the manufacturer’s tools are only useful for independent repair shops, which are specialised on a specific brand or for independent diagnostic tool manufacturers, who want to implement the functionalities in their multi-brand tools.

The top-level diagnostic tools vary in a price range from EUR 950,- to EUR 8.380,-²² with an average of EUR 5.000,- (see Fig. 15-5). Besides reading the fault code memory, these diagnosis tools usually provide profound repair information. The prices for the tools from DaimlerChrysler (EUR 15.000,-), Jaguar (EUR 13.864,-) Ford (EUR 11.172,-) and BMW (EUR 11.000,-) are outstanding and far above the prices for comparable brands for independent diagnosis tools.

Apart from Peugeot, Citroën and Volkswagen, the manufacturers offer their diagnostic tools for the same price to independent as to their own. The main diagnostic tool from Peugeot is not available for free operators. For them, Peugeot offers a reduced version with less functionalities and a price reduction of EUR 1.000,-. This tool is, for example, not able to reset the security system. PSA uses a similar policy for Citroën. The possibility to purchase a reduced and less expensive version is in favour of an independent operator, but the main diagnostic tool should also be available.

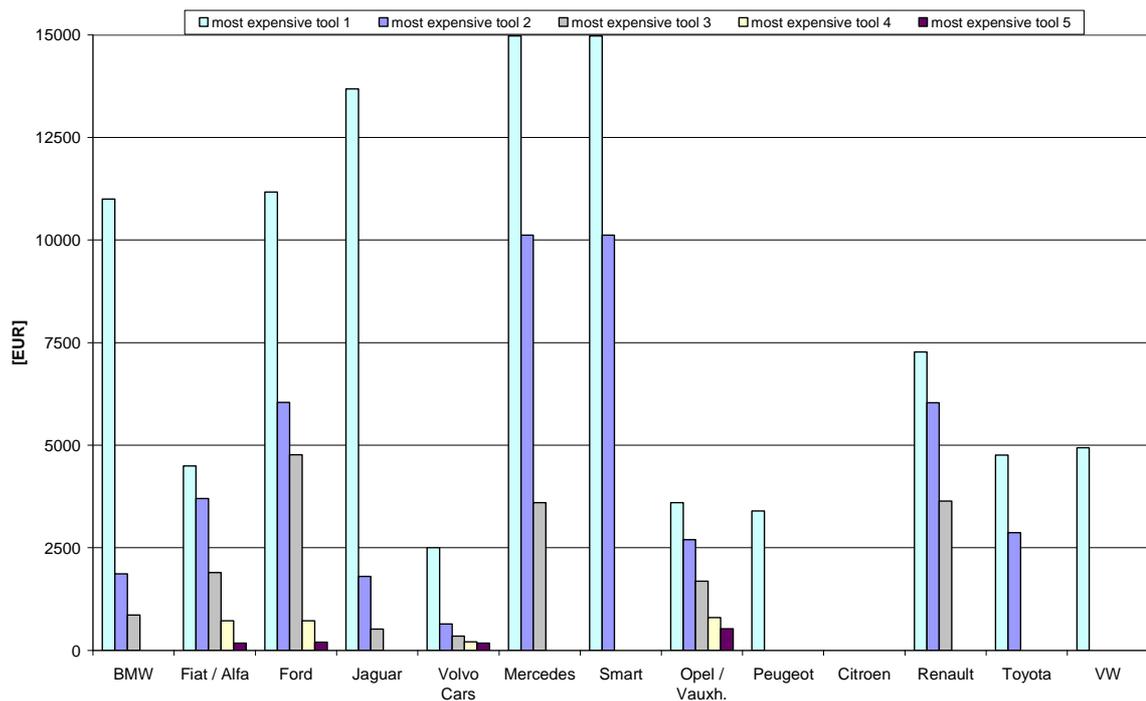


Fig. 15-5: Five most costly diagnosis tools

²² plus annual software and license costs

The Volkswagen tool for independent workshops is EUR 436,- more expensive because of a larger scope of delivery (additional diagnosis cable and compatibility to Internet system, different screen resolutions) and higher handling costs for the importer (set-up of the customer number and administration). It is questionable, whether the enlarged scope justifies a price increase of almost 10 %.

The possibility to provide operations to ECU's is a prerequisite for the independent operators to guarantee their competitiveness vis-à-vis the authorised network. Relevant procedures are software updating, variant coding, initialisation/reinitialisation and resetting of the security system²³. Assuming that an independent operator is able to afford expensive manufacturer specific diagnostic tools it is possible to execute the necessary ECU operations (apart from resetting the security system) with vehicles from BMW, Jaguar, Mercedes, Smart, Renault and VW (see Fig. 15-6)²⁴.

