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Final report

Do motor vehicle suppliers give independent operators effective access to all technical information as required under the EC competition rules applicable to the motor vehicle sector?

Project number

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1 Executive Summary

Commission Regulation (EC) No 1400/2002 sets out rules, under which restrictive agreements caught by the ban laid down in Article 81(1) meet the conditions for an exemption pursuant to Article 81(3). Such rules are deemed to be observed throughout the European Union by suppliers of motor vehicles and spare parts in their contractual and day-to-day business relationship with their downstream partners or buyers. The Commission has undertaken to monitor the operation of the new Regulation on a regular basis. One major element, which has to be monitored, concerns the access of technical repair information for independent operators. Motor vehicle manufacturers must allow all interested independent operators to have full access to all technical information, diagnostic and other equipment, tools, including all relevant software, and training required for the repair and maintenance of motor vehicles.

This study examines whether and how the provisions of the new Regulation relating the access to technical information have been implemented by the motor vehicle manufacturers. The assessment is based on 9 major car manufacturers (BMW, DaimlerChrysler, Fiat, Ford, GM, PSA, Renault, Toyota, Volkswagen) and all major truck manufacturers (DAF, Daimler Chrysler, Iveco, MAN, Renault, Scania, Volvo) and covers the situation in Germany, Italy, France, UK, the Netherlands, Ireland, Denmark and Poland.

The access of independent workshops to technical repair information is provided via Internet-based systems, CD/DVD's, paper or a combination of these media. Nearly all motor vehicle manufacturers cover 100 % of their models produced within the last 10 years, concerning technical repair information, but the requirement to have all information on one medium in view of granting independent operators access to the information necessary to carry out the work in question, has only been fulfilled by a few passenger car manufacturers.

The difficulty of obtaining the relevant document on different information systems is a major problem independent repairers are faced with. Due to different structures, layouts and qualities of the systems, which are offered by the motor vehicle manufacturers, it is exhausting and often even impossible to find the required information. A standardised structure and a common vocabulary (or automatic translator), as it was already developed in the OASIS project, would mark a distinct step towards providing effective access to technical repair information.

To compound the difficulties in search of the relevant information, some vehicle manufacturers also withhold important documents or deliver certain information delayed (e.g. common faults or recall campaigns). This is particularly true for the information provided to independent tool manufacturers because the systems are tailored in the first place for independent repairers.

Although special diagnostic tools are needed for an increasing number of repairs, such tools are offered by the motor vehicle manufacturers only at high prices. Therefore, it has to be ensured that diagnostic tool manufacturers get sufficient information to produce adequate

universal tools. The information provided to diagnostic tool manufacturers is generally not sufficient to produce multi-brand diagnostic tools and moreover the situation has in fact declined with the new Block Exemption Regulation (BER), and independent manufacturers are referenced to the technical information systems for the independent repairers.

Another major problem is the price of the technical information. Due to inadequately designed information systems and/or insufficient cost models, independent operators are not able to purchase technical repair information at a price, at which repairs can be conducted under competitive conditions.

The new Block Exemption Regulation calls for the supply of fair and indiscriminate information to the independent publishers. Whereas the passenger car manufacturers have taken satisfactory measures to supply independent publishers, this is in fact contradicted by statements from representatives of publishing companies. According to them, there are several vehicle manufacturers, which have stopped to supply information for publishers at the end of October 2003 and have still not presented conditions or terms to continue.

At first sight, the situation of independent operators has been improved with the introduction of the new BER and the motor vehicle manufacturers have implemented the new Regulation relating to the access to technical information. However, in particular the unattractive price models and the bad usability of the information systems, prohibit access to technical repair information. For certain repairers the inexistence of adequate multi-brand scan tools and limited possibilities to repair electronical systems make it difficult to work under competitive conditions. For those groups (independent tool manufacturers or publishers) who try to improve the environment under which independent operators are working in the situation has even declined.

2 Introduction

Commission Regulation (EC) No 1400/2002 from 31st July 2002 on the application of Article 81(3) of the Treaty to categories of vertical agreements and concerted practices in the motor vehicle sector ("the Regulation") entered into force on 1 October 2002. The Regulation sets out rules under, which restrictive agreements caught by the ban laid down in Article 81(1) meet the conditions for an exemption pursuant to Article 81(3). Such rules are deemed to be observed throughout the European Union by suppliers of motor vehicles and spare parts in their contractual and day-to-day business relationship with their downstream partners or buyers.

The Regulation brings in new provisions, which all aim at introducing more competition in distribution and after-sales services. As with the block exemption regulation (EEC) No 1475/1995, the Commission has undertaken to monitor the operation of the new Regulation on a regular basis. However, the scope of the monitoring of the regulation is to be broader. Particular attention should be paid to the Regulation's effects on a) competition in motor vehicle retailing and in after-sales servicing on the common market or relevant parts of it; b) the structure and level of concentration of motor vehicle distribution and any resulting effects on competition.

One major element which has to be monitored relates to the access of technical repair information for independent operators. If vehicle manufacturers and suppliers wish to benefit from the block exemption regulation they must provide such effective access to independent operators, pursuant to article 4(2) of Reg. 1400/2002.

In order to protect effective competition on the market for repair and maintenance services and to prevent fore-closure of independent operators, motor vehicle manufacturers must allow all interested independent operators to have full access to all technical information, diagnostic and other equipment, tools, including all relevant software, and the required training for the repair and maintenance of motor vehicles. Independent operators, who must be allowed to have access include independent repairers, manufacturers of repair equipment or tools, publishers of technical information, automobile clubs, roadside assistance operators, operators offering inspection and testing services and operators offering training for repairers.

In particular, the conditions of access must not discriminate between authorised and independent operators, access must be granted upon request and without undue delay, and the price charged for the information should not discourage access by failing to take into account the extent to which the independent operator uses it. A supplier of motor vehicles should be required to grant independent operators access to technical information on new motor vehicles at the same time as such access is granted to its authorised repairers, and must not oblige independent operators to purchase more than the information necessary to carry out the work in question. Suppliers should be obliged to grant access to the technical information necessary for re-programming electronic devices in a motor vehicle. However, it

is legitimate and proper for them to withhold access to technical information, which might allow a third party to bypass or disarm on-board anti-theft devices, to recalibrate electronic devices or to tamper with devices, which for instance limit the speed of a motor vehicle, unless protection against theft, re-calibration or tampering can be attained by other less restrictive means. Intellectual property rights and rights regarding know-how, including those which relate to the above-mentioned devices, must be exercised in a manner, which avoids any type of abuse.

This study examines, whether, and to what extent, the provisions of the Regulation relating to access to technical information have been implemented by the motor vehicle manufacturers, with regard to the different categories of independent operators as defined in Article 4(2).

The systems put in place by the motor vehicle manufacturers are described in the chapters 6 - 9 for passenger car manufacturers, and in the chapters 10 - 13 for truck manufacturers. After the description of the different measures and systems, an analysis and evaluation is performed in chapters 15 - 18. In particular, two main issues will be analysed:

An examination of whether measures have been taken by the manufacturers to grant independent operators effective access to all relevant repair information, or whether such access is not granted in respect of certain information.

An examination and evaluation of the technical and commercial conditions under which independent operators can get access to the necessary information in terms of scope, price, timing, and the practical (e.g. relating to the language, in which the information is available) and legal arrangements, that independent operators have to accept, to receive information.

3 Methodology

In order to be able to examine whether and how the motor vehicle manufacturers have implemented the provisions of the new Regulation relating the access to technical information, a suitable questionnaire has been developed. The questionnaire asks for both general information, relevant for all 'involved operators', and target-group oriented information, with regard to the different possible requirements of individual independent operators, in particular.

- Independent repairers,
- Manufacturers of repair equipment or tools,
- Independent distributors of spare parts,
- Publishers of technical information,
- Automobile clubs,
- Roadside assistance operators, operators offering inspection and testing services and
- Operators offering training for repairers.

Since the Regulation stipulates that independent operators should get the same information as authorised repairers, the questionnaire has to distinguish between conditions and measures for authorised repairers and those, which are valid for the independent market.

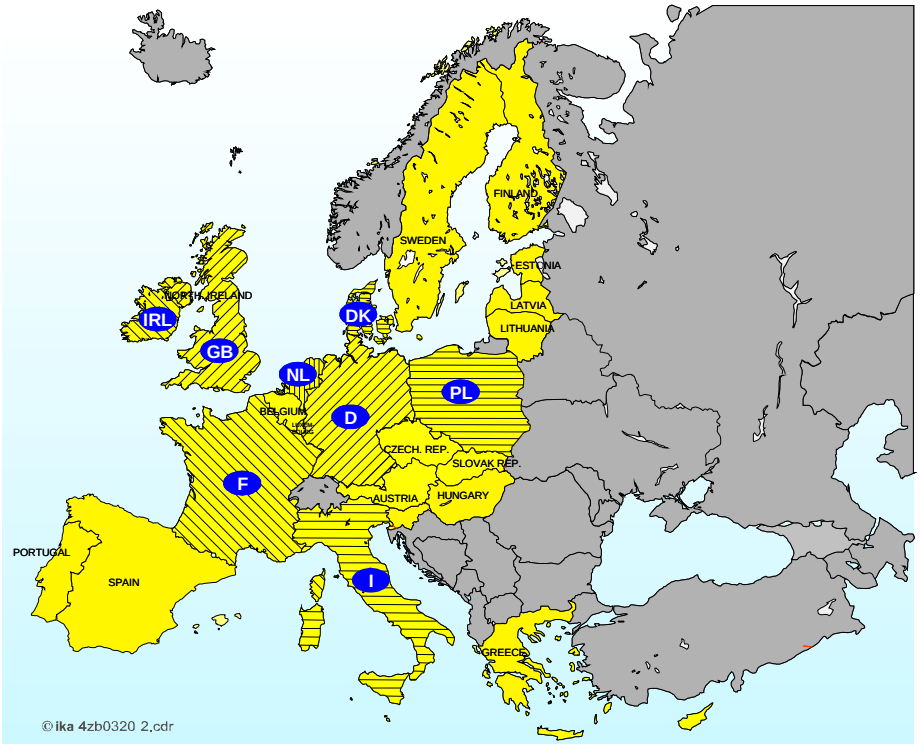

Fig. 3-1: Covered markets (hatched)

In order to obtain a full description of the relevant measures and systems put in place, the questionnaire is addressed to 9 major car manufacturers (BMW, DaimlerChrysler, Fiat, Ford, GM, PSA, Renault, Toyota, Volkswagen) and all major truck manufacturers (DAF, Daimler-Chrysler, Iveco, MAN, Renault, Scania, Volvo) to cover the situation in Germany, Italy, France, UK, Netherlands, Ireland, Denmark and Poland.

4 Enquiry about the requirements of the independent operators

Before defining the requirements for the different operators, it is important to be aware of the market situation within Europe. The values in Fig. 4-1 have been drawn from the 2004 German DAT-Report. The graphs are representing the situation in Germany; other European countries may have different values.

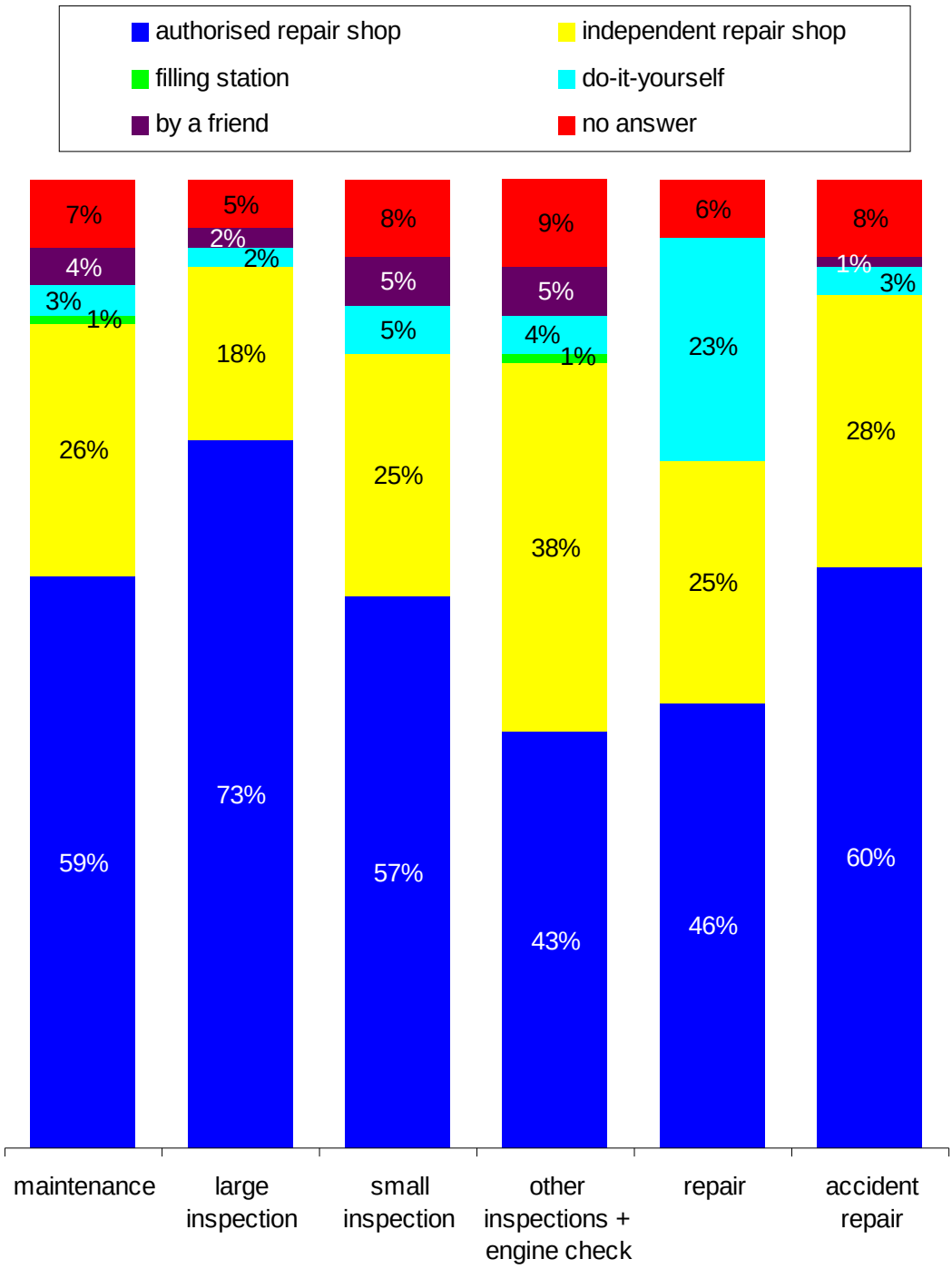

Fig. 4-1: Allocation of accomplishment in Germany 2003 (DAT-Report 2004)

In Germany, authorised operators do approximately 50% of the work; independent operators cover approximately 25% of the work in all different categories.

Furthermore, the prices for repair and maintenance are important to estimate an appropriate fee for the technical information. The figures in Fig. 4-2 have also been drawn from the 2004 German DAT-Report, presenting the German market. For each vehicle EUR 245,- (altogether) has been paid for maintenance jobs and EUR 185,- (altogether) for repair jobs in 2003.

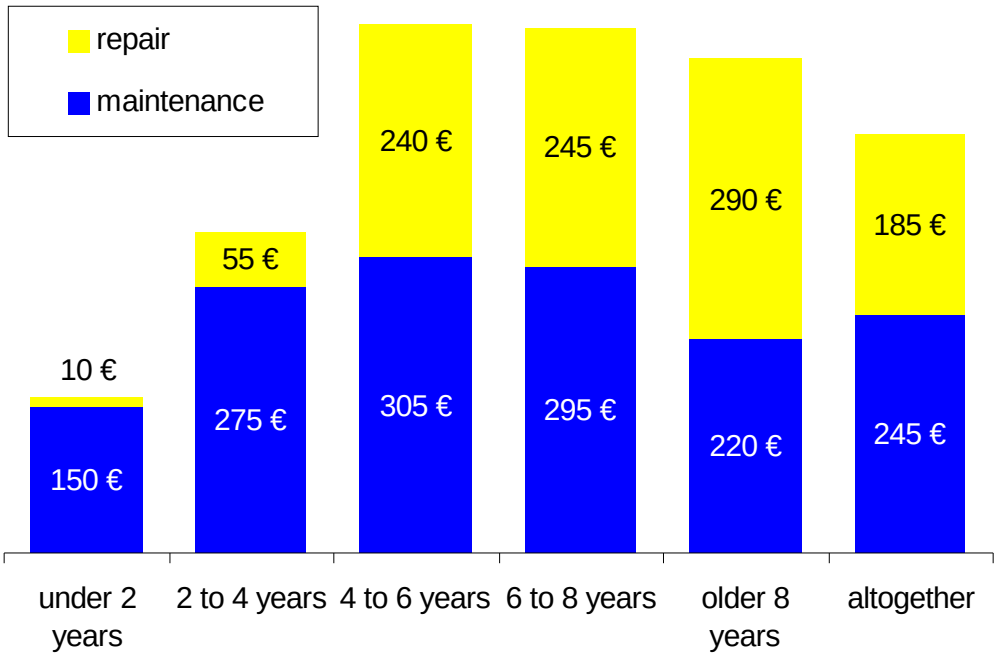

Fig. 4-2: Expenses for maintenance and repair in Germany 2003 (DAT-Report 2004)

To develop a suitable questionnaire the requirements of the respective independent operators have to be acquired. The operators have been divided into four main groups and a requirement list has been worked out for each group:

1. Independent repairers, automobile clubs, roadside assistance operators, operators offering inspection and testing services
2. Manufacturers of repair equipment or tools,
3. Independent distributors of spare parts,
4. Publishers of technical information and operators offering training for repairers.

These requirements have been allocated by conducting market and desk research and inquiries among suppliers and their associations (e. g. AFCAR - Alliance for the Freedom of

Car Repair in the EU, EGEA – European Garage Equipment Association) and independent operators (e.g. workshops, publisher).

4.1 Requirements of Independent Repairers, Automobile Clubs, Roadside Assistance Operators, Operators offering Inspection and Testing Services

The requirements of the independent repairers have been allocated by market and desk research, an analysis of the OASIS requirements specification [OAS03], different discussions with aftermarket representatives and an expert meeting at the German Association for Motor Trades and Repairs (ZDK) with representatives of ZDK (CECRA), GVA (Figiefa), Publishers, parts distributors, AFCAR and CNPA. If a requirement has a particular importance for a specific user group, this group is named in brackets.

The following items have been identified:

1. Unambiguous vehicle identification
    - by vehicle identification number (VIN)
    - a minimal set of information, e.g.: make, model, model year, engine code, engine capacity or horse power
2. Spare parts identification (esp. for independent repairers, spare parts distributors)
    - The following information must be provided for each component:
        - image of the component
        - image and description of the part location
        - wiring schematic and circuit diagram showing its connections to the ECU and ground - if electrical
        - a diagram showing its connections – if mechanical / hydraulic
        - a description of its major functions followed by its ancillary functions
        - vehicle manufacturer part number / part name
        - part fitting and removal processes (including access information - what parts have to be removed to reach the component)
3. Work plan
    - Work plan with all steps to conduct a repair in an independent workshop (esp. for independent repairers).

4. Repair and maintenance information

- Service Schedules (esp. for independent repairers)
- Maintenance and repair specifications (esp. for independent repairers)
- Control, fitting and removal processes related to service schedules (esp. for independent repairers)
- Body repair information (esp. for body repair shops)
- Information on the location of the OBD plug (esp. for independent repairers, roadside assistance, operators offering testing and inspection services))
- Common faults (esp. for independent repairers, roadside assistance)
- Re-mobilisation procedures (esp. for independent repairers, roadside assistance)
- Security information should be provided if it is required for repair and only as far as it is available to authorised dealers/repairers and is delivered in a way that does not compromise vehicle integrity or security (esp. for independent repairers).

5. Description of necessary / available diagnostic tools (all, except spare parts distributors)

- Description of the necessary diagnostic and other special tools.
- Information and distribution of diagnostic and other special tools for a non-discriminatory price.

6. Information on existing technical repair support.

- Information by hotlines and procedures to use this support.

7. Access to technical information

- All information on a single medium (one information system).
- Small chargeable information units (esp. for independent repairers, operators offering testing and services).
- Spare part information in addition on a separate medium (esp. for spare parts distributors).
- Immediate access (except spare parts distributors).
- Small minimum subscription or access periods.

8. Prices

- Competitive Prices
  The prices for the required technical information should be affordable to perform a repair competitively taking account, which prices are paid by the customer for certain jobs:

  - Average workshop prices (Germany)

Maintenance jobs	approx. EUR 245,-
Repair jobs	approx. EUR 185,-

  - Prices for a periodical vehicle inspection (Germany)

Passenger Cars	approx. EUR 45,-
Commercial Vehicles	
< 3.5 t	approx. EUR 45,-
> 3.5 – 7.5 t	approx. EUR 60,-
> 7.5 – 12.0 t	approx. EUR 60,-
> 12.0 – 18.0 t	approx. EUR 60,-
> 18.0 – 28.0 t	approx. EUR 60,-
> 28.0 – 32.0 t	approx. EUR 60,-
> 32.0 t	approx. EUR 105,-

4.2 Requirements of Manufacturers of Repair Equipment or Tools

Tool manufacturers use the information requested so that they may manufacture tools to enable independent operators to repair and maintain motor vehicles. This specification has been provided by GEA (British Garage Equipment Association Ltd.) (also adapted by EGEA):

1. Communication Protocol Information

The following information is required indexed against vehicle make, model, variant or other workable definition e.g. VIN or Auto-identification (defining vehicles in scope of each auto identification).

- Any additional protocol information, not covered by ISO15031, enabling a complete system diagnostics. Including any additional hardware or software protocol information, parameter identification, transfer functions, “keep alive” requirements, error conditions etc.
- Fault code reading including details of how to obtain and interpret all Fault Codes not detailed by ISO15031.
- Live data parameters including scaling information.

- Functional tests including device activation or control.
- Details of how to obtain all component and status information.
- Resetting adaptive learns, variant coding and replacement component setup, customer preferences, etc.
- Access/security codes required for repair functions, and control module updating required, affecting the repair.
- ECU identification and variant coding.
- Details of how to reset Service Lights.
- Location of diagnostic connector and connector details if not defined by ISO15031 part 3.
- Engine code identification

2. Test and diagnosis of components

The following information is required for component tests and diagnosis indexed against component:

- A description of tests to confirm its functionality - at the component or in the harness.
- Test Procedure including test parameters and component information.
- Connection details including min/max input /output driving/loading values.
- Values expected under certain driving conditions including idling.
- Electrical values for the component in its static and dynamic states.
- Failure mode values for each of the above scenarios.
- Failure mode diagnostic sequences including fault trees and guided diagnostics elimination.

3. Data required to complete or effect the repair

The following is required together with the scope and applicability:

- ECU and component initialisation (in the event of replacements being fitted).
- Initialisation of new or replacement ECU’s where relevant using pass through (re-) programming techniques.

4.3 Requirements of Independent Distributors of Spare Parts

Independent spare part distributors have the need to obtain OE (original equipment) part numbers to create cross-reference tables from the OE number to the after-sales part number. Since the OE part numbers are changed at times it is also necessary to obtain information on updated spare part numbers. It would be preferred, if the information is on a separate medium and no unneeded information has to be purchased. Access to the spare part information has to be within a reasonable amount of time, but not immediately as required by the repair shops. It is also in the interest of spare part distributors that independent repairers are able to define a given vehicle adequately in order to identify the necessary spare parts.

Spare part distributors who would like to redistribute repair information to their customers are sort of a very basic publisher of technical information, in this context.

4.4 Requirements of Publishers of Technical Information and Operators offering Training for Repairers

The requirements of the independent publishers or training organisations are partly defined by the requirement specification for the independent repairers. An independent publisher checked this requirement specification and the coverage of all necessary information sectors was confirmed. In addition, different discussions with aftermarket representatives have been used as an input to the requirements. If there are any special conditions for this operator group (e.g. different information packages, prices indexed on the quantities that will be distributed, special technical support) this information is also needed.

Independent publishers are facing extensive delays from vehicle manufacturers in agreeing to provide information in some quarters. Even 9 months after the regulations of the new BER came into force there are some vehicle manufacturers who, although they stopped supply of information at the end of October 2003, have still not presented conditions or terms to continue supply, even though independent repairers are able to obtain it. Additionally the prices and conditions have worsened significantly with the introduction of the new BER.

It was quite difficult to obtain any concrete information from independent publishers, because they are afraid that any statements will get back to the vehicle manufacturers and this could create more delays.

5 Development Questionnaire

Based on the enquiry in chapter 4 a questionnaire has been developed, which considers all identified requirements. The questionnaire is divided into two main parts:

1. Core Questionnaire (Part A)

   Part A asks for some general information for all groups of independent operators and furthermore for specific information based on the special requirements of tool manufacturers and independent publishers.

   Part A is obligatory for every recipient of the request. If there are differences concerning the granted access to technical information between the eight different countries involved in this investigation, the respective manufacturers are requested to fill in a questionnaire Part A for each of these countries (e.g. a questionnaire Part A for Poland and a questionnaire Part A covering the other seven countries).

2. Information Medium (Part B)

   Part B enquires whether the requirements of independent workshops are fulfilled by the different information systems. Since the group of independent spare part distributors has similar requirements, these demands are also considered.

   Part B is split into three different questionnaires, which are related to the manufacturers respective information system. The redelivery of one Part B is also obligatory for every recipient of the request. If a manufacturer is providing technical information via Internet, Part B1 has to be filled-in, if he is granting access to technical information by CD/DVD, Part B2 has to be used and if the information system is paper based, Part B3 has to be filled-in. If a manufacturer provides access by more than one of the listed media, additional questionnaires have to be completed (e.g. Part B1 and Part B2, if access to technical information is granted via Internet and CD/DVD). With differences between the eight different countries, again additional forms have to be completed.

The structure of the questionnaires is provided below. The complete versions are appended.

- **Part A – Core Questionnaire**

1. Arrangements relating to independent repairers, roadside assistance operators and automobile clubs

   1.1. Information provision

   1.2. Diagnostic tools

   1.3. Operations relating to ECU’s

   1.4. Special Tools excluding diagnosis tools

1.5. Actualisation of information

1.6. Training information

1.7. Price discounts and rebates for authorised repairers

2. Arrangements enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturers' devices

2.1. Information provision

2.2. Test and diagnosis of information

2.3. Communication Protocol Information

3. Arrangements relevant for publishers

3.1. Information provision

- **Part B – Information Medium (Internet (B1), CD/DVD (B2), Paper (B3))**

1. Arrangements relevant to independent repairers, roadside assistance operators and automobile clubs

1.1. Registration and access conditions

1.2. Registration costs

1.3. Cost models

1.4. Payment

1.5. Number of users

1.6. Covered vehicles and update periods

1.7. Hard- and software requirements

1.8. Languages

1.9. Information structure

2. Scope of Technical Information

2.1. Vehicle identification

2.2. Search Criteria

2.3. Display of search results

2.4. Information scope

3. Test Cases

   3.1. Replacement of a defective engine ECU

   3.2. Maintenance and service instructions

4. Differences of the information systems provided to authorised operators and those to independent operators

Some questions ask for information relating to one specific vehicle. In the passenger car sector a common mid-size vehicle was chosen and in the truck sector a heavy-duty truck. These vehicles are described in Tab. 5-1 and Tab. 5-2.

Company	**Brand**	**Model**	
BMW	BMW		3 Series
Fiat	Alfa		156
Fiat	Fiat		Stilo
Ford	Ford		Mondeo
Ford	Jaguar		X-Type
Ford	Volvo		V40/S40
DaimlerChrysler	Mercedes		C-Class
DaimlerChrysler	Smart		fortwo coupé
GM	Opel/Vauxhall		Vectra
PSA	Citroën		C5
PSA	Peugeot		406
Renault	Renault		Laguna
Toyota	Toyota		Avensis
Volkswagen	Volkswagen		Passat

Tab. 5-1: Overview of passenger car models for specific information questions

Company	**Brand**	**Model**	
DAF	DAF		XF
DaimlerChrysler	Mercedes		Actros
Iveco	Iveco		Stralis
MAN	MAN		TGA
Renault	Renault		Magnum/Premium
Scania	Scania		R Series
Volvo Trucks	Volvo		FH

Tab. 5-2: Overview of truck models for specific information questions

After approval, the questionnaire was sent out by the Commission as request for information pursuing to Article 11 of Regulation 17 to the above-mentioned addressees. Based on these questionnaires completed by the manufacturers, the different measures and systems, which have been introduced to grant independent operators effective access to all relevant repair information, are described comprehensively in the following chapters. The given information is mainly based on the questionnaires, which were filled in by the different manufacturers. Any inconsistent or unclear replies have been crosschecked with the respective information medium provided by the manufacturer. On a spot check basis all other information have also been reviewed. If necessary the manufacturer replies have been adjusted.

The systems and measures, put in place by the motor vehicles manufacturers, are evaluated in the chapters 17 - 18.

6 Passenger Car Manufacturers - General Information (Part A)

At the beginning of Part A of the questionnaire, each manufacturer has to provide the percentage of vehicles, for which information has been made available for independent operators. Apart from Peugeot (94%), each manufacturer has covered 100% of their vehicle fleet produced within the last 10 years.

The second question deals with the used medium to provide repair information. The majority has chosen an Internet-based concept. As shown in Tab. 6-1, few manufacturers use CD/DVD's.

The last question of this paragraph refers to the information policy concerning the authorised dealer network. The majority provides information on CD/DVD to their own network.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.1.1	% covered	100	100	100	100	100	100	100	100	94	100	100	100	100
1.1.2	Internet	100	0	90	100	97	0	0	100	75	0	50	0	100
1.1.3	CD/DVD	0	40	0	0	97	100	100	100	76	88	30	36[1]	100
1.1.4	Paper	0	60	10	0	3	0	0	100	25	12	20	100	0
1.1.7	Medium for authorised dealer	all forms	CD, Pa-per	Inter-net	Inter-net	CD, DVD	CD, DVD	CD, DVD	CD, DVD	all forms	CD, DVD	CD, DVD	CD, Pa-per	CD, DVD, Intern.

Tab. 6-1: Information Provision[1]

6.1 Diagnostic Tools (1.2)

At the beginning of this paragraph the manufacturers have to state the prices for the most costly diagnostic tools. The diagnostic tools from DaimlerChrysler (Mercedes and Smart) are the most expensive (EUR 15.000,-). The figures for the other manufacturers can be drawn from Fig. 6-1. The average costs for the most costly diagnostic tool from the other manufacturers are EUR 5.000,-.

Apart from reading and resetting the fault memory, the most expensive diagnosis tool offered by the manufacturers also usually provides profound repair information. Therefore, a higher price in comparison to the standard tool, which predominantly only provides fault code reading, is inevitable.

[1] In Italy 36% of the repair information is also available on CD/DVD

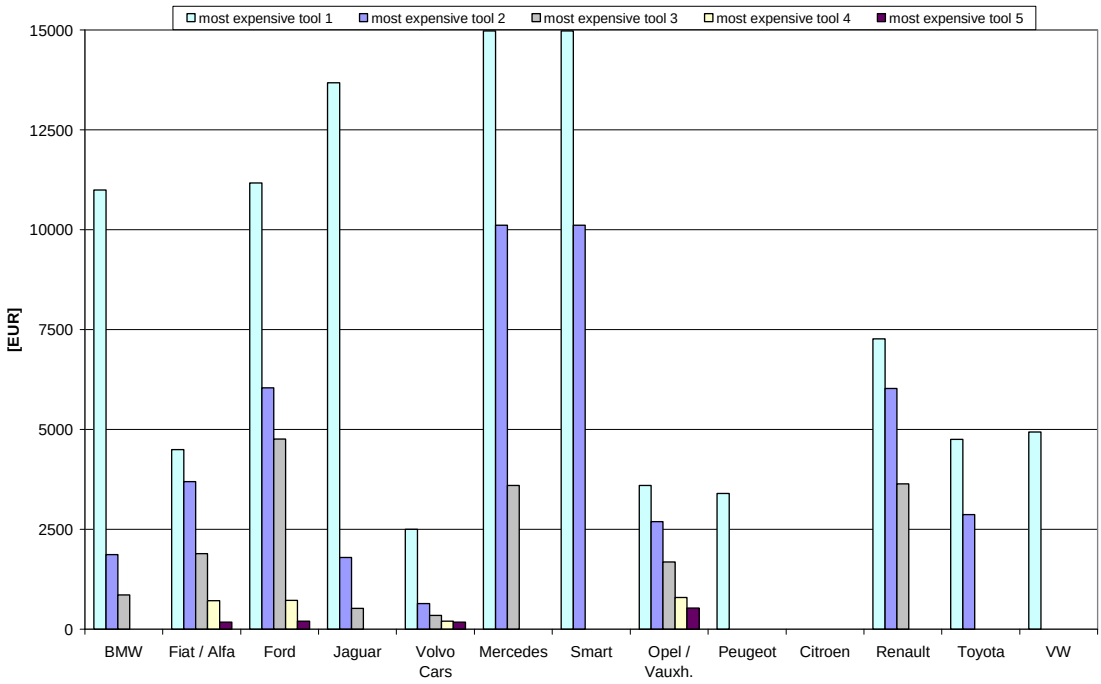

Fig. 6-1: Five most costly diagnosis tools

Fig. 6-2 shows the prices for common brand independent diagnosis tools. These tools are for instance able to read and to reset the fault memory of the engine control, the brake system, the transmission control or the AC system. Furthermore, these tools provide repair information to certain vehicles. A great discrepancy concerning the number of covered vehicles by each tool exists. Additionally the extent of their functionality is different (see Fig. 6-3), which precisely explains the need of independent tool manufacturers in order to produce multi-brand scan tools, which are able to access all different vehicle systems.

Manufacturer	Tool name	Purchase Price	Annual Price
AVL	DiScan 8000 E	EUR 3530,-	EUR 518,--
Tecno	Reflex 3130 Y	EUR 4551,-	EUR 681,--
Bosch	KTS 520	EUR 1695,- (additional PC required)	Depends on information scope: E. g. Engine diagnostics: EUR 430,--
	KTS 650	EUR 7200,-	
BrainBee	ST 6000	EUR 2800,-	EUR 379,-- (after 1. year)
Gutmann	Mega Macs	EUR 8380,-	EUR 490,--
Sun	PDL 1000	EUR 1042,-	
	PDL 2000	EUR 1025,-	
	Modis	EUR 6700,-	
Texa	Axone 2000	EUR 3200,-	EUR 500,-- (after 1. year)
Würth	WoW! Pro	EUR 4299,-	Depends on information scope: EUR 348 - 1.668,--

Fig. 6-2: Prices for common brand independent diagnosis tools

The more expensive versions are equipped with instruments, to measure voltage and electric current, or with oscilloscopes to record oscillating signals. The prices for these tools vary in a range from EUR 950,- to EUR 8.380,- plus annual software and license costs and correspond to the prices of the brand dependent diagnosis tools. Only the prices for the tools from DaimlerChrysler and Jaguar are outstanding.

	DiScan 8000	Tecno Reflex 3130	Bosch KTS 650	Brain Bee ST 6000	Gutmann Mega macs 55	Sun Modis	Texa Axione 2000	Wuerth WoW	Mercedes Star Diagnosis
engine electronics	EOBD	EOBD	(I, F, FR)	I, F, FR, AV, AT	I, F, FR, AV	EOBD	EOBD	I, F, FR, AV	I, F, FR, AV, AT
brake system	Vehicle not listed	Vehicle not listed	(I, F, FR)		I, F, FR, AV	Vehicle not listed	Vehicle not listed		I, F, FR, AV, AT
airbag			(I, F, FR)		I, F, FR, AV			I, F, FR	I, F, FR, AV, AT
instruments			(I, F, FR)						I, F, FR, AV, AT
transmission control			(I, F, FR)						I, F, FR, AV, AT
heating/ac			I, F, FR, AV, AT		I, F, FR, AV			I, F, FR	I, F, FR, AV, AT
immobiliser									I, F, FR, AV
headlamp levelling			I, F, FR, AV, AT						I, F, FR, AV, AT
comfort systems			I, F, FR, AV, AT		I, F, FR, AV				I, F, FR, AV, AT
central locking system									I, F, FR, AV, AT
ignition control			(I, F, FR)						I, F, FR, AV, AT
park assistant			I, F, FR, AV, AT						I, F, FR, AV, AT
seat control			I, F, FR, AV, AT						I, F, FR, AV, AT
roof electronics			(I, F, FR)						I, F, FR, AV, AT

Legend: I: Identification F: Fault Reading FR: Fault Reset AV: Actual Values AT: Actuator Test (...): System not clearly identified

Fig. 6-3: Scope of multi-brand tools vs. manufacturer tools (Mercedes Star Diagnosis) (Vehicle: Mercedes C220 CDI, 09/2003) Source: Kfz-Betrieb

Apart from Peugeot, Citroën and Volkswagen, the manufacturers offer the diagnostic tools for the same price to independent operators in comparison to their own network (Fig. 6-4). The main diagnostic tool from Peugeot is not available for free operators. For them, Peugeot offers a reduced version of the main diagnostic tool 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. As one exception to the general rule, the Regulation specifies, that it is legitimate and proper for a supplier to withhold access to technical information, which might allow a third party to bypass or disarm on-board anti-theft devices. However, tools exist, which enable to reset the security system without allowing a third to “crack” anti-theft devices. The facility “Pass-Through Programming” 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.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.2.2	**same price ind op/auth op**	yes	yes	yes	yes	yes	yes	yes	yes	**no**	**no**	yes	yes	**no**
1.2.5	**diff. in deliv. betw. ind/auth op.**	no	no	no	no	no	no	no	no	no	no	no	no	no
1.2.6	**special finance models**	**no**	**no**	**no**	**no**	**no**	yes	yes	**no**	**no**	**no**	yes	**no**	yes
1.2.7	**tools available from other prod./sources**	**yes**	**yes**	no	no	no	no	no	no	no	**yes**	no	no	no

Fig. 6-4: Policy of distributing diagnosis tools

The Volkswagen tool for independent workshops is EUR 436,- more expensive for the following reasons:

- The scope of delivery is larger (additional diagnosis cable and compatibility to Internet system, different screen resolution).
- The different scope of delivery is necessary, as the additional items of equipment are already in use at authorised workshops.
- The handling costs for the importer are higher (set-up of the customer number and administration)

The manufacturers indicate a delivery period between 5 and 90 days for their diagnostic tools and only minor differences exist between the authorised workshops and independent operators (Fig. 6-4).

All manufacturers correspond, that there is no specific condition that independent operators have to fulfil such as training, professional experience or other qualification to purchase information for diagnostic tools (Fig. 6-4). Jaguar mentions an administration fee of 10% for independent operators, but the service provided for this fee has not been explained.

Four brands offer special financing models to purchase diagnosis tools. Independent operators can either buy or rent the Mercedes/Smart diagnosis hardware. For authorised repairers, only renting of this equipment hardware is offered. Volkswagen offers a leasing concept, e.g. in Germany via the Volkswagen Financial Services AG. Renault only answers, that they offer special financing models (Fig. 6-4).

For four manufacturers the diagnostic tools are also available from other producers. For example the Pass-through programming tool for BMW from an independent tool manufacturer has been tested with BMW interfaces and is officially validated as a supported tool. Other Pass-through tools can also be supported due to the SAE J2534 specification. Furthermore, the vehicles from Fiat can be connected with tools from different producers (Fig. 6-4).

The PSA Group does not sell tool devices themselves. Therefore, this manufacturer enumerates different tools producers, which support vehicles from Peugeot and Citroën.

The contact points of the manufacturers can be drawn from the appendix.

6.2 Operations relating to ECU’s (1.3)

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. Today, a usual mid-size vehicle is equipped with over 80 ECU’s. These components are responsible for a great number of breakdowns. Solving this issue usually involved the car owner driving to a

workshop, where a diagnostic tool is connected with the car. In the workshop, the following operations may be executed:

1. Software Update: The download of a redeveloped software version.

2. Variant coding: This operation consists of assigning parameters of a hardware component to the software of an ECU. The operation is necessary after flashing a new software version as well as after replacing a hardware component.

3. Initialisation/Reinitialisation: During this operation, e.g. a sensor and the relevant controller are accustomed to a certain extent together. The data of the initialisation is stored in the EPROM of the controller. Every time the sensor or the controller is replaced or dismantled, a new initialisation is necessary.

4. Pass-Through Programming: This facility is able to program manufacturer specific electronic control modules using a standard PC connected to the Internet. The new Block Exemption Regulation does not prescribe such a facility.

5. Reset security system: Normally the engine ECU or other components are connected with the vehicle immobiliser. After the replacement of such a component it is often necessary to reset the security system.

In this paragraph of the questionnaire the vehicle manufacturers have been asked, if independent operators are able to execute the mentioned operations. The answers can be drawn from Fig. 6-5.

		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. 6-5: Possible ECU operations

In case of affirming the relevant operation, the vehicle manufacturers have to name the needed tool/software and their prices. Due to the variability of the provided answers, each manufacturer is treated separately.

Except operations relating to anti-theft, it is possible for BMW, Jaguar, Mercedes, Smart, Renault and VW to completely execute the required ECU operations.

6.2.1 BMW

Apart from resetting the security system, it is possible for independent operators to execute the required ECU operations for BMW vehicles. The needed tool (Group Tester One) can be used on all model series of BMW and MINI cars including all required functionalities. The price depends on the specific EU-country and varies in a range from EUR 8.700,- to EUR 13.300,- (average EUR 11.000,-). In case an independent operator has bought the tool, the relevant software is distributed every three months and can be purchased for EUR 1.800,- annual.

The possibility to reset the security system exists neither for authorised BMW operators nor for independent operators. It is possible for independent operators as well as for authorised workshops, under the application of the corresponding diagnostic tool, to reset the vehicle immobilisation. Resetting of the security system requires a replacement of the vehicle immobilisation control unit, in terms of the alignment with the engine control unit. Independent operators can order the immobilisation control units via authorised dealerships evidencing the original customer vehicle documents.

6.2.2 Fiat/Alfa

Independent operators can only execute variant coding and reinitialisation procedures for Fiat/Alfa vehicles. The price for the needed tool for both operations is EUR 3.700,- (Netherlands EUR 5.400,-). For the relevant software the independent operators have to pay EUR 400,-.