Whereas the Regulation stipulates that suppliers should be obliged to grant access to the technical information necessary for re-programming electronic devices in a motor vehicle, Fiat/Alfa (only variant coding and reinitialisation), Ford (no ECU operations), Volvo (no variant coding), Opel/Vauxhall (no ECU operations), Peugeot (no ECU operations), Citroën (no ECU operations) and Toyota (only re-programming and reinitialisation), either provide limited ECU operations or none of the necessary operations (see Fig. 15-6). For those manufacturers certain repairs could not be performed in an independent workshop.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.3.1	possibility to update software/reprog.	yes	no	no	yes	yes	yes	yes	no	no	no	yes	yes	yes
1.3.2	possibility variant coding	yes	yes	no	yes	no	yes	yes	no	no	no	yes	no	yes
1.3.3	possibility initialisation/reinit.	yes	yes	no	yes	yes	yes	yes	no	no	no	yes	yes	yes
1.3.4	possibility pass-through programming	yes	no	no	no	yes	no	no	no	no	no	no	no	no
1.3.5	possibility reset security systems	no	no	no	yes	yes	no	no	no	no	no	yes	no	yes

Fig. 15-6: Possible ECU operations

As one exception to the general rule it is legitimate and proper for a manufacturer to withhold access to technical information, which might allow a third party to bypass or disarm on-board anti-theft devices. However, other possibilities exist, which allow resetting the security

²³ For a description of the relevant operations see chapter 6.2

²⁴ Based on the answers given in the questionnaire.

system without allowing a third party to “crack” anti-theft devices. The facility “Pass-Through Programming” is one of these devices, which is able to program manufacturer specific electronic control modules, using a standard PC connected to the Internet. Free operators are in favour of this approach. Only Volvo and BMW have this tool.

15.1.5.2 Prices of manufacturer specific special tools (excluding diagnostic tools)

In order to clarify, at what price the independent operators have to purchase special tools (excluding diagnosis tools) to perform an appropriate repair, the vehicle manufacturers have been asked to deliver specific information on the workshop equipment in use. As the five most used special tools the manufacturers mostly enumerate releasing tools, gauges, removers, alignment kits or tensioning devices. The majority of the mentioned special tools vary in a reasonable price range from EUR 150,- to EUR 500,-. The prices for some special tools from Fiat/Alfa, Jaguar, Peugeot, Citroën, Renault, Toyota and VW are above average. Toyota indicates a price of EUR 4.548,- for a so-called “MAD kit” and a price of EUR 3.000,- for a brake disk grinding. An independent operator cannot raise these funds.

Furthermore, the vehicle manufacturers have been asked to enumerate the five most expensive special tools. Mercedes (EUR 4.284,-) and Toyota (EUR 4.518,-) have the most expensive special tools in use. The most expensive special tools from Volvo, Ford and Opel/Vauxhall can be purchased under EUR 500,-. For the other manufacturers, the price for the most expensive special tool varies in a range from EUR 809,89 (VW) and EUR 2.235,- (Citroën).

15.1.5.3 Test cases

Based on the two test cases, which are described in chapter 14 the necessary special tool costs have been acquired. Test case 1 describes the replacement of an engine ECU whereas test case 2 asks for the technical information in order to perform a standard maintenance or service job.

The minimum tool costs are nearly identical for test case 1 and 2 (see Fig. 15-7). Only BMW (1: EUR 850,- / 2: EUR 890,-), Renault (1: EUR 3.674,- / 2: EUR 3.667,-) and Volvo (1: EUR 3.910,- / 2: EUR 1.710,-) have different prices. As already described before, the replacement of an engine ECU is not possible for an independent operator on a Citroën, Opel or Peugeot. For those manufacturers the minimum tool costs are shown for test case 2 only.

In general a diagnostic scan tool is needed and therefore these costs are quite high. Ford, Jaguar, Smart and Volkswagen sell the most expensive tools. BMW provides a Pass-Through Programming tool, which is connected to the Internet. Here, an expensive manufacturer specific diagnostic tool is not needed. Volvo does not have a dedicated diagnostic scan tool or DTC reader, but only the integrated solution called VADIS. VADIS integrates the possibility to read all information for repair, including diagnostics and parts catalogue. This application is only sold on DVD (EUR 600,-). There is a need to connect the

vehicle with the PC to be able to do diagnostics with VADIS. This is done with special interface VCT2000 and cables (EUR 1.050,-). For test case 1 Volvo's ECU needs to be added with functional software and reinitialisation of the vehicle. This requires an online software downloading program connected to the Internet. This application is called WSDA (Web software Downloading Application; EUR 2.200,- annual) and is responsible for the difference between test case 1 and 2.

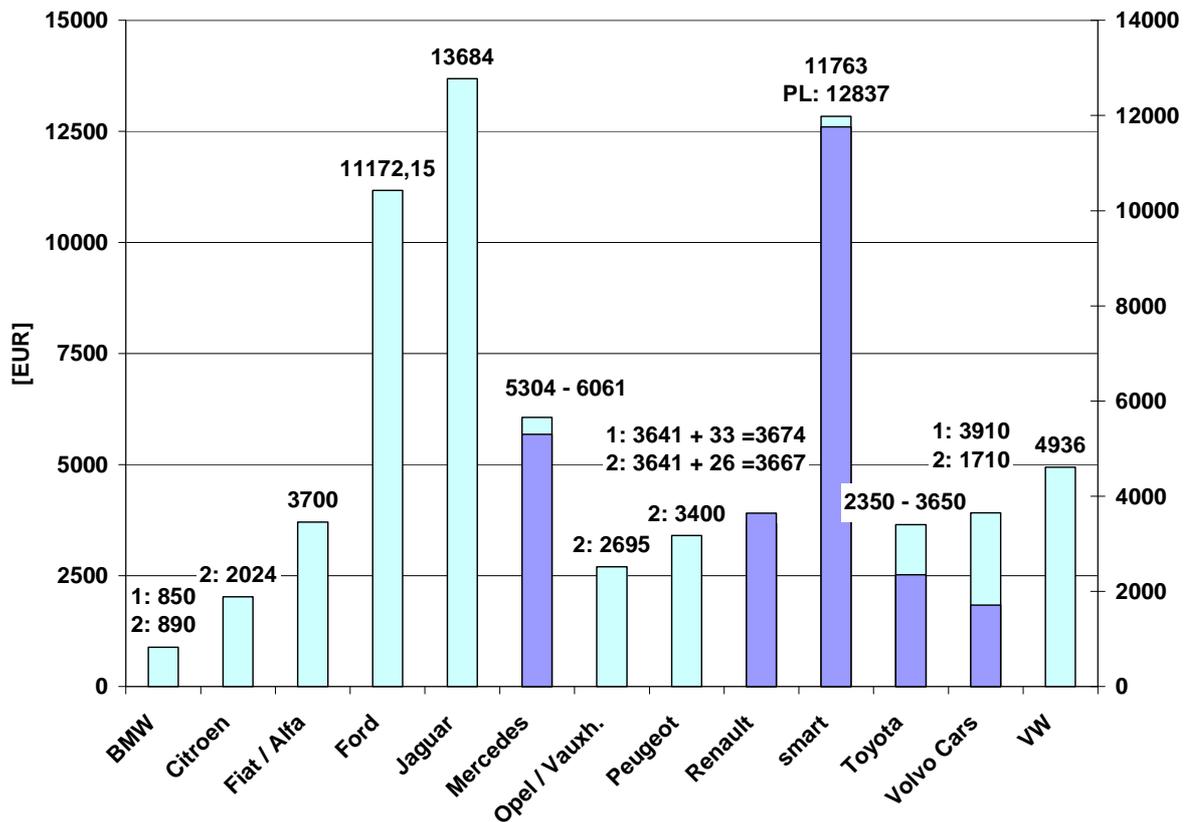


Fig. 15-7: Minimum tool costs in test case 1 and 2

In analogy to the technical information costs, again Mercedes and Toyota have different prices for different countries. Toyota explains that the differences result from differences in the software content of the tester (e.g. different measurement possibilities depending on market conditions, local translation). Mercedes does not name any reason.

It is a prerequisite that free operators can buy diagnostic tools for a fair price, but for multi-brand repairers the purchase of several manufacturer specific tools is not affordable. Only the BMW option with a communication to the diagnostic information system (DIS), by using a special hardware interface, is an interesting solution. If such a tool can be used to communicate with systems of other manufacturers, the costs of EUR 850,- (plus additional download costs) are a favourable option.

Country	DK	F	GER	IRE	I	NL	PL	UK
Mercedes	5837,-	5482,-	5304,-	6061,-	5544,-	5304,-	5572,-	5388,-
Toyota	2870,-	3650,-	3164,-	2800,-	2350,-	2350,-	2380,-	3149,-

Tab. 15-3: Minimum tool prices in test case 1 and 2 (Mercedes (partly estimated), Toyota)

With respect to the above-described prices, the strong need for multi-brand diagnostic tools is obvious. If independent repairers should be able to work in a competitive environment it is essential that diagnostic tool manufacturers get sufficient information to produce multi-brand or universal scan tools.

15.1.6 Training information

All manufacturers provide the same classroom training for independent operators at the same price as for authorised operators. Apart from Fiat/Alfa, Ford Volvo and Toyota, they also offer remote training programmes on CD/DVD or via Internet. The prices for an external training on engine management vary in a price range from EUR 71,- to EUR 500,-.

In contrast to conditions for independent operators, Toyota reimburses technical training costs in case of successful completion and certification of Toyota's specific qualification scheme to their authorised repairers.

15.2 Evaluation for Manufacturers of Repair Equipment or Tools

According to the New Block Exemption Regulation, it must be possible for independent operators to check all electronic vehicle components. For an independent operator it is rather impossible to purchase all manufacturer specific tools. Therefore, there is a need for diagnostic tools, which covers more than one vehicle manufacturer.

All manufacturers have been asked for the arrangements, to enable diagnostic tool manufacturers to produce devices with the same functions as the manufacturer's ones. Apart from Ford and Volvo, no manufacturer has covered 100% of the vehicles concerning the necessary information. The information from Renault (20% for one specific vehicle produced since 2002) and Toyota (70%) are not complete. The rest delivers no special information.

The vehicle manufacturers have also been asked, if they provide information to enable tool manufacturers to install test procedures for specific cars in their tools. Only Jaguar, Volvo, Renault and Toyota do so. Volvo attests to deliver the required information, although they do not offer special information to diagnostic tool manufacturers. This could mean, that Volvo provides the information together with their "regular" information to independent operators. No vehicle manufacturer has answered, if the independent diagnostic tool manufacturers get information at the same time as licensed providers.