6.2.3 Ford

Independent operators cannot execute ECU operations with Ford vehicles.

6.2.4 Jaguar

It is possible for independent operators to execute the required ECU operations for Jaguar vehicles. The facility Pass-Through Programming is not provided. The price for the needed tool is EUR 13.684,- and includes the software.

6.2.5 Volvo Cars

Apart from variant coding, it is possible for independent operators to execute the required ECU operations for Volvo vehicles. The price for the needed tool is EUR 1.050,-. For the relevant software the independent operators have to pay EUR 2.200,- annually.

6.2.6 Mercedes

Apart from resetting the security system, it is possible for independent operators to execute the required ECU operations for Mercedes vehicles. The facility Pass-Through Programming is not provided.

For Mercedes, DaimlerChrysler offers a tool for EUR 3.600,- (Poland EUR 4.140,-; Denmark EUR 3.960,-) and a tool for EUR 10.116,- (Poland EUR 11.128,-; Denmark EUR 11.634,-) to execute ECU operations. For the relevant software the independent operators have to pay between EUR 1.704,- (Netherlands) and EUR 2.000,- (Denmark) annually.

6.2.7 Smart

For Smart, DaimlerChrysler follows the same policy as for Mercedes. Apart from resetting the security system, it is possible for independent operators to execute the required ECU operations. The facility Pass-Through Programming is not provided.

DaimlerChrysler does not offer two versions of a suitable tool for Smart. Only the more expensive tool is suitable for Smart and can be purchased for EUR 10.116,- (Poland EUR 11.128,-). For the relevant software the independent operators have to pay EUR 1.295,- annually (Poland EUR 1.332,-) plus a one-time subscription fee of EUR 352,-.

6.2.8 Opel/Vauxhall

Independent operators cannot execute ECU operations with Opel/Vauxhall vehicles.

6.2.9 Peugeot

Independent operators cannot execute ECU operations with Peugeot vehicles.

6.2.10 Citroën

Independent operators cannot execute ECU operations with Citroën vehicles.

6.2.11 Renault

It is possible for independent operators to execute the required ECU operations for Renault vehicles. The facility Pass-Through Programming is not provided. The price for the needed tool is EUR 3.641,-. For the relevant software the independent operators have to pay EUR 392,- (UK EUR 1.014,-) annually.

6.2.12 Toyota

Independent operators can only flash software updates and execute reinitialisation procedures for Toyota vehicles. The facility Pass-Through Programming is not provided. The price for the needed tool for both operations varies in a range from EUR 2.350,- to EUR 3.650,- depending on the country. The relevant software is included.

6.2.13 VW

It is possible for independent operators to execute the required ECU operations for VW vehicles. The price for the needed tool is EUR 4.936,-. To use the tool, an online access to the VW server is necessary. Therefore, VW charges for handling (EUR 116,-), a secure software client (EUR 1.170,- for 3 years) and an access per car type (EUR 56,-). The facility Pass-Through Programming is not provided.

6.3 Special Tools (1.4)

In order to clarify, at what price the free operators have to purchase special tools to enable an appropriate repair, the vehicle manufacturers have been asked to deliver specific information on the workshop equipment in use (excluding diagnosis tools). At first, the vehicle manufacturers have to name the five most used special tools over EUR 150,-, their prices and the frequency of use (assuming that a garage services 100 cars per month). The prices of these five tools for each manufacturer can be drawn from Fig. 6-6.

The manufacturers mainly enumerate releasing tools, gauges, removers, alignment kits or tensioning devices. Only Volvo has not answered these questions, because according to their statement they do not use special tools over EUR 150,-. The majority of the mentioned tools from the other manufacturers vary in a price range from EUR 150,- to EUR 500,-. Above average are the following special tools:

- Fiat/Alfa: rotating stand for engine overhaul for EUR 1.441,-
- Jaguar: locking Wheel Nut Kit for EUR 816,-
- Peugeot: engine repair box for EUR 820,-
- Citroën: multi function gauge: for EUR 1.140,-
- Renault: battery tester for EUR 840,43
- Toyota: MAD kit for EUR 4.548,- (not explained); brake disk grinding for EUR 3.000,-; spring tensioner for EUR 920,-; puller bearing set for EUR 913,-; puller b set for EUR 836,-
- VW: engine support bracket for EUR 809,89 (DK) and EUR 504;19 (I)

Due to the fact, that only few manufacturers have been able to estimate the frequency of use of their special tools, only the absolute costs of the tools can be compared. The analysis concerning the given answers can be drawn from Fig. 6-6.

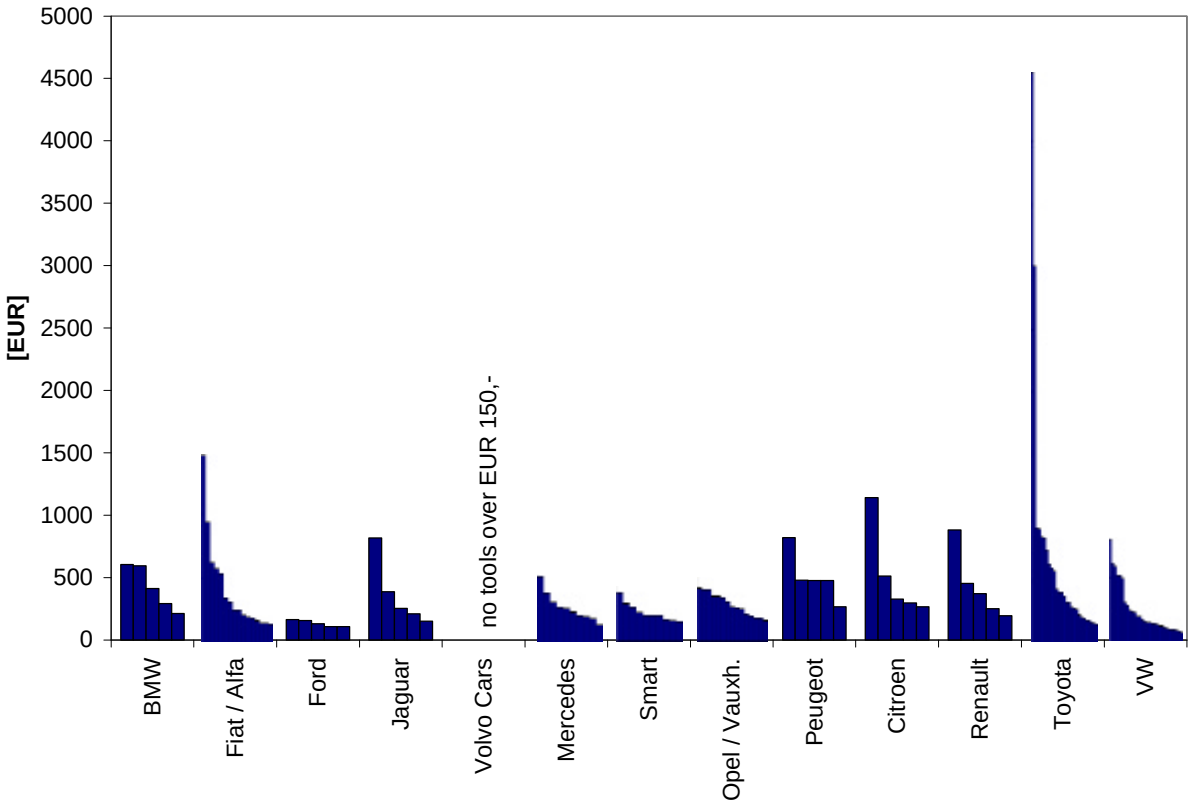

Fig. 6-6: Prices for five most used tools (over EUR 150,-)[2]

Furthermore, the vehicle manufacturers have to name the five most expensive special tools, their prices and the frequency of use, again assuming that a garage services 100 cars per month. The prices of these five tools for each manufacturer can be drawn from Fig. 6-7.

For this question, only few manufacturers have also been able to estimate the frequency of use of their special tools. Therefore, only the absolute costs can be compared. It is obvious, that Mercedes (EUR 4.284,-) and Toyota (EUR 4.518,-) have the most expensive special tools. The most expensive special tools from Volvo, Ford and Opel/Vauxhall can be purchased for under EUR 500,-. For the other manufacturers, the prices for the most expensive special tool vary in a range from EUR 809,89 (VW) and EUR 2.235,- (Citroën). The functions of special tools over EUR 1.500,- can be drawn from the following explanations:

[2] Mercedes, Smart, Toyota, VW and Opel/Vauxhall provide country-specific analysis. For these manufacturers, the diagram does not only content the prices for five special tools, but also for all enumerated prices for a special tool.

- BMW: chassis and hydro-lifter for EUR 1.740,-
- Mercedes: portal frame for EUR 4.284,15; valve seat turning kit for EUR 3.738,58; tester for power steering pump for EUR 2.916,82; welding gauge for EUR 2.759,69; hydraulic press for EUR 2.248,98 (all prices for Poland)
- Smart: gage for adjusting A-pillar for EUR 2.056,41
- Peugeot: material to repair electric components EUR 1.841,-
- Citroën: tools allowing the dynamometric engine components for EUR 2.235,-
- Toyota: MAD kit for EUR 4.548,- (not explained); brake disk grinding for EUR 3.000,-

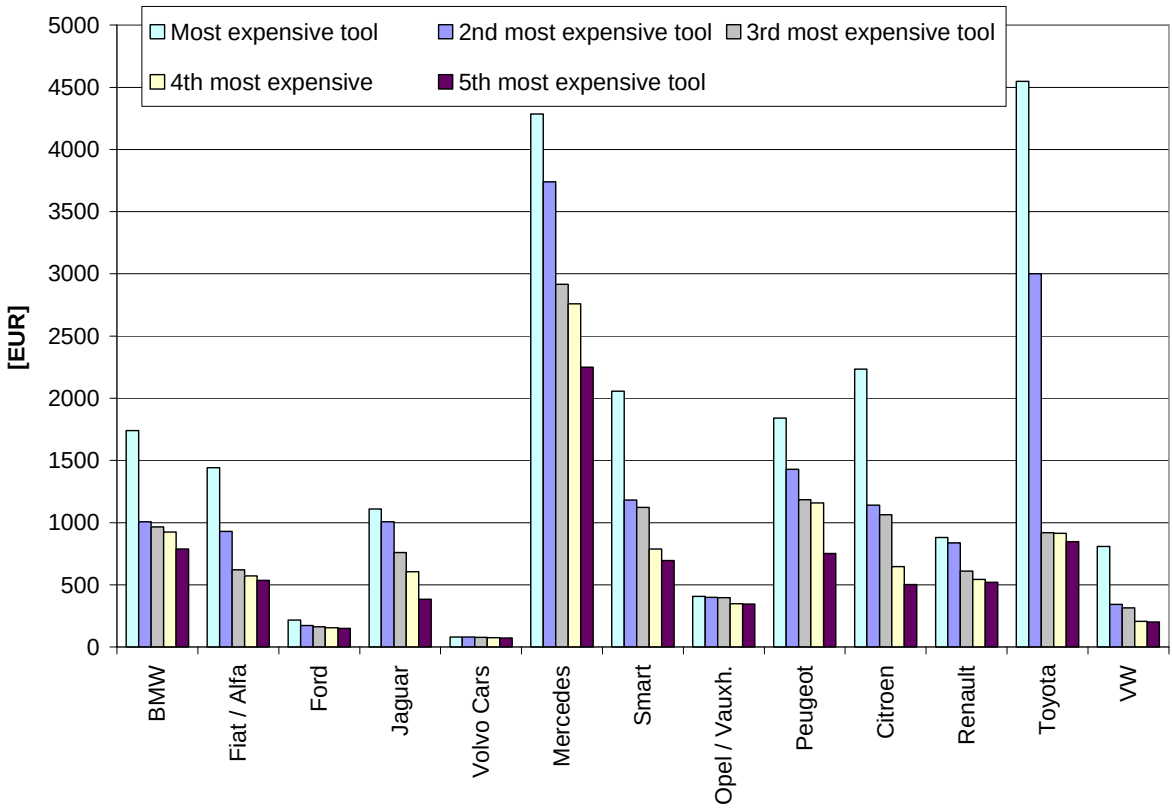

Fig. 6-7: Prices for the five most expensive special tools [3]

[3] Mercedes, Smart, Toyota, VW and Opel/Vauxhall provide country-specific analysis. For these manufacturers, the diagram contents the prices for the country, where independent operators have to pay most for the special tool in scope.

At the end of this paragraph the manufacturers have been asked, if they provide special financing models, like leasing of their special tools. All passenger car manufacturers negate this question.

6.4 General Information (1.5)

This paragraph deals with the information policy of the vehicle manufacturers. It is a prerequisite, 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 safety related problems of a specific vehicle cannot be adequately considered to secure customers' security. Furthermore, the free operators cannot keep pace with the authorised dealers, if they do not have access to the latest spare part numbers, information on modified parts or information on software updates. Fig. 6-8 shows, that no manufacturer delivers the same information to independent operators as to its authorised network.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.5.1	get ind. op. same inf. on common faults	n/a	no	no	yes	yes	yes	yes	no	yes	n/a	yes	yes	yes
1.5.1.2	get ind. op. inf. at same time	yes	n/a	n/a	yes	no	no	no	n/a	yes	n/a	yes	no	no
1.5.2	get ind. op. same inf. on recall campaigns	no	no	no	yes	no	yes	yes	no	no	no	no	no	no
1.5.2.2	get ind. op. inf. at same time	n/a	n/a	n/a	yes	n/a	no	no	n/a	n/a	n/a	n/a	n/a	n/a
1.5.3	get ind. op. same techn. bulletins	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.5.3.2	get ind. op. inf. at same time	yes	n/a	n/a	yes	yes	no	no	no	yes	yes	yes	no	no
1.5.4	get ind. op. same inf. on mod. parts	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes
1.5.4.2	get ind. op. inf. at same time	yes	yes	no	n/a	n/a	yes	yes	yes	yes	yes	yes	no	no
1.5.5	provide inf. on updates sparepart numbers	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
1.5.5.2	get ind. op. inf. at same time	yes	yes	n/a	n/a	no	yes	yes	yes	yes	yes	yes	no	yes
1.5.6	get ind. op. same inf. on software updates	yes	yes	yes	yes	yes	yes	yes	yes	no	no	yes	yes	yes
1.5.6.2	get ind. op. inf. at same time	yes	yes	yes	yes	yes	yes	yes	yes	n/a	n/a	yes	no	no
1.5.7	provide hotline support on techn. quest.	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.5.7.1	get ind. op. the same inf.	yes	n/a	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Fig. 6-8: Actualisation of information

Due to the variability of the provided answers, each manufacturer is treated separately.

6.4.1 BMW

There is a confidential exchange of information between BMW and its authorised operators in both ways, which includes “common faults”. According to BMW, this is applied as a discussion platform in cases, where no reliable repair method is yet available or no experience exists. Such confidential or yet unconfirmed information on common faults is not shared with independent operators.

Furthermore, BMW does not provide any information on recall campaigns and have not delivered any reason for this lack in their information policy in the questionnaire.

According to BMW, all other available information on repair of vehicles will be forwarded to the independent operator using the same Internet platform as authorised operators.

6.4.2 Fiat/Alfa

Fiat/Alfa does also not provide information on common faults, recall campaigns and technical bulletins. They have not delivered any reason for this lack in their information policy in the questionnaire.

Fiat/Alfa only have a helpdesk office to share best practice with authorised dealers to solve new problems, but they do not offer this service for independent operators. According to Fiat/Alfa, all other available information is forwarded to the independent operator in the same form and at the same time as for authorised operators.

6.4.3 Ford

Ford does also not provide information on common faults, recall campaigns and technical bulletins. According to their answer, they do not carry out any silent or hidden recalls. They add, that their authorised repairers carry out owner-notified and non-owner notified programs as well as updates prior to sales. However, input or bulletins provided by authorised repairers are included in repair instructions available via Internet.

The Internet update on modified parts for independent repairers can be more current than the DVD media, delivered to authorised repairers, due to the lead time for production and shipment. Concerning updated spare part numbers the situation is the same. The part numbers are updated via Internet and in the parts catalogue, accessible to authorised and independent repairers.

According to Ford, all other available information is forwarded to the independent operator in the same form and at the same time as for authorised operators and the hotline support also exists for both parties.

6.4.4 Jaguar

Apart from the information on modified parts and on updated spare part numbers, Jaguar uses the same information policy for independent operators and for the authorised network. Further information has not been provided.

6.4.5 Volvo Cars

According to Volvo, information on common faults is issued via a technical helpdesk available for each dealer and independent operators. The information supply is depending on the inquiry at the helpdesk and can deviate in comparison to authorised dealers.

Volvo does not provide information on recall campaigns or on modified parts. They have not given any further explanations in this context.

Superseded part numbers are indicated when the dealer is ordering a part by the parts ordering system. According to Volvo, part numbers change every day and this is the main and only secure way to have the right part numbers at the time of ordering. Volvo's generic parts catalogue is not able to follow all daily "supersessions" and is updated by the usual way, 6 times annual.

Furthermore, Volvo indicates, that they have not received any contacts or requests for the existing hotline support up to now from any independent operator.

6.4.6 Mercedes

According to Mercedes the independent operators get information on common faults, recall campaigns and technical bulletins, but not at the same time as authorised dealers. Between the monthly updates of the information system, very urgent information is distributed to the authorised network separately (e.g. via mail). Independent operators will receive the same information with the next monthly update of the information system.

All other available information is forwarded by Mercedes to the independent operators in the same form and at the same time as for authorised operators and the hotline support also exists for both parties.

6.4.7 Smart

Smart uses the same information policy as Mercedes.

6.4.8 Opel/Vauxhall

Opel/Vauxhall does not provide information on common faults and recall campaigns. Technical bulletins are only applicable to the UK market. According to Opel/Vauxhall, independent repairers are not in the mailings list, but information is provided on request.

Opel/Vauxhall forwards all other available information to the independent operators in the same form and at the same time as for authorised operators and the hotline support also exists for both parties.

6.4.9 Peugeot

Peugeot does not provide information on recall campaigns and software updates. Peugeot forwards all other available information to the independent operators in the same form and at the same time as for authorised operators. The hotline support also exists for both parties, but with some restrictions. Information on safety relevant systems, on emission relating systems and the on the immobiliser are not given to independent operators.

6.4.10 Citroën

Citroën does not provide information on recall campaigns and software updates. Information on common faults is given to all repairers, who subscribe the technical assistance. Citroën forwards all other available information to the independent operators in the same form and at the same time as for authorised operators. The hotline support also exists for both parties.

6.4.11 Renault

Apart from recall campaigns, Renault provides all the required information.

6.4.12 Toyota

Apart from information on recall campaigns, Toyota provides all the required information. They do not distribute the information to independent operators and to the authorised network at the same time, but a copy of the relevant technical bulletin is available upon request (free of charge).

6.4.13 VW

Apart from information on recall campaigns, VW provides all the required information. They do not distribute the information to independent operators and to the authorised network at the same time, because time differences exist, concerning availability due to the different information routes. If independent workshops use the hotline number or the hotline fax, they receive technical information via fax. Authorised partners receive technical information within the Volkswagen IT architecture. This requires them to fulfil the manufacturer's IT standards.

6.5 Training Information (1.6)

This chapter deals with the provided training programmes to study further the involved staff at the workshop. The questionnaire mainly asks for the information medium and for price divergences between authorised workshops and independent operators (Fig. 6-9).

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.6.1	**provide remote training progr.**	yes	**no**	**no**	yes	**no**	yes	yes	yes	yes	yes	yes	**no**	yes
1.6.1.1	**get ind. op. the same inf.**	yes	n/a	n/a	yes	n/a	yes	yes	yes	yes	yes	yes	n/a	yes
1.6.1.2	**ind. op. pay same price**	yes	n/a	n/a	yes	n/a	yes	yes	**no**	yes	yes	yes	n/a	**no**
1.6.2	**provide classroom training**	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.6.2.1	**can ind. op. participate in same lessons**	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.6.2.2	**ind. op. pay same price**	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
1.6.3	**access to exterior train.**	yes	yes	yes	n/a	n/a	yes	yes	yes	yes	yes	yes	yes	yes
1.6.3.1	**price in EUR per day for external training on engine management**	210		160	135 - 250	160 in DK			115 - 200	150 - 380	71 - 345	175 - 500	80 - 150	120 - 270

Fig. 6-9: 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.

Ford has currently no remote training programmes available, but there is a plan to install it in the foreseeable future.

Opel/Vauxhall uses a different accounting scheme concerning the online-based training for independent operators and for authorised workshops. Authorised repairers have to pay Euro 80,- per each trainable employee. The minimum number of trainable employees is three technicians according to the standard within the authorised repairers agreement. Due to the fact, that Opel/Vauxhall does not want to ask the independent operators to pay Euro 80,- for all of their employees, they charge Euro 150,- per individual usage in this case. This price policy does only not exists in Germany and both parties have to pay Euro 150,- for each trainable employee. In Poland, training information for independent operators is yet not available.

VW's authorised service dealers have to buy all technical information that is available. The independent workshop does not have to purchase the full package of information. These workshops can purchase information according to their specialisation.

Furthermore, it has been asked, if independent operators also have access to training carried out by authorised repairers or external training institutions, in case of not provided by the manufacturer itself. Jaguar and Ford have not provided a specific answer to this question,

but due to the fact, that they offer training information themselves, they cannot be blamed for this. Toyota generally carries out their training themselves. In Denmark and Italy occasionally training can be provided through a training institution.

Finally, the manufacturers have to give the price for a training unit on engine management, provided by an authorised repairer or an external training institution. Although Jaguar and Ford have not provided a specific answer on the preceding question, they have filled in a price. Mercedes and Smart explain, that they do not offer training units on engine management up to now. The provided prices from the other manufacturers sometimes vary from country to country. For these manufacturers, Fig. 6-9 contents the lowest and the highest price. The given prices of all manufacturers are all in a similar range.

6.6 Price Discounts and Rebates for Authorised Repairers

The questionnaire has asked for discounts and rebates for authorised repairers, because this could be a possibility to bypass the Block Exemption Regulation. Manufacturers may charge independent operators and authorised dealers the same price for technical information and afterwards they could refund an amount to authorised dealers. In this way manufacturers could pretend to follow the Block Exemption Regulation.

Toyota reimburses technical training costs in case of successful completion and certification of Toyota's specific qualification scheme. This should increase the motivation of repairers to invest in staff qualification and staff retention. According to the provided answers, the other manufacturers do not offer price discounts and rebates for authorised repairers (Fig. 6-10).

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
1.7.1	special price discounts for auth. rep.	no	no	no	no	no	no	no	no	no	no	no	yes	no

Fig. 6-10: Price discounts and rebates

6.7 Information for Diagnostic Tool Manufacturers (2)

In this paragraph it has been asked for the arrangements, enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturers. Before the introduction of the new Block Exemption Regulation, the diagnostic tool manufacturer sometimes had a number of arrangements with vehicle manufactures, where they were 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 the introduction of the new Block Exemption Regulation, and often coinciding with a change of technology for data transfer, the diagnostic tool manufacturers have been moved to the status of an independent repairer.

Some tool manufacturers have not been willing to cooperate with the authors of this study, because they fear further restrictions from the vehicle manufacturers.

6.7.1 Information Provision (2.1)

This new situation is quite obvious by analysing the first answers of the vehicle manufacturers in the section of the questionnaire dealing with the information policy for diagnostic tool manufacturers. Fig. 6-11 shows the percentage of covered vehicles produced within the last 10 years, for which the manufacturers provide special information for tool manufacturers. Apart from Ford and Jaguar, no manufacturer has made information available for all vehicles. The information from Renault (20% for one specific vehicle produced since 2002) and Toyota (70%) is not complete. The rest delivers no information.

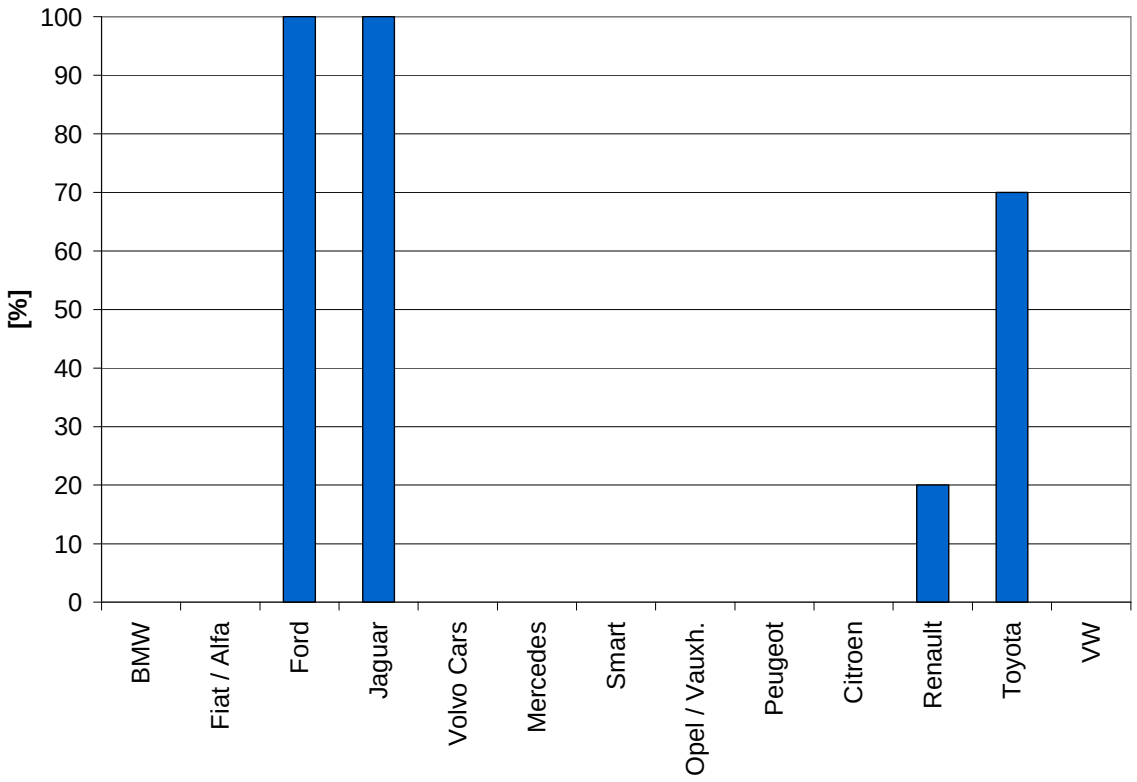

Fig. 6-11: Covered vehicles with specific information for tool manufacturers

According to a statement from Volkswagen, mentioned in the enclosure to the questionnaire, they do not supply manufacturers of diagnosis units with any additional information. VW explains, that these companies do have the same access to all technical information as the independent workshops. VW is of the opinion, that the independent diagnosis tool manufacturers can develop their own units using this information. Toyota explains, that they have not received any request.

This is rather contradictive to the statement of a representative from GEA[4]. According to his point of view, information on communication protocols and component tests is increasingly important and can only be obtained by purchasing vehicle manufacturer's tools cost effectively.

According to BMW, they treat diagnostic tool manufacturers not different than other types of independent operators and therefore they do not receive technical support exceeding the support provided to other independent operators. The cooperation with a licensed diagnostic tool manufacturer starts before they provide information to independent operators.

Due to the fact, that only four manufacturers provide special information for tool manufacturers, the answers for chapter 2.1 of the questionnaire are summarised shortly in the following:

Information media:	Ford:	Internet and paper
	Jaguar:	Internet
	Renault:	Paper and software (not explained)
	Toyota:	Paper and Microsoft Office

Information packages: Only Renault has answered. They use the following packages:

1. Communication between tool and vehicle
2. Auto-diagnostic of the ECU's
3. Methods for diagnostic and repair
4. Repair of electronic components

Price policy: Some vehicle manufacturers indicate the price of information relevant for independent repairers, if they do not provide information especially for tool manufactures. These answers are not useful in this chapter.

Although Renault has a low coverage rate, independent tool manufacturers have to pay EUR 3.390,- for the information. Ford charges EUR 990,- for all vehicles and EUR 170,- for a midsize vehicle.

Date of information: No vehicle manufacturer has answered, if the independent diagnostic tool manufacturers get information at the same time as licensed providers.

[4] GEA: Garage Equipment Association Ltd.

Entity of provision: Only Renault and Toyota have answered this question. Both have explained that they provide the information by a centralised entity, which has the mandate to decide, which information will be provided.

Technical support: Only BMW and Renault provide technical support to the diagnostic tool manufacturers.

A summary of the provided answers can be drawn from Fig. 6-12. The vehicle manufacturers, which provide special information for diagnostic tool manufacturers are marked in yellow colour.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
2.1.3	are there inf. packages	no	no	no	no	no	no	no	no	n/a	n/a	yes	no	no
2.1.6	get ind. diagn.toolmanuf. inf. at same time	n/a	no	no	no	n/a	no	no	no	n/a	n/a	no	no	no
2.1.8	distribution by central entity	no	no	no	no	n/a	no	no	no	n/a	n/a	yes	yes	no
2.1.8.1	has entity mandate to dec. which inf. will be prov.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	yes	yes	no
2.1.9	prov. techn. support for tool manuf.	yes	no	no	no	n/a	no	no	no	n/a	n/a	yes	no	no

Fig. 6-12: Information provision to diagnostic tool manufacturers

6.7.2 Test and Diagnosis information

In this chapter of the questionnaire the vehicle manufacturers have been asked, if they provide information enabling tool manufacturers to install test procedures for specific cars in their tools. Therefore, the following information is indispensable:

- Any procedure to test and diagnose vehicle systems and components
- Descriptions and values of any parameter, which is necessary to perform the procedures
- Values expected under certain driving conditions (e.g. voltage of a sensor)
- Failure mode diagnostic sequences, including fault trees and guided diagnostic elimination
- Information on ECU and component initialisation

Some vehicle manufacturers have answered these questions, although they do not offer special information for diagnostic tool manufacturers (the vehicle manufacturers, which provide special information for diagnostic tool manufacturers are marked in yellow colour in Fig. 6-13). This means, that these manufacturers deliver this information together with their “regular” information to independent operators.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
2.2.1	prov. descriptions of test procedures (steps)	yes	yes	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.2	prov. test parameters	no	yes	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.3	prov. connection details incl. MIN/MAX values	no	no	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.4	prov. values expected under certain driv. cond.	yes	no	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.4.1	if yes: provide failure mode values for scenarios	no	n/a	n/a	yes	n/a	n/a	no	n/a	n/a	n/a	yes	yes	no
2.2.5	electric. values in static/dynamic states	no	yes	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.5.1	if : provide failure mode values for scenarios	n/a	no	n/a	yes	yes	n/a	no	n/a	n/a	n/a	yes	yes	no
2.2.6	prov. failure mode diagn. seq. incl. fault trees etc	no	yes	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no
2.2.7	prov. inf. on ECU and component init.	yes	yes	no	yes	yes	no	no	no	n/a	n/a	yes	yes	no

Fig. 6-13: Information on diagnosis to diagnostic tool manufacturers

The answers for chapter 2.2 of the questionnaire are summarised shortly for each manufacturer in the following:

6.7.2.1 BMW

According to BMW, they do not provide any documentation on test procedures (although answered with yes in the questionnaire), but the user of the information system has access to process flows within the runtime system. This information is depending on specific vehicles, as the user has to specify a vehicle by series, model and year of manufacture. There is no global view on test procedures possible. The user is lead through several processes by an interface. There is no explicit description of the test procedures, but an intuitive process flow is offered to the user.

The answers given in the questionnaire also indicate, that BMW provides information on values expected under certain driving conditions and information on ECU plus component

initialisation. All other information, which is also indispensable to develop an appropriate tool, is withheld.

6.7.2.2 Fiat/Alfa

Fiat/Alfa has answered these questions with yes in the questionnaire, although they do not offer special information for diagnostic tool manufacturers. According to them, they provide information on test procedures, but only parameters for a few sub-systems. Furthermore, information on electrical values in different states, on failure mode diagnostic sequences and on ECU and component initialisation exists for independent operators. All other information, which is also indispensable to develop an appropriate tool, is withheld.

6.7.2.3 Ford

Although Ford pretends to deliver special information for diagnostic tool manufacturers, they withhold all the required information. Therefore, it is rather impossible for an independent diagnostic tool manufacturer to include Ford in its tools.

6.7.2.4 Jaguar

According to Jaguar, they provide all the required information to diagnostic tool manufacturers.

6.7.2.5 Volvo

Volvo has answered these questions with yes in the questionnaire, although they do not offer special information for diagnostic tool manufacturers. Apart from failure mode values, they provide all the necessary information to include Volvo in a manufacturer independent diagnostic tool.

6.7.2.6 Mercedes

Mercedes does not provide any of the required information.

6.7.2.7 Smart

Smart does not provide any of the required information.

6.7.2.8 Opel/Vauxhall

Opel/Vauxhall does not provide any of the required information.

6.7.2.9 Peugeot

Peugeot does not provide any of the required information.

6.7.2.10 Citroën

Citroën does not provide any of the required information.

6.7.2.11 Renault

According to Renault, they provide all the required information to diagnostic tool manufacturers.

6.7.2.12 Toyota

According to Toyota, they provide all the required information to diagnostic tool manufacturers.

6.7.2.13 VW

VW does not provide any of the required information.

6.7.3 Communication Protocol Information

The only standard covering electronic communication is Directive 98/69/EC, which only applies to emission related vehicle systems. For these systems, e.g. ISO 15031 on protocols is prescribed, in order to achieve a useful, standardised mechanism for developing diagnosis tools. This standard regulates the following items relating to communication:

- ISO 15031-1: general information
- ISO 15031-2 presents a standard nomenclature for vehicle components. It includes the standard names, abbreviations and acronyms that have already been assigned to commonly used components.
- ISO 15031-3 specifies a standard connector between the testing tool and the vehicle, together with the location of the connector within the vehicle.
- ISO 15031-4 specifies the facilities to be provided by a minimal, standard testing tool, which may be used to extract digital information from the vehicle, clear fault codes and request actuator operation.
- ISO 15031-5 specifies the messages, which pass between the vehicle and the testing tool in order to provide a set of basic, standard diagnostic facilities.
- ISO 15031-6 specifies codes to particular vehicle malfunctions, as identified by monitoring facilities within the vehicle.

- ISO 15031-7 specifies the data link security

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 cover more than one vehicle manufacturer. It is a prerequisite, that independent diagnostic tool manufacturers get information comparable to ISO 15031 to all electronic vehicle components.

The questionnaire asks for the necessary protocol information to manufacture a brand independent diagnostic tool (Fig. 6-14). The vehicle manufacturers, which provide special information for diagnostic tool manufacturers are marked in yellow colour.

		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. 6-14: Communication protocol information

The answers for chapter 2.3 of the questionnaire are summarised shortly for each manufacturer in the following:

6.7.3.1 BMW

BMW itself does not produce nor develop hard- or software relating to technical diagnosis equipment needed for the service of BMW vehicles. A tool manufacturer has exclusively developed the diagnosis application. The transfer of the development results to competitors by BMW has been expressly excluded under a software development agreement. The only information provided by BMW are details on the diagnostic connector.

The manufacturer of the BMW diagnostic tool itself is not subject to any limitations to license its products to its own competitors. Apart from that, the acquisition of data derived from available information allows any other producer of diagnosis equipment to generate computable data for use in other operation systems.

6.7.3.2 Fiat/Alfa

Fiat/Alfa does not provide any of the required information.

6.7.3.3 Ford

Apart from the information how to reset the service light, Ford does not provide any details asked in the questionnaire relevant for diagnostic tool manufacturers.

6.7.3.4 Jaguar

Apart from information on the diagnostic connector, Jaguar does not provide any details asked in the questionnaire relevant for diagnostic tool manufacturers.

6.7.3.5 Volvo

Volvo has answered these questions, although they do not offer special information for diagnostic tool manufacturers. Therefore, the information must be provided together with the information relevant for independent operators.

Apart from withholding access to security codes required for repair functions and control module updating, Volvo delivers all necessary information to tool manufacturers.

6.7.3.6 Mercedes

Mercedes does not provide any of the required information.

6.7.3.7 Smart

Smart does not provide any of the required information.

6.7.3.8 Opel/Vauxhall

Opel/Vauxhall does not provide any of the required information

6.7.3.9 Peugeot

Peugeot has not answered to any of the required questions.

6.7.3.10 Citroën

Citroën has not answered to any of the required questions.

6.7.3.11 Renault

Apart from withholding access to security codes required for repair functions and control module updating, Renault delivers all necessary information to tool manufacturers. According to Renault's cover letter, they are already in contact with the independent tool manufacturers BOSCH, FACOM and ACTIA to answer their requirements.

6.7.3.12 Toyota

Toyota does not provide any additional protocol information not covered by ISO 15031. Furthermore, they withhold any access to security codes required for repair functions and control module updating. According to Toyota, information on ECU identification and variant coding is not provided. All other required information is offered to independent diagnostic tool manufacturers.

6.7.3.13 VW

VW does not provide any of the required information

6.8 Information for Publishers (3)

The New Block Exemption Regulation (BER) calls for the supply of fair and indiscriminate information to the independent operators. Independent publishers are part of the same group as independent repairers, although many of the agreements between publishers and the vehicle manufacturers are based on suppliers licence costs. These costs could be much higher compared to independent repairers. Furthermore some representatives of the publishers are of the opinion that the New Block Exemption Regulation has more restricted information to publishers.

Fig. 6-15 shows the percentage of covered vehicles produced within the last 10 years, for which the manufacturers provide special information for publishers. Fiat/Alfa, Jaguar and Volvo do not offer special information for publishers. For these manufacturers, the informa-

tion must be therefore provided together with the information relevant for the other independent operators.

The special information from Peugeot (they have covered 75% of the vehicles produced within the last 10 years), Citroën (covered 70%) and Toyota (covered 70%) are not complete concerning publishers. The other vehicle manufacturers have covered 100% of the vehicles produced within the last 10 years by their information relevant for publishers.

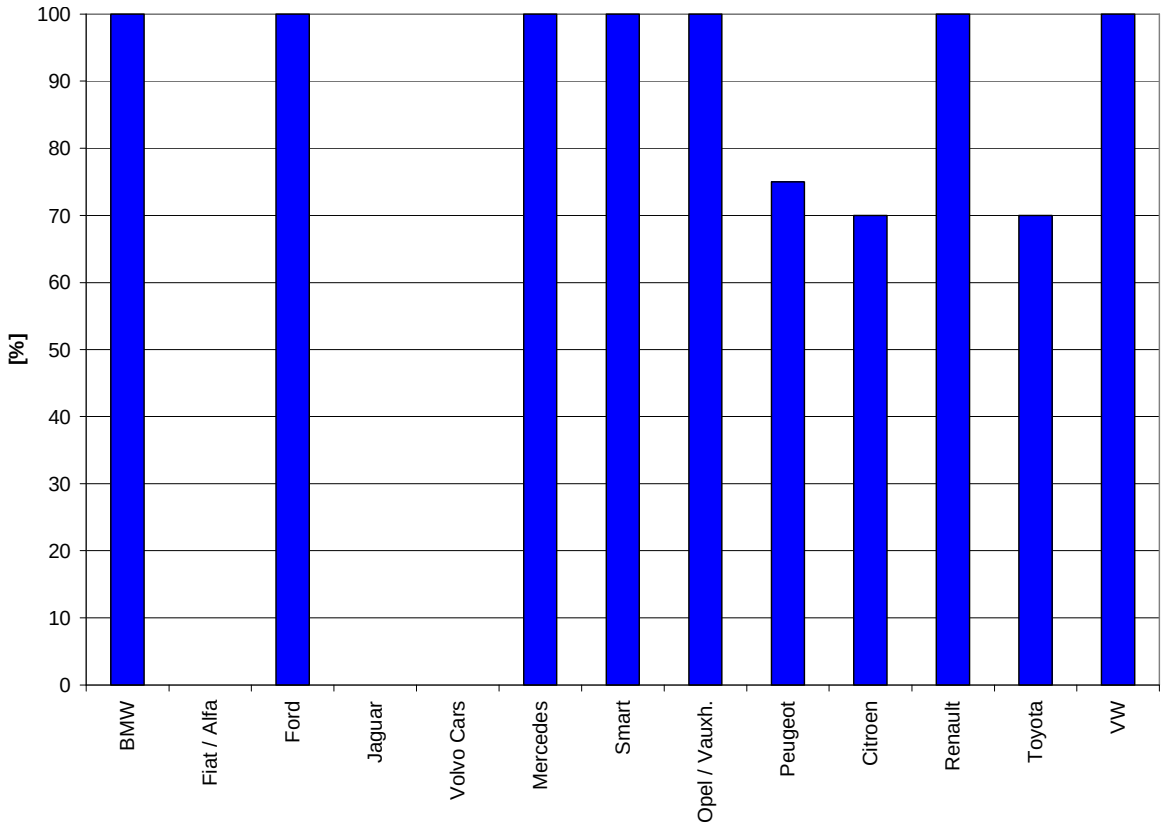

Fig. 6-15: Covered vehicles with specific information for publishers

In the questionnaire, the vehicle manufacturers have to give insight in their information policy concerning publishers (Fig. 6-16). The vehicle manufacturers, which provide special information for publishers are marked in yellow colour.

Most of the vehicle manufacturers providing special information for publishers use Internet, Paper or CD's/DVD's as distribution media.

		BMW	Fiat / Alfa	Ford	Jaguar	Volvo Cars	Mercedes	Smart	Opel / Vauxh.	Peugeot	Citroen	Renault	Toyota	VW
3.12	information media	Inter-net		Inter-net, Paper			DVD	DVD	CD, Video, Paper	CD, DVD	DVD	Inter-net, CD, Paper	Paper	CD, DVD, Internet
3.1.3	information packages	no	no	yes	no	no	yes	no	yes	yes	yes	no	no	no
3.1.6	prov. techn. support for publishers	yes	no	no	no	no	no	no	yes	no	no	no	no	yes
3.1.6.1	has entity mandate to dec. which inf. will be prov.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	yes	n/a	n/a	n/a	n/a	no

Fig. 6-16: Information provision for publishers

It is important for the publishers, that they are able to purchase the relevant information as reasonable packages. Only Ford, Mercedes, Opel/Vauxhall, Peugeot and Citroën provide these packages. Ford does not deliver any deeper information on their used information packages.