It is a prerequisite, that independent diagnostic tool manufacturers get information comparable to ISO 15031 to all electronic vehicle components to manufacture brand independent diagnostic tools. No vehicle manufacturer provides all the necessary protocol information. However, Volvo and Renault indicate to deliver the majority of the required information (see Fig. 15-8).

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
2.3.1	prov. any add. protocol not covered by ISO 15031	no	no	no	no	yes	no	no	no	n/a	n/a	yes	no	no
2.3.2	prov. inf. on fault code reading/interpretation	no	no	no	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.3	prov. live data parameter incl scale inf.	no	no	no	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.4	prov. inf. on funct. tests incl device act./control	no	no	no	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.5	prov. details how to obtain component/status inf.	no	no	no	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.6	prov. inf. on reset./adapt. learns/variant coding	no	no	no	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.7	prov. inf. on ECU identification & variant coding	no	no	no	no	yes	no	no	no	n/a	n/a	yes	no	no
2.3.8	prov. access to sec. codes req. for rep.funct.	no	no	no	no	no	no	no	no	n/a	n/a	no	yes	no
2.3.9	prov. inf. how to re-set service lights	no	no	yes	no	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.10	prov. inf. on diagn. connector details	yes	no	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.3.11	prov. inf. for unambiguous veh. identification	no	no	no	no	yes	no	no	no	n/a	n/a	yes	no	no

Fig. 15-8: Communication protocol information

GEA states that the position has deteriorated for independent tool manufacturers, since the introduction of the BER and recent technology changes. Before the BER diagnostic tool manufacturers had a number of arrangements with vehicle manufactures, where they were effectively treated as a dealer and received the same technical literature a dealer received, often free of charge or at least at the standard deal charge rate. Since BER, and often coinciding with a change of technology for data transfer, they have been moved to the status of an 'independent repairer' and just given a reference to the independent repairers web site whenever they ask for information. More detailed requests seem to be blocked by the vehicle manufacturer's legal departments.

It seems the BER has had the dual effect of expediting a change in technology on information transfer and giving the VM the opportunity to move independent tool manufacturers to the new 'independent repairers' information. The change of technology has

also coincided with the increase in technology on vehicles, which means that information on Communication Protocols and Component Test information is increasingly important. Unfortunately, this is the exact information, which is not present from the new information channels with the VM's, adopting the position, that this information is embodied in their own vehicle specific tools, and that this is the only way to obtain this information.

Whilst purchasing these tools is cost effective for a franchised dealer dealing with only one make, it is a prohibitive route for independent workshops and roadside assistance organisations, and does not provide the independent tool manufacturers with the required information.

15.3 Evaluation for Publishers of Technical Information and Operators offering Training for Repairers

The New Block Exemption Regulation calls for the supply of fair and indiscriminate information for the independent publishers. Besides publishers, spare part distributors, who would like to redistribute repair information to their customers, are sort of a very basic publisher of technical information.

Whereas in general, the provided answers, according to publishers, show quite satisfying measurements, from the manufacturers to feed independent publishers, Fiat/Alfa, Jaguar and Volvo do not offer any special information to them. For these manufacturers, the information is provided together with the information relevant to the other independent operators. Most other manufacturers have answered, that the information is available one month before or at the same time as start of sales.

This is rather contradictive to statements from representatives of publishing companies. According to them, there are some vehicle manufacturers, which have stopped to supply information to publishers at the end of October 2003, and have still not presented conditions or terms to continue. This means a worsening of the situation for the independent publishers²⁵.

²⁵ For further information see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** (Appendix)

16 Synopsis for each Passenger Car Manufacturer

The following subchapters provide a synopsis and comprehensive presentation for each passenger car manufacturer. The different criteria only reflect a technical and commercial evaluation, based on chapter 15. These criteria are not those, which would be used to evaluate whether the systems put in place by the manufacturers comply with the competition rules.

The positive (+) and negative (-) sides of the systems, used to make the information and tools available, are listed for each manufacturer separately.

16.1 BMW

16.1.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (Internet).
- Long registration process (48 – 72 hours), but a registration in advance is prohibited by a basic access fee of EUR 180,- annual.
- Minimum subscription period 12 months (if registration is terminated during a current quarter, fees paid in advance for subsequent quarters will be refunded on a pro-rata basis).

2. Price for technical repair information

- The pay-per-view cost model is an attractive option to only pay for the information, which is required for a certain repair. On the other hand, the website should support a direct navigation to the relevant information. If it is not possible to find a document immediately, each “wrong” page will be charged separately.
- Basic fee of EUR 180,- EUR annual. Information units have to be paid separately.
- Information units too expensive.²⁶

²⁶ See evaluation of test case 1 and 2.

3. Availability and prices for spare part information

- + Information on a separate website is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information website.
- Currently free of charge, but EUR 60,- per quarter in the future.

4. Scope of the information system

- + Vehicle identification by VIN.
- + Availability of symptom charts.
- + Comprehensive technical information.
- + Availability of job times.
- + Sufficient languages.
- + Information on common faults.
- No description of search results. Especially with the pay-per-view model this leads to additional costs, if the user displays “wrong” documents. Therefore only moderate usability.
- Search results list contains documents, which are not within the identified model range.
- Search criteria and display of search results are different for authorised and independent operators. Authorised repairer can search for specific data without specifying with VIN, model, E-series or date of manufacturing.

5. Prices and capabilities of manufacturer specific tools.

- + Independent operators pay the same price for diagnostic tools as authorised operators.
- + The diagnostic tools enable the majority of the required ECU operations.
 - o The most used manufacturer specific tools are available for average prices.
 - o The diagnostic tools are available for average prices.

6. Training information.

- + BMW provides the same classroom training for independent operators at the same price as for authorised operators.
- + BMW provides the same remote training for independent operators at the same price as for authorised operators.

16.1.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment tools is not provided.
- Test and diagnosis information is fragmentary.
- Protocol information does not exist.

16.1.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + BMW provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- There are no packages (e.g. for models, technical operations or published exemplars) available.
- The publishers of technical information and operators offering training for repairers get the information too late

16.2 Fiat / Alfa

16.2.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + Availability of information packages for single models.
- Information provision through different media (40 % CD, 60 % paper).
- 30 days delivery time. No immediate access possible.
- No small or custom-tailored information packages available.

2. Price for technical repair information

- Expensive minimum price (EUR 243,-).
- Expensive one-year subscription price (EUR 3.500,- for Italy)
- Expensive prices in test case 1 & 2 (EUR 829,-)

3. Availability and prices for spare part information

- + Information on a separate CD is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information CD.

- Price for CD: EUR 65,-
4. Scope of the information system
- + Availability of symptom charts.
 - + Availability of job times.
 - + Sufficient languages.
 - Ordinary usability.
 - No vehicle identification by VIN.
 - No service information.
 - No welding instructions (-> body repair shops)
 - No information on recalls and common faults.
5. Prices and capabilities of manufacturer specific tools.
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The prices of the diagnostic tools are under average.
 - The diagnostic tools only enable some of the required ECU operations.
 - The prices of the most used manufacturer are above average.
6. Training information.
- + Fiat/Alfa provides the same classroom training for independent operators at the same price as for authorised operators.
 - Remote training is not provided.

16.2.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Test and diagnosis information is not complete.
- Special information for manufacturers of repair equipment tools is not provided.
- Protocol information does not exist.

16.2.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- Fiat/Alfa does not provide special information for publishers of technical information and operators offering training for repairers.

16.3 Ford

16.3.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (Internet).
- + Immediate access.
- + Payment by access time.
- No registration costs, but advance payment of EUR 50,- required.

2. Price for technical repair information

- + Acceptable minimum price (EUR 15,-)
- + Acceptable prices in test case 1 & 2 (EUR 15,-)
- Expensive one-year subscription price (EUR 2.600,-)

3. Availability and prices for spare part information

- + Information on a separate website is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information website.
- + Spare part information free of charge.

4. Scope of the information system

- + Availability of symptom charts.
- + Sufficient languages.
 - o Ordinary usability.
- Vehicle identification by VIN is not working satisfactory.
- No precise spare parts identification of a given vehicle.
- No service information.
- No operating fuels information.
- No DTC meanings.
- No information on recalls and common faults.
- Website displays no special tool information with German language settings.

5. Prices and capabilities of manufacturer specific tools
 - + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The most used manufacturer specific tools have prices under average.
 - o The diagnostic tools are available at average prices.
 - The diagnostic tools enable none of the required ECU operations.

6. Training information
 - + Ford provides the same classroom training for independent operators at the same price as for authorised operators.
 - Remote training is not provided.

16.3.2 Synopsis for Manufacturers of Repair Equipment or Tools

- + Special information for manufacturers of repair equipment exists for 100% of the vehicles produced within the last 10 years.
- Test and diagnosis information do not exist.
- Only one of the required protocols Information is available.

16.3.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + Ford provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- + Information packages (e.g. for models, technical operations or published exemplars) are available.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.4 Jaguar

16.4.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access
 - + All technical repair information on one medium (Internet).
 - + No registration costs.

- + Immediate access.
 - + Payment by access time with different time periods.
2. Price for technical repair information
- + Adequate minimum price (EUR 8,-)
 - + Adequate prices in test case 1 & 2 (EUR 8,-)
 - + Adequate one-year subscription price (EUR 990,-)
3. Availability and prices for spare part information
- No spare part information available.
4. Scope of the information system
- + Availability of symptom charts.
 - + Information on recalls and common faults.
 - + Sufficient languages.
 - o Ordinary usability.
 - No Vehicle identification by VIN.
 - No precise spare parts identification of a given vehicle.
 - No information on resetting maintenance indicator.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools enable the majority of the required ECU operations.
 - The most used manufacturer specific tools have prices above average.
 - The diagnostic tools have prices above average.
6. Training information.
- + Jaguar provides the same classroom training for independent operators at the same price as for authorised operators.
 - + Jaguar provides the same remote training for independent operators at the same price as for authorised operators.

16.4.2 Synopsis for Manufacturers of Repair Equipment or Tools

- + Special information for manufacturers of repair equipment exists for 100% of the vehicles produced within the last 10 years.
- + Jaguar provides all the required test and diagnosis information.
- Only one of the required protocols Information is available.