Opel/Vauxhall uses different videos and brochures for special repairs such as body welding techniques. Publishers, who want do purchase information on Peugeot vehicles have different options. Packages on replacement parts, repair methods, work time/payment, schematic descriptions and inner vehicle plans exist for all vehicles in 17 languages (as choice).

Publishers, who want to purchase information on Citroën vehicles have two options. The first package contains all the relevant information. The second one is divided in replacement parts, repair methods and work time/payment.

Another important item is the date, when publishers get the information from a new vehicle. Most of the manufacturers have answered, that the information is available one month before or at the same time as the start of sales. The exact figures can be drawn from Fig. 6-17. In this short period, it is rather impossible for publishers to produce an appropriate documentation.

The last part of this paragraph deals with the question, if the vehicle manufacturers provide technical support for publishers. Only BMW, Opel/Vauxhall and VW offer this service. If the service is offered, it is also important that the person at the hotline is in a position to decide, if information can be provided or not. Only Opel/Vauxhall's hotline has the mandate to decide, which information can be provided or not (considering intellectual property rights).

In general, the provided answers according to publishers show quite positive measurements from the manufacturer to feed independent publishers. This is rather contradictive to statements from a representative of a publishing company[5]. According to them, even nine months

[5] Name of the information source is known by the publisher of this study

after the introduction of the New Block Exemption Regulation, there are some vehicle manufacturers, which have stopped to supply information for publishers at the end of October 2003 and have still not presented conditions or terms to continue.

3.1.5	Date of information provision
BMW	start of sales
Fiat/Alfa	some
Ford	same time than our authorized repairers
Jaguar	1 month before start of sales
Volvo	start of sales
Mercedes	1 month before start of sales
Smart	1 month before start of sales
Opel/Vauxhall	start of sales
Peugeot	1 month before start of sales
Citroen	1 month before start of sales
Renault	start of sales
Toyota	upon request
VW	start of sales

Fig. 6-17: Date of information provision for publishers

6.8.1 Price of Information (3.1.4)

To be able to compare, how much publishers have to pay for information, the questionnaire asks for the prices for the complete information for a mid-size vehicle relevant for 1000 published exemplars of a documentation. Due to the importance of this question, the answers are treated in separate paragraph. According to a statement from a representative of a large publishing company, the prices for publishers are not balanced in comparison to the asked prices for independent operators.

6.8.1.1 BMW

BMW offers the complete information to publishers under a flat rate arrangement. Publishers currently pay a flat rate of 6.000 Euro annual.

6.8.1.2 Fiat/Alfa

Fiat/Alfa does not deliver special information to publishers.

6.8.1.3 Ford

Publishers pay Ford for information an annual license fee of EUR 6.500.- per country, in which the information is sold. This is independent from the individual sales volume, but covers the entire range of information available.

6.8.1.4 Jaguar

Jaguar does not deliver special information to publishers.

6.8.1.5 Volvo Cars

Volvo does not deliver special information to publishers.

6.8.1.6 Mercedes

Mercedes has explained, that they only have individual prices according to the data content needed and published exemplars.

6.8.1.7 Smart

Smart has also explained, that they only have individual prices according to the data content needed and published exemplars.

6.8.1.8 Opel/Vauxhall

Upon request and contractual agreement, profit making publishing companies can purchase Technical Information on CD as a packaged priced of Euro 6.000,- per annual subscription (10 issues). Additional information such as special repairs can be separately purchased on videos and new technical features on hardcopy paper brochures.

6.8.1.9 Peugeot

The price for Peugeot information relevant for publishers is calculated as follows:

Y: price to be paid by publisher

X: price of information package

N: number of published exemplars

i: coefficient (3 to 25 as function of N)

B: depends on the information level used by publisher (1 to 4)

P: Peugeot part of information

Formula : $Y = ((X \times N) / (i \times B)) \times P$

The prices for the information packages (X) are as follows:

EUR 2.500,- for all languages and all vehicles
EUR 1.700,- for one language and all vehicles
EUR 425,- for one language and one vehicle
EUR 1.000,- for replacement parts for all languages and all vehicles
EUR 680,- for replacement parts for one language and all vehicles
EUR 170,- for replacement parts for one language and one vehicle
EUR 250,- for replacement parts for all languages and one vehicle

The other information packages have a comparable price system.

6.8.1.10 Citroën

Citroën uses a comparable price system to Peugeot. The price for Citroën information relevant for publishers is calculated as follows:

Y: price to be paid by publisher
P: price of information package
N: number of published exemplars
i: coefficient (1 to 40 as function of N)
C: other coefficient

Formula : $Y = ((P \times N) / (i \times C))$

The prices for the information packages (X) are as follows:

EUR 465,- for complete information
EUR 60,- for replacement parts
EUR 30,- work times
EUR 375,- repair methods

6.8.1.11 Toyota

Toyota has not yet defined an appropriate pricing.

6.8.1.12 VW

Documents are provided in encrypted form. The prices for the release of a document are the same as for independent workshops. The documents are protected by copyright. Publishers using a document's content must have a usage contract and pay an extra fee of approx. 50% of the document price.

7 Passenger Car Manufacturers - Internet-based Information System (Part B1)

7.1 Registration and Access (1.1 – 1.4)

To obtain access to a manufacturer's Internet-based information system, the user must complete an electronic registration application. The user must be an independent operator as defined in the BER and his registered office has to be within the European Union.

As shown in Tab. 7-1 most of the car manufacturers have implemented a link to their technical information website on their standard customer website. Only a few do not offer such a link (BMW, Volvo and Opel). Since standard search engines like Google or Yahoo do not list these websites, the user has to know the correct URL (e.g. https://opel-tis.eur.gm.com/imtportal) to get access to technical repair information.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
registration from standard website	**no**	yes	yes	**no**	**no**	yes	yes	yes

Tab. 7-1: Registration Process (1.1.3)

Since the registration process is done electronically, access to technical repair information is granted instantly. Only BMW (3 - 4 days) and Volvo (max. 2 days) need several days to complete the registration process (see Fig. 7-1). In the case of BMW and Ford the independent operator also have to pay an advance payment of EUR 50,-, which is used to pay for the information units. The user may top up this credit by payment of multiples of EUR 50,- (BMW) or in multiples of EUR 10,- with a minimum top-up of EUR 50,- (Ford).

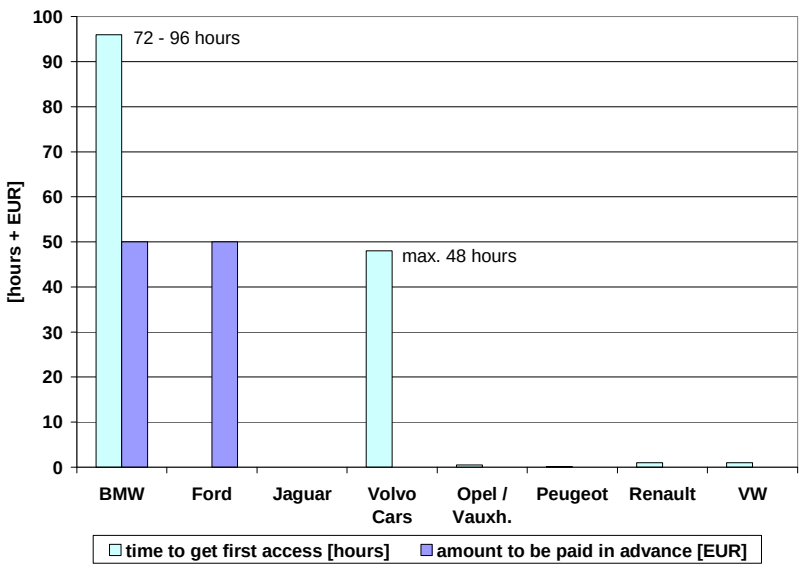

Fig. 7-1: First Access: Timing and Advance Payments (1.1.1 + 1.2.2)

Different cost models are offered (see Tab. 7-2). Nearly all manufacturers offer access to technical repair information on a subscription base respectively by access time. There are a variety of other different cost models. These “other payments” are explained in chapter 7.1.1.

	* BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
pay per view	yes	no	no	no	no	no	no	no
payment by accesstime	yes	yes	yes	yes	yes	yes	yes	no
payment by job	no	no	no	no	no	no	no	no
pay per DTC	yes	no	no	no	no	no	no	no
subscription	yes	yes	yes	yes	yes	yes	yes	no
other payments	yes	no	yes	yes	yes	yes	yes	yes

Tab. 7-2: Cost Models (1.3.1 – 1.3.6)
DTC: Diagnostic Trouble Code
*: only for communication with DIS (Diagnostic Information System)

In general, payment is made by credit card, which is possible for all manufacturers. Credit card payment is a common and accepted method and therefore sufficient for independent operators. BMW (Germany only) and Jaguar also offer a payment by direct debit. Peugeot sends an invoice, which can be paid by bank transfer or cheque.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
bank transfer	no	no	no	no	no	yes	no	no
credit card	yes	yes	yes	yes	yes	yes	yes	yes
debit	yes	no	no	no	no	no	no	no
other	no	no	no	no	no	yes	no	no
special discounts	yes	no	no	no	no	no	no	yes

Tab. 7-3: Method of Payment (1.4)

BMW and Volkswagen provide special discounts. Whereas BMW offers a reduced rate of 50% only to educational establishments, Volkswagen has a special rebate system with discounts from 10 – 30 % dependent on the ordered quantity:

- from EUR 200,- - 349,-: 10%
- from EUR 350,- - 499,-: 15%
- from EUR 500,- - 999,-: 20%
- from EUR 1.000,-: 30%.

A subscription of technical information is possible for different time periods and of course for different prices. Fig. 7-2 gives an overview of the minimum prices with regard to the minimum subscription period and also to the costs for a period of one month. If a subscription on a one-month basis is not possible (BMW and Ford) the annual fees are divided by 12. The minimum prices to purchase technical repair information represent an important figure for an independent repairer. These prices differ from EUR 8,- for Jaguar and Renault, to EUR 83,- for Volvo and EUR 180,- for BMW. The prices shown for BMW are only basic access fees; whereas each information unit is charged separately (see 7.1.1.1). Volkswagen does not offer a subscription of the complete technical information for all of their models. Instead of this a subscription of different topics or documents is offered (see 7.1.1.8). If a repair shop is searching for technical information for a single repair the long minimum subscription period of BMW is not satisfactory. It might be possible to cancel the BMW's contract of subscription after one quarter, but even this period is quite long. A one-hour (Renault) or one day subscription (Jaguar, Opel, Peugeot) should be preferred. On a one month basis Ford and Jaguar offer the lowest prices.

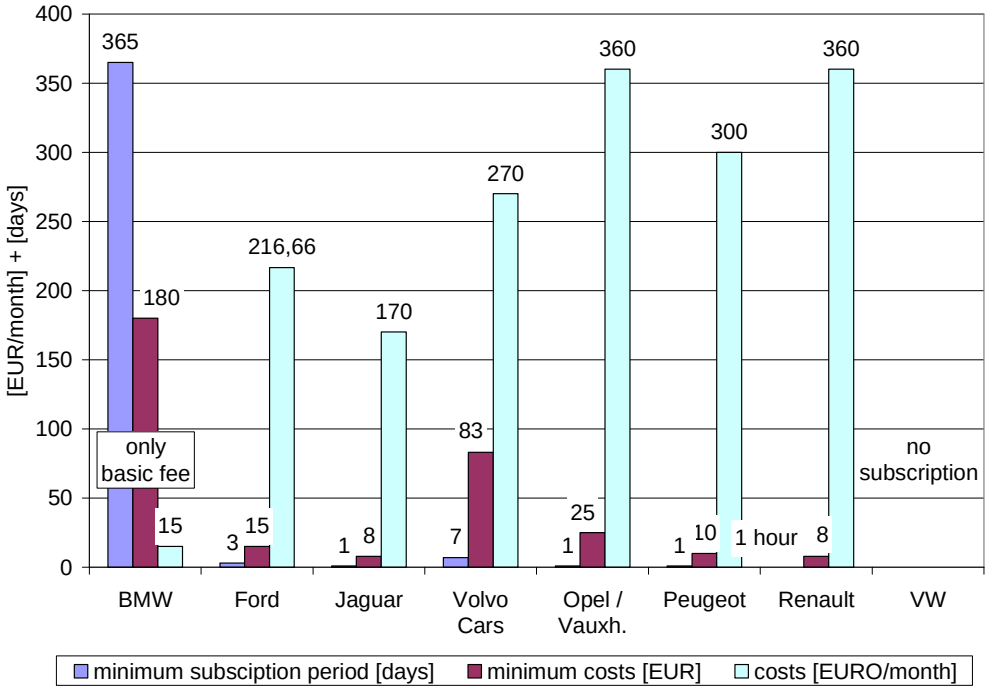

Fig. 7-2: Subscription of Technical Information (1.3.5)
(costs per month & minimum subscription period)

7.1.1 Other Payments

7.1.1.1 BMW

For the use of the BMW Online Service System (OSS), the user shall pay the following amounts, subjected to the date of receipt of the registration application:

- Registration application received during the 1st quarter: EUR 180,-
- Registration application received during the 2nd quarter: EUR 150,-
- Registration application received during the 3rd quarter: EUR 100,-
- Registration application received during the 4th quarter: EUR 50,-

If a registration is terminated during a current quarter, fees paid in advance for subsequent quarters will be refunded on a pro-rata basis. Information units are not included in the fee and must be purchased in a separate procedure. The following payments shall be payable by the user for use of the service:

- Within the Technical Information System (TIS), the Commercial Service Data (KSD) and wheel/tyre combinations: Per page called up EUR 0,40. This does not apply, however, for pages designed to permit the selection of data, such as vehicle identification or navigating through to the relevant documents. These pages may be called up free of charge.

- Within the Trouble Code Inquiry (Pcode): Per successful inquiry EUR 0,20.

- Within the Diagnostic Information System (DIS display and communication): Per six-minute period or part thereof (period between logging on and logging off) EUR 3,00.

- Within the "Technical Helpdesk" module, EUR 25,- must be paid for each enquiry. An enquiry always relates to a single technical problem on a single vehicle. If there are two or more technical problems on a vehicle, and if enquiries relating to them are necessary or desired, then two or more chargeable enquiries must be submitted. The same applies to a problem on more than one vehicle. BMW answers the enquiries by e-mail or telephone. If a user needs to submit a subsequent enquiry relating to a technical problem on a specific customer vehicle, this can be done free of charge using a facility made available by the BMW technical advisor, provided it has not been possible to solve the problem on the basis of the response to the first enquiry. It is assumed that a problem has been solved if it has not recurred for a period of six months after repair.

- No current charges for the use of ASAP (After-sales Asistance Portal), but BMW reserves the right to demand EUR 60,- per quarter in the future

7.1.1.2 Ford

Access to all Technical information will be 'time limited' to 72 hours (3 days) for the selected information packages. The selected information packages are applicable to a provided VIN (Vehicle Identification Number). Alternatively, an annual subscription can be purchased.

Package Content (Transaction)	**Charges [EUR]**
Mechanical Repairs (Repair procedures, Diagnostics, Specifications etc; including body mechanicals; excluding body repairs)	15,-
Wiring Diagrams (including full auxiliary data)	15,-
Routine Maintenance (schedules, intervals, procedures)	8,-
Body Repairs	15,-
Access to all the information in the packages listed above (1 year)	2.600,-

Tab. 7-4: Charges of Information Packages (Ford)

Calls to the technical Hotline are charged by 'transaction' i.e. the time of the telephone call and research. Per 'minute of transaction time' charges are between EUR 1,- and 2,- (depending on the hotline centre). Based on experience with current dealers, average 'transaction' duration is approximately 20 minutes.

7.1.1.3 Jaguar

Jaguar offers options to subscribe for 1 day, 1 month or 1 year and choose 1 model and 1 model year, 1 model and all model years or all models and all model year. The possibility to choose different time periods and different models is favourable for independent operators.

Subscription Model	**1 day [EUR]**	**1 month [EUR]**	**1 year [EUR]**
1 model, 1 model year	8,-	42,-	170,-
1 model, all model years	14,-	70,-	346,-
all models, all model years	28,-	170,-	990,-

Tab. 7-5: Subscription Model (Jaguar)

7.1.1.4 Volvo

Volvo offers options to subscribe for 1 week, 1 month or 1 year for all models.

Subscription Model	1 week [EUR]	1 month [EUR]	1 year [EUR]
all models	83,-	270,-	2.200,-

Tab. 7-6: Subscription Model (Volvo)

7.1.1.5 Opel

Opel offers options to subscribe for 1 day, 1 week, 1 month or a half year for all models. The possibility to choose different time periods is favourable for independent operators.

Subscription Model	1 day [EUR]	1 week [EUR]	1 month [EUR]	180 days [EUR]
All models	25,-	150,-	360,-	1.800,-

Tab. 7-7: Subscription Model (Opel)

7.1.1.6 Peugeot

Peugeot offers options to subscribe for 1 hour, 6 hours, 1 day, 1 week, 1 month or 1 year for all models. The possibility to choose different time periods is favourable for independent operators.

Subscription Model	1 hour [EUR]	6 hour [EUR]	1 day [EUR]	1 week [EUR]	1 month [EUR]	1 year [EUR]
all models	10,-	15,-	20,-	90,-	300,-	2.500,-

Tab. 7-8: Subscription Model (Peugeot)

7.1.1.7 Renault

Renault offers two different packages. Package 1 with all technical documentation available on the website and package 2 with all technical documentation available on the website except for wiring diagrams. Again, the possibility to choose different time periods and different content is favourable for independent operators.

Subscription Model	1 hour [EUR]	1 day [EUR]	1 week [EUR]	1 month [EUR]	1 year [EUR]
Package 1 / Package 2	15,- / 8,-	30,- / 15,-	110,- / 55,-	360,- / 180,-	3.000,- / 1.500,-

Tab. 7-9: Subscription Model (Renault)

7.1.1.8 Volkswagen

The prices for the Volkswagen system depend on the number and type of documents, for which an independent operator has taken out a subscription. The prices of a document are displayed on the document properties page. Each document is a complete package with all information for a specific system (prices between EUR 4,60 and 107,40), but also contains cross-references to other documentations. If a single chapter is offered separately, then each referred reference chapter has to be purchased in addition. The system is a very inflexible model with few purchase options.

Examples:

Technical Information Automatic Gearbox:	EUR 18,40
Technical Information 4-Cylinder Diesel Engine:	EUR 18,40
Maintenance Information VW Passat:	EUR 18,40
Wiring Diagrams for all models:	EUR 107,40

7.2 Users (1.5)

The numbers of users, which are registered for a web based information system, vary very widely. VW and Ford already show a very large number of users whereas only a few users use the Volvo and Opel system. The number of website logins also shows significant differences. Volkswagen and Volvo do not measure this figure. Due to these figures it may be assumed that especially the Opel system does not give sufficient information to independent operators for acceptable conditions.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
no. registered users	449	1025	484	30	4	245	278	2148
website logins/month	750	222	620	n/a	1	< 104	100	n/a

Tab. 7-10: Number of registered users and website logins per month (1.5)

7.3 Hard- and Software Requirements (1.7)

Tab. 7-11 gives an overview of the hard- and software requirements for the different information systems. The hardware requirements represent the “state-of-the-art” without any uncommon specifications. The necessary software is limited to conventional web browsers (Internet Explorer x.x [IE] or Netscape 4.7 [NS]) and an Acrobat Reader for PDF documents. Sometimes the user has to adjust the settings of his web browser in order to access and use the website. In addition some special plug-ins are needed, which are all free of charge and could directly be downloaded from the website.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
min. processor [MHz]	**300**	**no min.**	**66**	**133**	**500**	**66**	**66**	**266**
min. RAM [MB]	**64**	**32**	**32**	**64**	**128**	**128**	**32**	**32**
min. display resolution	**1024 x 768**	**800 x 600**	**1024 x 768**	**800 x 600**	**800 x 600**	**800 x 600**	**800 x 600**	**800 x 600**
needed software	**IE 5.5**	**Web Browser**	**IE 5.5**	**IE 6+**	**IE 5.0**	**IE 5.0**	**IE 5.0+**	**IE 5.0**
needed software	**NS 4.7x**		**Acrobat Reader V4**	**Acrobat Reader**	**Windows 2000 OS**		**NS 4.7x**	**Acrobat Reader**
special plug-ins	**yes**	**yes**	no	no	**yes**	**yes**	**yes**	**yes**
if yes: how many	**1**	**1**			**2**	**2**	**1**	**1**
if yes: at what cost	**0**	**0**			**0**	**0**	**0**	**0**

Tab. 7-11: Hard- and Software Requirements (1.7)

7.4 Information Scope

7.4.1 Covered Vehicles and Update Periods (1.6)

For BMW, Jaguar, Volvo (wiring on paper only), Opel and Volkswagen technical repair information is available for all models produced within the last 10 years. For Ford (90 %) Peugeot (75 %) and Renault (50 %) only a portion of this information is available via Internet. Ford, Peugeot and Renault provide other information on paper (Ford and Peugeot) or on paper plus CD (Renault). These additional media have to be purchased separately.

Information updates were made instantly (Ford, Jaguar, Renault) or within periods of 2 - 3 months, which represents a reasonable period of time.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
covered vehicles last 10 years [%]	**100**	**90**	**100**	**97**	**100**	**75**	**50**	**100**
update periods	**2 month**	**1 day**	**1 day**	**2 month**	**3 month**	**3 month**	**1 day**	**3 month**

Tab. 7-12: Covered vehicles and update periods (1.6)

7.4.2 Languages (1.8)

The websites are offered in several different languages. All manufacturers offer their technical information in Dutch, English, French, German, Italian and Spanish and also, with the exception for Jaguar, in Portuguese and Swedish.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
czech	no	yes	no	no	yes	yes	yes	yes
danish	no	yes	no	no	yes	yes	no	yes
dutch	yes	yes	yes	yes	yes	yes	yes	yes
english	yes	yes	yes	yes	yes	yes	yes	yes
estonian	no	no	no	no	no	no	no	no
finnish	no	yes	no	yes	yes	yes	no	yes
french	yes	yes	yes	yes	yes	yes	yes	yes
german	yes	yes	yes	yes	yes	yes	yes	yes
greek	yes	yes	no	no	yes	yes	yes	yes
hungarian	no	yes	no	no	yes	yes	yes	yes
italian	yes	yes	yes	yes	yes	yes	yes	yes
latvian	no	no	no	no	no	no	no	no
lithuanian	no	no	no	no	no	no	no	no
norwegian	no	yes	no	no	yes	yes	no	no
polish	no	yes	no	no	yes	yes	yes	yes
portuguese	yes	yes	no	yes	yes	yes	yes	yes
romanian	no	no	no	no	no	no	no	no
slovenian	no	no	no	no	no	yes	yes	no
spanish	yes	yes	yes	yes	yes	yes	yes	yes
swedish	yes	yes	no	yes	yes	yes	yes	yes
other	no	yes	no	no	yes	yes	yes	no

Tab. 7-13: Languages (1.8)

Estonian, Latvian, Lithuanian and Romanian are not supported. Some manufacturers offer additional languages like Turkish (Ford, Opel, Renault and Peugeot), Russian (Ford, Renault and Peugeot), Japanese (Ford, Renault) and Chinese (Peugeot).

7.4.3 Vehicle Identification (2.1)

Since vehicles are delivered in different configurations and variants, so it is absolutely necessary to be able to precisely identify a given vehicle in order to obtain the correct and relevant technical information. Therefore vehicle identification is a very important requirement. Such identification could be performed by different means. The best and easiest method to automatically identify a vehicle is by using its vehicle identification number (VIN). The VIN consists of 17 characters:

- Character 1-3: World Manufacturer Code
- Character 4-9: Vehicle Features (e.g. model, body style, engine type, …)
- Character 10: Model Year
- Character 11: Production Plant
- Character 12-17: Sequential Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
W	O	L	O	V	B	P	3	5	3	1	0	4	2	5	6	6

Tab. 7-14: Vehicle Identification Number (VIN)
Example Opel Omega B, Model 2003: WOLOVBP3531042566

Identification by VIN is only possible for BMW, Ford, Volvo and VW, but it does not return any results on the Ford website (Ford Focus 1.8l 12/98; VIN: WFOAXXGCDAWA19792; Message: Unable to Locate Information for the Vehicle Data). Whereas Opel did not specify that an identification by VIN is possible, this feature is implemented on the website, but does not work either (error message: VIN is not interpretable).

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 the vehicle identification number (VIN) is not known, this feature is also absolutely necessary. All manufacturers provide this method of identification.

To find the necessary technical information it is necessary to identify all original parts and their respective part numbers. Ford, Jaguar and Volkswagen do not provide such an unambiguous identification. Regarding Ford, the identification is the same as for authorised repairers. The Jaguar selection is only made by model and model year. For Volkswagen the

identification is well defined, but only the required original equipment or special tools are displayed without any part numbers.

BMW also provides a diagnosis interface from its website to a vehicle in the workshop by a PC/laptop and the appropriate supplementary hardware. With the so called DIS Diagnosis System the vehicle identification can also be performed by communication with the car via OBD2 interface or OBD interface, using data the vehicle sends back to the application.

In some European countries the registration plate number precisely defines vehicles. On the Ford website a vehicle identification by the registration plate number is also possible for these countries (Finland, Norway, Sweden, Denmark, GB, Ireland, Spain, Portugal, Netherlands and Italy).

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
by VIN	yes	yes	**no**	yes	**no**	**no**	**no**	yes
by selective list	yes	yes	yes	yes	yes	yes	yes	yes
by other	yes	yes	**no**	**no**	**no**	**no**	**no**	**no**
identification of original parts (incl. part no.)	yes	**no**	**no**	yes	yes	yes	yes	**no**

Tab. 7-15: Vehicle Identification (2.1)

7.4.4 Information Search (2.2 – 2.3)

To receive the necessary technical information different search criteria should be provided. In this context the most important criteria are search by systems (provided by all manufacturers) and search by components (only BMW, Ford, Volvo, Opel). An efficient way usually is a full text search. BMW, Jaguar, Volvo and Opel provide such a feature. But different manufacturers use different terms for their systems and components and therefore a target-oriented full text search may be difficult and the user may not get the desired information.

Search by symptoms is a useful option to identify faulty components. Any manufacturer, except for BMW, offers this option, Ford and Jaguar provide a symptom chart for each system, which fulfils the requirements of an independent repair shop.

In addition BMW also provides a search by document number, title and type of document, but these features are of minor use.

In order to receive the necessary documents, the title and a short description of the content of the document are necessary. A document title is provided by all manufacturers whereas a

description is only available on the Volvo, Peugeot and Volkswagen website. If the user wants to print these documents and file them for a later use a creation date or version number is useful to ensure the validity of the documents.

BMW displays a document number (e.g. RA 123456), which can also be used as a search criterion.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
Trouble Codes (DTC)	yes	no	no	yes	yes	no	no	no
symptoms	(yes)	(yes)	(yes)	no	no	no	no	no
systems	yes	yes	yes	yes	yes	yes	yes	yes
components	yes	yes	no	yes	yes	no	no	no
OE numbers	yes	no	no	yes	no	yes	no	no
special tool names	yes	no	no	yes	yes	no	yes	no
warning indication	no	no	no	yes	no	no	no	no
full text search	yes	no	yes	yes	yes	no	no	no
other	yes	no	no	no	no	no	no	no

Tab. 7-16: Search Criteria (2.2)

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
title	yes	yes	yes	yes	yes	yes	yes	yes
short description	no	no	no	yes	no	yes	no	yes
creation date/version	no	no	yes	no	no	yes	no	yes
other	yes	no	no	no	no	no	no	no

Tab. 7-17: Display of Search Results (2.3)

7.4.5 Content (2.4)

Tab. 7-18 describes the scope of general technical repair information. For some manufacturers (Ford, Opel, Peugeot) hydraulic and pneumatic wiring are missing. Especially for fault investigations this information might be necessary in some cases, but not as

important as electrical wiring. Volvo provides these electrical diagrams on paper. Here, the price for a typical wiring diagram is EUR 45,- – 50,-.

For some models of Renault, parts of the technical information are available on paper only. This includes information on settings, operating fuels, tightening torques, body repair information, DTC identification and electrical wiring. Only for the latest Laguna and Megane models information is completely available via Internet.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
functional descriptions	yes	yes	yes	yes	yes	yes	yes	yes
fitting / removal procedures	yes	yes	yes	yes	yes	yes	yes	yes
work plans / job times	yes	**no**	**no**	**no**	**no**	yes	**no**	yes
electrical wiring	yes	yes	yes	(yes)	yes	yes	yes	yes
hydraulical wiring	yes	**no**	yes	**no**	**no**	**no**	yes	yes
pneumatical wiring	yes	**no**	yes	**no**	**no**	**no**	yes	yes
emission related information	yes	yes	yes	yes	yes	yes	yes	yes
body repair information	yes	yes	yes	yes	yes	yes	yes	yes
welding instructions	yes	yes	yes	yes	yes	yes	yes	yes
pickup points	yes	yes	yes	yes	yes	yes	yes	yes
tightening torque figures	yes	yes	yes	yes	yes	yes	yes	yes
axle settings	yes	yes	yes	yes	yes	yes	yes	yes
brake clearance	yes	yes	yes	yes	yes	yes	yes	yes
operating fuels	yes	**no**	yes	yes	yes	yes	yes	yes
wheel-tire combinations	yes	yes	yes	yes	yes	**no**	yes	yes

Tab. 7-18: Information content – general information (2.4.1)

Usually the customer asks for price information before a repair job is performed. For a realistic estimation job times are necessary. Information on job times is not required as such by the BER, but BMW, Peugeot and VW provide these figures as an asset.

Servicing is one of the main jobs independent garages are working in. Therefore the information described in Tab. 7-19 is quite necessary and important. Ford does not provide any service information and for Jaguar necessary instructions are also missing. The Renault service information is only available on paper.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
service intervals	yes	**no**	yes	yes	yes	yes	(yes)	yes
service instructions	yes	**no**	yes	yes	yes	yes	(yes)	yes
resetting maintaince indicator	yes	**no**	**no**	yes	yes	yes	**no**	yes

Tab. 7-19: Information content – service information (2.4.2)

For a target-oriented fault identification and repair diagnostic information is also required. Peugeot does not provide any diagnosis information; only the location of the diagnostic connector (OBD plug) can be found. On the Jaguar website DTC meanings are only provided for the XJ-Series, but not for XK, S-Type and X-Type. Information on ECU software versions is also not available for Jaguar, Volvo and Ford, who also do not deliver an interpretation on diagnostic trouble codes (DTC). A lack in test procedures, parameters and values do not have the same relevance (Peugeot), but is important especially for diagnostic tool manufacturers.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
location diagnostic connector	yes	yes	yes	yes	yes	yes	yes	yes
DTC meanings	yes	**no**	(yes)	yes	yes	**no**	yes	yes
information on ECU software versions	yes	**no**	**no**	**no**	yes	**no**	yes	yes
test procedures	yes	yes	yes	yes	yes	**no**	yes	yes
test parameters	yes	yes	yes	yes	yes	**no**	yes	yes
test values under certain conditions	yes	yes	yes	yes	yes	**no**	yes	yes

Tab. 7-20: Information content – diagnosis information (2.4.3)

In order to be able to buy the correct spare parts for a given repair OE spare part numbers and spare part lists are necessary. To purchase aftermarket spare parts the OE spare part number is also required and a cross-reference table selects the aftermarket parts. BMW and Ford provide spare part information on a separate website where an extra registration is needed. This registration is free of charge, but BMW reserves the right to demand payment. At present, use is free of charge within the scope of a trial operation. The date, as of which a charge will be made, will be announced by BMW over the portal. The charge will amount to approx. EUR 60,- per quarter. Opel, Renault and Volkswagen provide spare part information

on a separate CD-ROM for additional costs. Opel's service centre was asked for the price of a CD and replied that the CD is available for franchised partners only. For Jaguar spare part information could not be found.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
spare part numbers	yes	yes	**no**	yes	(yes)	yes	(yes)	(yes)
spare part list for given vehicle	yes	yes	**no**	yes	(yes)	yes	(yes)	(yes)
graphical spare parts identification	yes	yes	**no**	yes	(yes)	yes	(yes)	(yes)

Tab. 7-21: Information content – spare parts (2.4.4)

A special tool list for a given vehicle is necessary to know, which tools are needed and to decide whether a repair can be performed economically in an independent workshop. Some manufacturers do not provide such a list, but it is sufficient if the necessary special tools are named in the repair manuals. These manufacturers were also marked with "yes". On the Ford website no tool lists were accessible with German language settings. With any other language the list was displayed.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
special tool list for given vehicle	yes	(yes)	yes	yes	yes	yes	yes	(yes)
description of intended use for each tool	yes	(yes)	yes	yes	yes	yes	yes	(yes)

Tab. 7-22: Information content – special tools (2.4.5)

7.5 Differences between authorised and independent operators (1.9 + 4)

Based on the answers in the respective questionnaires Tab. 7-23 describes the differences of the conditions and the content of the technical information systems between authorised and independent operators. For those manufacturers where currently no web based technical information system is available to the authorised repairers, a comparison between the web system for independent operators and the CD/DVD system for authorised operators is made. Differences in hard- and software requirements, which are based on different information systems (Internet or CD/DVD) are neglected.

	BMW	Ford	Jaguar	Volvo Cars	Opel / Vauxh.	Peugeot	Renault	VW
registration conditions	yes	yes	yes	yes	yes	yes	yes	yes
registration costs	yes	yes	no	yes	yes	no	yes	no
cost models	yes	yes	yes	yes	yes	yes	yes	yes
covered vehichles / update periods	yes	no	no	no	no	no	no	no
hard- / software requirements	yes	no	no	no	no	no	no	yes
languages	no	no	no	no	no	no	no	no
vehicle identification	no	no	no	no	no	no	no	yes
search criteria	yes	no	no	no	no	no	no	no
display of search results	yes	no	no	no	no	no	no	yes
information structure	no	n/a	no	no	yes	n/a	yes	yes
scope general repair info	no	no	no	no	no	no	no	no
scope service info	no	no	no	no	yes	no	no	no
test and diagnosis info	no	no	no	no	no	yes	no	no
spare parts info	no	no	no	no	no	no	no	no
special tools info	no	no	no	no	no	no	no	no

Tab. 7-23: Differences of the conditions and systems for authorised and independent operators

All other differences are explained in detail as follows:

2. Registration Conditions

   a. BMW
   The registration of authorised operators is done by execution of the BMW Dealer on BMW Service agreement. Independent operators register individually via the Internet.

   b. Ford
   Authorised operators are registered within the Ford Intranet (CDS = Company to Dealer Systems). Independent operators register individually via the Internet.

c. Jaguar
Authorised repairers access via company Extranet. Independent operators register individually via the Internet.

d. Volvo Cars
Authorised dealers cannot subscribe to iVADIS.

e. Opel/Vauxhall
Currently there is no web based Technical Information System (TIS) available for Opel/Vauxhall authorised repairers.

f. Peugeot
The registration of authorised operators is done by execution of Peugeot. Independent operators individually register via the Internet.

g. Renault
Independent operators can buy an access for a limited time, whereas the authorised repairers have taken out a subscription for one year.

h. Volkswagen
Authorised operators get automatic access after authorisation. Independent operators register individually via the Internet.

3. Registration Costs

a. BMW
Besides the audit costs, there are no additional registration costs for authorised operators as the information system is different. Authorised operators get information on CD/DVD systems. The distribution of the information and the gathering of this information is covered by the BMW cost model (BMW to National Sales Company (NSC), NSC to authorised repairer). Costs are allocated to the NSC by the following model:

- Annual media charge (in 2004 --> EUR 2.400,-) per service outlet, including DIS (Diagnosis Information System), CIP (Coding Individualization Programming, TIS (Technical Information System), KSD (e.g. Flat Rate Units), EPC (Electronic Parts Catalogue), EBA (Mounting Guidelines), SIP (Training), WEP (Workshop Equipment and Planning), Nominal Emission Data, Navigation Software.
  Plus 7,50 EUR per retailed Vehicle, plus EUR 15,- per extra CD, plus EUR 30,- per TLF ("Trainer Leitfaden"), plus EUR 3,- per Brochure.
  From NSC to authorised operator:
  Annual basis fee for the company plus pro-rata per service-outlet (headquarter, operating site 1, operating site 2, etc.). Prices depends on NSC's:

- Germany (2003):
  EUR 2.750 Basis Fee plus pro-rata per operating site depending on VAK (pro-rate asset cost)

- Italy:
  Outlet Price Range from EUR 620,- to EUR 2.950,- depending on turnover and outlet number.
  Diagnosis CD (DIS, CIP, NAVI) can be sold individually or under annual subscription: Single CD EUR 150,-, Annual subscription EUR 1.000,-, (15% discount for Dealers who have more than one Outlet in the same province).
  Service Information Programme CD (SIP):
  - CBT Manager EUR 500,-
  - New Cars EUR 500,-
  - New Engines EUR 150,-
  In case of course package subscription, SIP CD's are included in the package price.

- Denmark: Media cost in EUR per CD
  - ETK (electronic parts catalogue) EUR 60,-
  - KSD (flat rate units) EUR 60,-
  - DIS EUR 60,-
  - CIP EUR 60,-
  - TIS EUR 60,-
  - NAV (Navigation-CD) EUR 60,-
  - WEP (Workshop Equipment and Parts) EUR 60,-
  - SIP included in training fee
  - System Costs EUR 875,-

- France:
  - fixed annual price: EUR 4.000,- (for BMW) and EUR 3.000,- (for MINI)
  - additionally: + x EUR Depending on turnover of BMW original parts, but maximum price is EUR 10.000,-

- Netherlands:
  Electronic info package for dealers including software
  - DIS
  - TIS
  - KSD
  - SIP
  - ETK
  - EBA
  - JetStream, PUMA & VERA
  Fixed price per outlet EUR 7.995,-
  Technical Help Desk via 0900 number per minute, EUR 0,51 per minute.

- Great Britain(GB)/Ireland (IR):
  Charges from BMW AG:
  Cost per Service Outlet (EUR 2.250,-) x No of dealers in ZG = Total Fixed cost
  Cost per vehicle (EUR 7,50) x wholesale volume (BMW/MINI) = Wholesale Volume Cost
  Reduction in costs per CD issued (EUR 4,- per CD)

  Charges to Great Britain / Irish dealer network:
  Total fixed cost + Wholesale volume costs = Total charges for media from BMW AG
  Total cost from BMW AG - reduction in cost per CD = Total invoice value from BMW AG
  Total invoice value from BMW AG + 30% (Overhead for ZG technical support) = total Dealer network charge
  Total Dealer Network Charge/Number of dealers/repairers = Charges per dealer/repairer

  Other charges to GB/IR dealers/repairers:
  Cost per CD issued when automatically issued --> £ 3,-

  The after-sale Media Charge in GB/IR includes DIS, TIS, SIP, EBA, CIP, KSD, Navi, etc.

  GB Example Based on 2003 Figures:
  Charges from BMW AG:
  Total Fixed Costs = EUR 991.844,50
  Wholesale Volume Costs = EUR 365.625,00
  Reduction in costs per CD issued = -EUR 102.968,50
  Total Charges from BMW AG = EUR 1.254.501,50

  Charges to ZG dealer network:
  Total Charges from BMW AG in £ (budget F/Ex rate 2003 £ 1= EUR 1,4295) = £ 840.537,02
  Partial Cost recovery for Overhead cost Technical support (excluding salaries) +30%
  Total cost invoiced to dealer network = £ 1.092.698
  Total Authorised Repairers (Service Outlets) = 153
  Total Invoice Value per Service Outlet 2003 = £ 7.141,82

- Poland:
  Quarterly Fixed price: EUR 562,50
  Additionally: + EUR 4,- per CD/DVD

b. Ford
Authorised dealers pay a monthly fee. Independent Operators pay 'per view'.

c. Volvo Cars
Authorised dealers cannot subscribe to iVADIS.

d. Opel/Vauxhall
Currently there is no web based Technical Information System (TIS) available for Opel/Vauxhall authorised repairer.

4. Cost Models

a. BMW
See “Registration Costs”.

b. Ford
See “Registration Costs”.

c. Jaguar
Authorised repairers have to pay for all models and all model years. Independent repairers can choose shorter subscription periods and fewer models if required.

d. Volvo Cars
Authorised dealers cannot subscribe to iVADIS.

e. Opel/Vauxhall
Currently there is no web based Technical Information System (TIS) available for Opel/Vauxhall authorised repairers.

f. Peugeot
Independent operators can buy an access for a limited time, whereas the authorised repairers have taken out a subscription for one year.

g. Renault
Independent operators can buy an access for a limited time, whereas the authorised repairers have taken out a subscription for one year.

h. Volkswagen
Independent operators pay per document (book or chapter). Authorised operators pay a general monthly fee.
According to the qualitative standards of the service dealer contract, authorised dealers are obliged to participate in active quality monitoring. The authorised dealer has to make investments to fulfil the standard "active quality monitoring". This includes the payment of an information flat rate subscription charge. The authorised service dealer will then receive all technical

information that is available. The independent workshop does not have to purchase the full package of information. These workshops can purchase information according to their specialisation.

5. Covered Vehicles / Update Periods

   a. BMW
   Information on all covered vehicles available. The periods for information on DVD/CD and OSS can differ approximately a few days in exceptional cases. Usually the data and the update periods are the same.

6. Hard- and Software Requirements

   a. BMW
   Authorised operators:
   - PC -GT1 or DISplus (for diagnosis and programming)
   - DIS/CIP DVD for GT1
   Other operators:
   - PC - Browser - Microsoft Java Virtual Machine (for DIS)
   - Cookies accepted
   - Java Script enabled
   - PCL5 or Postscript printer (for DIS)
   - PassThru Tool or EDIC-Card
   - Alternatively GT1 plus DIS/CIP DVD for GT1.

   Conclusion:
   The soft- and hardware requirements for other operators are lower.

   b. Volkswagen
   Independent operators only need a PC matching the hardware and software requirements. Authorised partners need a complete LAN infrastructure to connect to the server system of the manufacturer. The minimum requirements for the operating system of the client PC connected to the LAN are Win NT, Win 2000 or Win XP/pro.

7. Vehicle Identification

    a. Volkswagen
    Direct search mode is only available for authorised repairers. After entering the enquiry, the authorised partner is guided directly to the relevant chapter. This procedure is only available if the entire IT- infrastructure is designed in accordance with the manufacturer's specifications. Independent operators have the available search modes listed above (general search: model, model year, topic; additional in expert search: gearbox code, engine code). After entering the enquiry, the independent operator is guided to the complete information for the request (whole book for the request) and has to make a new search for the relevant chapter (additional access for that document might be required). If the complete information for the requested vehicle has already been accessed, text search (supported by acrobat reader) is available.