16.4.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- Jaguar does not provide special information for publishers of technical information and operators offering training for repairers.

16.5 Volvo

16.5.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (Internet).
- + No registration costs.
- Long registration process (max. 48 hours)
- Payment by access time with a minimum period of one week.

2. Price for technical repair information

- Expensive minimum price (EUR 83,-)
- Expensive prices in test case 1 & 2 (EUR 83,-)
- Expensive one-year subscription price (EUR 2.200,-)

3. Availability and prices for spare part information

- + Information on standard website without additional costs for registered users.
- No separate medium for spare part distributors.

4. Scope of the information system

- + Vehicle identification by VIN.
- + Comprehensive search criteria.
- + Comprehensive technical information.

- + Sufficient languages.
 - + Advanced and well structured website.
 - + Information on common faults.
 - No information on recalls.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools enable the majority of the required ECU operations.
 - + The most used manufacturer specific tools have prices under average.
 - The diagnostic tools have prices above average.
6. Training information
- + Volvo provides the same classroom training for independent operators at the same price as for authorised operators.
 - Remote training is not provided.

16.5.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- + Volvo provides all the required diagnosis information.
- + Apart from information on access to the security system, all the required information on protocols available.

16.5.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- Volvo does not provide special information for publishers of technical information and operators offering training for repairers.

16.6 Mercedes / Smart

16.6.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access
- + All technical repair information on one medium (CD).

- Several days delivery time. No immediate access possible.
 - No small or custom-tailored information packages available.
2. Price for technical repair information
- + Adequate one-year subscription price
(Mercedes EUR 967,- - 1.274,-; Smart EUR 934,- – 955,-).
 - Expensive minimum price (Mercedes EUR 967,- - 1274,-; Smart EUR 934,- – 955,-).
 - Expensive prices in test case 1 & 2
(Mercedes EUR 967,- - 1.274,-; Smart EUR 934,- – 955,-).
 - Different prices in different countries.
3. Availability and prices for spare part information
- + Information on a separate CD is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information CD.
 - Price for CD: Mercedes EUR 421,-; Smart: EUR 147,- plus EUR 526,- annual
4. Scope of the information system
- + Vehicle identification by VIN.
 - + Job times available.
 - + Comprehensive search criteria.
 - + Comprehensive technical information.
 - + Sufficient languages.
 - + Advanced and well-structured CD.
 - + Information on recalls and common faults.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools enable the majority of the required ECU operations.
 - + The most used manufacturer specific tools have prices under average.
 - The diagnostic tools have prices above average.

6. Training information.

- + DaimlerChrysler provides the same classroom training for independent operators at the same price as for authorised operators.
- + DaimlerChrysler provides the same remote training for independent operators at the same price as for authorised operators.

16.6.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- Test and diagnosis information are not provided.
- Protocol information is not provided.

16.6.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + DaimlerChrysler provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- + Information packages (e.g. for models, technical operations or published exemplars) are available for Mercedes.
- Information packages (e.g. for models, technical operations or published exemplars) are not available for Smart.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.7 Opel / Vauxhall

16.7.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (Internet).
- + Immediate access.
- + Payment by access time with different time periods.
- + No registration costs.

- + Possibility to order hardcopy PDF's for individual model repair / technical information extracts by paper fax copy. Independent operators can order a maximum of 15 pages for a price 15,- plus 0,50 EUR per page requested.
 - Only four registered users to the website.
2. Price for technical repair information
- + Reasonable minimum price (EUR 25,-)
 - + Reasonable prices in test case 1 & 2 (EUR 25,-)
 - + Expensive one-year subscription price (EUR 3.600,-)
3. Availability and prices for spare part information
- + Information on a separate CD is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information website.
 - In contrast to the answers to the questionnaire Opel's service centre replied that the CD is available for franchised partners only.
4. Scope of the information system
- + Comprehensive technical information.
 - + Sufficient languages.
 - o Ordinary usability, but several programming faults on the website.
 - Vehicle identification by VIN is not working satisfactory.
 - No information on recalls and common faults.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools have prices under average.
 - + The most used manufacturer specific tools have prices under average.
 - The diagnostic tools enable none of the required ECU operations.
6. Training information.
- + Opel/Vauxhall provides the same classroom training for independent operators at the same price as for authorised operators.
 - + Opel/Vauxhall provides the same remote training for independent operators at the same price as for authorised operators.

16.7.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- Test and diagnosis information are not provided.
- Protocol information is not provided.

16.7.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + Opel/Vauxhall provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- + Information packages (e.g. for models, technical operations or published exemplars) are available.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.8 Citroën

16.8.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (CD).
- + Availability of information packages for single models.
- + Possibility to subscribe for specific documents by assigning an access key to allow local look up.
- 60 days delivery time. No immediate access possible.
- No small or custom-tailored information packages available.

2. Price for technical repair information

- Expensive minimum price (EUR 150,-).
- Reasonable one-year subscription price (EUR 1.975,-)
- Expensive prices in test case 2 (EUR 150,-)

3. Availability and prices for spare part information

- + Information on a separate CD is favourable for spare part distributors.

- + Information also on standard CD without additional costs for registered users.
 - o Price for separate CD: EUR 90,-
4. Scope of the information system
- + Vehicle identification by VIN.
 - + Availability of job times.
 - + Sufficient languages.
 - Rudimental CD-based system does not fulfil the needs and requirements of an independent workshop. Unclear and confusing arrangement of information. Difficult to find the relevant piece of information.
 - No emission-related information.
 - No diagnostic information.
 - No information on recalls and common faults.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - o The diagnostic tools have average prices.
 - The most used manufacturer specific tools have prices above average.
 - The diagnostic tools enable none of the required ECU operations.
6. Training information.
- + Citroën provides the same classroom training for independent operators at the same price as for authorised operators.
 - + Citroën provides the same remote training for independent operators at the same price as for authorised operators.

16.8.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- Test and diagnosis information are not provided.
- Protocol information is not provided.

16.8.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + Information packages (e.g. for models, technical operations or published exemplars) are available.
- o Citroën provides only for 70% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.9 Peugeot

16.9.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + No registration costs.
- + Immediate access via website.
- + Payment by access time with different time periods.
- Information provision through different media (75 % Internet/CD, 25 % paper).
- 15 - 45 days delivery time for CD and paper.

2. Price for technical repair information

- + Adequate minimum price (EUR 10,-)
- + Adequate price in test case 2 (EUR 10,-)
- + Expensive one-year subscription price (EUR 2.500,-)

3. Availability and prices for spare part information

- + Information on standard website without additional costs for registered users.
- No separate medium for spare part distributors.
- Spare part information only in French.

4. Scope of the information system

- + Availability of job times.
- + Sufficient languages.

- + Information on common faults.
 - o Vehicle identification by VIN only on CD.
 - Limited search options.
 - Different models only on paper.
 - No information on DTC meanings.
 - Simple and insufficient website does not fulfil the needs and requirements of an independent workshop. Unclear and confusing arrangement of information. Very difficult or nearly impossible to find the relevant piece of information.
 - No diagnostic information.
 - No information on recalls.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - o The diagnostic tools have average prices.
 - The most used manufacturer specific tools have prices above average.
 - The diagnostic tools enable none of the required ECU operations.
6. Training information.
- + Peugeot provides the same classroom training for independent operators at the same price as for authorised operators.
 - + Peugeot provides the same remote training for independent operators at the same price as for authorised operators.

16.9.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- Test and diagnosis information are not provided.
- Protocol information is not provided.

16.9.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + Information packages (e.g. for models, technical operations or published exemplars) are available.

- o Peugeot provides only for 75% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.10 Renault

16.10.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + No registration costs.
- + Immediate access via website.
- + Payment by access time with different time periods.
- Information provision through different media (50 % Internet, 30 % CD, 20 % paper).
- No immediate access for CD and paper based information.

2. Price for technical repair information

- + Adequate minimum price (EUR 8,-)
- + Reasonable price in test case 1 & 2 (EUR 23,-)
- + Reasonable one-year subscription price without wiring (EUR 1.500,- / with wiring: EUR 3.000,-)

3. Availability and prices for spare part information

- + Information on a separate CD and separate website is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information CD.
- + No additional costs.

4. Scope of the information system

- + Sufficient languages.
- + Information on common faults.
- No Vehicle identification by VIN.
- Limited search options.

- Parts of important technical repair information only on paper (e.g. settings, tightening torques, DTC identification). Only the latest Laguna and Megane information are completely available via Internet
 - Service information on paper only. No information on resetting of maintenance indicator.
 - Simple and insufficient website does not fulfil the needs and requirements of an independent workshop. Unclear and confusing arrangement of information. Very difficult or nearly impossible to find the relevant piece of information.
 - No information on recalls.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools enable the majority of the required ECU operations.
 - o The diagnostic tools have average prices.
 - The most used manufacturer specific tools have prices above average.
6. Training information
- + Renault provides the same classroom training for independent operators at the same price as for authorised operators.
 - + Renault provides the same remote training for independent operators at the same price as for authorised operators.

16.10.2 Synopsis for Manufacturers of Repair Equipment or Tools

- + All the required diagnosis information is provided.
- + Apart from information on access to the security system, all the required information on protocols is available.
- Special information for manufacturers of repair equipment only exists for 20% of the vehicles produced within the last 10 years.

16.10.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + Renault provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- Information packages (e.g. for models, technical operations or published exemplars) are not available.

- The publishers of technical information and operators offering training for repairers get the information too late.

16.11 Toyota

16.11.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access

- + All technical repair information on one medium (paper).
- + Availability of information packages for single models.
- + Paper-on-demand option in UK.
- < 15 days delivery time. No immediate access possible.
- No small or custom-tailored information packages available.

2. Price for technical repair information

- Reasonable minimum price (EUR 11,- - 90,-).
- Expensive prices for complete service literature of one model.
- Expensive prices in test case 1 & 2 (EUR 80,- - 408,-)

3. Availability and prices for spare part information

- + Information on a separate CD is favourable for spare part distributors.