8. Search Criteria

    a. BMW
    DIS:
    Users have the same process flow.

    TIS Internet:
    Vehicle Identification via VIN type in or by E-Series, Model and Year of production.
    TIS authorised:
    Specific data can be searched w/o specifying with VIN, Model, E-Series or Date of manufacturing.

    KSD Internet:
    Vehicle identification via Series - model - ID type is required in order to obtain information.
    KSD authorised operators:
    Search for documents is possible just via series, id-type and/or VIN. Authorised operators can search for documents more global.

9. Display of Search Results

    a. BMW
    Display of search results is different on the online system, but not the content.

    b. Volkswagen
    See vehicle identification.

10. Information Structure

    a. Opel
       Currently there is no web based Technical Information System (TIS) available for Opel/Vauxhall authorised repairers.

    b. Renault
       The PDF documents for independent operators are split into subgroups in order to ease the search and for shorter download periods.

    c. Volkswagen
       The Internet information is especially designed for independent operators. The downloads are displayed in PDF format. Authorised operators install special software with all technical information on their local data network (LAN/intranet). Updates are supported by VPN (overnight data transfer).

12. Service Information

    a. Opel/Vauxhall
       Labour Operation Numbers and Times are omitted from the IMT TIS CD.

13. Test and Diagnosis Information

    a. Peugeot
       There is no information concerning the diagnosis on the independent repairers website, whereas it exists on the authorised repairers site.

7.6 The Usability of the Information Systems

7.6.1 BMW

BMW provides an extensive and advanced website. All necessary technical information is covered. On the other hand the search possibilities are very limited. Therefore it is very difficult and time consuming to find the necessary piece of information. After a search procedure the list of documents only provides a short title. In many cases the user takes the wrong document. Due to the “pay-per-view” cost model this procedure is also very costly. In addition the information provision is split into two different web portals: BMW Online Service System (OSS) and BMW After-sales Assistance Portal (ASAP), which increases the complexity, but also gives some information free of charge (ASAP).

If a user has identified a certain car, the search result list also contains data of other cars. This increases the difficulty of the whole searching process. Authorised repairers have different vehicle identification and search possibilities and the display of search results is also different. An adoption of these features to the independent operators website might ease the search process and would therefore improve the usability of the website.

7.6.2 Ford

The Ford website is also extensive and advanced, but important documents are missing (service information, DTC meanings, operating fuels). Whereas the search possibilities were also limited, it was easier (compared to BMW) to find the relevant document due to the better structure of the content list.

7.6.3 Jaguar

The structure of information is comparable to the Ford website. In general it is easy to find the relevant documents, which are PDF versions of the paper workshop manuals with additional links and search possibilities. Purchasers are advised that the specification apply to a range of vehicles and not to any specific one. For the specification of a particular vehicle, purchasers should consult their dealer. Since nearly all necessary information should be available this does not cause significant problems.

7.6.4 Volvo Cars

Volvo developed a sophisticated website. The information is well structured. All documents contain links to relevant additional information. All necessary information can be found in a reasonable amount of time. A compatibility test can be performed to check whether the website browser settings are correct. A “text only” button is also available, which reduces the necessary download times for slow network connections.

7.6.5 Opel/Vauxhall

It seems that all above listed technical repair information is on the website. But in terms of usability for an independent workshop it is doubtful whether the operator is able to find the relevant information in a reasonable amount of time. While checking the website several problems occurred:

- Vehicle identification by VIN did not identify the vehicle.
- Vehicle identification by a selective list is not guided. It is possible to define illogical cars. In that case the listed information is very confusing.
- Opel’s manufacturer VIN code starts with “WOL…” for every Opel. It was not possible to enter the “O” directly in the identification window. Therefore the code was entered with “copy and paste” from MS Word.
- The free text search did not work satisfying (e.g. the word “OBD” was not found). Occasionally the result list also contained multiple but identical results.

It is assumed that the website contains several problems or errors, which make it very difficult to obtain the required piece of information.

7.6.6 Peugeot

The website is structured by different models and a rudimental list of topics for each model (see Fig. 7-3). The listed items, which are on the lowest information level, do not follow any traceable structure (e.g. Peugeot 406 -> Mechanical -> General, see Fig. 7-4). Apart from the very unclear arrangement of items, it is not clear why some information is displayed for one model but not for another. E.g. “Data tightening torques brakes” is displayed for a Peugeot 406, but not for a Peugeot 307 (see Fig. 7-4 and Fig. 7-5). Other items do not lead to any information (e.g. Peugeot 406 -> Maintenance -> General, see Fig. 7-6).

Apart form the listed topics no additional search features are available. Vehicle identification is only possible by model name, without any additional specification (e. g. model year, engine, transmission, …). In addition the website looks very simple, the information structure is unclear and it is quite difficult to find the necessary information. It is also not clear whether all specified information is contained for every listed model.

For an independent operator it is very difficult or nearly impossible to find the relevant technical information. Compared to all other websites, the Peugeot and the Renault system represent a poor level and do not satisfy the needs of an independent workshop.

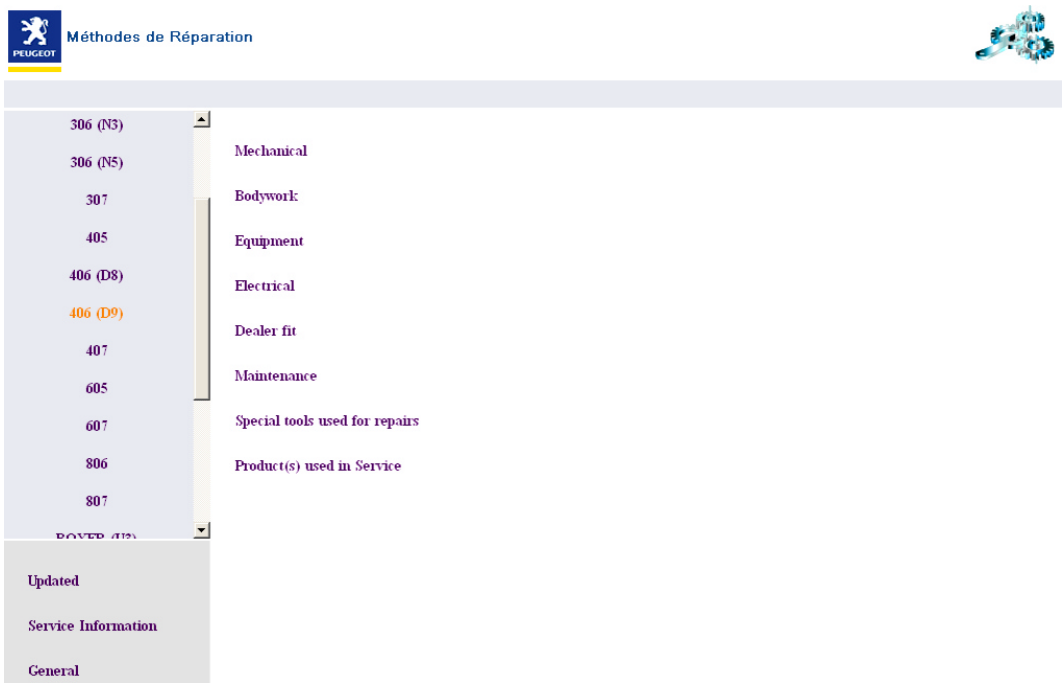

Fig. 7-3: Top Level Peugeot 406 (D9)

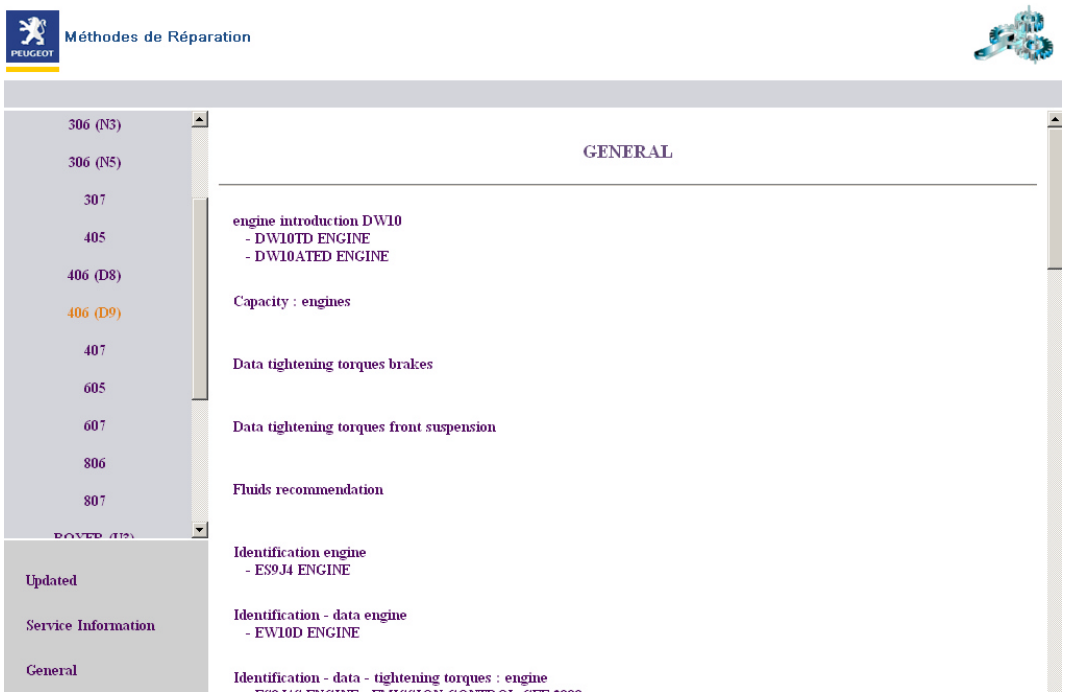

Fig. 7-4: Level: Peugeot 406 (D9) -> Mechanical -> General

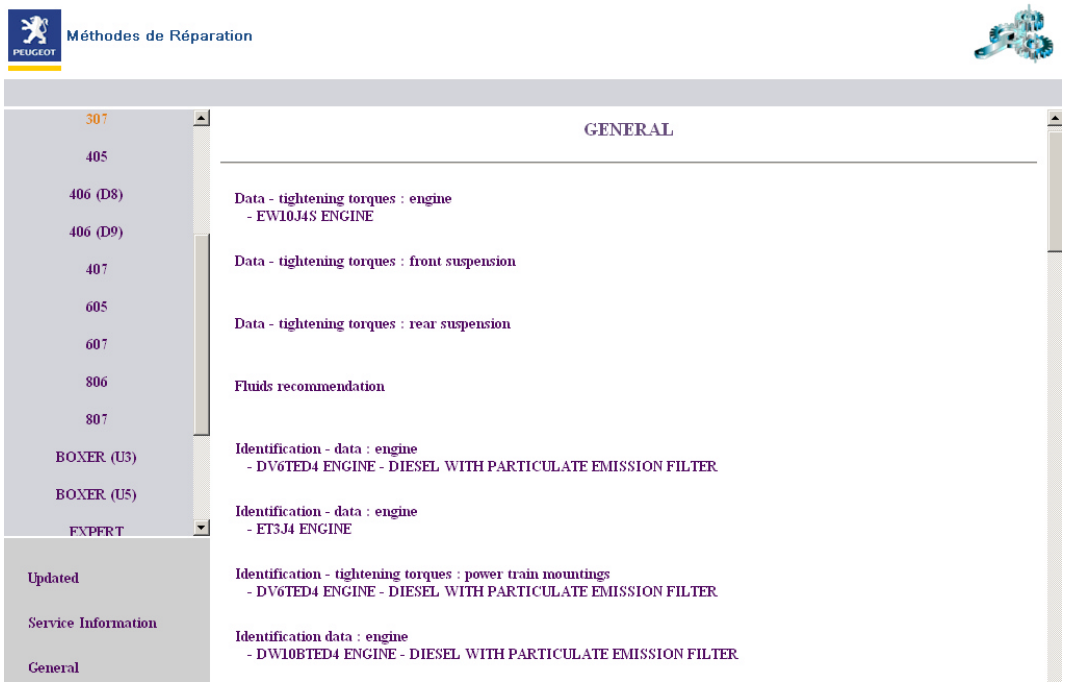

Fig. 7-5: Level: Peugeot 307 -> Mechanical -> General

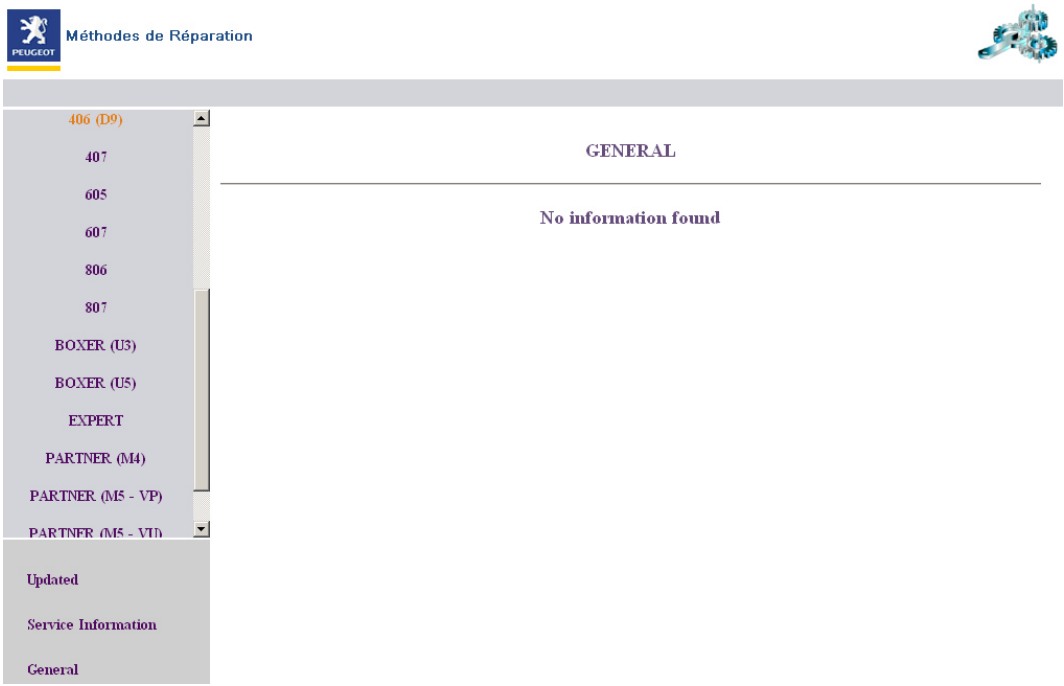

Fig. 7-6: Level: Peugeot 406 (D9) -> Maintenance-> General

7.6.7 Renault

The Renault website contains standard workshop repair manuals, which are digitalised to a PDF file. In order to obtain small files the quality and resolution of the pages are sometimes bad (e.g. wiring diagrams are not readable). The structure looks identical to the workshop manual. Again the listing of the different topics is very confusing. E.g. in the chapters “General information -> Engine and peripherals” (see Fig. 7-7) the terms “ENGINE AND ENGINE PERIPHERALS” and “ENGINE AND PERIPHERALS” are listed as separate chapters. Whereas the first item contains 8 documents, the second one lists 33 documents. The user cannot identify, which chapter is relevant. The topic “ENGINE AND PERIPHERALS” also contains different subchapters with identical names (e.g. “ENGINE REPAIR”, see Fig. 7-8), which all contain different information. The user has to check each document to identify whether it contains the needed information. A content list or a short description of the content is also not given. Furthermore it is not possible to search for specific keywords.

For an independent operator it is very difficult or nearly impossible to find the relevant technical information. Compared to all other websites, the Peugeot and the Renault system represent a poor level and do not satisfy the needs of an independent workshop.

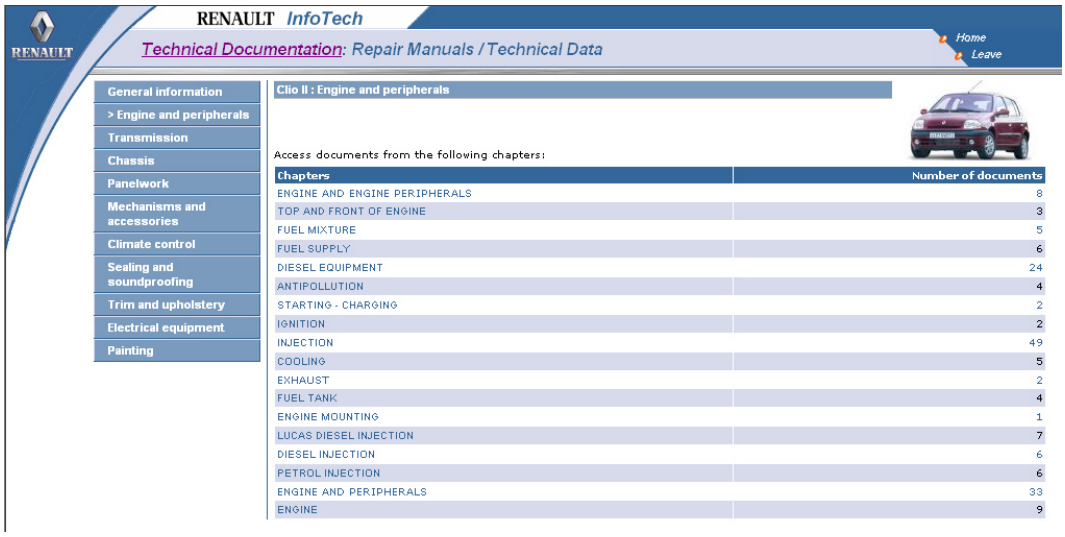

Fig. 7-7: Level: Clio II -> Engine and peripherals

Fig. 7-8: Level: Clio II -> Engine and peripherals -> Engine and peripherals

7.6.8 Volkswagen

The VW website contains all necessary technical information. Vehicles are identified by VIN or by a selective list. As a result all relevant workshop manuals are listed. The user can only buy complete PDF documents (usually between 100 – 200 pages) for certain systems (e.g. engine) and procedures (maintenance). For each document a content list can be displayed

for free. Since the workshop documents are quite large it takes some time to download them and it is also very costly. Some books refer to others, which have to be purchased separately. The documents can be displayed offline, but only if the subscription license is still valid. Another disadvantage is that for each search procedure the vehicle identification process has to be done again. Since the “go back” button of the web browser does not work on the website, it is sometimes time consuming to search for the relevant information.

From an independent operators point of view it would be more economic and comfortable to purchase only the part of information, which is needed for the repair.

8 Passenger Car Manufacturers - CD/DVD based Information System (Part B2)

8.1 General Remarks

The assessment of Smart covers all countries with the exception of Denmark. Smart does not sell any cars in Denmark. DaimlerChrysler (Mercedes + Smart), who has a CD based system in place, is currently pursuing a project aiming at the implementation of an Internet-based system for the provision of technical information in the future.

In contrast to all other countries where paper documentation is sold, Toyota provides a CD based system for the Italian market.

The CD's provided by Opel, Renault and Volkswagen are similar to the Internet-based system. A detailed assessment of these systems is made in chapter 7. Any differences or particularities are named.

8.2 Access (1.1 – 1.4)

In general CD/DVD based systems consist of a package with all technical information for one or all models (see Tab. 8-1). Mercedes, Peugeot and Citroën also offer additional packages.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
package all models	yes	yes	yes	yes	yes	yes	**no**
package single model	yes	**no**	**no**	**no**	**no**	yes	yes
package with specific system for all models	**no**	**no**	**no**	**no**	**no**	yes	**no**
other	**no**	**no**	yes	**no**	yes	yes	**no**

Tab. 8-1: Available information packages (1.1)

- Mercedes
  Analogous to the offer to authorised repairers various information packages are offered:
  - Passenger car package (passenger cars, off-road vehicles, transporters)
  - Commercial vehicles
    (transporters, commercial vehicles, Unimog, MB-trac, busses)
  - Passenger cars / Off-Road vehicles

  - Trucks
  - Transporters
  - Unimog / MB-trac

- Peugeot
  An independent operator can independently subscribe for different packages.

- Citroën
  Citroën offers two different options: LASERTEC CLASSIC is intended for those repairers that want to obtain technical information from time to time. If one wants all the technical documentation and its updates for all vehicles, the LASERTEC EXCUSIVE offer should be chosen. To be able to consult the Citroën technical documentation, a LASERTEC installation pack (price: EUR 90,-) has to be bought. After installing it, one can look up the Citroën spare parts documentation and work time schedules freely. Then, according to the specific needs, the independent operator can order the technical documents he is interested in on a website. After paying for these documents online, an access key will be assigned to allow local look-up. It is also possible to order update DVD's (price: EUR 40,-) to update the data or to find information concerning new cars.
  LASERTEC EXCLUSIVE is intended for those operators who want to receive all the Citroën documentation and its updates (12 DVD's/year; price annual: EUR 1.975,-). Again, the LASERTEC installation pack has to be bought first.

The costs of different information packages are described Fig. 8-1. The largest one-year subscription prices can be found for Fiat/Alfa, Volvo and Peugeot. For Fiat a subscription is possible in Denmark (Subscription establishment EUR 3.356,- + EUR 134,- per month) and Italy (Subscription establishment EUR 2.400,- + EUR 1.100,- annual). Opel, Volvo and Peugeot also provide an Internet-based system. The one-year subscription costs are identical to those for the Internet option.

Volvo is the only manufacturer whose minimum subscription period (2 month) is shorter than one year (also see Fig. 8-2). Therefore the costs for a one-time delivery are significant lower.

Mercedes has different prices for each country, which differ from EUR 967,- to 1.274,- (DK: 1.112,-; F: 1.093,-; GER & NL: 967,-; UK & IRE 1.034,-; I: 1.113,-; PL: 1.274,-). The MCC Smart price of EUR 934,- is for all countries with the exception of Poland where EUR 955,- have to be paid. The total price of EUR 934,- consists of a one-time license price of EUR 115,- plus a annually price for data content and maintenance of EUR 418,-.

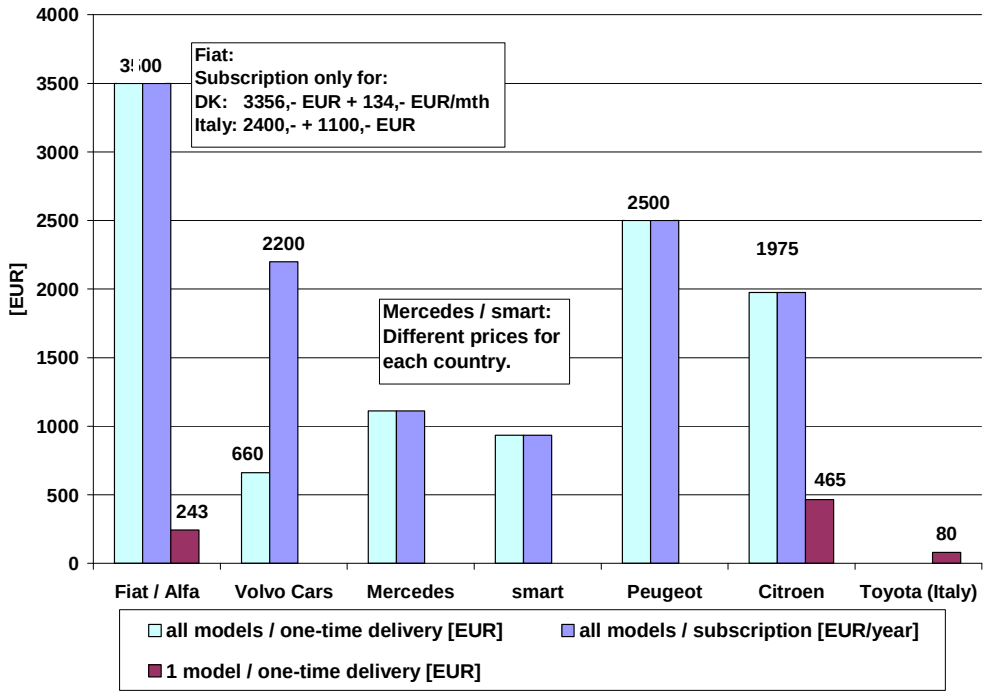

Fig. 8-1: Costs of Information Packages (1.1)

The delivery times for the different CD packages vary from 1 - 7 to 30 days for Fiat and 15 - 45 days for Peugeot. For Fiat and Peugeot it is not reproducible why such large delivery times are needed. If an independent operator has chosen a subscription of technical information the general subscription period is one year.

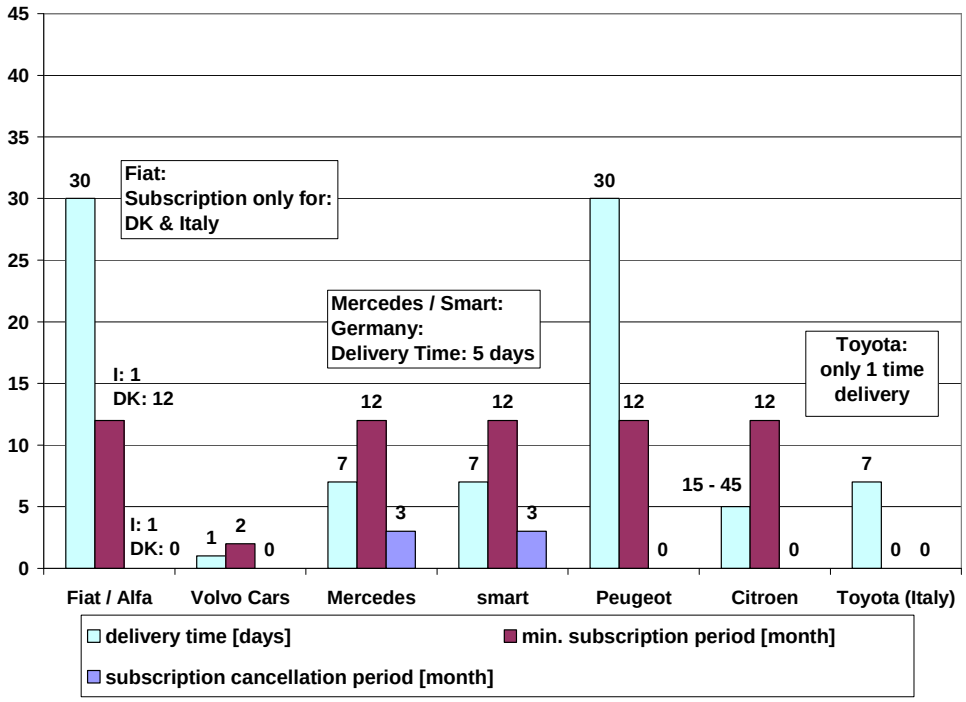

Fig. 8-2: Delivery Time, Minimum Subscription Period and Subscription Cancellation (1.2)

Usually there are not any cancellation periods, only the subscription of Mercedes/Smart repair information has to be cancelled 3 months before end of contract. An independent operator will only subscribe for technical information on a specific brand if the information is needed regularly. Therefore these periods are acceptable.

The required methods of payment, which are shown in Tab. 8-2, represent common procedures. There are no special discounts. Any other methods of payment are named as follows:

Fiat/Alfa:

Credit Card: only UK and Ireland
Cash on delivery (COD): only Denmark, France, Ireland, Italy

Mercedes:

Bank transfer: only Italy, Poland, UK
Debit: without Poland

Smart:

Bank transfer: only Italy, Poland, UK & Ireland
Debit: without Poland
Cheque: only France

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
bank transfer	yes	**no**	(no)	(no)	yes	**no**	**no**
credit card	(no)	yes	**no**	**no**	**no**	yes	yes
debit	**no**	**no**	(yes)	(yes)	**no**	**no**	**no**
other	yes	**no**	**no**	(no)	yes	**no**	yes
special discounts	**no**	**no**	**no**	**no**	**no**	**no**	**no**

Tab. 8-2: Method of Payment (1.3)

Generally the manufacturer directly distributes the information packages. Only Fiat/Alfa, Peugeot and Toyota use their local dealer network for that purpose. Opel (Portica, Germany)

and Volkswagen (arvato logistics services) have contracted external agencies to handle the distribution[6].

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
directly by manufacturer	**no**	yes	yes	yes	yes	yes	**no**
by local authorised dealers	yes	**no**	**no**	**no**	yes	**no**	yes
by any other organisation	**no**	**no**	**no**	**no**	**no**	**no**	**no**

Tab. 8-3: Distribution of technical information (1.4)

8.3 Users (1.5)

Very few independent operators use the purchasing of technical information on CD/DVD. Since the CD/DVD systems lack the flexibility (pricing, packaging) of an Internet system, the costs are only affordable for repairers who are specialised on certain brands. Even large multi-brand repairers (e.g. Auto-Teile-Unger ATU) who might have sufficient repairs on different brands do not usually buy technical information directly from the manufacturer. Those companies have special contracts with publishers (e.g. Autodata) who provide the necessary technical repair information to them.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
number of users per year	50 (Italy)	less than 10	100	10	95	9	7

Tab. 8-4: Number of users (1.5)

8.4 Hard- and Software Requirements (1.6)

Tab. 8-5 gives an overview on the hard- and software requirements for the different CD/DVD based systems. Again, the hardware requirements represent the “state-of-the-art” without

[6] The needs of the independent workshops with regard to the distribution of technically information are not totally clear. Within the European Association for Motor Trades and Repairs (CECRA) different opinions exist.

any uncommon specifications. The necessary software is limited to conventional web browsers (Internet Explorer x.x [IE] or Netscape 4.7 [NS]) and an Acrobat Reader for PDF documents. Only the electronic parts catalogues (EPC) of Opel and Toyota require a dongle, which has to be purchased separately.

Toyota did not provide any information on hard- and software requirements for their CD based technical information system in Italy.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
min. processor [MHz]	400	700	200	200	600	500	
min. RAM [MB]	64	128	64	64	128	256	
min. display resolution	800 x 600	800 x 600	1024 x 768	1024 x 768	1024 x 768	1024 x 768	
min. disk space [MB]	1000	9000	6000	6000	600	500	
needed software	IE 5.5	IE 6.0					
needed software							
special plug-ins	**yes**	no	no	no	no	no	
if yes: how many	2						
if yes: at what cost	0						

Tab. 8-5: Hard- and software requirements (1.6)

8.5 Information Scope

8.5.1 Covered Vehicles and Update Periods (1.2.2.3 + 1.2.2.5)

For Volvo, Mercedes/Smart, Opel and Volkswagen technical repair information is available on CD for all models produced within the last 10 years. Fiat/Alfa (40 %), Peugeot (75 %), Citroën (88 %) and Toyota (80 %) only provide a portion of technical repair information on CD; all other information is on paper.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Opel / Vauxh.	Peugeot	Citroen	Toyota (Italy)	VW
covered vehicles last 10 years [%]	40	100	100	100	100	75	88	80	100
updates per year	DK: 1-6 I: 12	6	11	11	10	10	12	n.a.	6 -8

Tab. 8-6: Covered vehicles and update periods (1.2.2)

During a subscription update CD's are sent 6 times annual for Volvo, Volkswagen and Fiat Denmark and 10 – 12 times annual for all other manufacturers. Since Toyota (Italy) and Fiat/Alfa (all countries, except: DK & I) do not offer a subscription of technical repair information, no update figures were given.

8.5.2 Languages (1.7)

The CD's are also offered in several different languages. All manufacturers offer their technical information in Dutch, English, French, German, Italian, Portuguese and Spanish and also with exceptions in Finnish and Swedish (without Alfa) and Greek and Polish (without Volvo).

Mercedes and Smart remark that for all languages except German, English, French, Spanish and Italian only parts of the information are translated. Peugeot and Citroën distribute their information in the listed languages, but the parts catalogue is only available in French, English, Spanish, German and Italy. The Toyota CD is only sold in Italy, which is therefore the only language for Toyota.

Estonian, Latvian, Lithuanian, Romanian (exception Mercedes/Smart) and Slovenian (exception Citroën) are not supported. Hungarian and Norwegian is only available from few manufacturers. In addition Fiat/Alfa and Opel offer Turkish.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
czech	yes	no	yes	no	yes	yes	no
danish	no	no	yes	no	yes	yes	no
dutch	yes	yes	yes	yes	yes	yes	no
english	yes	yes	yes	yes	yes	yes	no
estonian	no	no	no	no	no	no	no
finnish	no	yes	yes	yes	yes	yes	no
french	yes	yes	yes	yes	yes	yes	no
german	yes	yes	yes	yes	yes	yes	no
greek	yes	no	yes	yes	yes	yes	no
hungarian	no	no	no	no	yes	yes	no
italian	yes	yes	yes	yes	yes	yes	yes
latvian	no	no	no	no	no	no	no
lithunian	no	no	no	no	no	no	no
norwegian	no	no	no	no	yes	yes	no
polish	yes	no	yes	yes	yes	yes	no
portuguese	yes	yes	yes	yes	yes	yes	no
romanian	no	no	yes	yes	no	no	no
slovenian	no	no	no	no	no	yes	no
spanish	yes	yes	yes	yes	yes	yes	no
swedish	no	yes	yes	yes	yes	yes	no
other	yes	no	no	no	no	no	no

Tab. 8-7: Languages (1.7)

8.5.3 Vehicle Identification (2.1)

The necessity to identify a given vehicle can be satisfied by identification via a selective list with several attributes and/or by using the vehicle identification number (VIN). Identification via a selective list is provided by all listed manufacturers, whereas an automatically VIN

resolution is not possible with the CD based systems of Fiat/Alfa and Toyota (Italy). Those two manufacturers are therefore also not able to identify all original parts definitely.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
by VIN	no	yes	yes	yes	yes	yes	no
by selective list	yes	yes	yes	yes	yes	yes	yes
by other	no	no	no	no	no	no	no
identification of original parts (incl. part no.)	no	yes	yes	yes	yes	yes	no

Tab. 8-8: Vehicle Identification (2.1)

8.5.4 Information Search (2.2 – 2.3)

To receive the necessary technical information different search criteria should be provided. In this context the most important criteria are search by systems (provided by all manufacturer without Peugeot and Citroën) and search by components (provided by all manufacturer). Some manufacturers offer additional features like a full-text search (Fiat/Alfa, Volvo, Mercedes/Smart and Toyota Italy) or search by symptoms (Fiat/Alfa and Toyota Italy).

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
Trouble Codes (DTC)	no	yes	yes	yes	no	no	yes
symptoms	yes	no	no	no	no	no	yes
systems	yes	yes	yes	yes	no	no	yes
components	yes	yes	yes	yes	yes	yes	yes
OE numbers	no	yes	yes	yes	yes	yes	no
special tool names	yes	yes	yes	yes	no	no	yes
warning indication	yes	yes	no	yes	no	no	yes
full text search	yes	yes	yes	yes	no	no	yes
other	no	no	no	no	no	no	no

Tab. 8-9: Search Criteria (2.2)

In comparison to the Internet-based systems the display of search results is less important, because the user has not to pay for any additional access periods. But on the other hand it is of course necessary to find the required information in a reasonable amount of time. From that point of view an adequate and informative listing of search results is still relevant.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
title	yes	yes	yes	yes	yes	yes	yes
short description	**no**	yes	yes	yes	yes	yes	yes
creation date/version	**no**	**no**	yes	yes	yes	**no**	**no**
other	**no**	**no**	**no**	**no**	**no**	**no**	**no**

Tab. 8-10: Display of Search Results (2.3)

In order to receive the necessary documents the title and a short description of the content of the documents are necessary. All manufacturers with the exception of Fiat/Alfa, who only gives a title, provide this information. A creation date or version number is not available for Fiat/Alfa, Volvo, Citroën and Toyota (Italy).

8.5.5 Content (2.4)

Tab. 8-11 describes the scope of general technical repair information. Some manufacturers lack important information. Several manufacturers (Ford, Opel, Peugeot) do not provide any hydraulic and pneumatic wiring, whereas electrical wiring for Volvo and Toyota are available on paper only. Peugeot and Citroën do not offer any emission related information. Since this is necessary for emissions tests, the lack of such information is hardly acceptable and in particular operators who offer testing and inspection services rely on this information. For Fiat/Alfa and Toyota welding instructions are missing, which represent important information, especially for body repair shops.

All manufacturers provide sufficient service information, except Peugeot and Toyota who distribute their service information on paper only.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
functional descriptions	yes	yes	yes	yes	yes	yes	yes
fitting / removal procedures	yes	yes	yes	yes	yes	yes	yes
work plans / job times	yes	**no**	yes	yes	yes	yes	**no**
electrical wiring	yes	(yes)	yes	yes	yes	yes	(yes)
hydraulical wiring	**no**	**no**	yes	yes	**no**	yes	yes
pneumatical wiring	**no**	**no**	yes	yes	**no**	**no**	yes
emission related information	yes	yes	yes	yes	**no**	**no**	yes
body repair information	yes	yes	yes	yes	yes	yes	yes
welding instructions	**no**	yes	yes	yes	yes	yes	**no**
pickup points	yes	yes	yes	yes	yes	yes	yes
tightening torque figures	yes	yes	yes	yes	yes	yes	yes
axle settings	yes	yes	yes	yes	yes	yes	yes
brake clearance	**no**	yes	yes	yes	yes	yes	yes
operating fuels	yes	yes	yes	yes	yes	yes	**no**
wheel-tire combinations	yes	yes	yes	yes	**no**	yes	**no**

Tab. 8-11: Information content – general information (2.4.1)

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
service intervals	yes	yes	yes	yes	(yes)	yes	(yes)
service instructions	yes	yes	yes	yes	(yes)	yes	(yes)
resetting maintaince indicator	yes	yes	yes	yes	(yes)	yes	yes

Tab. 8-12: Information content – service information (2.4.2)

For a target-oriented fault identification and repair diagnostic information is also required. Peugeot and Citroën do not provide any diagnosis information; only the location of the diagnostic connector (OBD plug) can be found. Especially the interpretation of diagnostic trouble codes (DTC) is necessary when diagnosing a vehicle and important information for scan tool manufacturers. Volvo, Peugeot, Citroën and Toyota also do not deliver any information on ECU software versions.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
location diagnostic connector	yes	yes	yes	yes	yes	yes	yes
DTC meanings	yes	yes	yes	yes	**no**	**no**	yes
information on ECU software versions	yes	**no**	yes	yes	**no**	**no**	**no**
test procedures	yes	yes	yes	yes	**no**	**no**	yes
test parameters	yes	yes	yes	yes	**no**	**no**	yes
test values under certain conditions	**no**	yes	yes	yes	**no**	**no**	yes

Tab. 8-13: Information content – diagnosis information (2.4.3)

All manufacturers provide sufficient spare part and special tools information. Spare part information is generally distributed on a separate CD.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
spare part numbers	yes	yes	yes	yes	yes	yes	yes
spare part list for given vehicle	yes	yes	yes	yes	yes	yes	yes
graphical spare parts identification	yes	yes	yes	yes	yes	yes	yes

Tab. 8-14: Information content – spare parts (2.4.4)

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
special tool list for given vehicle	yes	yes	yes	yes	yes	yes	yes
description of intended use for each tool	yes	yes	yes	yes	yes	yes	yes

Tab. 8-15: Information content – special tools (2.4.5)

8.6 Differences between authorised and independent operators (1.8 + 4)

Based on the answers in the respective questionnaires Tab. 8-16 describes the differences in the conditions and the content of the technical information systems between authorised and independent operators.

Any differences are explained in detail as follows:

1. Purchase Options
    a. Volvo Cars
    Authorised dealers cannot purchase per DVD. They have a mandatory annually subscription.
    b. Mercedes/Smart
    Star Diagnosis hardware can also be purchased via independent repairers (authorised operators can only rent).
    c. Peugeot
    Independent operators can choose different packages.
    d. Citroën
    Authorised repairers are obliged to purchase an annual subscription.
    e. Volkswagen
    Authorised repairers get a new DVD automatically as long as they have a valid contract. Independent operators receive new CD's for the period of 12 months.
2. Payment
    a. Volvo Cars
    Authorised dealers pay via debit or annually invoices.
    b. Opel/Vauxhall
    The base prices are the same, However, independent operators are charged handling, delivery and credit card Transaction Fee, whereas for authorised repairers these fees are covered within their agreement.

c. Peugeot
Independent operators pay by cheque or bank transfer; the authorised repairers are directly charged on their account.

d. Citroën
Independent operators pay by credit card; the authorised repairers are directly charged on their account.

e. Volkswagen
Authorised repairers have a fixed monthly fee for the DVD with whole content (all car types, all available documents). Independent operators pay per accessed document (book or chapter).

11. Test and Diagnosis Information

a. Mercedes
Restricted access to theft relevant functions/information.

	Fiat / Alfa	Volvo Cars	Mercedes	smart	Peugeot	Citroen	Toyota (Italy)
purchase options	no	**yes**	**yes**	**yes**	**yes**	**yes**	no
payment	no	**yes**	no	no	**yes**	**yes**	no
hard- / software requirements	no	no	no	no	no	no	no
languages	no	no	no	no	no	no	no
vehicle identification	no	no	no	no	no	no	no
search criteria	no	no	no	no	no	no	no
display of search results	no	no	no	no	no	no	no
information structure	no	no	no	no	no	no	no
scope general repair info	no	no	no	no	no	no	no
scope service info	no	no	no	no	no	no	no
test and diagnosis info	no	no	**yes**	no	no	no	no
spare parts info	no	no	no	no	no	no	no
special tools info	no	no	no	no	no	no	no

Tab. 8-16: Differences in the conditions and systems for authorised and independent operators

8.7 The Usability of the Information Systems

8.7.1 Fiat/Alfa

Fiat provides a separate CD for each model. The information is structured into different topics (technical data – descriptions – fault diagnosis – testing–procedures – electrical equipment), which are subdivided into different vehicle systems (e.g. engine – clutch – gearbox …). Generally the information was found within a reasonable amount of time. The description of necessary procedures is not sufficient in any case and sometimes graphical descriptions are missing. Some items do not contain any information (message: information not available). The CD contains a good fault analysis by different symptoms.

8.7.2 Mercedes/Smart

The system is the same as for the authorised repairers. Information is structured in a traceable way and the necessary technical information can be found within a reasonable amount of time.

8.7.3 Peugeot

The structure and layout of the CD systems is identical for Peugeot and Citroën. The system looks rudimental. The technical information is displayed in 10 different subgroups. Each subgroup lists different documents for the identified vehicle. The documents are not displayed in any logical arrangement, which makes it quite difficult to find the necessary information.