4. Scope of the information system

- + Availability of symptom charts.
- + "New Car Features" manual for new models.
- + Availability of job times.
- Information only in English.
- + Information on common faults.
- Vehicle identification by VIN only on spare parts CD.
- No service information (only in Italy)
- No information on recalls.

5. Prices and capabilities of manufacturer specific tools
 - + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools have prices under average.
 - o The diagnostic tools only enable some of the required ECU operations.
 - The most used manufacturer specific tools have prices above average.
6. Training information.
 - + Toyota provides the same classroom training for independent operators at the same price as for authorised operators.
 - Remote training is not been provided.

16.11.2 Synopsis for Manufacturers of Repair Equipment or Tools

- + All the required test and diagnosis information are provided
- o Special information for manufacturers of repair equipment only exists for 70% of the vehicles produced within the last 10 years.
- o The provided protocol information is not complete.

16.11.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- o Toyota only provides for 70% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- Information packages (e.g. for models, technical operations or published exemplars) are not available.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.12 Volkswagen

16.12.1 Synopsis for Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing services and Spare Part Distributors

1. Registration and access
 - + All technical repair information on one medium (Internet).

- + Immediate access.
 - Only subscription for complete manuals with all information for a specific system or model (prices between EUR 4,60 and 107,40 per document). Some manuals refer to other documentation, which has to be purchased separately.
 - Download of complete PDF workshop manuals leads to huge data amounts.
 - No small or custom-tailored information packages available.
2. Price for technical repair information
- + Rebate system with discounts from 10 – 30 % dependent on the ordered quantity.
 - o Reasonable minimum prices (EUR 4,- - 107,-).
 - Expensive prices in test case 1 & 2 (EUR 193,- & EUR 253,-)
3. Availability and prices for spare part information
- + Information on a separate CD is favourable for spare part distributors, but for an independent repairer this information should also be implemented or directly accessible from the technical information website.
4. Scope of the information system
- + Vehicle identification by VIN
 - + Availability of job times.
 - + Sufficient languages.
 - + Comprehensive technical information.
 - + Information on common faults.
 - o Ordinary usability.
 - Time consuming vehicle identification.
 - No precise spare parts identification of a given vehicle.
 - Limited search options. Direct search mode is only available for Authorised repairers.
 - No information on recalls.
5. Prices and capabilities of manufacturer specific tools
- + Independent operators pay the same price for diagnostic tools as authorised operators.
 - + The diagnostic tools have prices under average.
 - + The diagnostic tools enable the majority of the required ECU operations.

- + The most used manufacturer specific tools have average prices.

6. Training information.

- + VW provides the same classroom training for independent operators at the same price as for authorised operators.
- + VW provides the same remote training for independent operators at the same price as for authorised operators.

16.12.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Special information for manufacturers of repair equipment does not exist.
- Test and diagnosis information are not provided.
- Protocol information is not provided.

16.12.3 Synopsis for Publishers of Technical Information and Operators offering Training for Repairers

- + VW provides for 100% of the vehicles produced within the last 10 years special information for publishers of technical information and operators offering training for repairers.
- Information packages (e.g. for models, technical operations or published exemplars) are not available.
- The publishers of technical information and operators offering training for repairers get the information too late.

16.13 Overview Passenger Car Manufacturers

Based on the above-described results a matrix is developed, which provides a summarising assessment to each manufacturer's system with regard to the different topics.

16.13.1 Independent repairers, automobile clubs, roadside assistance operators, operators offering inspection and testing services and spare part distributors

	BMW	Fiat /Alfa	Ford	Jaguar	Volvo	Mercedes / Smart	Opel / Vauxhall	Citroen	Peugeot	Renault	Toyota	Volkswagen
Quality and usability of the media	0	0	0	0	+	+	0	--	--	--	0	0
Quantity of information made accessible	+	-	-	+	+	+	0	-	-	-	0	+
Registration and Access Conditions	-	--	+	+	0	--	+	-	+	+	--	0
Price for the technical information	-	-	+	+	0	--	0	-	+	+	-	-
Capabilities manufacturer specific (scan) tools	+	0	--	+	0	0	--	--	--	+	0	+
Prices of manufacturer specific tools	0	+	+	--	0	0	+	-	-	-	-	+

Legend: ++: excellent +: good 0: average -: below average --: poor

Tab. 16-1: Assessment manufacturer systems

16.13.2 Manufacturers of repair equipment or tools

	BMW	Fiat /Alfa	Ford	Jaguar	Volvo	Mercedes / Smart	Opel / Vauxhall	Citroen	Peugeot	Renault	Toyota	Volkswagen
Information for tool manufacturers	--	-	0	+	0	--	--	--	--	+	0	--

Legend: ++: excellent +: good 0: average -: below average --: poor

Tab. 16-2: Assessment manufacturer systems

16.13.3 Publishers of technical information and operators offering training for repairers

	BMW	Fiat /Alfa	Ford	Jaguar	Volvo	Mercedes / Smart	Opel / Vauxhall	Citroen	Peugeot	Renault	Toyota	Volkswagen
Information for publishers	0	-	+	--	--	0	+	0	0	0	-	0

Legend: ++: excellent +: good 0: average -: below average --: poor

Tab. 16-3: Assessment manufacturer systems