8.7.4 Citroën

The structure and layout of the CD systems is identical for Peugeot and Citroën. The system looks rudimental. The technical information is displayed in 10 different subgroups. Each subgroup lists different documents for the identified vehicle. The documents are not displayed in any logical arrangement, which makes it quite difficult to find the necessary information.

8.7.5 Toyota

No CD-ROM available for Toyota Italy.

8.7.6 Volvo Cars

No CD-ROM available for Volvo. See Internet system.

9 Passenger Car Manufacturers - Paper based Information System (Part B3)

9.1 General Remarks

Only for Peugeot the service manuals and the flash information are available on paper. Service information is also part of the website, but not on the CD. Due to the restriction on service information a further assessment on the paper information has not been done.

9.2 Access (1.1 – 1.4)

Toyota is the only manufacturer whose technical repair information is available on paper only (except for Italy). All other manufacturers provide paper information in addition to an Internet- (Opel and Renault) or a CD-(Fiat/Alfa and Citroën) based system. Only Fiat distributes older models on paper (= 60 % of the vehicles, which were produced in the last 10 years). All other information is on CD. Therefore the available packages and the prices are also similar to those on CD (see chapter 8.2). Opel provides 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 of EUR 15,- plus EUR 0,50 per page requested. The average handling time covered by the Customer Assistance Centre (CAC) consultants is 10 minutes per request.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
package all models	yes	**no**	**no**	**no**
package single model	yes	**no**	**no**	(yes)
package with specific system for all models	**no**	**no**	**no**	yes
other	**no**	yes	yes	yes

Tab. 9-1: Available information packages (1.1)

For Toyota service literature is generally available by functional groups (e.g. chassis, engine, body, wiring ..) or a combination of them. In the United Kingdom data/information is supplied on a request-by-request basis. The information is faxed to the client, following a contact on a dedicated hotline. The level of information supplied will be dependent upon the enquiry, with the minimum of a single page if appropriate. Alternatively if multiple pages are required then this will be supplied. Costs: First Page:(Credit Card): EUR 3,- (Debit Cards): EUR 3,44 - Sheets thereafter: EUR 0,60 per sheet - Alternatively individual Repair/Diagnosis Manuals

may be purchased. In France (average cost EUR 420,- for a mid-size model) and the Netherlands (EUR 501,- per model) packages with single models are also available.

For Citroën technical repair information is on paper for the models AX, ZX, XM and C15 and the electrical wiring for the models AX, ZX, XM, C15, Xantia 1 and Jumper 1. The manuals are published for different vehicle systems (e.g. mechanical, body, electrical, engine repair,…). The documentation is available within the limits of the stock. All other models are published on CD ROM.

The delivery times are shown in Fig. 9-1. Since Opel delivers their information by fax on demand, the reply time is only 10 minutes. For all other manufacturers these periods are quite large and especially for Fiat and Citroën not acceptable.

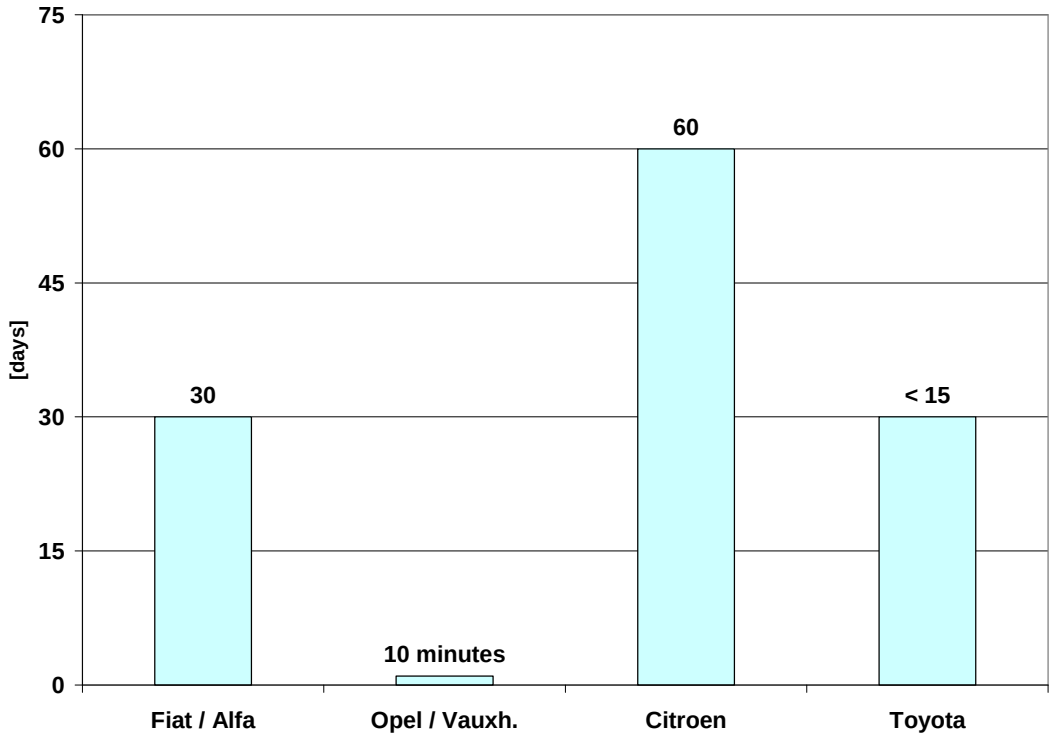

Fig. 9-1: Delivery Time (1.2.1.1)

As shown in Tab. 9-2 there are different methods of payment, which all represent common procedures. For Fiat payment is also done by cash on delivery (DK, F, IRE, I) and for Citroën by cheque. Toyota distributes their information through the local dealer network (see Tab. 9-3). The payment is done at the authorised repairer by cash. There are no special discounts.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
bank transfer	yes	**no**	**no**	**no**
credit card	**no**	yes	**no**	**no**
debit	**no**	**no**	**no**	**no**
other payment	yes	**no**	yes	yes
special discounts	**no**	**no**	**no**	**no**

Tab. 9-2: Method of Payment (1.3)

Usually the manufacturer directly distributes the information packages. Only Fiat/Alfa, and Toyota use their local dealer network for that purpose. The needs of the independent workshops with regard to the distribution of technical information are not totally clear and therefore not assessed.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
directly by manufacturer	**no**	yes	yes	**no**
by local authorised dealers	yes	**no**	**no**	yes
by any other organisation	**no**	**no**	**no**	**no**

Tab. 9-3: Distribution of technical information (1.4)

9.3 Users (1.5)

Toyota provides technical repair information on paper only. For that reason only they can name a significant number of users. For all other manufacturers the provision of technical repair information is not relevant. Fiat/Alfa does not keep any central records.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
number of users per year	no central records kept	0	0	<100

Tab. 9-4: Number of users (1.5)

9.4 Information Scope

9.4.1 Covered Vehicles and Update Periods (1.2.2.3 + 1.2.2.5)

Fiat provides 60 % of their technical repair information on paper; 40 % is available on CD. For Citroën most information is provided on CD (88 %), only 12 % of the documents are delivered on paper. For Opel, and Toyota 100 % is available on paper. Opel also offers their documents on CD and via Internet.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
covered vehicles last 10 years [%]	60	100	12	100

Tab. 9-5: Covered vehicles and update periods (1.2.2)

Regular update periods are not named. Usually the information is published with introduction of a new model. Toyota publishes supplements providing information-covering changes in the main repair manual. Based on the Toyota Avensis main repair manual (3.600 pages in total; Vol. 1: 1.740 pages, Vol. 2: 890 pages, Vol. 3: 970) that was published in January 2003, a first supplement (470 pages) was published in February 2003 and a second one (1.200 pages) in September 2003.

9.4.2 Languages (1.7)

Toyota only offers English documents. Since no other information media is available this is obviously against the interests of independent workshops. For all other manufacturers technical repair information is provided at least in Dutch, English, French, German, Italian, Portuguese and Spanish. These manufacturers also provide other information sources with additional languages. Therefore no further assessment is made.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
czech	**no**	yes	**no**	**no**
danish	**no**	yes	yes	**no**
dutch	yes	yes	yes	**no**
english	yes	yes	yes	yes
estonian	**no**	**no**	**no**	**no**
finnish	**no**	yes	yes	**no**
french	yes	yes	yes	**no**
german	yes	yes	yes	**no**
greek	**no**	yes	yes	**no**
hungarian	**no**	yes	**no**	**no**
italian	yes	yes	yes	**no**
latvian	**no**	**no**	**no**	**no**
lithunian	**no**	**no**	**no**	**no**
norwegian	**no**	yes	yes	**no**
polish	**no**	yes	**no**	**no**
portuguese	yes	yes	yes	**no**
romanian	**no**	**no**	**no**	**no**
slovenian	**no**	**no**	**no**	**no**
spanish	yes	yes	yes	**no**
swedish	**no**	yes	yes	**no**
other	**no**	yes	**no**	**no**

Tab. 9-6: Languages (1.7)

9.4.3 Vehicle Identification (2.1)

For paper-based systems identification is only possible by a selective list with several attributes (model, model year, engine, transmission, body style). Since the workshop books are generally structured in that way, all manufacturers provided such an identification method. Toyota also provides automatic vehicle identification on their Electronic Parts Catalogue (EPC).

9.4.4 Information Search (2.2)

Paper based workshop manuals are divided into different chapters. These chapters represent systems of a vehicle and are the first and main search criterion. Toyota and Opel also offer additional search criteria. A search by components is possible by an alphabetical index; but for a search by DTC and a search by symptoms different charts are needed. Especially DTC and symptom charts are important for an independent operator.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
Trouble Codes (DTC)	no	no	no	yes
symptoms	no	yes	no	yes
systems	yes	yes	yes	yes
components	no	yes	no	yes
OE numbers	no	yes	no	no
special tool names	no	yes	no	no
warning indication	no	no	no	yes
other	no	no	no	no

Tab. 9-7: Search Criteria (2.2)

9.4.5 Content (2.3)

Tab. 9-8 describes the scope of general technical repair information. Again, nearly all manufacturers lack pneumatic and hydraulic wiring. Only Citroën, who does not offer any emission related information, shows a significant lack of information. For Fiat welding instructions are missing again, which concerns in particular the requirements of body repairers. Toyota provides job times on their Electronic Parts Catalogue available on CD.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
functional descriptions	yes	yes	yes	yes
fitting / removal procedures	yes	yes	yes	yes
work plans / job times	**no**	**no**	yes	(yes)
electrical wiring	yes	yes	yes	yes
hydraulical wiring	**no**	**no**	yes	**no**
pneumatical wiring	**no**	**no**	**no**	**no**
emission related information	yes	yes	**no**	yes
body repair information	yes	yes	yes	yes
welding instructions	**no**	yes	yes	yes
pickup points	yes	yes	yes	yes
tightening torque figures	yes	yes	yes	yes
axle settings	yes	yes	yes	yes
brake clearance	**no**	yes	yes	yes
operating fuels	yes	yes	yes	yes
wheel-tyre combinations	yes	yes	yes	yes

Tab. 9-8: Information content – general information (2.3.1)

Servicing is one of the main jobs independent garages are working on. Although the provision of service information was affirmed in the questionnaire, no such documents could be found in the Toyota repair documentation. Fiat/Alfa and Citroën do not provide any information on how to reset the maintenance indicator.

For a target-oriented fault identification and repair diagnostic information is also required. Fiat/Alfa does not provide DTC meanings. The lack of test procedures, parameters and values do not have the same relevance, but is especially important for diagnostic tool manufacturers. Only Toyota, whose documentation is available on paper only, is providing all kinds of information.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
service intervals	yes	yes	yes	**no**
service instructions	yes	yes	yes	**no**
resetting maintaince indicator	**no**	yes	**no**	**no**

Tab. 9-9: Information content – service information (2.4.2)

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
location diagnostic connector	yes	yes	yes	yes
DTC meanings	**no**	yes	yes	yes
information on ECU software versions	**no**	**no**	**no**	yes
test procedures	**no**	yes	yes	yes
test parameters	yes	yes	**no**	yes
test values under certain conditions	**no**	yes	**no**	yes

Tab. 9-10: Information content – diagnosis information (2.4.3)

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
special tool list for given vehicle	yes	yes	**no**	yes
description of intended use for each tool	yes	yes	yes	yes

Tab. 9-11: Information content – special tools (2.4.5)

Only Opel publishes spare part information on paper. Other manufacturers provide separate CD ROMS (see chapter 8.5.5). Spare part information for Toyota is provided on a third-party website (www.microcatfresh.net) and also by a separate CD ROM.

A special tool list for a given vehicle is useful to decide whether a repair can be performed economically in an independent workshop. Citroën does not provide such a list, but the necessary special tools are named in the repair manuals.

9.5 Differences between authorised and independent operators (1.7 + 4)

Based on the answers in the respective questionnaires Tab. 8-16 describes the differences in the conditions and the content of the technical information systems between authorised and independent operators.

Any differences are explained in detail as follows:

1. Purchase Options
    a. Opel & Vauxhall
       Paper information is not provided to Authorised Repairers as they all subscribe to TIS & EPC
    b. Toyota
       Independent buying from authorised repairers.
2. Payment
    a. Opel/Vauxhall
       see “Purchase Options”.
    b. Citroën
       Independent operators pay by cheque; the authorised repairers are directly charged from their account.
    c. Toyota
        i. Denmark
           Free
        ii. France
           Independent operators are paying by bank transfer and are paying to authorised repairers.
        iii. Germany
           Authorised repairers pay by debit.
        iv. Ireland
           Payment by authorised repairers is made to Toyota Ireland. Payment by independent repairers is made to authorised repairers.

	Fiat / Alfa	Opel / Vauxh.	Citroen	Toyota
purchase options	no	yes	no	no
payment	no	yes	yes	no
languages	no	no	no	no
vehicle identification	no	no	no	no
search criteria	no	no	no	no
scope general repair info	no	no	no	no
scope service info	no	no	no	no
test and diagnosis info	no	no	no	no
spare parts info	no	no	no	no
special tools info	no	no	no	no

Tab. 9-12: Differences in the conditions and systems for authorised and independent operators (4)

9.6 The Usability of the Information Systems

9.6.1 Fiat/Alfa

No paper information available. See CD system.

9.6.2 Opel/Vauxhall

No paper information available. See CD/Internet system.

9.6.3 Citroën

No paper information available. See CD system.

9.6.4 Toyota

Toyota provides books for models (e.g. Toyota Avensis Repair Manual), vehicle systems (e.g. Manual Transaxle E355, E356 Repair Manual,1AZ-FSE Engine Repair Manual) and

other topics (Toyota Avensis Repair Manual for Collision Damage; Toyota Avensis Electrical Wiring Diagram; Toyota Special Service Tools). In addition a “New Car Features” manual is provided, which explains the main characteristics of new models, in particular providing a technical explanation of the construction and operation of new mechanisms and new technologies used. All documents are structured in a reproducible manner. For each manual a list of terms and abbreviations is given. Due to the good overview of paper documentation, each piece of information can be found within a reasonable amount of time.

10 Truck Manufacturers - General Information (Part A)

10.1 Information Provision (1.1)

At the beginning of Part A, each truck manufacturer has to provide the percentage of covered vehicles by their repair information. All manufacturers have covered 100% of their vehicle fleet produced within the last 10 years.

The second question deals with the used medium to provide repair information. The majority has chosen a paper-based concept. As shown in Fig. 10-1, few manufacturers use CD/DVD's or Internet.

The last question of this paragraph refers to the information policy concerning the authorised dealer network. The majority provides information on paper to their own network.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.1.1	**% covered veh. last 10 years**	100	100	100	100	100	appr. 100	100
1.1.2	**% inform. available internet**	0	0	100	40	30	appr. 50	0
1.1.3	**% inform. available CD/DVD**	0	90	0	85	30	0	100
1.1.4	**% inform. available paper**	0-100[5]	40	100	40	70	100	10
1.1.7	**medium provided to auth. dealer**	Paper, Internet, Laptop	Paper, CD, DVD	Internet	all forms	CD, Paper, Internet	Paper	CD/DVD

Fig. 10-1: Information Provision[7]

10.2 Diagnostic Tools (1.2)

At the beginning of this paragraph the manufacturers have to give the price for the most costly diagnostic tools. The tools from DAF (EUR 12.500,-), MAN (EUR 14.000,-) and Mercedes (EUR 14.474,- to EUR 17.222,-) are the most expensive. The figures for the other manufacturers can be drawn from Fig. 10-2. The costs to buy the most costly diagnostic tool from the other manufacturers vary in a range from EUR 3.283,- to EUR 7.290,-.

Apart from reading the fault code memory, the most expensive diagnosis tool offered by the manufacturers usually also provides profound repair information. Therefore, a higher price in comparison to the standard tool, which predominantly only provides fault code reading, is

[7] DAF: 0% for diagnostics; Renault: 100 % of technical repair information on paper; 30 % for Internet/CD is spare part information.

inevitable. The prices of the brand dependent standard diagnosis tools correspond to the prices of independent tool manufacturers.

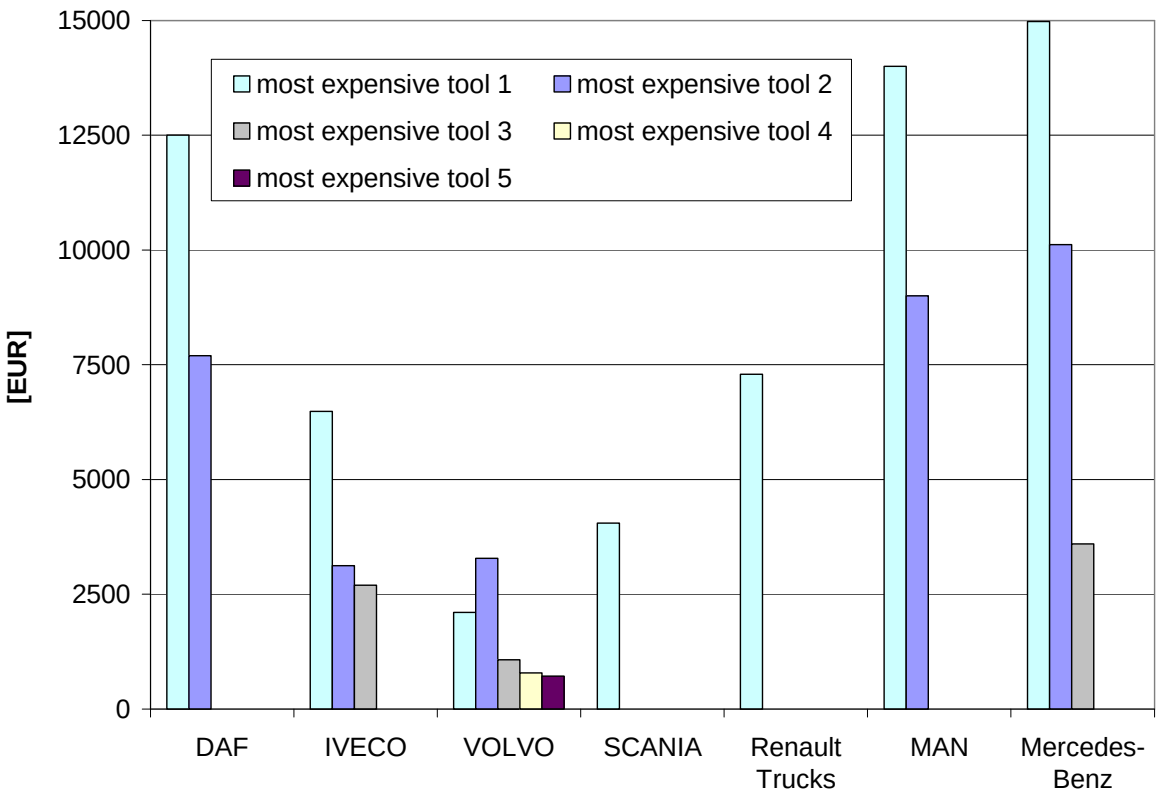

Fig. 10-2: Five most costly diagnosis tools

All manufacturers offer the diagnostic tools for the same price to independent operators in comparison to their own network (Fig. 10-3).

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.2.2	**same price ind op/auth op**	yes	yes	yes	yes	yes	yes	yes
1.2.5	**diff. in deliv. betw. ind/auth op.**	no	**yes**	no	no	no	no	no
1.2.6	**special finance models**	**no**	**no**	**no**	yes	yes	**no**	yes
1.2.7	**tools available from other prod./sources**	no	no	**yes**	no	no	no	no

Fig. 10-3: Policy of distributing diagnosis tools

The manufactures indicate a delivery period between 8 and 83 days for their diagnostic tools. Only DAF has not been able to give a figure, because their authorised supplier does not have the tools on stock and therefore the delivery period depends on its lead time (Fig. 10-4).

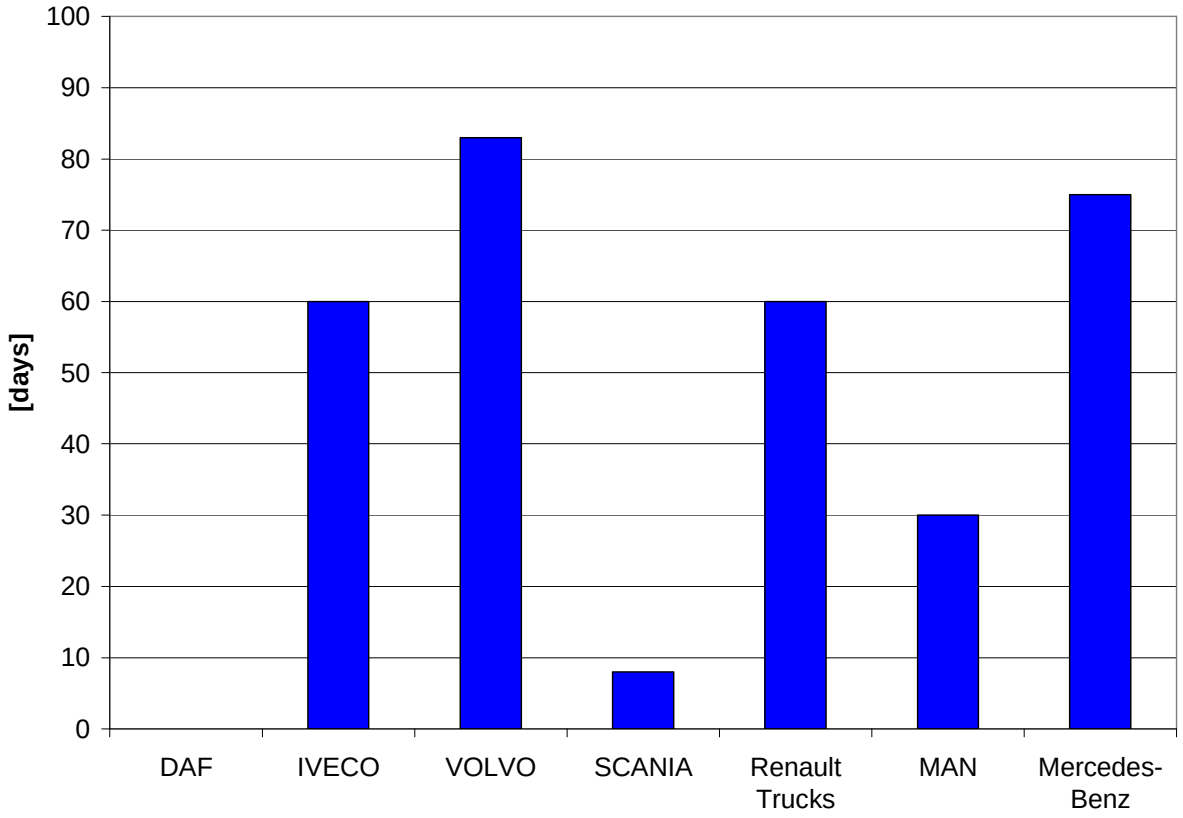

Fig. 10-4: Delivery period for diagnosis tools

Apart from Iveco, only minor differences exist between the delivery period for authorised workshops and independent operators (Fig. 10-3). Unfortunately, Iveco does not provide any further explanations.

Independent operators, who want to purchase a Scania diagnostic tool, require professional experience and for safety reasons, Scania also demands the relevant training. Also Volvo asks for special training. A first time subscriber needs to attend training courses before access is granted. The intervals between such training courses depend on the demand by candidate-subscribers. As demand is currently rather limited, it can take up to 45 days before a training course is available. In the calculation of the relevant delivery period, those 45 days have been included as a matter of caution. Once an independent operator has obtained the initial training and has become a user of the diagnostic tool, updates are made available within 7 working days. All other manufacturers correspond, that there is no specific condition that independent operators have to fulfil.

Three brands offer special financing models to purchase diagnosis tools. Independent operators can either buy or rent the Mercedes/Smart diagnosis hardware. For authorised repairers, only renting of this hardware equipment is offered. Renault offers a long-term rental concept. Scania's diagnostic tool, which is continuously updated, is only available as a subscription. The tool consists of hardware, software and a key device. The key device is only for lease (Fig. 10-3).

Only for Volvo the diagnostic tools are also available from other producers. But Volvo has explained, that they do not have any specific information on these tools and that they are not able to confirm the extent, to which they can be used for.

The contact points of the manufacturers concerning diagnosis tools can be drawn from the appendix.

10.3 ECU Operations (1.3)

As already mentioned in the part dealing with passenger vehicles, an ordinary vehicle is equipped with over 80 ECU's. In this paragraph of the questionnaire the truck manufacturers have been asked, if independent operators are able to execute the already mentioned operations (see passenger vehicle part). The answers can be drawn from Fig. 10-5.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.3.1	poss. for ind.op to update software/reprog.	no	yes	no	no	no	no	yes
1.3.2	can ind. op. carry out variant coding	no	yes	yes	yes	no	no	yes
1.3.3	can ind. op. carry out initialisation/reinit.	no	yes	yes	no	no	no	yes
1.3.4	can ind. op. carry out pass-through prog.	no	no	yes	no	no	no	no
1.3.5	can ind. op. reset security systems	no	no	no	no	no	no	no

Fig. 10-5: Possible ECU operations

In case of affirming the relevant operation, the vehicle manufacturers have to name the needed tool/software and their prices. Due to the variability of the provided answers, each manufacturer is treated separately.

10.3.1 DAF

Independent operators cannot execute ECU operations with trucks from DAF.

10.3.2 Iveco

Apart from resetting the security system, it is possible for independent operators to execute the required ECU operations for Iveco trucks. The facility Pass-Through Programming is not provided.

Iveco offers the tools E.A.SY (EUR 6.480,-) or E.A.SY LIGHT (EUR 3.125,-). For the relevant software the independent operators have to pay between EUR 1.500,- annually.

10.3.3 Volvo

Independent operators can only execute variant coding and reinitialisation procedures for Volvo trucks. The facility Pass-Through Programming is provided. The price for the needed tool for both operations is EUR 2.100,- annual and no relevant software exists.

10.3.4 Scania

Apart from variant coding, independent operators are not able to execute any of the required ECU operations. The price for the needed tool is EUR 13.684,- and includes the software. Furthermore, the facility Pass-Through Programming does not exist.

To perform variant coding, independent operators have to pay EUR 4.050,- including the needed software.

10.3.5 Renault Trucks

Independent operators cannot execute ECU operations with trucks from Renault.

10.3.6 MAN

Independent operators cannot execute ECU operations with trucks from MAN.

10.3.7 Mercedes

Apart from resetting the security system, it is possible for independent operators to execute the required ECU operations for Mercedes trucks. The facility Pass-Through Programming is not provided.

Mercedes offers a tool for EUR 3.600,- (Poland EUR 4.140,-; Denmark EUR 3.960,-) and a tool for EUR 10.116,- (Poland EUR 11.128,-; Denmark EUR 11.634,-) to execute ECU operations. For the relevant software the independent operators have to pay between EUR 1.704,- (Netherlands + Germany) and EUR 2.000,- (Denmark) annually.

10.4 Special Tools (1.4)

In order to clarify, at what price the free operators have to purchase special tools to enable an appropriate repair, the truck manufacturers have also been asked to deliver specific information on the workshop equipment in use (excluding diagnosis tools). At first, the truck manufacturers had to name the five most used special tools over EUR 150,-, their prices and the frequency of use (assuming that a garage services 100 vehicles per month).

Due to the fact, that only few manufacturers have been able to estimate the frequency of use of their special tools, only the absolute costs of the tools can be compared. Some manufacturers provide an analysis of the five most used special tools in each country.

Sometimes these tools have different prices in the countries in scope for the questionnaire. In order to enable an objective analysis, Fig. 10-6 contents all listed prices for the five most used special tools for these manufacturers (Renault, MAN, Mercedes).

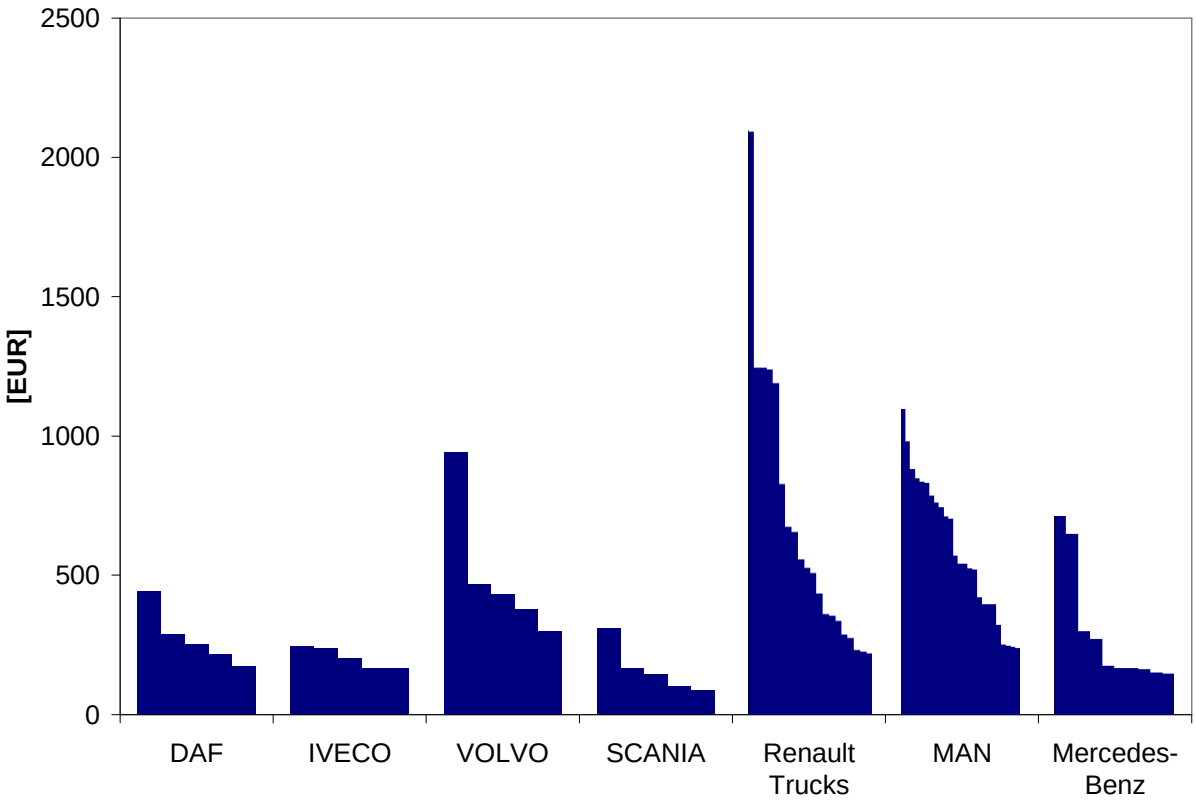

Fig. 10-6: Prices for five most used tools (over EUR 150,-)[8]

The truck manufacturers also mainly enumerate releasing and lifting tools, gauges, removers, alignment kits or tensioning devices. The majority of the mentioned tools vary in a price range from EUR 150,- to EUR 500,-. Above average are the following special tools (the prices are enumerated for the country with the highest prices):

- Volvo: pressure gauge for EUR 942,-
- Renault: crimping toolbox for EUR 834,20,- (Italy), tester (not explained) for EUR 1.241,- (Italy), battery tester for EUR 2.098,- (Italy), no special tools can be purchased in Poland
- MAN: torque multiplier for EUR 976,- (Poland), pressing tool for EUR 713,- (Poland), hydraulic pressure pump for EUR 1.098,- (Poland)

[8] Renault, MAN and Mercedes provide country-specific analysis. For these manufacturers, the diagram does not only content the prices for five special tools, but also for all enumerated prices for a special tool.

- Mercedes: socket box (testing electrical components & systems) for EUR 750,61 (Poland EUR 684,18)

Furthermore, the truck manufacturers have to name the five most expensive special tools, their prices and the frequency of use, again assuming that a garage services 100 vehicles per month. The prices of these five tools for each manufacturer can be drawn from Fig. 10-7.

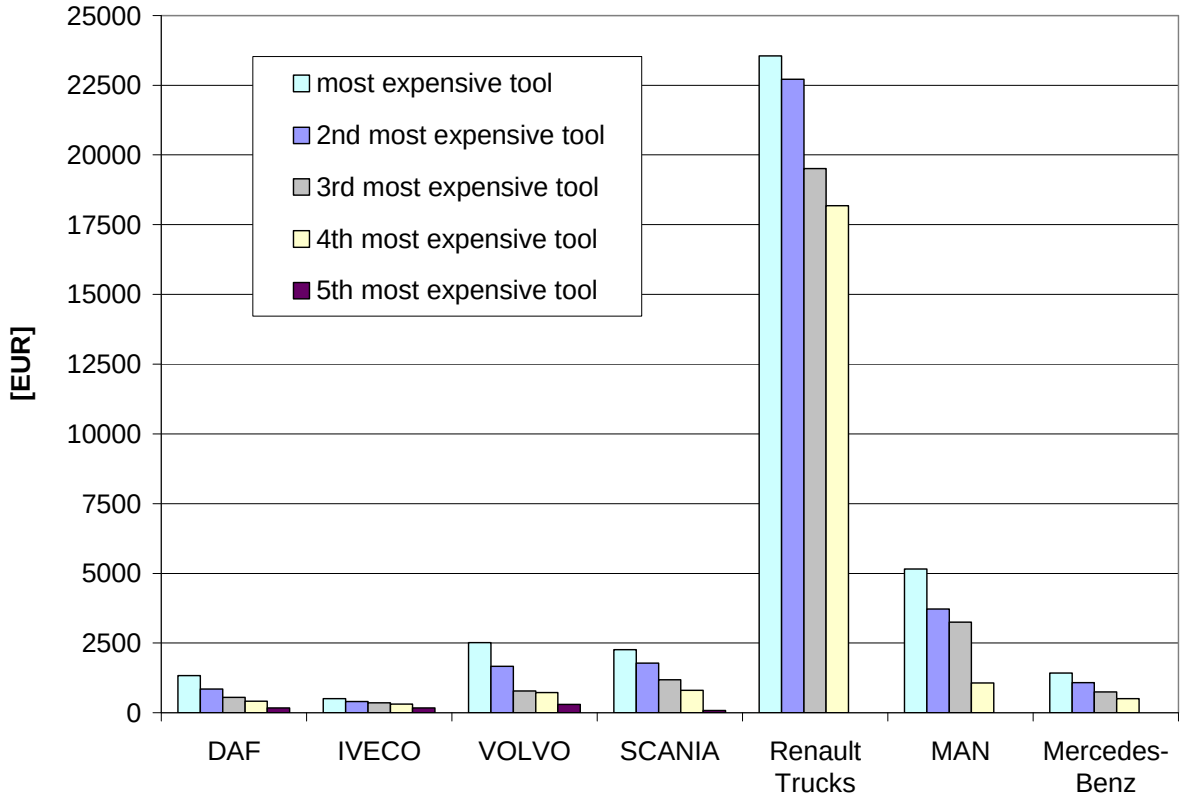

Fig. 10-7: Prices for the five most expensive special tools [9]

It is obvious, that the tools from Renault Trucks are outstanding. The most expensive tool is a “Front Axle Tester” for EUR 23.553,17 in Italy. In the Netherlands the independent operators only have to pay EUR 12.507,59 for the same tool. The “Hoist adjusting tool” can be purchased in Italy for EUR 22.713,60 and in France for EUR 9.352,66. This discrepancy concerning the prices in different countries is also valid for the other three most expensive tools.

At the end of this paragraph the truck manufacturers have been asked, if they provide special financing models like leasing for their special tools. All manufacturers negate this question.

[9] Renault, MAN and Mercedes provide country-specific analysis. For these manufacturers, the diagram contents the prices for the country, where independent operators have to pay most for the special tool in scope.

10.5 Actualisation of Information (1.5)

This paragraph deals with the information policy of the truck manufacturers. It is a prerequisite, 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 safety related problems of a specific vehicle cannot be adequately considered to secure customers' security. Furthermore, the free operators cannot keep pace with the authorised dealers, if they do not have access to the latest spare part numbers, on information on modified parts or information on software updates. Fig. 10-8 shows, that no truck manufacturer delivers the same information to independent operators than to its authorised network.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.5.1	get ind. op. same inf. on common faults	yes	yes	yes	yes	yes	yes	yes
1.5.1.2	get ind. op. inf. at same time	no	no	yes	yes	no	yes	no
1.5.2	get ind. op. same inf. on recall campaigns	yes	no	no	no	no	no	yes
1.5.2.2	get ind. op. inf. at same time	no	n/a	n/a	n/a	n/a	n/a	no
1.5.3	get ind. op. same techn. bulletins	yes	no	yes	yes	yes	no	yes
1.5.3.2	get ind. op. inf. at same time	no	n/a	yes	yes	no	n/a	no
1.5.4	get ind. op. same inf. on mod. parts	yes	no	yes	yes	yes	yes	yes
1.5.4.2	get ind. op. inf. at same time	no	n/a	yes	yes	yes	yes	yes
1.5.5	provide inf. on updates sparepart numbers	yes	yes	yes	yes	yes	yes	yes
1.5.5.2	get ind. op. inf. at same time	no	yes	n/a	yes	yes	yes	yes
1.5.6	get ind. op. same inf. on software updates	yes	yes	yes	yes	yes	yes	yes
1.5.6.2	get ind. op. inf. at same time	no	yes	yes	yes	yes	no	yes
1.5.7	provide hotline support on techn. quest.	no	yes	yes	yes	yes	yes	yes
1.5.7.1	get ind. op. the same inf.	n/a	no	yes	no	no	yes	yes

Fig. 10-8: Actualisation of information

Due to the variability of the provided answers, each truck manufacturer is treated separately.

10.5.1 DAF

According to DAF's reply, they only had a few enquiries from independent operators requesting to provide them with technical information. Based on the relatively low numbers of the requests to receive technical information, DAF has not invested in specific software or IT-interfaces that will enable independent operators to have access to the technical information they may require by means of an Internet portal, CD's or DVD's. DAF has established a central DAF Dealer Systems Helpdesk instead that will provide this information in paper format or, upon request, as a digital PDF-file. DAF's national sales subsidiaries in the EU are instructed to refer the relevant requests to the DAF Dealer Systems Helpdesk.

The central DAF Dealer Systems Helpdesk will, on the request of independent repairers, provide these with the full scope of technical information that DAF has made available to its authorised service dealers. The information will have the form of DAF's regular service documentation (Technical Information Bulletins, Maintenance Manuals, Workshop Manuals, Fluids and Lubricants Manuals, Special Tools Manuals, System Binders and Component Binders) for authorised dealers. The information may also be provided in part as a fax message, e-mail or CD containing the PDF-files with the specific pages of these documents that relate to the question received.

According to DAF, the format of the information can further be printouts of the computer screens generated by the DAF Service Rapido and DAF Parts Rapido software DAF has made available to its authorised repairers on a monthly license fee basis. To make this software available to independent operators in a similar manner as for authorised DAF service dealers, it would, according to DAF's statement, require investments that are not reasonably economically justifiable, considering the current low demand from independent operators. Furthermore, DAF is of the opinion, that independent operators are not prepared to pay the relevant monthly license fee, in view of the in general relatively low number of repair jobs on DAF vehicles in their workshops. The DAF Dealer Systems Helpdesk will however enable independent operators to have access to printouts of the same computer screen pages as authorised DAF service dealers, this on an ad hoc basis and without the need to commit to regular license payments.

In conclusion, DAF offers the required information, but their information system only allows providing information to independent operators upon request. Furthermore, DAF does not have a hotline support on technical questions.

10.5.2 Iveco

According to Iveco, they have not yet structured their information provision according to the needs of independent operators. The authorised operators are linked with Iveco via "qualitative standard requirements", which encourage a "subscription" of the technical information. Iveco does not give a hint, if this system is also offered to independent

operators. Although Iveco declares to deliver information on common faults, updated spare part numbers and software updates, the information media is not mentioned.

At present, Iveco does not provide a hotline support. In the future, they intend to run a hotline on spare parts.

10.5.3 Volvo

Apart from information on recall campaigns, Volvo delivers all the required information. Furthermore, they undertake a hotline support on technical questions.

10.5.4 Scania

Apart from information on recall campaigns, Scania delivers all the required information, if the user has subscribed to the information system. According to Scania, information on recall campaigns is sent directly to their end customers and is based on unique chassis information. Scania is of the opinion that new vehicles are not sold by independent operators and therefore information on recall campaigns is not relevant.

Scania undertakes a hotline support on technical questions, but independent operators do not get the same information as the authorised network.

10.5.5 Renault

Renault provides information on common faults to independent operators, but not at the same time as authorised workshops. The information on recall campaigns will be sent to independent operators, when the authorised operators duly implement the technical solution. The same is valid for technical bulletins.

Renault undertakes a hotline support on technical questions, but independent operators do not get the same information as the authorised network.

10.5.6 MAN

According to MAN, they provide information on common faults, but the process to inform independent operators at the same time as authorised workshops is still in progress. Concerning recall campaigns, only authorised partners are informed. The same is valid for technical bulletins.

Information on software updates exist for independent operators, but due to “security adjustments” (know-how information) they are not provided at the same time as authorised workshops. All other required information is accessible for independent operators.

10.5.7 Mercedes

According to Mercedes the independent operators get information on common faults, recall campaigns and technical bulletins but not at the same time as authorised dealers. Between the monthly updates of the information system, very urgent information is distributed to the authorised network separately (e.g. via mail). Independent operators will receive the same information with the next monthly update of the information system.

All other available information is forwarded by Mercedes to the independent operators in the same form and at the same time as for authorised operators and the hotline support also exists for both parties.

10.6 Training Information (1.6)

This chapter deals with the provided training programmes to study further the involved staff at the workshop. The questionnaire mainly asks for the information medium and for price differences between authorised workshops and independent operators (Fig. 10-9).

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.6.1	**provide remote training progr.**	no	yes	yes	yes	yes	yes	yes
1.6.1.1	**get ind. op. the same inf.**	n/a	yes	yes	yes	yes	yes	yes
1.6.1.2	**ind. op. pay same price**	n/a	yes	yes	yes	yes	yes	yes
1.6.2	**provide classroom training**	yes	yes	yes	yes	yes	yes	yes
1.6.2.1	**can ind. op. participate in same lessons**	yes	yes	yes	yes	yes	yes	yes
1.6.2.2	**ind. op. pay same price**	yes	yes	yes	yes	yes	yes	yes
1.6.3	**access to exterior train.**	yes	yes	yes	yes	yes	yes	yes
1.6.3.1	**price in EUR per day for external training on engine management**	440		150 - 200		120 - 185	385	

Fig. 10-9: Training information

All manufacturers provide the same classroom training for independent operators at the same price as for authorised operators. Apart from DAF, they also offer remote training programmes on CD/DVD or via Internet.

In all relevant countries, except France for Volvo, independent operators can participate in the same lessons as authorised operators. In France, Volvo has outsourced the training of independent operators to a training institution. Separate in-house training is offered to the authorised network. In all other countries Volvo carries out training directly.

Furthermore, it has been asked, if independent operators also have access to training carried out by authorised repairers or external training institutions, in case of not provided by the manufacturer itself. All manufacturers agree, that all independent operators have access to exterior training.

Finally, the manufacturers have to give the price for a training unit on engine management provided by an authorised repairer or an external training institution. Mercedes explains, that they do not offer training units on engine management up to now. Iveco and Scania have not given a price for this unit. The provided prices from the other manufacturers sometimes vary from country to country. For these manufacturers, Fig. 10-9 contents the lowest and the highest price. The given prices of all manufacturers are all in a similar range.

10.7 Price Discounts and Rebates for Authorised Repairers (1.7)

The questionnaire has asked for discounts and rebates for authorised repairers, because this could be a possibility to bypass the Block Exemption Regulation. Manufacturers may charge independent operators and authorised dealers the same price for technical information and afterwards they could refund an amount to authorised dealers. In this way manufacturers could pretend to follow the Block Exemption Regulation.

Although MAN has answered in the questionnaire not to offer special price discounts and rebates for authorised repairers, but the attached extract of a MAN service contract diverges from this answer. As official MAN service contractor, a workshop can get a price reduction of 38,40% on all special tools and a price reduction of 60,00% for all spare parts and repair manuals. According to the provided answers, the other manufacturers do not offer price discounts and rebates for authorised repairers (Fig. 10-10).

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.7.1	special price discounts for auth. rep.	no	no	no	no	no	no	no

Fig. 10-10: Price discounts and rebates for authorised repairers

10.8 Information for Diagnostic Tool Manufacturers (2)

In this paragraph it has been asked for the arrangements enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturers' tools.

10.8.1 Information Provision (2.1)

This section of the questionnaire deals with the information policy for diagnostic tool manufacturers. Fig. 10-11 shows the percentage of covered vehicles produced within the last 10 years, for which the manufacturers provide special information for tool manufacturers. All truck manufacturers do not deliver special information to diagnostic tool manufacturers.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
2.1.1	% veh. prov. spec. inf. for tool manuf.	0	0	0	0	0	0	0
2.1.3	are there inf. packages	n/a	no	n/a	no	no	no	no
2.1.6	get ind. diagn.toolmanuf. inf. at same time	n/a	no	n/a	no	no	no	no
2.1.8	inf. provision to diagntoolman. distrib. by centr. ent.	n/a	no	n/a	no	no	no	no
2.1.8.1	has entity mandate to dec. which inf. will be prov.	n/a	no	n/a	n/a	n/a	no	n/a
2.1.9	prov. techn. support for tool manuf.	n/a	no	n/a	no	no	no	no

Fig. 10-11: Information provision to diagnostic tool manufacturers

DAF explains, that they have not yet developed a general policy on what specific information they will provide to independent tool manufacturers. According to DAF, they will deal with the requests from these parties on their individual merits, when these requests will in fact be received. DAF is still in the process of reviewing the only request they have so far received from an independent parts manufacturer.

According to a statement from Volvo, they almost have no experience with demands from diagnostic tool manufacturers. To their knowledge, they have received no more than one or two general requests since the New Block Exemption Regulation came into force. In these instances, Volvo has offered to provide the same information made available to the authorised repairers and the independent operators. Volvo explains to await further experience with this type of requests in order to decide on any definitive approach in this matter.

All other truck manufacturers have not delivered any further explanations, why they do not provide special information to independent diagnostic tool manufacturers.

For the questions dealing with the price for independent diagnostic tool manufacturers (2.1.4 and 2.1.5), some vehicle manufacturers indicate the price of the information relevant for independent repairers. These answers are not useful in this chapter.

10.8.2 Test and Diagnosis information (2.2)

In this chapter of the questionnaire the truck manufacturers have been asked, if they provide information enabling tool manufacturers to install test procedures for specific trucks in their tools. The indispensable information has already been explained in the chapter dealing with passenger cars.

Only Iveco and MAN have answered these questions, although they do not offer special information for diagnostic tool manufacturers. This means, that these manufacturers deliver these information together with their “regular” information to independent operators.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
2.2.1	prov. descriptions of test procedures (steps)	n/a	no	n/a	no	no	yes	no
2.2.2	prov. test parameters	n/a	no	n/a	no	no	yes	no
2.2.3	prov. connection details incl. MIN/MAX values	n/a	yes	n/a	no	no	yes	no
2.2.4	prov. values expected under certain driv. cond.	n/a	yes	n/a	no	no	yes	no
2.2.4.1	if yes: provide failure mode values for scenarios	n/a	yes	n/a	n/a	n/a	no	n/a
2.2.5	electric. values in static/dynamic states	n/a	yes	n/a	no	no	yes	no
2.2.5.1	if yes : provide failure mode values for scenarios	n/a	yes	n/a	n/a	n/a	yes	n/a
2.2.6	prov. failure mode diagn. seq. incl. fault trees etc	n/a	yes	n/a	no	no	yes	no
2.2.7	prov. inf. on ECU and component init.	n/a	yes	n/a	no	no	yes	no

Fig. 10-12: Information on diagnosis to diagnostic tool manufacturers

Apart from descriptions of test procedures and test parameters, all other DAF information can be purchased from authorised dealers or the “DAF Dealer Systems helpdesk”.

Except failure mode values, MAN provides all the required information together with the information for independent operators.

10.8.3 Communication Protocol Information (2.3)

According to the New Block Exemption Regulation, it must be possible for independent operators to check all electronic vehicle components. It is a prerequisite, that independent diagnostic tool manufacturers get information comparable to ISO 15031 for all electronic vehicle components. The questionnaire asks for the necessary protocol information to manufacture a brand independent diagnostic tool (Fig. 10-13).

Only MAN provides some protocol information within the information for independent operators. They deliver information on fault code reading, resetting the service light and details of the diagnostic connector.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
2.3.1	prov. any add. protocol not covered by ISO 15031	n/a	no	n/a	no	no	no	no
2.3.2	prov. inf. on fault code reading/interpretation	n/a	no	n/a	no	no	yes	no
2.3.3	prov. live data parameter incl scale inf.	n/a	no	n/a	no	no	no	no
2.3.4	prov. inf. on funct. tests incl device act./control	n/a	no	n/a	no	no	no	no
2.3.5	prov. details how to obtain component/status inf.	n/a	no	n/a	no	no	no	no
2.3.6	prov. inf. on reset./adapt. learns/variant coding	n/a	no	n/a	no	no	no	no
2.3.7	prov. inf. on ECU identification & variant coding	n/a	no	n/a	no	no	no	no
2.3.8	prov. access to sec. codes req. for rep.funct.	n/a	no	n/a	no	no	no	no
2.3.9	prov. inf. how to re-set service lights	n/a	no	n/a	no	no	yes	no
2.3.10	prov. inf. on diagn. connector details	n/a	no	n/a	no	no	yes	no
2.3.11	prov. inf. for unambiguous veh. identification	n/a	no	n/a	no	no	no	no

Fig. 10-13: Communication protocol information

10.9 Arrangements relevant for Publishers

The New Block Exemption Regulation calls for the supply of fair and indiscriminate information to the independent operators as well as for independent publishers. Fig. 6-15 shows the percentage of covered trucks produced within the last 10 years, for which the manufacturers provide special information for publishers. Iveco and Scania do not offer special information for publishers. For these manufacturers, the information must be therefore provided together with the information relevant for the other independent operators.

According to DAF, they have not yet developed a general policy on what specific information they will provide to publishers. DAF will deal with the requests from these parties on their individual merits, when these requests will in fact be received.

The other truck manufacturers (Volvo, Renault, MAN and Mercedes) have covered 100% of the vehicles produced within the last 10 years by their information relevant for publishers.

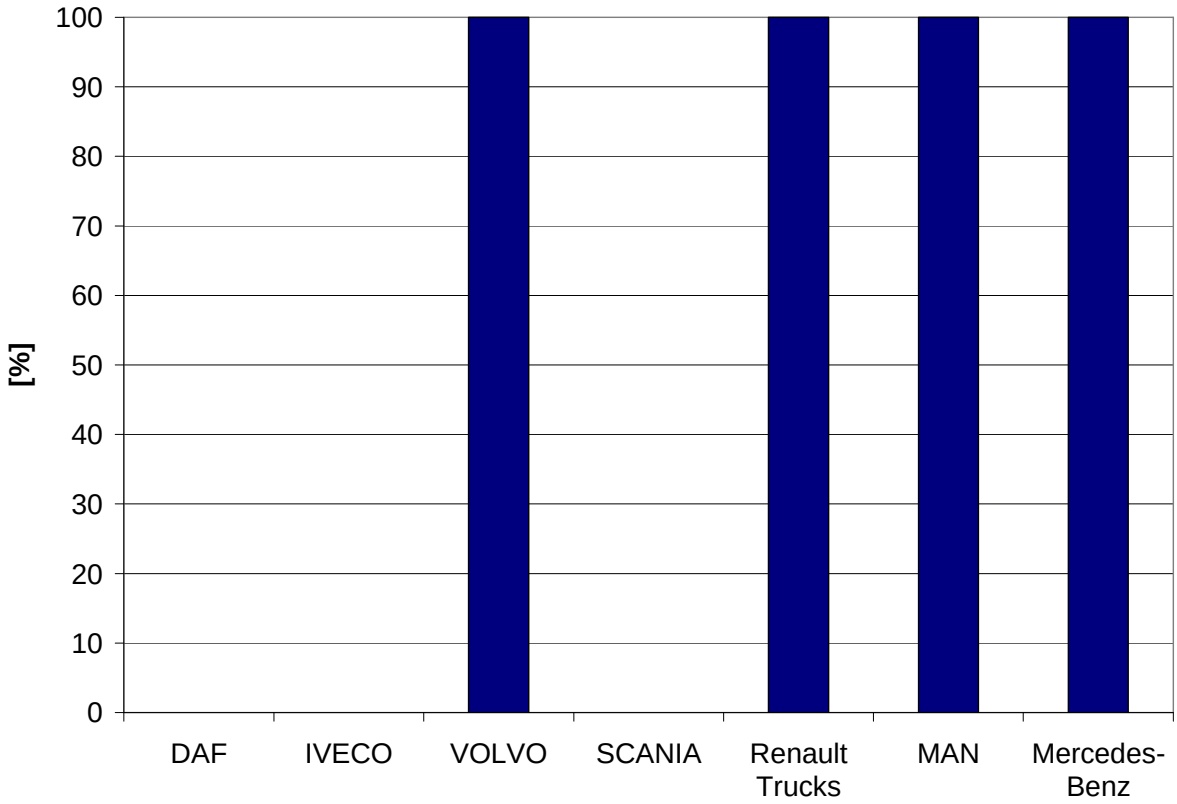

Fig. 10-14: Covered vehicles with specific information for publishers

In the questionnaire, the vehicle manufacturers have to give insight in their information policy concerning publishers (Fig. 6-16). The truck manufacturers, which provide special information for publishers are marked in yellow colour.

Most of the vehicle manufacturers providing special information for publishers use the Internet, Papers or CD's/DVD's as distribution media.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
3.1.2	used information media			Paper, Internet		CD, Paper	Paper, Internet	DVD[8]
3.1.3	information packages	n/a	no	yes	no	no	yes	yes
3.1.6	prov. techn. support for publishers	n/a	no	yes	no	no	no	no
3.1.6.1	has entity mandate to dec. which inf. will be prov.	n/a	no	yes	n/a	n/a	n/a	n/a

Fig. 10-15: Information provision for publishers[10]

[10] In Poland Mercedes only offers papers and CD's to publishers

It is important for the publishers, that they are able to purchase the relevant information as reasonable packages. Only Volvo, MAN and Mercedes provide these packages.

According to Volvo, packages can be ordered, although there are no ready-made information packages. However, information can be obtained separately for one or more repair operations. Whenever such a request is made, Volvo will send a printout of the relevant information that is available to the publisher.

MAN has only mentioned, that they offer “brochures and Internet” as packages for publishers. Mercedes has individual prices according to the needed data content and published exemplars.

Another important item is the date, when publishers get the information for a new truck. Most of the manufacturers have answered, that the information is available one month before or at the same time as start of sales (manufacturers, which provide special information for publishers are marked in yellow colour). The exact figures can be drawn from Fig. 6-17. In this short period, it is rather impossible for publishers to produce an appropriate documentation.

3.1.5	**Date of information provision**
DAF	
IVECO	
VOLVO	1 month before start of sales
SCANIA	
RENAULT	1 month before start of sales
MAN	
MERCEDES	1-2 months before start of sales

Fig. 10-16: Date of information provision for publishers

The last part of this paragraph deals with the question, if the vehicle manufacturers provide technical support for publishers. Only Volvo offers this service. This hotline also has the mandate to decide, which information can be provided or not (considering intellectual property rights).

10.9.1 Price of information (3.1.4)

To be able to compare, how much publishers have to pay for information, the questionnaire asks for the prices for the complete information for a mid-size vehicle relevant for 1000 published exemplars of a documentation. Due to the importance of this question, the answers are treated in a separate paragraph.

10.9.1.1 DAF

DAF does not deliver special information to publishers.

10.9.1.2 Iveco

Iveco does not deliver special information to publishers.

10.9.1.3 Volvo

Volvo points out, that the publishers will most likely prefer the Internet-based “Impact system” compared to a print-out version with the same information. According to Volvo, it can be expected, that publishers require a lot of information, which would make a paper version more expensive than the electronic information (Volvo charges EUR 100,- euro per demand plus EUR 1,- per page).

10.9.1.4 Scania

Scania does not deliver special information to publishers. According to Scania, the price would be quoted on request.

10.9.1.5 Renault

Renault provides the following price scheme, which is not comprehensible:

1000 driving & maintenance notices:	EUR 5.460,-
1000 time hours schedule book:	EUR 3.555,-
CD spare parts catalogue consult:	EUR 3.460,-

11 Truck Manufacturers - Internet-based Information System (Part B1)

11.1 General Remarks

The assessment of MAN covers all countries, in which the importer is a subsidiary of MAN. In Ireland and the Netherlands the importers are privately owned companies and therefore MAN's reply does not cover this countries. The website only consists of a spare part and special tools catalogue. For technical repair information only an overview of available paper information is provided.

11.2 Registration and Access (1.1 – 1.4)

To get access to a manufacturer's Internet-based information system, the user must complete an electronic registration application. The user must be an independent operator as defined in the BER and his registered office has to be within the European Union.

Three Truck manufacturers have introduced an Internet-based technical information system so far. DaimlerChrysler is working on such a system. Only the MAN repair information website can be reached by a link on the standard website. Since standard search engines like Google or Yahoo do not list these websites, the user has to know the correct URL to get access to technical repair information.

	MAN	Scania	Volvo Trucks
registration from standard website	yes	**no**	**no**

Tab. 11-1: Registration Process (1.1.3)

From a technical point of view an electronic registration process could grant access to the website's content immediately. In spite of that and also in contrast to many car manufacturers, the truck manufacturers need several days to complete the registration process (see Fig. 11-1). In the case of Volvo, access is only granted if the user has participated in an Impact training course. The intervals between such training courses depend on the demand of candidate subscribers. As demand is currently rather limited, it can take up to 45 days before a training course is available. For that reason an independent operator who wants to subscribe to the Volvo information system has to wait nearly 3 months. In addition the total amount for the technical information has to be paid in advance (EUR 4115,-).

To register for the Scania website an initial non-recurring fee of EUR 60,- has to be paid.

Different cost models are offered (see Tab. 11-2). Scania and Volvo Trucks offer access to technical repair information on a subscription base. MAN uses a pay by access time model.

The use of the MAN Partner Net - After-sales is free of charge. There are no registration costs. The use of WEB MANTIS (spare parts and tools), incurs the costs. There is a daily flat-rate charge for the use of WEB MANTIS. This means that when the user logs in for the first time within a single day an amount of EUR 8,10 is charged for the use of WEB MANTIS. Once this charge is paid access is granted for using WEB MANTIS on the respective day.

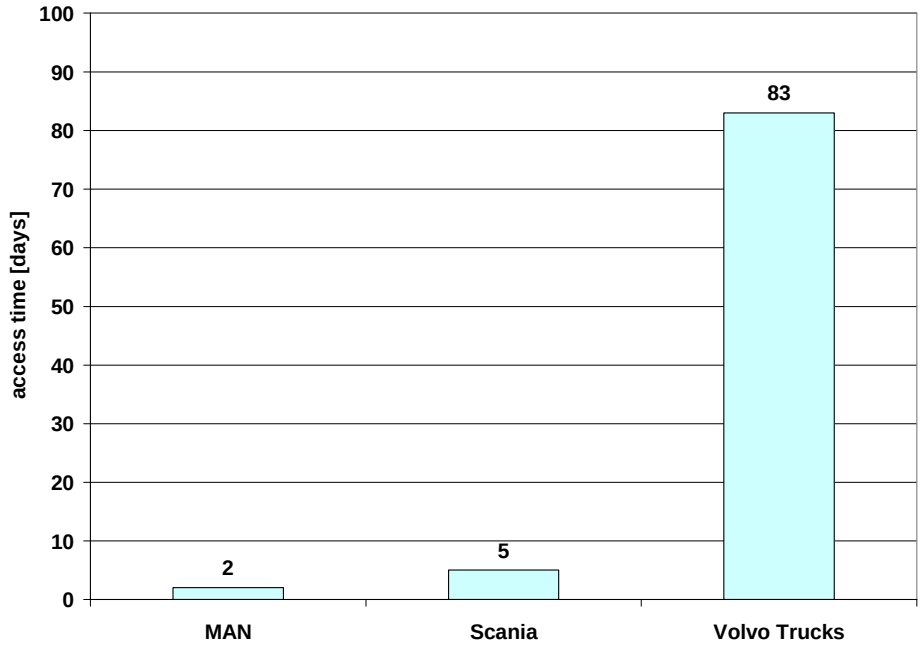

Fig. 11-1: First Access: Timing [days] (1.1.1)

	MAN	Scania	Volvo Trucks
pay per view	no	no	no
payment by accesstime	yes	no	no
payment by job	no	no	no
pay per DTC	no	no	no
subscription	no	yes	yes
other payments	no	no	no

Tab. 11-2: Cost Models (1.3.1 – 1.3.6)
DTC: Diagnostic Trouble Code

Payment could be done on several ways. For MAN a credit card is needed and for Volvo payment is done by bank transfer or debit. Scania grants access after payment with e.g. credit card, invoice or cash. Scania has no vertical price control but a price list valid between factory and the national distributor. There are no special discounts.

	MAN	Scania	Volvo Trucks
bank transfer	**no**	yes	yes
credit card	yes	yes	**no**
debit	**no**	**no**	yes
other	**no**	yes	**no**
special discounts	**no**	**no**	**no**

Tab. 11-3: Method of Payment (1.4)

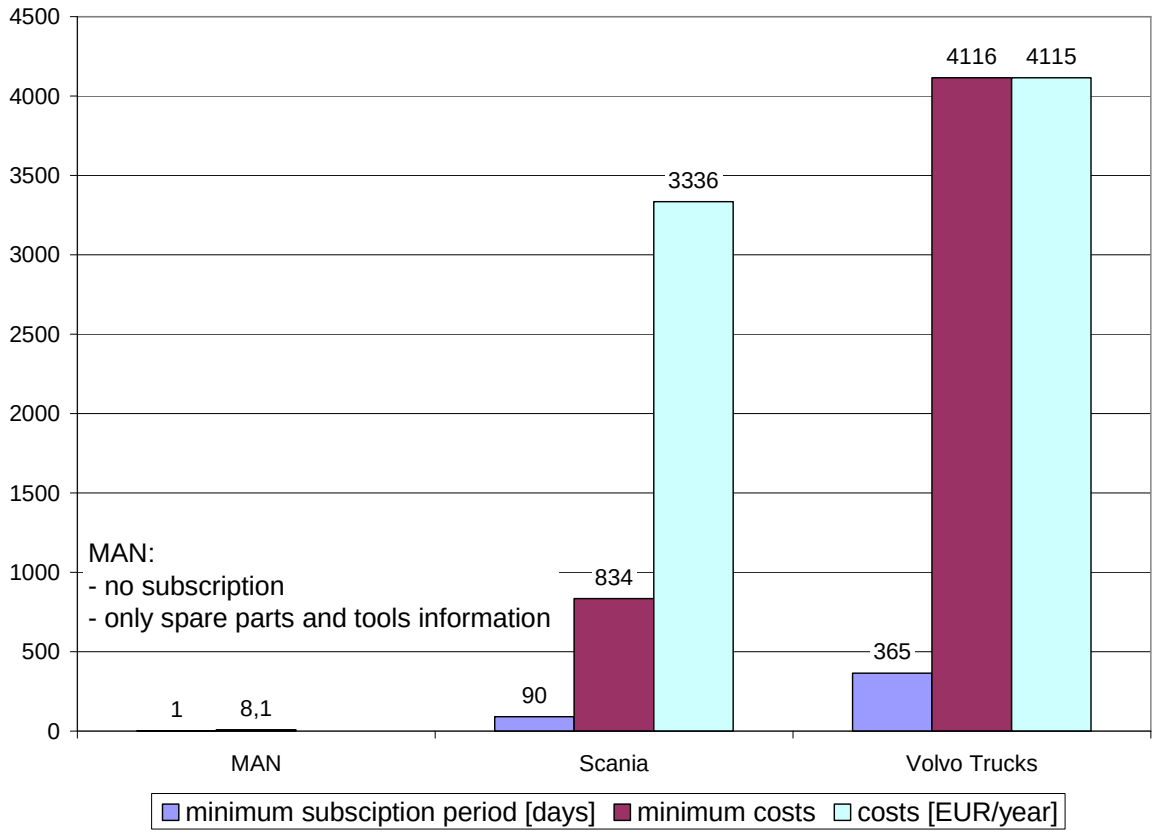

Fig. 11-2: Subscription of Technical Information (1.3.5)
(costs per month & minimum subscription period)

Scania and Volvo offer a subscription of technical repair information. The minimum subscription period differs from 3 months for Scania to one year for Volvo. These periods are quite long compared to the demand of an independent operator to subscribe for a short period. In the passenger car sector these periods differ from 1 hour to one year. Fig. 11-2 gives an overview on the minimum costs with regard to the minimum subscription period and the costs for a period of one year. Due to the minimum subscription period of 3 months the minimum prices for Scania are EUR 834,- compared to EUR 4.115,- for Volvo (EUR 4.000,- annual + EUR 115,- annual and registered user). Also the one-year costs are about 20 % less costly for Scania. MAN does not offer a subscription of technical repair information. Only spare part and tool information are available on the website for a daily flat-rate charge of EUR 8,10.

11.3 Users (1.5)

MAN counts approx. 400 users of their website with 768 logins per month. For Volvo only one user is listed and Scania did not give any figures. Volvo remarked that at the date of the reply, due to the obligation of attending an Impact training course (see 11.2; access conditions), no independent users have actually subscribed to the website. The number indicated is the number of demands for a subscription received since October 2003 and that are now being processed. As already mentioned before, it is hardly understandable and not acceptable from an operator's point of view why the subscription takes such a long time. Due to these figures it may be assumed that only the MAN system gives useful spare part and tool information to independent operators for acceptable conditions.

	MAN	Scania	Volvo Trucks
no. registered users	ca. 400		1
website logins/month	768		(not applicable - permanent internet connection)

Tab. 11-4: Number of registered users and website logins per month (1.5)

11.4 Hard- and Software Requirements (1.7)

Tab. 7-11 gives an overview on the hard- and software requirements for the different information systems. The hardware requirements represent the “state-of-the-art” without any uncommon specifications. The necessary software is limited to conventional web browsers (Internet Explorer x.x [IE] or Netscape 4.7 [NS]). Sometimes the user has to adjust the settings of his web browser in order to access and use the website.

	MAN	Scania	Volvo Trucks
min. processor [MHz]	**233**	**300**	**200**
min. RAM [MB]	**64**	**500**	**64**
min. display resolution	**800 x 600**	**1024 x 768**	**1024 x 768**
needed software	**IE 5.5**	**IE**	**IE 5.x**
needed software	**Flash plug in**		**ICA Client**
special plug-ins	**yes**	no	no
if yes: how many	**1**		
if yes: at what cost	**0**		

Tab. 11-5: Hard- and Software Requirements (1.7)

For Volvo two different clients have to be installed for getting access to the system. The installation process is complicated and exhaustive. At the end it was not possible to get access to the system. Since Volvo is the only manufacturer who needs a separate installation to get access to an Internet system, it is difficult to understand why such a complex procedure is needed.

11.5 Information Scope

11.5.1 Covered Vehicles and Update Periods (1.6)

Volvo is the only manufacturer whose system covers 100 % of the vehicles, which were produced within the last 10 years. For Scania only 40 % of these trucks are available (other on paper and CD/DVD). MAN only provides spare part and special tools information via Internet. The update periods are within a reasonable amount of time for all manufacturers.

	MAN	Scania	Volvo Trucks
covered vehicles last 10 years [%]	**only parts**	**40**	**100**
update periods [month]	**monthly**	**weekly**	**1,5**

Tab. 11-6: Covered vehicles and update periods (1.6)

11.5.2 Languages (1.8)

The websites are offered in several different languages. MAN only offers their technical information in German and English. For Scania and Volvo all major European languages are available, but all languages of smaller countries are missing. Especially the languages provided by MAN are not satisfying, although the implementation of further languages is under progress.

	MAN	Scania	Volvo Trucks
czech	no	no	no
danish	no	no	no
dutch	no	yes	yes
english	yes	yes	yes
estonian	no	no	no
finnish	no	yes	yes
french	no	yes	yes
german	yes	yes	yes
greek	no	no	no
hungarian	no	no	no
italian	no	yes	yes
latvian	no	no	no
lithuanian	no	no	no
norwegian	no	no	no
polish	no	yes	no
portuguese	no	yes	yes
romanian	no	no	no
slovenian	no	no	no
spanish	no	yes	yes
swedish	no	yes	yes
other	no	no	no

Tab. 11-7: Languages (1.8)

11.5.3 Vehicle Identification (2.1)

Since vehicles are delivered in different configurations and variants it is absolutely necessary to be able to precisely identify a given vehicle in order to obtain the correct and relevant technical information. Especially in the commercial vehicle sector an enormous number of variants exist. Scania for example has a theoretical possibility to build approx. 8 billion different variants of trucks, based on a modular system and approx. 90 % of the production is unique. Therefore adequate vehicle identification is a very important requirement, perhaps even more important than in the passenger car sector. Such identification could be performed by different means. The easiest method to automatically identify a vehicle is by using its vehicle identification number (VIN). The VIN consists of 17 characters:

- Character 1-3: World Manufacturer Code
- Character 4-9: Vehicle Features (e.g. model, body style, engine type, …)
- Character 10: Model Year
- Character 11: Production Plant
- Character 12-17: Sequential Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
W	D	B	9	5	4	0	3	2	1	K	2	3	5	6	9	9

Tab. 11-8: Vehicle Identification Number (VIN)
Example MB Actros

Identification by VIN is only possible for Volvo Trucks and within the spare part identification of MAN. For Scania no automatic vehicle identification is available.

	MAN	Scania	Volvo Trucks
by VIN	yes	**no**	yes
by selective list	yes	yes	yes
by other	**no**	**no**	**no**
identification of original parts (incl. part no.)	yes	yes	yes

Tab. 11-9: Vehicle Identification (2.1)

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 the vehicle identification number (VIN) is not known, this feature is also absolutely necessary. Every manufacturer provides this method of identification and also an unambiguous identification of original parts.

11.5.4 Information Search (2.2 – 2.3)

To receive the necessary technical information different search criteria should be provided. In this context the most important criteria are search by systems (provided by all manufacturers) and search by components (only Volvo). An efficient way is usually a full text search. Scania provides such a feature. Since the different manufacturers use different terms for their systems and components a target-oriented full text search may be difficult and the user may not get the desired information.

Search by symptoms is a useful option to identify faulty components. No manufacturer offers this option.

	MAN	Scania	Volvo Trucks
Trouble Codes (DTC)	**no**	**no**	yes
symptoms	**no**	**no**	**no**
systems	yes	yes	yes
components	**no**	**no**	yes
OE numbers	**no**	**no**	yes
special tool names	**no**	yes	**no**
warning indication	**no**	**no**	**no**
full text search	**no**	yes	**no**
other	**no**	**no**	**no**

Tab. 11-10: Search Criteria (2.2)

In order to receive the necessary documents the title and a short description of the content of the document are necessary. A document title is provided by all manufacturers (MAN only spare parts list available) whereas a description is only available on the Volvo website. If the user wants to print these documents and file them for later use, a creation date or version number is useful to ensure the validity of the documents. Only Scania provides this information.

	MAN	Scania	Volvo Trucks
title	n/a	yes	yes
short description	n/a	**no**	yes
creation date/version	n/a	yes	**no**
other	n/a	**no**	**no**

Tab. 11-11: Display of Search Results (2.3)

11.5.5 Content (2.4)

Tab. 7-18 describes the scope of general technical repair information. For Volvo operating fuels and information on wheel/tyre combinations are missing, which are important for repair shops. The MAN website only consists of a spare part and special tools catalogue.

	MAN	Scania	Volvo Trucks
functional descriptions	n/a	yes	yes
fitting / removal procedures	n/a	yes	yes
work plans / job times	n/a	**no**	**no**
electrical wiring	n/a	yes	yes
hydraulical wiring	n/a	yes	yes
pneumatical wiring	n/a	yes	yes
emission related information	n/a	yes	yes
body repair information	n/a	yes	yes
welding instructions	n/a	**no**	yes
pickup points	n/a	yes	yes
tightening torque figures	n/a	yes	yes
axle settings	n/a	yes	yes
brake clearance	n/a	yes	yes
operating fuels	n/a	yes	**no**
wheel-tyre combinations	n/a	yes	**no**

Tab. 11-12: Information content – general information (2.4.1)

Usually the customer asks for price information before a repair job is performed. For a realistic estimation, information on job times is useful. Since this information is not required, as such by the BER, it is not on any website. Volvo is planning to integrate work plans and job times in the near future.

Servicing is one of the main jobs independent garages are working on. Therefore the information described in Tab. 7-19 is very important. Scania and Volvo provide sufficient service information.

	MAN	Scania	Volvo Trucks
service intervals	n/a	yes	yes
service instructions	n/a	yes	yes

Tab. 11-13:Information content – service information (2.4.2)

For a target-oriented fault identification and repair and in order to produce multi-brand scan tools, diagnostic information is required. Volvo does not provide information on ECU software versions, whereas Scania does not provide any information on test values under certain conditions. Both are important for diagnostic tool manufacturers.

	MAN	Scania	Volvo Trucks
location diagnostic connector	n/a	yes	yes
DTC meanings	n/a	yes	yes
information on ECU software versions	n/a	yes	**no**
test procedures	n/a	yes	yes
test parameters	n/a	yes	yes
test values under certain conditions	n/a	**no**	yes

Tab. 11-14: Information content – diagnosis information (2.4.3)

In order to be able to buy the correct spare parts to complete a repair, OE spare part numbers and spare part lists are necessary. To purchase aftermarket spare parts, the OE spare part number is also required and a cross-reference table selects the aftermarket parts.

Volvo and MAN provide all necessary information. For Scania spare part information is provided on a separate CD.

	MAN	Scania	Volvo Trucks
spare part numbers	yes	(yes)	yes
spare part list for given vehicle	yes	(yes)	yes
graphical spare parts identification	**no**	(yes)	yes

Tab. 11-15: Information content – spare parts (2.4.4)

A special tool list for a given vehicle is necessary to know, which tools are needed, and to decide, whether a repair can be performed economically in an independent workshop. Some manufacturers do not provide such a list, but it is sufficient if the necessary special tools are named in the repair manuals. These manufacturers were also marked with “yes”. On the Volvo website no tool information is available.

	MAN	Scania	Volvo Trucks
special tool list for given vehicle	yes	yes	**no**
description of intended use for each tool	yes	yes	**no**

Tab. 11-16: Information content – special tools (2.4.5)

11.6 Differences between authorised and independent operators (1.9 + 4)

Based on the answers in the respective questionnaires Tab. 7-23 describes the differences in the conditions and the content of the technical information systems between authorised and independent operators. For those manufacturers where currently no web based technical information system is available for authorised repairers, a comparison between the web system for independent operators and the CD/DVD system for authorised operators is made. Differences in hard- and software requirements that are based on different information systems (Internet or CD/DVD) are neglected.

Only MAN named differences, which are explained in detail as follows:

1. Registration Conditions
    a. Authorised repairers get the registration via Internet-Certificate, independent repairers via Internet (reduced version).
2. Registration Costs
    a. Authorised repairers free / independent repairers pay little.
3. Cost Models
    a. Extranet for authorised repairers lump sum payment/independent workshops have to pay per day.
7. Languages
    a. Under progress.
8. Vehicle Identification
    a. Authorised repairers have ClientCheck, which independent repairers do not have.
9. Search Criteria
    a. Authorised repairers have ClientCheck; independent repairers only have information from certificate of registration.
10. Display of Search Results
    a. Internet = reduced version to Extranet (contracted workshops).
11. Service Information
    a. Internet does not have the full version of model range.
12. Test and Diagnosis Information
    a. Internet does not show all possibilities.

	MAN	Scania	Volvo Trucks
registration conditions	**yes**	no	no
registration costs	**yes**	no	no
cost models	**yes**	no	no
covered vehichles / update periods	no	no	no
hard- / software requirements	no	no	no
languages	**yes**	no	no
vehicle identification	**yes**	no	no
search criteria	**yes**	no	no
display of search results	**yes**	no	no
information structure	**yes**	no	no
scope general repair info	no	no	no
scope service info	**yes**	no	no
test and diagnosis info	**yes**	no	no
spare parts info	no	no	no
special tools info	no	no	no

Tab. 11-17: Differences in the conditions and systems for authorised and independent operators

11.7 The Usability of the Information Systems

11.7.1 MAN

The MAN website only consists of a spare part and special tools catalogue. Their VIN number or a selective list identifies different truck models. For each model all spare parts of a certain vehicle system are displayed and all necessary information can be found quickly. For technical repair information only an overview of available paper information is provided.

11.7.2 Scania

The website is divided into different main chapters. After choosing one main chapter, the user defines the truck by a selective list. Each main chapter consists of several documents, which are structured without any reproducible logic. Each document is a PDF version of paper based repair manual for a certain vehicle system. Due to the unclear structure of the main chapters it is more extensive to find the relevant documents, but all information was found within a reasonable amount of time.

The website also only contains information, which could be viewed free of charge and without any registration (bodywork information, accessories).

11.7.3 Volvo Trucks

The after-sales standard website does not contain any information on what terms access is granted. For information how to subscribe to the technical information system Impact, the Volvo account manager should be contacted (no contact information displayed). To access the information content of the website the user needs to download an ECS software (approx. 7,5 MB) and an ICA client. After installing the ECS software a secure connection to the Volvo network is established. Although our IT department was in contact with Volvo several times it was not possible to get access to Impact.

12 Truck Manufacturers - CD/DVD based Information System (Part B2)

12.1 General Remarks

Renault only publishes spare part information on a CD. The main technical information is provided on paper. Therefore no further assessment has been made in the following chapters.

12.2 Access (1.1 – 1.4)

CD/DVD based Information Systems are provided by Iveco, Mercedes and Scania. Iveco offers packages with information on a single model; the available media are exactly the same for authorised repairers and for independent operators. Scania and Mercedes offer a CD package with technical information for all models.

	Iveco	Mercedes	Scania
package all models	**no**	yes	yes
package single model	yes	**no**	**no**
package with specific system for all models	**no**	**no**	**no**
other	**no**	yes	**no**

Tab. 12-1: Available information packages (1.1)

Analogous to the offer to authorised repairers various information packages are offered by Mercedes:

- Passenger car package (passenger cars, off-road vehicle, transporters)
- Commercial vehicles
  (transporters, commercial vehicles, Unimog, MB-trac, busses)
- Passenger cars / Off-Road vehicles
- Trucks
- Transporters
- Unimog / MB-trac

Since CD/DVD based systems are less flexible than Internet-based ones, the variety of options is small. The need to purchase a package for all models does only fulfil the

requirements of large repair shops or repair shops, which are specialised on specific brands. The requirement of independent repairers is a flexible system with a possibility to purchase small information units.

The costs for a one-year subscription are described in Fig. 12-1. The Scania price is EUR 5.000,-, which is quite high and even higher than the price for a one-year subscription to the Internet system (EUR 3.336,-, see chapter 11). For a one-time delivery the minimum subscription time is 3 months, which equals to EUR 1.250,-.

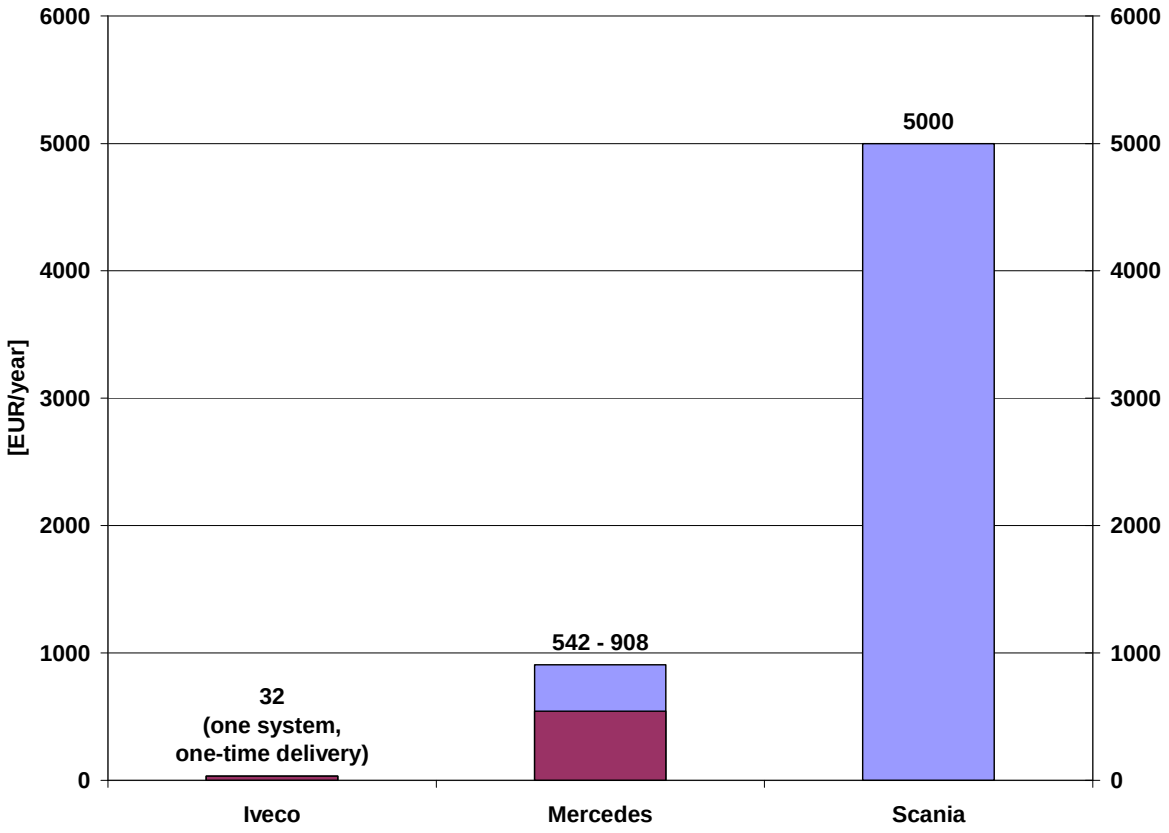

Fig. 12-1: Costs Information Packages for a One-year Subscription (1.1)

Mercedes has different prices for each country, which differ from EUR 542,- to 908,- (DK: 623,-; F: 590,-; GER & NL: 542,-; UK & IRE 568,-; I: 600,-; PL: 908,-). Again, the largest prices have to be paid in Poland. Since there are no other purchase options, the price for a one-time delivery is identical to the one-year subscription.

Iveco provides a CD with technical repair information on a single vehicle system for a price of EUR 32,- per system.

The delivery time for each manufacturer is approximately 7 days (Scania: 5 - 10 days). Only for Mercedes, inside of Germany the CD's are delivered within 5 days. The minimum

subscription period is 12 months for Mercedes (cancellation time: 3 months) and 3 months for Scania.

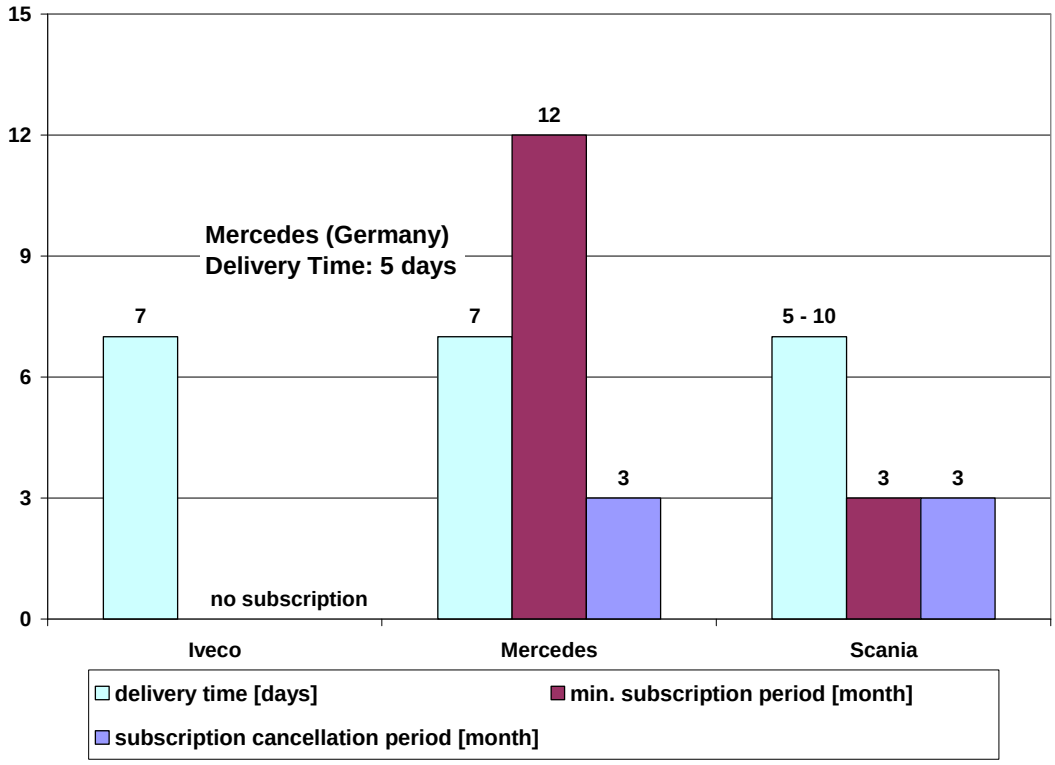

Fig. 12-2: Delivery Time, Minimum Subscription Period and Subscription Cancellation (1.2)

Payment could be done on several ways. For Iveco payment is possible by bank transfer or credit card; Mercedes payment is done by debit (France: by cheque). Scania grants access after payment with e.g. credit card, invoice or cash. Scania has no vertical price control but a price list valid between factory and the national distributor. There are no special discounts.

	Iveco	Mercedes	Scania
bank transfer	yes	**no**	yes
credit card	yes	**no**	yes
debit	**no**	yes	**no**
other	**no**	**no**	yes
special discounts	**no**	**no**	**no**

Tab. 12-2: Method of Payment (1.3)

The local authorised dealer network distributes Iveco's CD packages. For Mercedes this information is provided directly by the manufacturer (except for Ireland where the distribution is provided by the General Distributor), whereas Scania uses both methods

	Iveco	Mercedes	Scania
directly by manufacturer	**no**	yes	yes
by local authorised dealers	yes	**no**	yes
by any other organisation	**no**	**no**	**no**

Tab. 12-3: Distribution of technical information (1.4)

12.3 Users (1.5)

The Mercedes and Scania technical information is purchased by more than 100 users, which represent significant numbers, but two third of the registered Mercedes users are from Germany. All other countries are between 1 (DK and Italy) and 13 (United Kingdom) registrations. Iveco does not count any users.

	Iveco	Mercedes	Scania
number of users per year	0	150	105

Tab. 12-4: Number of users (1.5)

12.4 Hard- and Software Requirements (1.6)

Tab. 8-5 gives an overview on the hard- and software requirements for the different CD/DVD-based systems. Again, the hardware requirements represent the "state-of-the-art" without any uncommon specifications. The necessary software is limited to conventional web browsers (Internet Explorer x.x [IE] or Netscape 4.7 [NS]) and an Acrobat Reader for PDF documents. Iveco did not provide any information on display resolution and disk space.

	Iveco	Mercedes	Scania
min. processor [MHz]	90	200	300
min. RAM [MB]	23 (Ram)	64	64
min. display resolution		1024 x 768	1024 x 768
min. display resolution		768	768
min. disk space [MB]		6000	8000
needed software	Acrobat Reader		IE
special plug-ins	no	no	no

Tab. 12-5: Hard- and software requirements (1.6)

12.5 Information Scope

12.5.1 Covered Vehicles and Update Periods (1.2.2.3 + 1.2.2.5)

For Mercedes technical repair information is available for all models produced within the last 10 years. With Iveco (90 %) and Scania (85 %) only a portion of technical repair information is published on CD; all other information is on paper (Scania and Iveco) or Internet (Scania).

During a subscription update CD's are sent 4 times annual for Scania and 11 times annual for Mercedes. Since Iveco does not offer a subscription of technical repair information, no update figures were given.

	Iveco	Mercedes	Scania
covered vehicles last 10 years [%]	90	100	85
updates per year		11	4

Tab. 12-6: Covered vehicles and update periods (1.2.2)

12.5.2 Languages (1.7)

Also the CD's are offered in several different languages. All manufacturers offer their technical information in Dutch, English, Finnish, French, German, Italian, Portuguese, Spanish and Swedish. Mercedes remarks that for all languages except German, English, French, Spanish and Italian only parts of the information is translated.

	Iveco	Mercedes	Scania
czech	**no**	yes	**no**
danish	yes	yes	**no**
dutch	yes	yes	yes
english	yes	yes	yes
estonian	**no**	**no**	**no**
finnish	yes	yes	yes
french	yes	yes	yes
german	yes	yes	yes
greek	**no**	yes	**no**
hungarian	**no**	**no**	**no**
italian	yes	yes	yes
latvian	**no**	**no**	**no**
lithunian	**no**	**no**	**no**
norwegian	**no**	**no**	**no**
polish	**no**	yes	yes
portuguese	yes	yes	yes
romanian	**no**	yes	**no**
slovenian	**no**	**no**	**no**
spanish	yes	yes	yes
swedish	yes	yes	yes
other	**no**	**no**	**no**

Tab. 12-7: Languages (1.7)

12.5.3 Vehicle Identification (2.1)

The necessity to identify a given vehicle can be satisfied by identification via a selective list with several attributes and/or by using the vehicle identification number (VIN). All listed manufacturers provide identification by a selective list. The Iveco CD consists of a single PDF file with a complete repair manual. Automatic vehicle identification by VIN is not possible, but the VIN code is explained and the user is able to identify the vehicle manually. With the different methods of vehicle identification also all original parts can be identified.

	Iveco	Mercedes	Scania
by VIN	(no)	yes	yes
by selective list	yes	yes	yes
by other	**no**	**no**	**no**
identification of original parts (incl. part no.)	yes	yes	yes

Tab. 12-8: Vehicle Identification (2.1)

12.5.4 Information Search (2.2 – 2.3)

To receive the necessary technical information different search criteria should be provided. In this context the most important criteria are search by systems and search by components (both provided by all manufacturers). Some manufacturers offer additional features like a full-text search (Mercedes and Scania). The Iveco documentation consists of a single PDF file. With a PDF full text search, different search criteria are available.
In order to receive the necessary documents the title and a short description of the content of the document are necessary. This information is only provided by Mercedes. If the user wants to print these documents and file them for later use, a creation date or version number is useful, to ensure the validity of the documents. This information is not available for Scania.

In comparison to the Internet-based systems the display of search results is less important, because the user does not have to pay for any additional access periods. But on the other hand it is of course necessary to find the required information within a reasonable amount of time. From that point of view an adequate and informative listing of search results is still relevant.

	Iveco	Mercedes	Scania
Trouble Codes (DTC)	yes	yes	**no**
symptoms	**no**	**no**	**no**
systems	yes	yes	yes
components	yes	yes	yes
OE numbers	yes	yes	yes
special tool names	**no**	yes	**no**
warning indication	yes	**no**	**no**
full text search	yes	yes	yes
other	**no**	**no**	**no**

Tab. 12-9: Search Criteria (2.2)

	Iveco	Mercedes	Scania
title	yes	yes	yes
short description	n/a	yes	**no**
creation date/version	n/a	yes	**no**
other	**no**	**no**	**no**

Tab. 12-10: Display of Search Results (2.3)

12.5.5 Content (2.4)

Tab. 12-11 describes the scope of general technical repair information. Especially Mercedes is providing all necessary technical repair information. For Scania only welding information is missing. With the lack of emission related information and body repair information (incl. welding information) Iveco is not providing all types of information, which are relevant for independent workshops.

	Iveco	Mercedes	Scania
functional descriptions	yes	yes	yes
fitting / removal procedures	yes	yes	yes
work plans / job times	yes	yes	**no**
electrical wiring	yes	yes	yes
hydraulical wiring	yes	yes	yes
pneumatical wiring	yes	yes	yes
emission related information	**no**	yes	yes
body repair information	**no**	yes	yes
welding instructions	**no**	yes	**no**
pickup points	yes	yes	yes
tightening torque figures	yes	yes	yes
axle settings	yes	yes	yes
brake clearance	yes	yes	yes
operating fuels	yes	yes	yes
wheel-tyre combinations	yes	yes	yes

Tab. 12-11: Information content – general information (2.4.1)

Servicing is one of the main jobs independent garages are working on. Therefore the information described in Tab. 12-12 is quite necessary. All three manufacturers grant access to the respective information.

	Iveco	Mercedes	Scania
service intervals	yes	yes	yes
service instructions	yes	yes	yes

Tab. 12-12: Information content – service information (2.4.2)

For a target-oriented fault identification and repair diagnostic information is required. Scania does not provide testing values, which are of importance especially for diagnostic tool manufacturers.

	Iveco	Mercedes	Scania
location diagnostic connector	yes	yes	yes
DTC meanings	yes	yes	yes
information on ECU software versions	yes	yes	yes
test procedures	yes	yes	yes
test parameters	yes	yes	yes
test values under certain conditions	yes	yes	**no**

Tab. 12-13: Information content – diagnosis information (2.4.3)

In order to be able to buy the correct spare parts to complete a repair, OE spare part numbers and spare part lists are necessary. To purchase aftermarket spare parts the OE spare part number is also required and a cross-reference table selects the aftermarket parts. All three manufacturers give sufficient spare part information.

	Iveco	Mercedes	Scania
spare part numbers	yes	yes	yes
spare part list for given vehicle	yes	yes	yes
graphical spare parts identification	yes	yes	yes

Tab. 12-14: Information content – spare parts (2.4.4)

A special tool list for a given vehicle is useful to decide whether a repair can be performed economically in an independent workshop. Scania does not provide such a list, but the necessary special tools are named in the repair manuals. Therefore Scania was also marked with “yes”.

	Iveco	Mercedes	Scania
special tool list for given vehicle	yes	yes	(yes)
description of intended use for each tool	yes	yes	(yes)

Tab. 12-15: Information content – special tools (2.4.5)

12.6 Differences between authorised and independent operators (1.8 + 4)

Based on the answers in the respective questionnaires Tab. 8-16 describes the differences in the conditions and the content of the technical information systems between authorised and independent operators.

	Iveco	Mercedes	Scania
purchase options	no	**yes**	**yes**
payment	no	no	no
hard- / software requirements	no	no	no
languages	no	no	no
vehicle identification	no	no	no
search criteria	no	no	no
display of search results	no	no	no
information structure	no	no	no
scope general repair info	no	no	no
scope service info	no	no	no
test and diagnosis info	no	**yes**	no
spare parts info	no	no	no
special tools info	no	no	no

Tab. 12-16: Differences in the conditions and systems for authorised and independent operators

Any differences are explained in detail as follows:

1. Purchase Options
    a. Mercedes
       Only independent repairers can purchase Star Diagnosis (authorised operators can only rent).
    b. Scania
       MULTI for authorised workshops contains parts information, workshop manual, technical bulletins and job times - MULTI Service for independent operators contains the same as MULTI above except job times - MULTI Parts only contains parts information.

11. Test and Diagnosis Information
    a. Mercedes
       Restricted access to theft relevant functions/information.

12.7 The Usability of the Information Systems

12.7.1 Iveco

Iveco provides a CD with a single PDF file, which contains the complete repair manual. Due to the well-defined structure all information can be found within a reasonable amount of time.

12.7.2 Mercedes

The system is the same as those for the passenger cars and also identical to the system for the authorised repairers. Information is structured in a traceable way and the necessary technical information can be found within a reasonable amount of time.

12.7.3 Scania

The CD contains the same PDF documents as the Internet. The installation process is very time consuming (approx. 1 hour) and requires a lot of disk space. Due to the zipped files on the CD it is not possible to run the information directly from the CD.

After a successful installation it was not possible to get access to the workshop manuals and the technical information (buttons were greyed).

13 Truck Manufacturers - Paper based Information System (Part B3)

13.1 General Remarks

Scania and Iveco also distribute technical repair information on CD. For Volvo the information made available to independent operators are printouts of the Internet-based database. Upon request, independent operators can obtain a package with information on specific repair and maintenance operations. Volvo charges EUR 100,- per request, plus EUR 1,- per printed page, but the information is not delivered before 3 days after payment. Subscription of the paper version is not possible. For both, Iveco and Volvo, a detailed analysis of the systems put in place is made in the respective chapters 11 and 12.

13.2 Access (1.1 – 1.5)

DAF has established a central Dealer Systems Helpdesk that will provide information in paper format or, upon request, as a digital PDF-file. DAF's national sales subsidiaries in the EU are instructed to refer the relevant requests to the DAF Dealer Systems Helpdesk. Based on the relatively low numbers of the requests to receive technical information, DAF has not invested in specific software or IT-interfaces that will enable independent operators to have access to the technical information they may require by means of an Internet portal, CD's or DVD's. The central DAF Dealer Systems Helpdesk will, on the request of independent repairers, provide these with the full scope of technical information that DAF has made available to its authorised service dealers. The information has the form of DAF's regular service documentation (Technical Information Bulletins, Maintenance Manuals, Workshop Manuals, Fluids and Lubricants Manuals, Special Tools Manuals, System Binders and Component Binders) for authorised dealers. The information may also be provided in part as a fax message, e-mail or CD containing the PDF-files with the specific pages of these documents that relate to the question received.

The format of the information can further be printouts of the computer screens, generated by the DAF Service Rapido and DAF Parts Rapido software DAF has made available to its authorised repairers on a monthly license fee basis. To make this software available to independent operators in a similar manner as for authorised DAF service dealers, it would require investments from DAF that are from their point of view not reasonably economically justifiable, considering the current low demand from independent operators. Independent operators may moreover not be prepared to pay the relevant monthly license fee, in view of the in general relatively low number of repair jobs on DAF vehicles in their workshops. The DAF Dealer Systems Helpdesk will however enable independent operators to have access to printouts of the same computer screen pages as authorised DAF service dealers, this on an ad hoc basis and without the need to commit to regular license payments.

The prices charged for documentation such as workshop manuals are the same as charged to authorised DAF service dealers. Tailor-made information, such as faxes of certain pages of the workshop manuals or screen printouts from the DAF service software, is charged on a

cost recovery basis. Assuming payment by the independent operator is not a delaying factor, the information will be provided as soon as it is, considering the nature of the information, practically possible. Faxes with only a few pages will usually be transmitted quickly, documentation such as manuals will have the same delivery time as applies to deliveries to authorised DAF service dealers.

Also MAN provides a paper-on-demand system in Denmark, France, Germany and Poland.

Renault provides packages with technical information for all models and for a specific range:

- Technical information for all models
  - o Repair manual EUR 1.320,- annual
  - o Time Hours Schedule Book EUR 60,- annual
  - o Driving & Maintenance notices EUR 480,- annual
- Technical information for a specific range
  - o Repair manual EUR 350,- annual
  - o Driving & Maintenance notices EUR 95,- annual
  - o Spare Parts Catalogue EUR 114,-
    (available for models produced in series after 2000)

	DAF	MAN	Renault Trucks	Scania
package all models	yes	yes	yes	yes
package single model	yes	yes	yes	**no**
package with specific system for all models	**no**	yes	**no**	**no**
other	yes	yes	yes	**no**

Tab. 13-1: Available information packages (1.1)

The costs of the different information packages and options are described in Fig. 13-1. The highest prices have to be paid for MAN with approx. EUR 9.000,- – 10.000,- per model. The DAF information is also quite expensive, but the independent operator has the possibility to only buy portions of information as well (see above). The costs for technical information of all models are in the same range for Renault (EUR 1.800,-) and Scania (EUR 2.000,-).

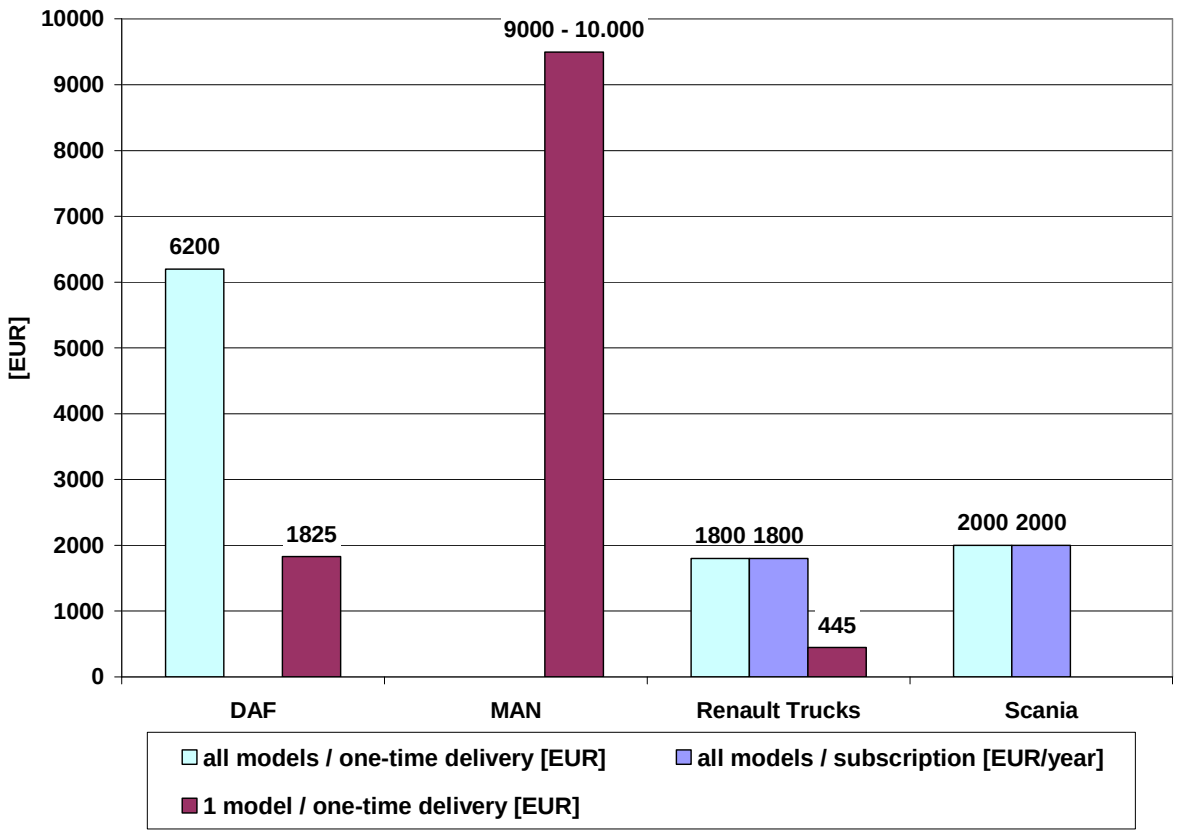

Fig. 13-1: Costs of Information Packages (1.1)

The delivery times are shown in Fig. 13-2. DAF needs 15 minutes - 30 days, depending on the nature of information requested and in stock availability. MAN has different delivery times, which were on demand for Denmark, France, Germany and Poland but hardly acceptable in Italy (5 weeks) and the United Kingdom (3 months). Also the Renault figures are not fulfilling the needs of an independent operator and are with 45 – 55 days far too large. The Scania information is delivered within 5 – 10 days. Since the paper manuals have to be sent per post these figures are acceptable.

Payment could be done in several ways (see Tab. 13-2). For DAF and Renault bank transfer does payment; MAN's payment is done by credit card. Scania grants access after payment with e.g. credit card, invoice or cash. Scania has no vertical price control but a price list valid between factory and the national distributor.

There are no special discounts.

For all manufacturers technical repair information is distributed by themselves and also by the local dealer network. DAF is the only manufacturer who provides information by themselves using the central Dealer Systems Helpdesk.

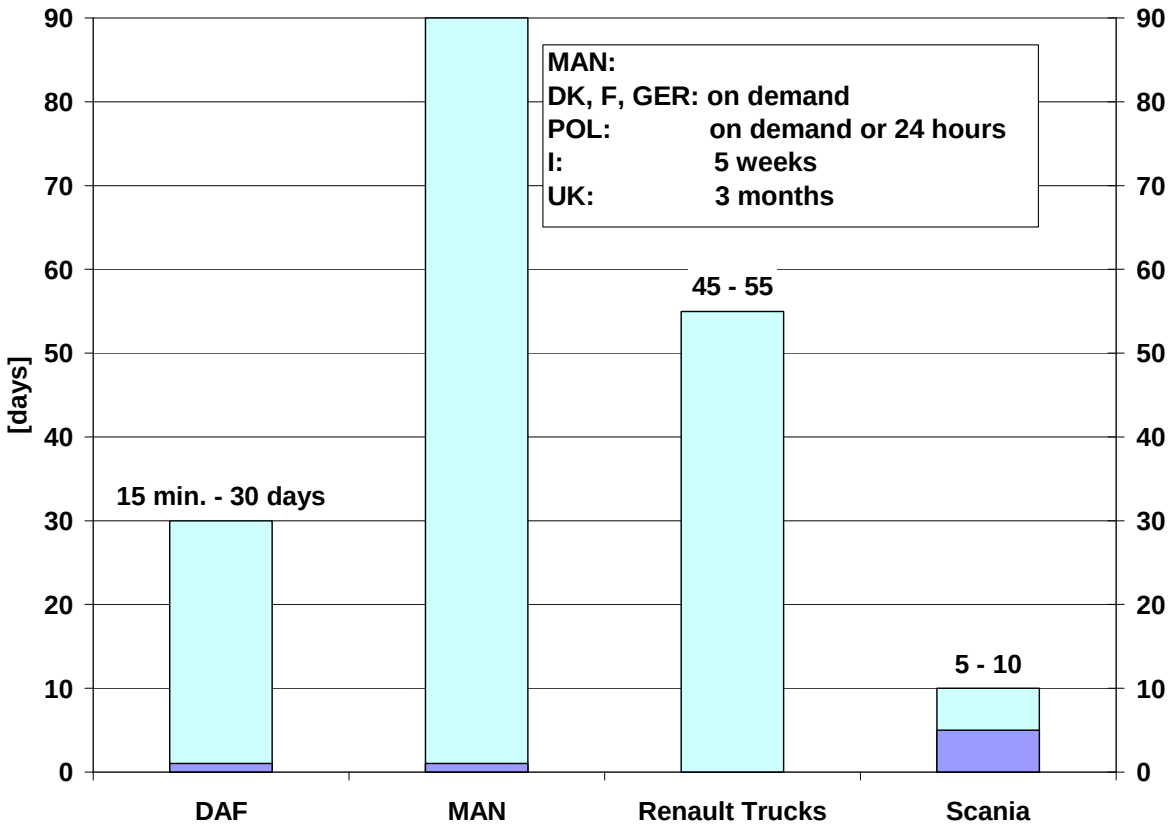

Fig. 13-2: Delivery Time (1.2.1.1)

	DAF	MAN	Renault Trucks	Scania
bank transfer	yes	no	yes	yes
credit card	no	yes	no	yes
debit	no	no	no	no
other payment	no	no	no	yes
special discounts	no	no	no	no

Tab. 13-2: Method of Payment (1.3)

	DAF	MAN	Renault Trucks	Scania
directly by manufacturer	yes	yes	yes	yes
by local authorised dealers	**no**	yes	yes	yes
by any other organisation	**no**	**no**	**no**	**no**

Tab. 13-3: Distribution of technical information (1.4)

13.3 Users (1.5)

Since the new Automotive Block Exemption came into effect DAF only had a few enquiries from independent operators requesting to provide them with technical information. On the basis of the records there have only been 12 - 15 of these requests throughout the EU. These came from independent repairers with the exception of one request from an independent tool manufacturer. DAF have not received any requests from roadside assistance operators, automobile clubs or from publishers. So far this has not been a significant change to the experience in years prior to the new Automotive Block Exemption.

MAN did not provide any figures and Renault answered that the paper based information has not been requested by independent operators. Only Scania counts a significant number of users.

	DAF	MAN	Renault Trucks	Scania
number of users per year	15	not known	0	> 200

Tab. 13-4: Number of users (1.5)

13.4 Information Scope

13.4.1 Covered Vehicles and Update Periods (1.2.2.3 + 1.2.2.5)

Paper based information is available for 100 % of all models produced within the last 10 years. Renault's information is updated permanently and for Scania the update period is 3 months. MAN and DAF send paper printouts on demand and did not name any update periods.

	DAF	MAN	Renault Trucks	Scania
covered vehicles last 10 years [%]	100	100	100	100
updates per year	n/a	n/a	permanent	4

Tab. 13-5: Covered vehicles and update periods (1.2.2)

13.4.2 Languages (1.7)

All manufacturers offer their technical information in Dutch, English, French, German, Italian, and Spanish. Except for DAF Finnish, Portuguese and Polish repair manuals are also available. In addition Renault provides Turkish and Russian documents.

	DAF	MAN	Renault Trucks	Scania
czech	no	yes	yes	no
danish	no	yes	yes	no
dutch	yes	yes	yes	yes
english	yes	yes	yes	yes
estonian	no	no	no	no
finnish	no	yes	yes	yes
french	yes	yes	yes	yes
german	yes	yes	yes	yes
greek	no	yes	no	no
hungarian	no	yes	yes	no
italian	yes	yes	yes	yes
latvian	no	no	no	no
lithunian	no	no	no	no
norwegian	no	yes	no	no
polish	no	yes	yes	yes
portuguese	no	yes	yes	yes
romanian	no	no	no	no
slovenian	no	yes	no	no
spanish	yes	yes	yes	yes
swedish	no	yes	no	yes
other	no	no	yes	no

Tab. 13-6: Languages (1.7)

13.4.3 Vehicle Identification (2.1)

For paper-based systems identification is only possible by a selective list with several attributes (model, model year, engine, transmission, body style). Since the workshop books are generally structured in that way, all manufacturers provided such an identification method.

13.4.4 Information Search (2.1 + 2.2)

Paper based workshop manuals are divided into different chapters. These chapters represent systems of a vehicle, which are for that reason a main search criterion. A search by components could also be possible by an alphabetical index (not provided); for search by DTC and search by symptoms different charts are needed. Especially a DTC (DAF, MAN and Scania) and a symptom chart (provided by DAF) are important for independent operators.

	DAF	MAN	Renault Trucks	Scania
Trouble Codes (DTC)	yes	yes	**no**	yes
symptoms	yes	**no**	**no**	**no**
systems	yes	yes	yes	yes
components	**no**	**no**	**no**	**no**
OE numbers	**no**	yes	yes	**no**
special tool names	yes	**no**	**no**	yes
warning indication	yes	**no**	**no**	**no**
other	**no**	**no**	**no**	**no**

Tab. 13-7: Search Criteria (2.2)

13.4.5 Content (2.3)

Tab. 13-8 describes the scope of general technical repair information. MAN is lacking important information (emission related information, brake clearance, wheel/tyre combinations), welding instructions are missing for Renault and Scania. Job time information is not required as such by the BER, these figures are provided by Renault as an asset.

	DAF	MAN	Renault Trucks	Scania
functional descriptions	yes	yes	yes	yes
fitting / removal procedures	yes	yes	yes	yes
work plans / job times	**no**	**no**	yes	**no**
electrical wiring	yes	yes	yes	yes
hydraulical wiring	yes	yes	yes	yes
pneumatical wiring	yes	yes	yes	yes
emission related information	yes	**no**	yes	yes
body repair information	yes	yes	yes	yes
welding instructions	yes	yes	**no**	**no**
pickup points	**no**	yes	**no**	yes
tightening torque figures	yes	yes	yes	yes
axle settings	yes	yes	yes	yes
brake clearance	yes	**no**	yes	yes
operating fuels	yes	yes	yes	yes
wheel-tyre combinations	yes	**no**	yes	yes

Tab. 13-8: Information content – general information (2.3.1)

	DAF	MAN	Renault Trucks	Scania
service intervals	yes	yes	yes	yes
service instructions	yes	**no**	yes	yes

Tab. 13-9: Information content – service information (2.4.2)

Servicing is one of the main jobs independent garages are working on. Therefore the information described in Tab. 13-9 is quite important. MAN does not provide service instructions, which is against the requirements of an independent operator.

For a target-oriented fault identification and repair diagnostic information is also required. MAN does not provide any diagnosis information on paper. The available information is limited for all manufacturers, which is against the demands of independent workshops and in particular also the needs of independent tool manufacturers are fulfilled inadequately.

	DAF	MAN	Renault Trucks	Scania
location diagnostic connector	yes	**no**	yes	yes
DTC meanings	yes	**no**	yes	yes
information on ECU software versions	**no**	**no**	**no**	yes
test procedures	**no**	**no**	**no**	yes
test parameters	yes	**no**	**no**	yes
test values under certain conditions	yes	**no**	**no**	**no**

Tab. 13-10: Information content – diagnosis information (2.4.3)

Spare part information is provided by MAN, Scania (CD ROM) and Renault (CD ROM), but for Renault for only a quite high price of EUR 600,- annual. DAF does not satisfy the needs of an independent workshop and also not the requirements of spare parts distributor.

	DAF	MAN	Renault Trucks	Scania
spare part numbers	**no**	yes	(yes)	(yes)
spare part list for given vehicle	**no**	yes	(yes)	(yes)
graphical spare parts identification	**no**	yes	(yes)	(yes)

Fig. 13-3; Information Content – spare parts (2.4.4)

A special tool list for a given vehicle is useful to decide whether a repair can be performed economically in an independent workshop. All manufacturers fulfil this requirement.

	DAF	MAN	Renault Trucks	Scania
special tool list for given vehicle	yes	yes	yes	yes
description of intended use for each tool	yes	yes	yes	yes

Tab. 13-11: Information content – special tools (2.4.5)

13.5 Differences between authorised and independent operators (1.7 + 4)

Based on the answers in the respective questionnaires, Tab. 13-12 describes the differences in the conditions and the content of the technical information systems between authorised and independent operators.

	DAF	MAN	Renault Trucks	Scania
purchase options	**no**	**no**	**no**	**no**
payment	**no**	yes	**no**	**no**
languages	**no**	**no**	**no**	**no**
vehicle identification	**no**	**no**	**no**	**no**
search criteria	**no**	**no**	**no**	**no**
scope general repair info	**no**	**no**	**no**	**no**
scope service info	**no**	yes	**no**	**no**
test and diagnosis info	**no**	**no**	**no**	**no**
spare parts info	**no**	**no**	**no**	**no**
special tools info	**no**	**no**	**no**	**no**

Tab. 13-12: Differences in the conditions and systems for authorised and independent operators

Only MAN names any differences, which are explained in detail as follows:

2. Payment
    a. Authorised partners have bank transfer.
7. Service Information
    a. Service information will not be sent to independent workshops.

13.6 The Usability of the Information Systems

13.6.1 DAF

The information has the form of DAF's regular service information. The structure is logical and due to the tailor-made printouts, such as faxes of certain pages of the workshop manuals or screen printouts from the DAF service software, the user is only able to obtain the information, which is really needed.

No regular repair information is distributed and it depends on the quality of the central Dealer Systems Helpdesk whether the needs of the independent operators are treated sufficiently.

13.6.2 MAN

No paper based information provided.

13.6.3 Renault Trucks

Renault provides different manuals for repair information, spare parts and job times. Due to the good overview of paper documentation, each piece of information can be found within a reasonable amount of time.

13.6.4 Scania

The paper-based manuals are identical to those on the Internet and on CD. Due to the good overview of paper documentation, each piece of information can be found within a reasonable amount of time.

14 Test Cases (3)

For a comparable analysis of different motor vehicle manufacturers, two different test cases have been developed. From these test cases the minimum price to purchase all the necessary technical information and any costs for special tools could be derived. This information is used for the evaluation in chapter 15. Both test cases require that the repair job has to be completed in the independent workshop, assuming that the repairer uses the most economic solution to obtain the information and tools.

For passenger cars, a midsize vehicle has to be repaired, and in the truck sector, a heavy-duty truck was chosen according to Tab. 14-1 and Tab. 14-2.

Company	**Brand**	**Model**	
BMW	BMW		3 Series
Fiat	Alfa		156
Fiat	Fiat		Stilo
Ford	Ford		Mondeo
Ford	Jaguar		X-Type
Ford	Volvo		V40/S40
DaimlerChrysler	Mercedes		C-Class
DaimlerChrysler	Smart		fortwo coupé
GM	Opel/Vauxhall		Vectra
PSA	Citroën		C5
PSA	Peugeot		406
Renault	Renault		Laguna
Toyota	Toyota		Avensis
Volkswagen	Volkswagen		Passat

Tab. 14-1: Midsize Vehicles for test cases

Company	Brand	Model	
DAF	DAF		XF
DaimlerChrysler	Mercedes		Actros
Iveco	Iveco		Stralis
MAN	MAN		TGA
Renault	Renault		Magnum/Premium
Scania	Scania		R Series
Volvo Trucks	Volvo		FH

Tab. 14-2: Heavy-duty trucks for test cases

14.1 Test Case 1 (3.1) – Replacement of a defective ECU

In the first test case a defective ECU has to be replaced. The following technical information is needed to perform the repair:

- Vehicle identification
- Diagnosis and fault identification
- Fitting and removal process
- Spare parts
- Special tools
- (Job times)
- Reinitialisation, coding and pass-through programming procedures (if necessary)
- Re-mobilisation of vehicle immobiliser (if necessary)
- Reset of fault memory

Necessary special tools are:

- Diagnostic scan tool for fault identification and reset of fault memory
- Diagnostic scan tool for reinitialisation and coding
- Pass-through programming tool (if necessary)
- Tool for re-mobilisation of vehicle immobiliser (if necessary)

14.2 Test Case 2 (3.2) - Maintenance and service instructions

In the second test case a standard maintenance and service job has to be performed, which is very common for independent repair shops. The following technical information is needed to perform the service:

- Vehicle identification
- Fault memory reading
- Oil change
- Filter change (oil/air/petrol/passenger compartment)
- Check of operation fluids
- Brake system check
- Axle system check (tyres, suspension)
- Reset of service interval
- Spare parts
- Special tools
- (Job times)

Necessary special tools are:

- Diagnostic scan tool for fault memory reading and resetting (if necessary)
- Diagnostic scan tool for reset of service interval (if necessary)

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 operators[11] 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

[11]Roadside 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 distributors[12], 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,-.

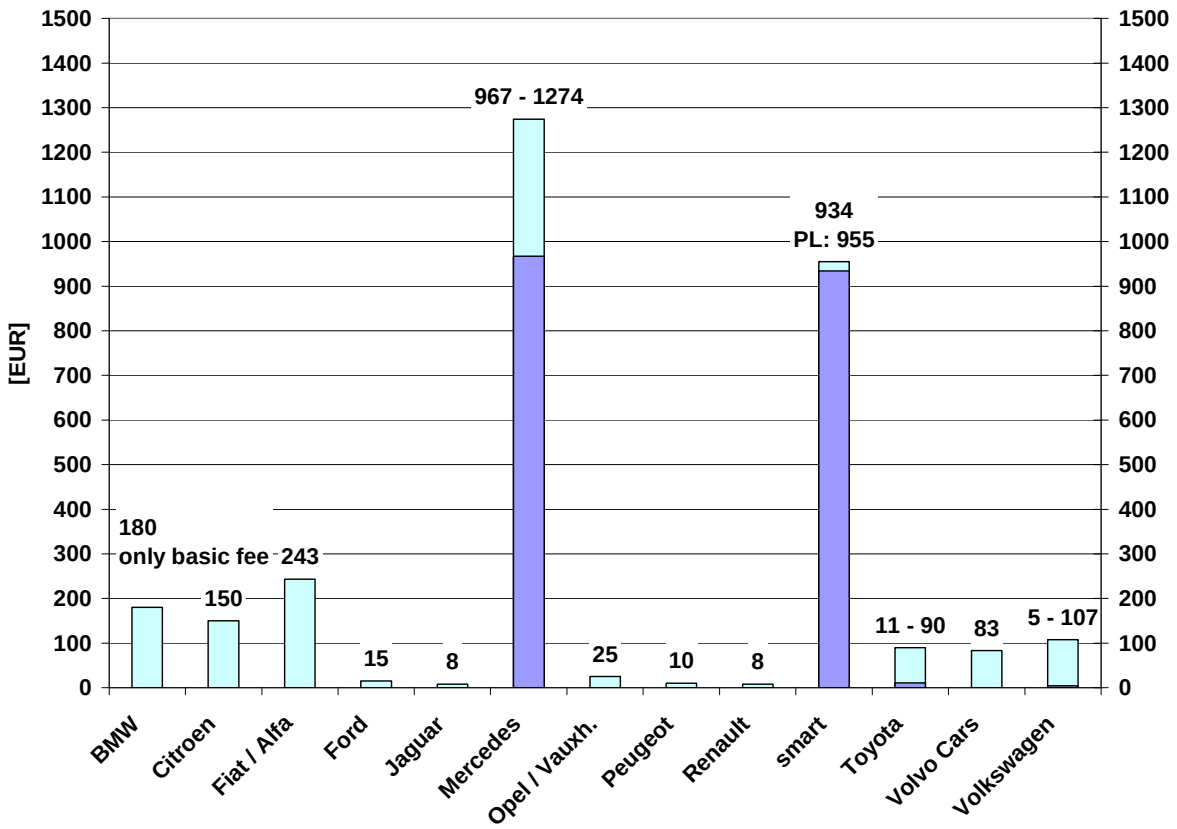

Fig. 15-1: Lowest prices for access to technical repair information (all information systems)

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 job[13], 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.

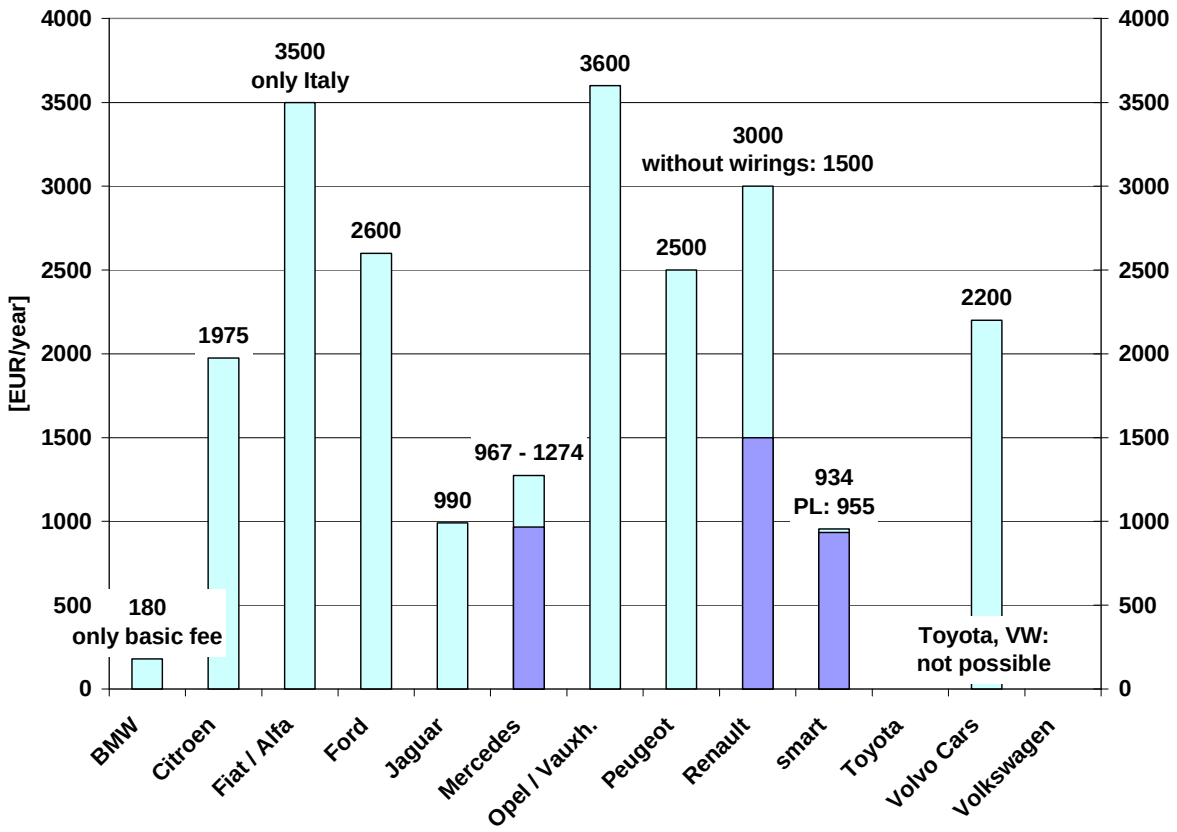

Fig. 15-2: Subscription for all models and one year (all information systems)

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 brand[15] 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 developed[16]. 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. 15-3[17]. 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

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[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).

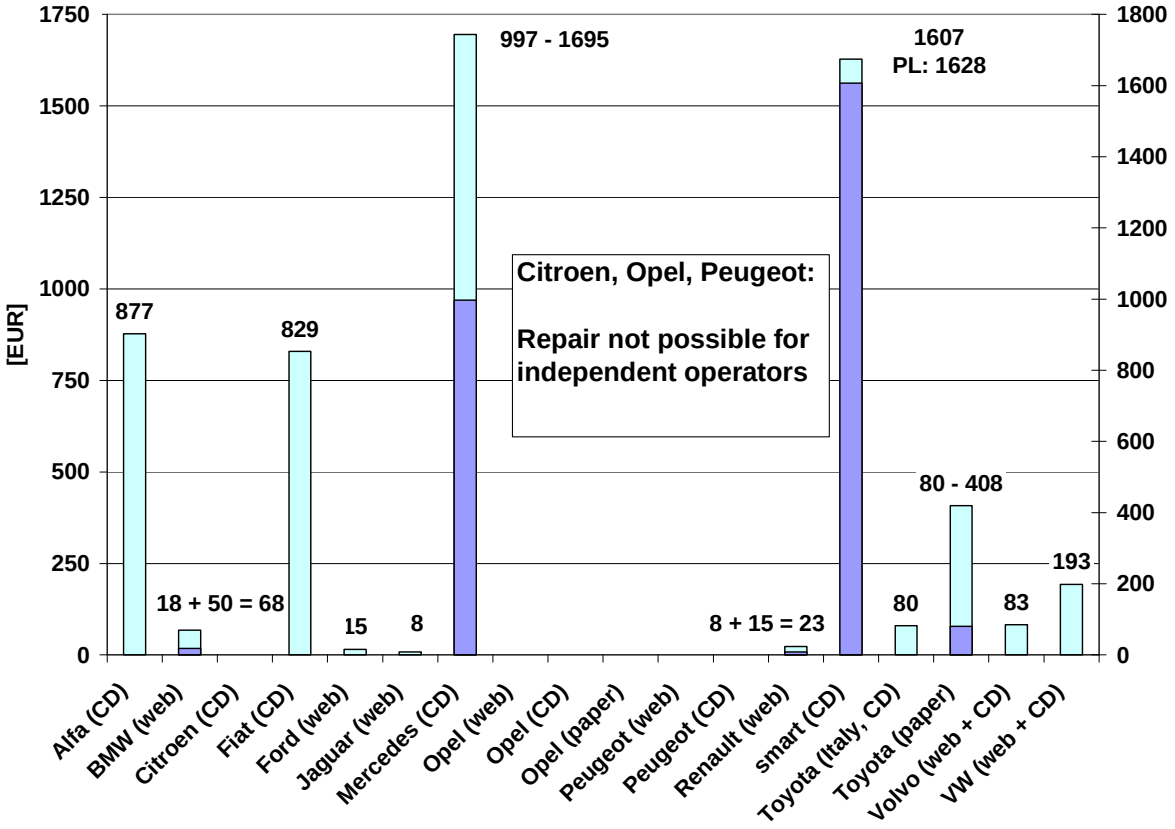

Fig. 15-3: Minimum prices for technical repair information in test case 1

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 job[18] 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.

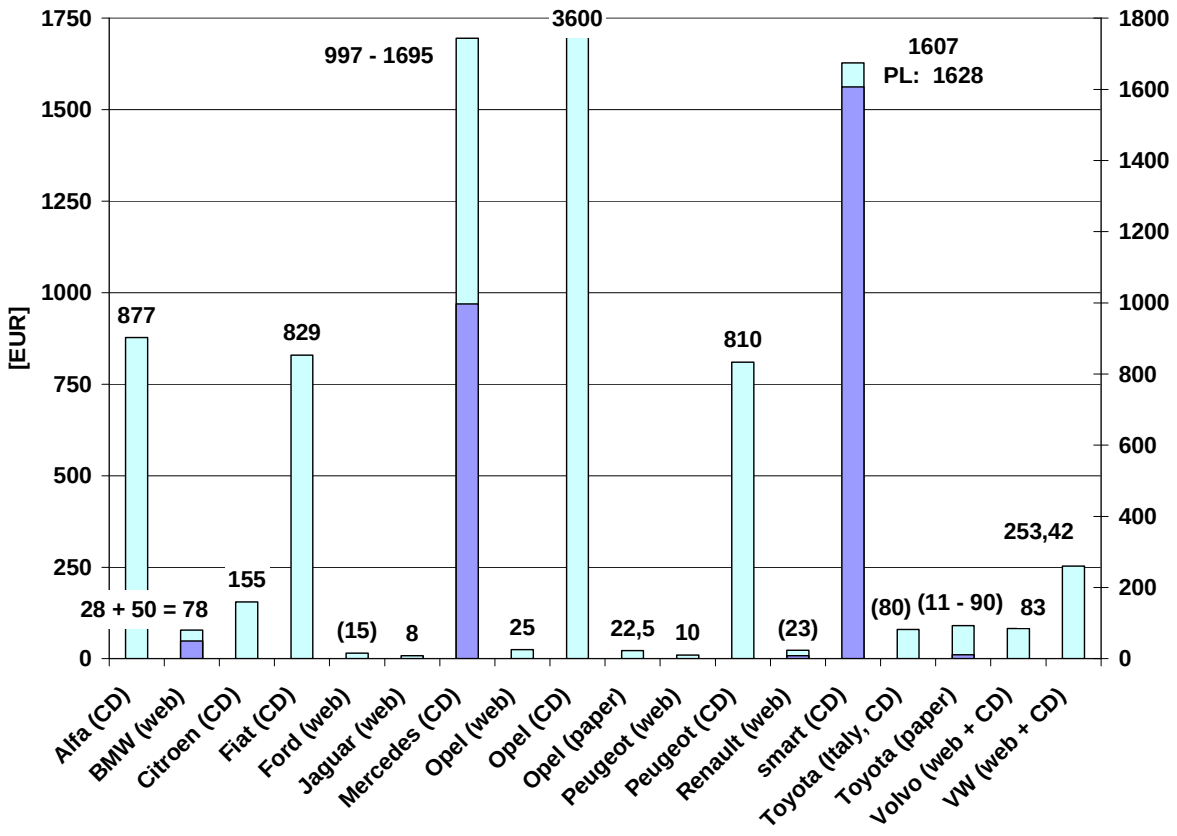

Fig. 15-4: Minimum prices for technical repair information in test case 2

[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 testing[19]. 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.

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[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 modem[21], 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 rudimental 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.

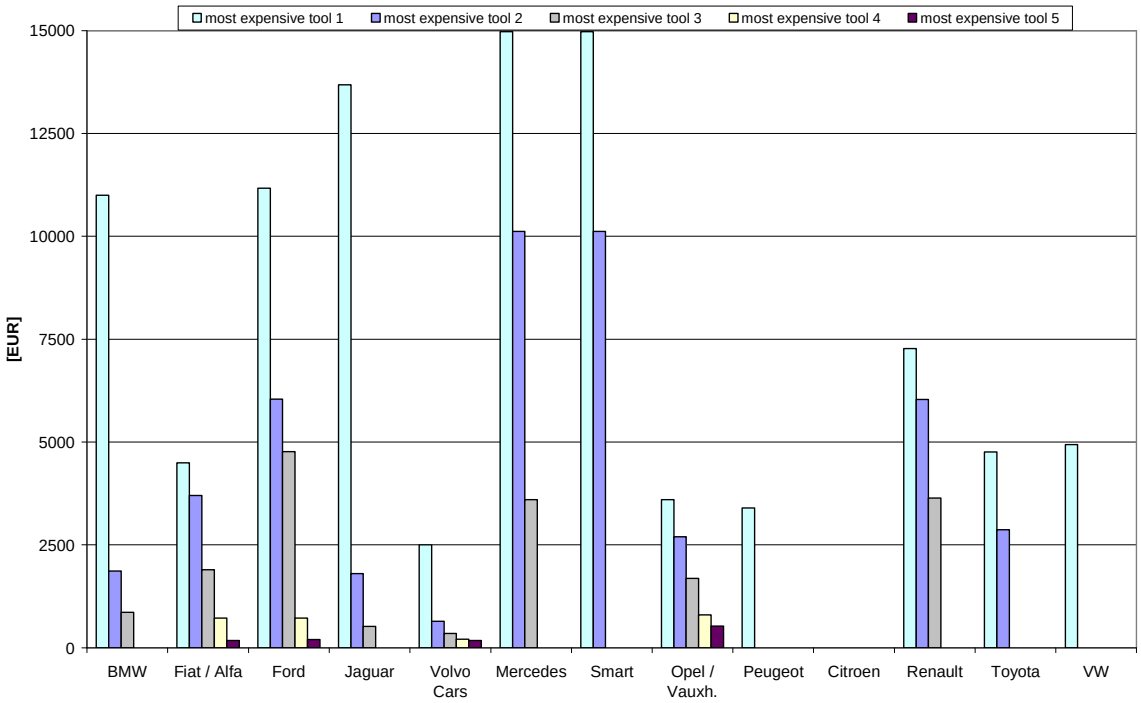

Fig. 15-5: Five most costly diagnosis tools

[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 system[23]. 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.

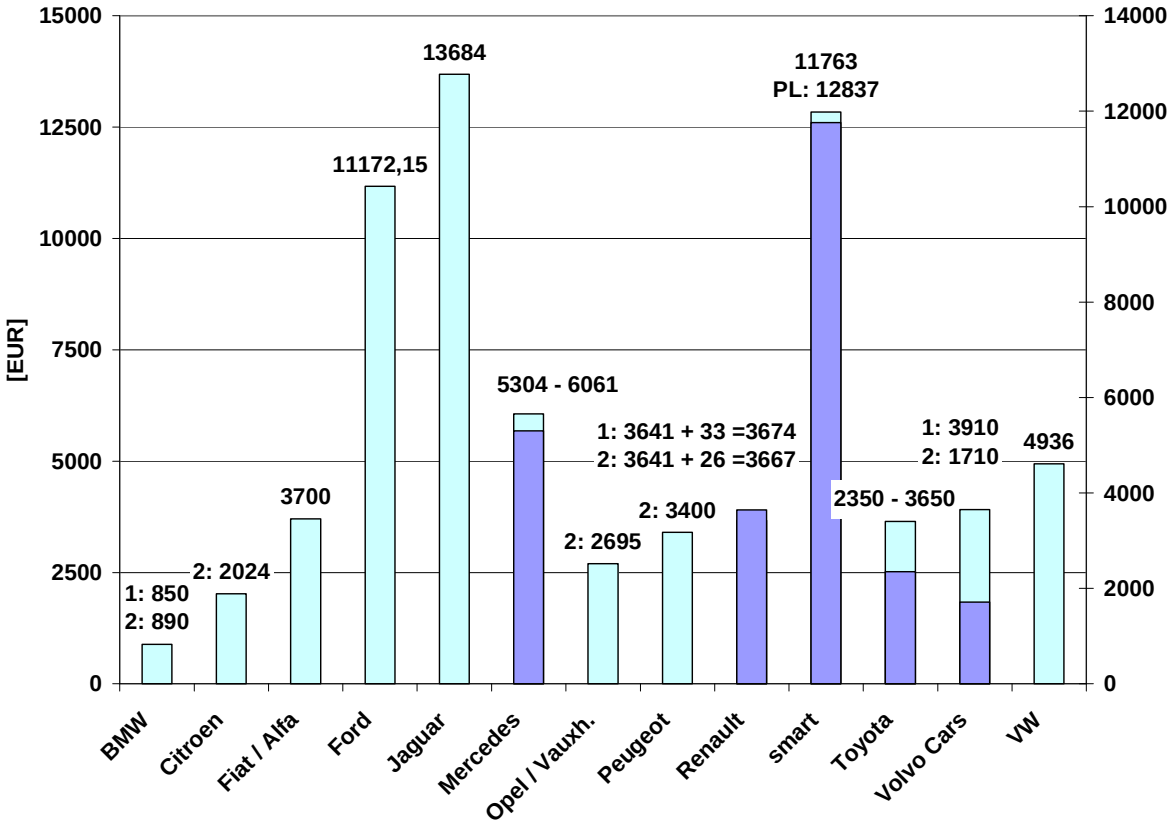

Fig. 15-7: Minimum tool costs in test case 1 and 2

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 an 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 publishers[25].

[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.

- o Price for CD: EUR 65,-

4. Scope of the information system
   - + Availability of symptom charts.
   - + Availability of job times.
   - + Sufficient languages.
   - o 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.
   - o 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

- o 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

17 Evaluation of the systems and measures put in place by the truck manufacturers

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

17.1.1 Registration and Access

Access to technical repair information is provided via Internet-based systems, CD/DVD's, paper or a combination of these media. All truck manufacturers have made information available for independent repairers relating to all their models produced within the last 10 years. On the other hand this information is not always available on a single information source. DAF, Iveco, MAN, Mercedes, Renault and Volvo provide nearly 100 % of their information on a single medium, but for Scania (40 % Internet/paper, 85 % CD) 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 operators[27] require immediate access especially if they are about to repair a specific vehicle, for which technical information is needed. If the repair information is mainly available on CD or paper (all truck manufacturers except Volvo), immediate access is not possible since the delivery of such media takes several days. The delivery times for the non-Internet media used by DAF (15 min. - 30 days), Renault Trucks (45 - 55 days) and MAN (Italy: 5 weeks, UK: 3 months, other: on demand) are extraordinarily long and the Internet systems of Scania (5 days) and in particular Volvo (> 60 days) also only grant access after an unacceptable delay. For this reason the systems provided are not in line with the requirement for instant access and do not even fit the requirements of those operators, who do not require such an immediate access (automobile clubs and spare part distributors).

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.

[27]Roadside assistance operators often use their own technical information systems which are purchased from an independent publisher or from a multi-brand diagnostic tool.

Although Scania offers an Internet-based solution, the requirements of independent operators are, due to the inflexible cost models and the necessity to purchase the whole information content, not satisfied. In addition the website contains only 40 % of the total technical repair information (other information on CD). The necessity to purchase the whole information content is also valid for the Volvo Trucks website; Volvo also provides a paper-on-demand system, but information is delivered not before 3 days after payment. In the truck repair sector only the paper-on-demand system provided by MAN in Denmark, France, Germany and Poland grants access to small information packages. The systems put in place by DAF (paper-on-demand, but the delivery time could take several days) Mercedes (CD for all models), MAN (I and UK) Renault (books for a range of models), Iveco (books for a specific system) do also not fulfil this requirement. MAN also developed an Internet solution, but this is only used for spare parts and special tools information, whereas all other technical repair information is provided on paper.

17.1.2 Prices for technical repair information

17.1.2.1 Minimum Prices

The minimum price for technical information (see Fig. 17-1) is related to the possibility of only purchasing the relevant information for a certain repair and for the minimum subscription periods, which are offered.

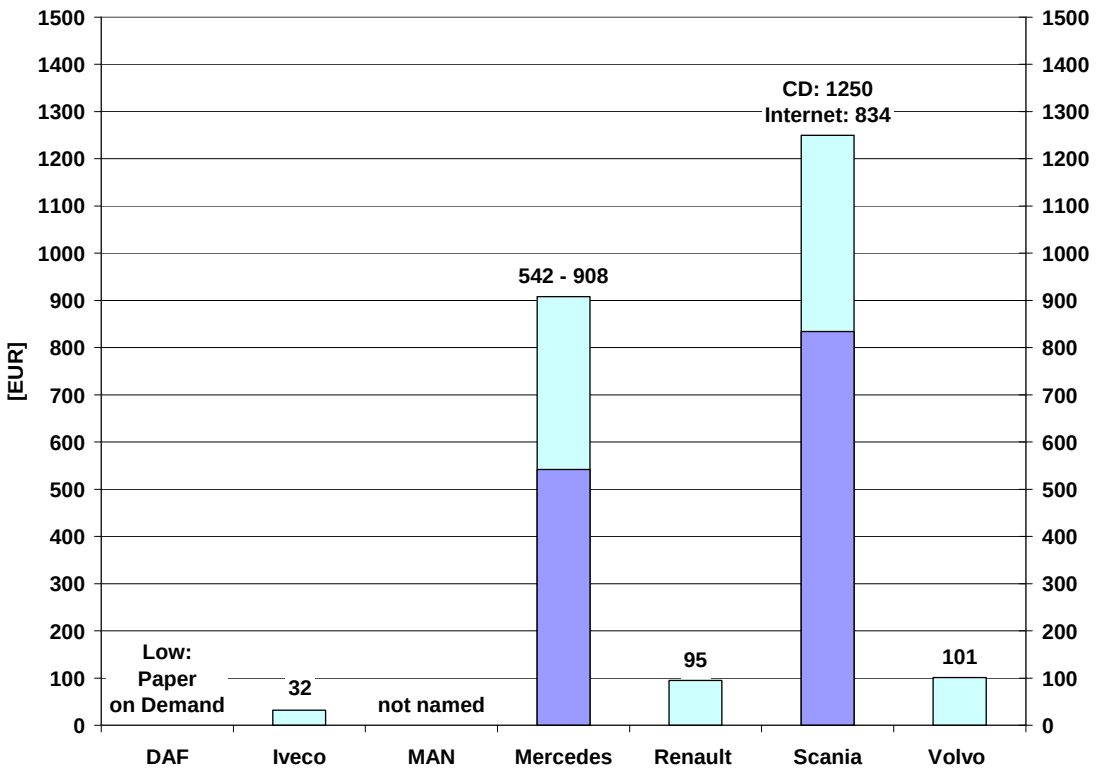

Fig. 17-1: Minimum prices for access to technical repair information (all information systems)

The minimum prices of the Internet systems vary between EUR 101,- for Volvo Trucks and EUR 834,- for Scania. Those manufacturers, whose technical information is mainly available on CD (Iveco, Mercedes, Scania), have a bottom prices of EUR 32,- for Iveco, EUR 1.250,- for Scania and from EUR 542,- to EUR 908,- for Mercedes. In addition, the Mercedes prices show a significant difference in different countries (from EUR 542,- for GER and NL to EUR 908,- for PL). DAF, MAN and Renault Trucks provide their technical information mainly on paper. The bottom prices for Renault are EUR 95,- whereas DAF and MAN did not provide any bottom prices.

For independent operators, who want to have access to technical repair information for single repair jobs, only the paper-on-demand models of Iveco and DAF show competitive prices. If one considers the total repair costs, the repair cannot be performed under competitive conditions with the minimum prices of Iveco, MAN, Mercedes, Renault Trucks, Scania and Volvo Trucks.

17.1.2.2 Subscription Prices

With a larger customer basis of 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. 17-2. Due to the relatively small number of different truck manufacturers it is more likely that a repair shop has a significant number of repairs for a certain brand.

The costs range from EUR 542,- to EUR 908,- for Mercedes up to approx. EUR 9.000,- for MAN (only one model), which is enormous. MAN shows the highest prices, which is in addition only valid for one model. Other models are charged separately. Also the prices for DAF, Scania (CD) and Volvo are quite large. Regardless to the total number of repairs in a workshop it is hard to believe that these prices are affordable for independent repairers. Only Mercedes and Renault offer a price model, which might be acceptable for large repair shops or those repairers, who are specialised on specific brands. Iveco did not provide any figures for the complete model range, but for a price of EUR 32,- workshop books for different vehicle systems are offered. Based on this figure it is likely that the Iveco technical information is on the bottom of the above mentioned price range.

With respect to the prices offered by Mercedes, Renault Trucks and Scania (Internet), the one-year costs of DAF, MAN, Scania (CD) and Volvo Trucks are quite expensive and 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 or those repairers, who are specialised on a specific brand and are therefore comparable to a franchised workshop.

In addition the questionnaire has asked the truck manufacturers for discounts and rebates for authorised repairers. Although MAN has answered in the questionnaire not to offer special price discounts and rebates for authorised repairers, the attached extract of a MAN service

contract diverges from this answer. As official MAN service contractor, a workshop can get a price reduction of 38,40% on all special tools and a price reduction of 60,00% for all spare parts and repair manuals. According to the provided answers, the other manufacturers do not offer price discounts and rebates for authorised repairers.

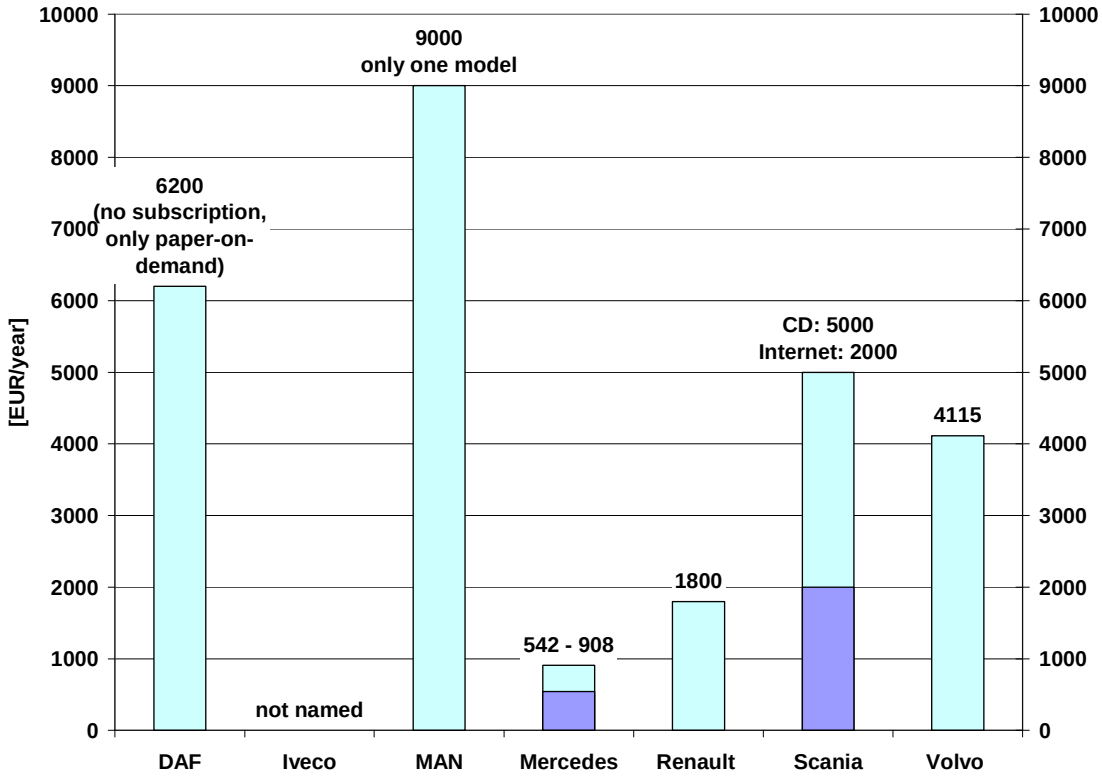

Fig. 17-2: Subscription for all models and one year (all information systems)

17.1.2.3 Test Cases

For a comparison of different motor vehicle manufacturers on certain repairs, two different test cases have been developed[28]. 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 minimum price of all required information for a single repair.

The replacement of an engine ECU involves the vehicles security or anti-theft system. For DAF, Iveco and MAN security devices or re-programming devices are not available for independent operators. Therefore test case 1 is not possible or cannot be completed. For those manufacturers no costs have been identified. For Mercedes the access to theft relevant functions and information is restricted. Based on the information given in part A of the ques-

[28] The description of the two test cases can be found in chapter 14.

tionnaire it is with regard of the limited ECU operations also unlikely that such a repair can be performed for Scania and Renault Trucks. Since no information is given an independent operator could not complete that test case 1, the prices for Mercedes, Scania and Renault Trucks are still considered.

DAF explained that the diagnostic tool (DAVIE XD) provided for independent operators could not be used to enable theft of the vehicle or the re-calibration or tampering with the engine or other vehicle systems. The putting in place of alternative techniques to prevent this, such as pass-through programming, would require unreasonable product development and financial investments from DAF, in particular considering the fact that DAF so far has only sold three DAVIE XD's to independent operators since the new Block Exemption came into effect.

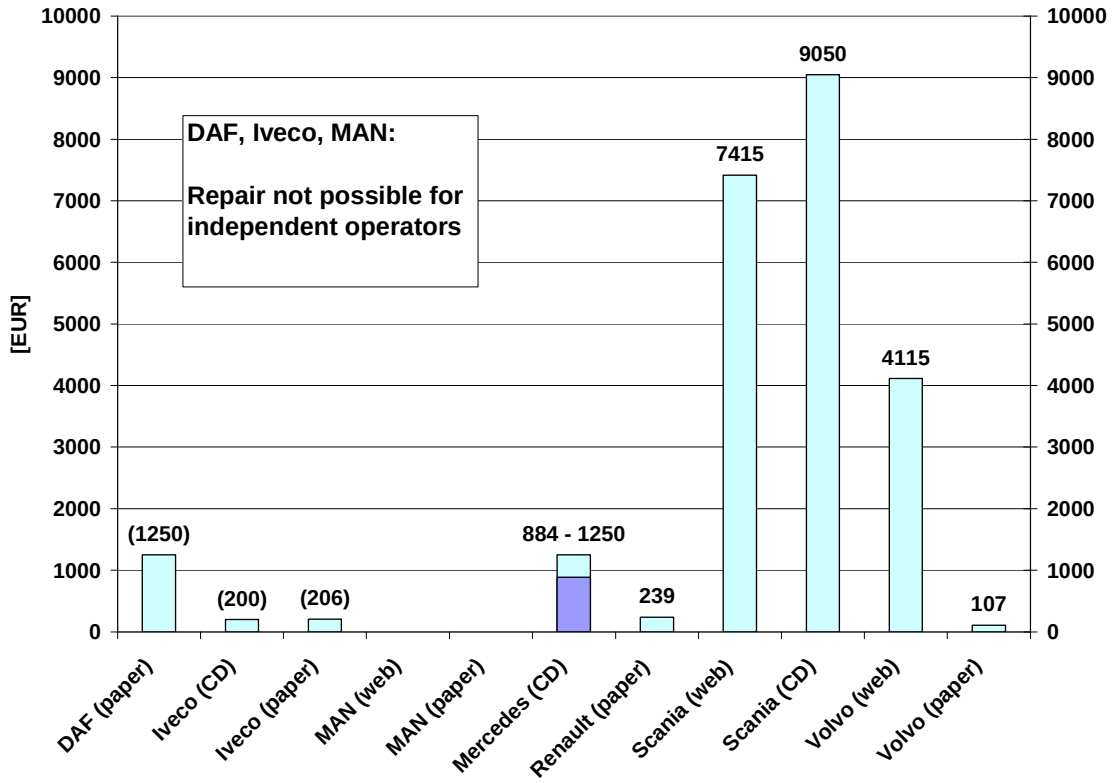

Fig. 17-3: Bottom prices for technical repair information in test case 1

Apart from DAF, Iveco and MAN the minimum technical information prices for test case 1 are displayed in Fig. 17-3[29]. The systems of Mercedes, Scania and Volvo Trucks (website) show the highest costs. Scania is on top with a price of EUR 9.050,- for the CD version and even the Internet-based variant is extremely costly (EUR 7.415,-). Also the Internet system of Volvo is due to a minimum subscription period of one year very expensive (EUR 4.115,-).

[29] 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.

Compared to those manufacturers the system of Mercedes is already significantly cheaper (EUR 884,- – 1.250,- depending on the country were the technical information is sold). The minimum prices have to be paid in Germany and the Netherlands (both EUR 884,-) whereas the maximum prices are in Denmark (EUR 965,-) and Poland (EUR 1.250,-). Since the same media are sold in all countries, such differences are implausible.

Country	DK	F	GER	IRE	I	NL	PL	UK
Mercedes	965,-	932,-	884,-	910,-	942,-	884,-	1.250,-	910

Tab. 17-1: Bottom prices for technical repair information in test case 1 (Mercedes)

Distinctly cheaper are those paper based systems, where specific information and not a complete package for all models can be purchased (Renault Trucks) and the paper-on-demand system of Volvo Trucks. Here the prices vary between EUR 107,- for Volvo Trucks and EUR 239,- for Renault Trucks, but even for those manufacturers it is doubtful, whether these prices are affordable based on the amount a customer shall pay in test case 1.

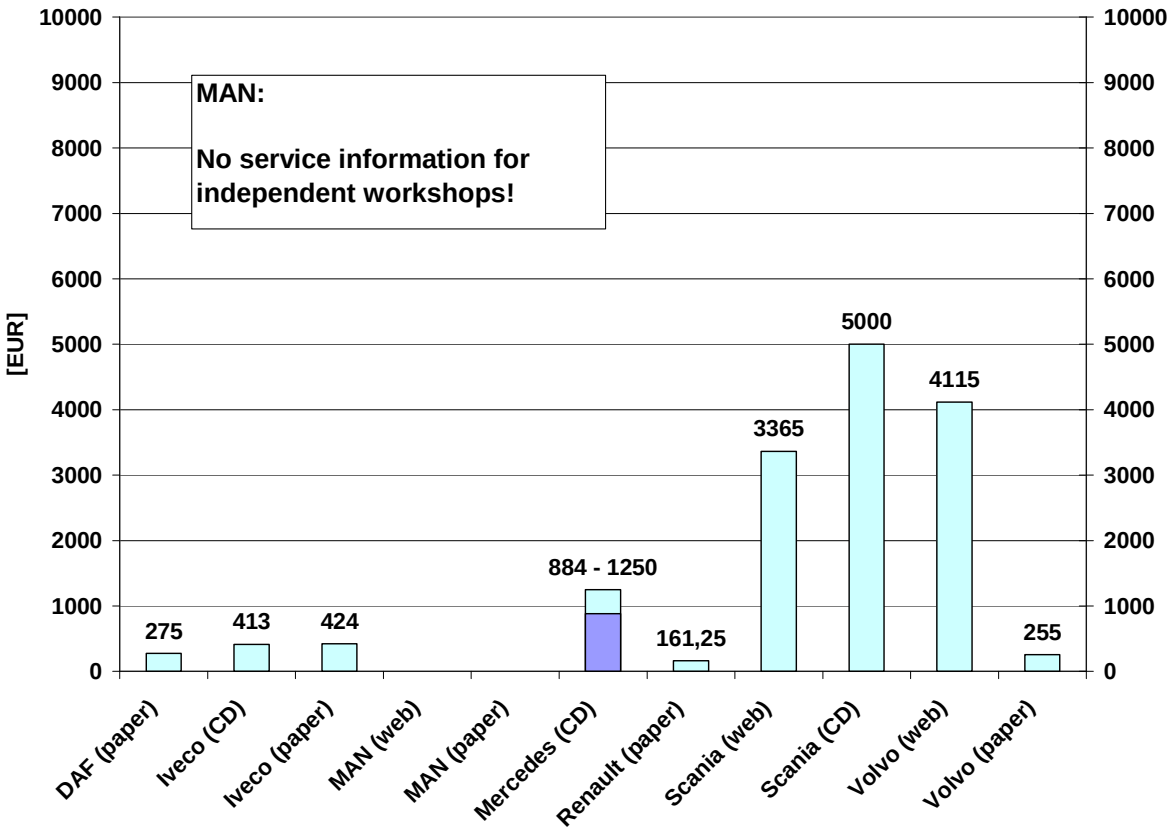

Fig. 17-4: Bottom prices for technical repair information in test case 2

The bottom prices for test case 2 are displayed in Fig. 17-4. Test case 2 (maintenance and service) can be completed with all brands except MAN. MAN does not provide any service

information to independent workshops and did not provide any figures. Again, the costs are not related to the information medium, on which they are provided. High prices can be found for Mercedes (same price structure than test case 1), Scania and Volvo. All other manufacturers vary between a range of EUR 161,- for Renault and EUR 424,- for Iveco. But even these minimum prices are quite high related to the repair job.

17.1.3 Availability and prices for spare parts information

As described in Tab. 17-2 access to spare parts information is provided by the standard technical information system itself (Volvo Trucks) or on a separate medium (all other manufacturers except DAF). In general, an Electronics Parts Catalogue (EPC) is offered on a separate CD for additional costs. The price range varies from included on the standard information medium or EUR 8,10 per day for MAN, to EUR 342,- for the Mercedes and EUR 600,- for Renault Trucks. The offers of Mercedes and Renault are not satisfactory for any group of independent operators.

Company	Brand	Medium	Price
DAF	DAF	Not available	-
Iveco	Iveco	Separate CD	Not named
DC	Mercedes	Separate CD	EUR 342,-
MAN	MAN	Separate website	EUR 8,10 per day
Renault Trucks	Renault	Separate CD	EUR 600,-
Scania	Scania	Separate CD	Not named
Volvo Trucks	Volvo	Standard website	Included

Tab. 17-2: 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. On the other hand 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 only.

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

17.1.4 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 testing[30]. The analysis is based on vehicle identification options, search options, technical content, languages, usability and any differences to the systems of the authorised workshops.

17.1.4.1 Vehicle Identification

Since vehicles are delivered in different configurations and variants 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. Especially in the commercial vehicle sector vehicle identification is a significant requirement, perhaps even more important as in the passenger car sector. Scania for example has a theoretical possibility to build approximately 8 billion different variants of trucks, based on a modular system and approximately 90 % of the production is unique.

Such identification could be performed by different means. The best and easiest method to identify a vehicle is by using its vehicle identification number (VIN). An identification by VIN is possible for Iveco (only manually), MAN (on website portal), Mercedes, Scania (only CD) and Volvo Trucks, but not for DAF and Renault Trucks.

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 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 DAF and Renault Trucks and to some extent also not by Iveco (only manually).

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

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[30] 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 this chapter is also relevant for them.

17.1.4.2 Information Search

To find the necessary technical information different and efficient search criteria should be provided. In this context the most important criteria are search by components and systems (provided by all manufacturers)[31]. 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 DAF provides fault identification by symptoms.

17.1.4.3 Content

The content or scope of technical information systems is substantial in many cases, but for some manufacturers important information is missing. Since maintenance and servicing are one of the main jobs in an independent repair shop, a lack in service information is hardly acceptable (MAN).

Other relevant documents are missing for MAN (emission related information, wheel/tyre combinations, diagnostic information), Iveco (emission-related information, body repair & welding information), Scania (welding instructions), Renault (welding instructions, limited diagnostic information) and Volvo (operating fuels, special tools). Diagnostic information is also quite important for roadside assistance operators and operators offering inspection and testing services (not provided by MAN). Emission related information is also relevant for operators who offer inspection services (not provided by MAN and Iveco).

It is a prerequisite, 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 at the same time to independent operators than to its authorised network. Apart from DAF and Mercedes all vehicle manufacturers withhold information on recall campaigns, for instance. Each manufacturer provides common faults whereas technical bulletins are missing for Iveco and MAN.

17.1.4.4 Languages

Technical repair information is provided in different languages. All manufacturers provide their information at least in Dutch, English, Finnish (except DAF), French, German, Italian, Portuguese (except DAF), Swedish (except DAF and Renault Trucks) and Spanish. Therefore the largest European markets are covered.

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[31] 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).

17.1.4.5 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 system of Scania each document is a PDF version of paper based repair manuals. For that reason and also due to the unclear structure it is extensive to find the relevant documents. The usability of the website provided by Volvo Trucks could not be evaluated, because it was impossible to get access to the system.

No figures concerning the data amount, which has to be downloaded from a website were given by Scania and Volvo Trucks. Whereas Scania did not provide any explanation, Volvo answered that their system is based on a permanent online connection with the VTC server located in Sweden and it is therefore not possible to determine the required data amount for specific information contained in the database.

The usability of the CD based system is also different. Iveco provides a CD with a single PDF file, which contains the complete repair manual. Due to the well-defined structure all information can be found within a reasonable amount of time. Mercedes provides the same system as for the authorised repairers. The structure is practical and the usability of this system is good. The Scania CD contains the same PDF documents as the Internet, but requires a very time-consuming installation process. Due to the good overview and the well-defined structure of the investigated paper based systems (DAF, MAN, Renault Trucks), the information can be found within reasonable amount of time.

17.1.4.6 Differences between the systems for authorised and independent operators

Independent and authorised operators should have access to the same scope of technical repair information for comparable conditions. MAN describes significant differences, where the web-based system is a reduced version to those of the authorised workshops, with a reduced model range, different content and also limited capabilities.

As already described before, no manufacturer delivers the same information on common faults or recall campaigns to the independent operators.

17.1.5 Prices and capabilities of manufacturer specific diagnostic 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.

17.1.5.1 Prices and capabilities of manufacturer specific diagnostic tools

For an increasing number of repairs special diagnostic tools are needed. Truck manufacturers offer different diagnostic tools to independent operators. Even in this sector it is unlikely, that due to the high prices, a multi-brand workshop will purchase different manufacturer specific tools. For those workshops multi-brand diagnostic tools are needed.

Therefore the manufacturer 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.

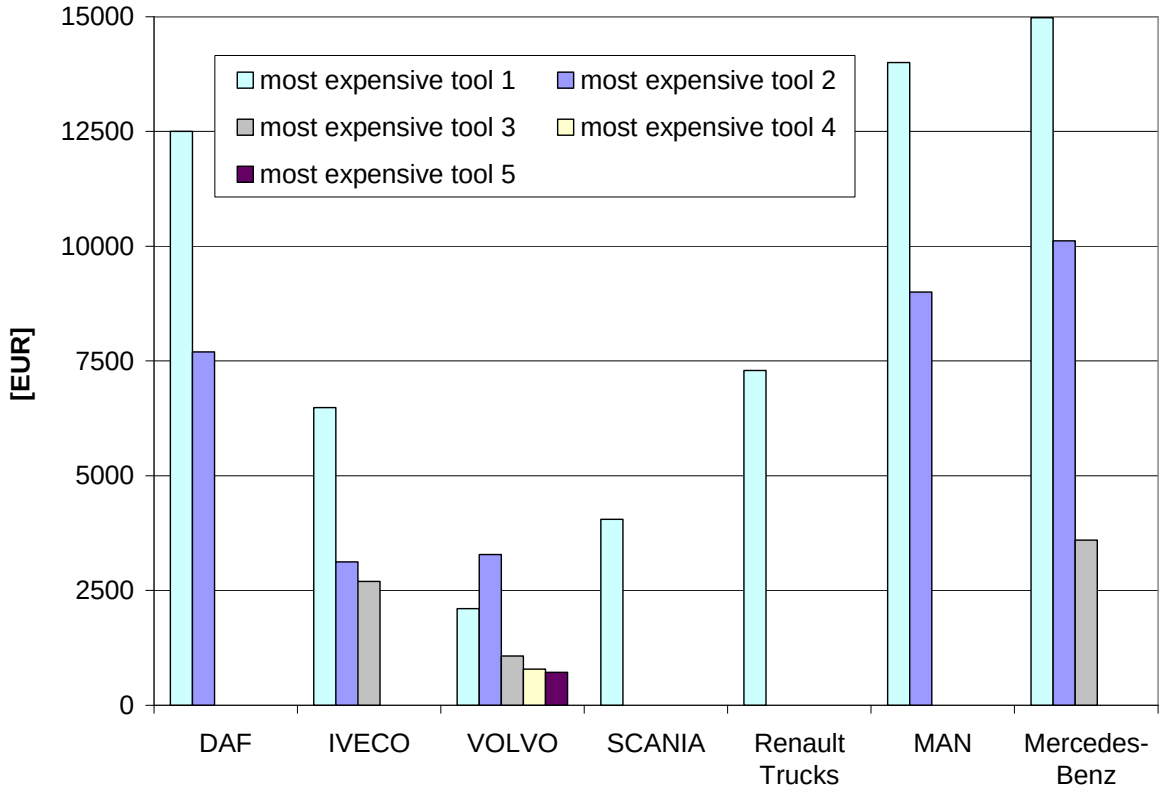

Fig. 17-5: Five most costly diagnosis tools

The top-level diagnostic tools vary in a price range from EUR 3.000,- to EUR 15.000,-[32] with an average of EUR 8.500,- (see Fig. 17-5). Besides reading the fault code memory, these diagnosis tools usually also provide profound repair information. The prices for the tools from Mercedes (EUR 14.474,- to EUR 17.222,-), MAN (EUR 14.000,-) and DAF (EUR 12.500,-) are outstanding.

[32] plus annual software and license costs

All manufacturers offer the diagnostic tools at the same price to independent operators in comparison to their own network.

The possibility to provide operations to ECU's, is prerequisite for the independent operators to guarantee their competitiveness vis-à-vis the authorised network. Relevant operations are software updating, variant coding, initialisation/reinitialisation and resetting of the security system[33]: 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) for trucks from Iveco and Mercedes (see Fig. 17-6)[34].

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, DAF (no ECU operations), Volvo Trucks (only variant coding and reinitialisation), Scania (only variant coding), Renault Trucks (no ECU operations), and MAN (no ECU operations) either provide limited ECU operations or none of the necessary operations (see Fig. 17-6). For those manufacturers certain repairs could not be performed in an independent workshop.

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
1.3.1	poss. for ind.op to update software/reprog.	no	yes	no	no	no	no	yes
1.3.2	can ind. op. carry out variant coding	no	yes	yes	yes	no	no	yes
1.3.3	can ind. op. carry out initialisation/reinit.	no	yes	yes	no	no	no	yes
1.3.4	can ind. op. carry out pass-through prog.	no	no	yes	no	no	no	no
1.3.5	can ind. op. reset security systems	no	no	no	no	no	no	no

Fig. 17-6: Possible ECU operations

As an exception of 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 system without allowing a third party to "crack" anti-theft devices. The facility "Pass-Through Programming" is one device, 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 provides this tool.

[33] For a description of the relevant operations see chapter 6.2

[34] Based on the answers given in the questionnaire.

17.1.5.2 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 enable an appropriate repair, the truck manufacturers have been asked to deliver specific information on the workshop equipment in use. As the five most used special tools, the manufacturers mainly enumerate releasing tools, gauges, removers, alignment kits or tensioning devices. The majority of the mentioned tools vary in a price range from EUR 150,- to EUR 500,-. Above average are some special tools from Volvo Trucks, Renault Trucks, MAN and Mercedes.

Furthermore, the vehicle manufacturers have been asked to enumerate the five most expensive special tools. Here, in particular the prices of Renault Trucks are outstanding, e.g. the “Front Axle Tester” for EUR 23.553,17 in Italy and are not affordable for an independent operator.

17.1.6 Test cases

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

Besides Renault Trucks (1: EUR 7.290,- / 2: EUR 20.528,-) the minimum tool prices are identical for test case 1 and 2 (see Fig. 17-7). As already described before, the replacement of an engine ECU is not possible for an independent operator on a DAF, Iveco and MAN. For those manufacturers the minimum tool prices are shown for test case 2 only.

In general a diagnostic scan tool is needed and therefore these costs are quite high. The most expensive tools are sold by Renault, which lists approximately 50 special tools for test case 2. Assuming that some of these tools can be replaced by standard multi-brand tools the costs are still extraordinarily and unacceptable for independent operators.

The Mercedes tool is the same as those used for passenger cars, but additional software has to be purchased. Scania and Volvo do not require a special tool for an ECU replacement.

Again, Mercedes provides different prices for different countries (see Tab. 17-3).

Country	DK	F	GER	IRE	I	NL	PL	UK
Mercedes	5.837,-	5.482,-	5.304,-	6.061,-	5.544,-	5.304,-	5.572,-	5.388,-

Tab. 17-3: Minimum tool prices in test case 1 (Mercedes)

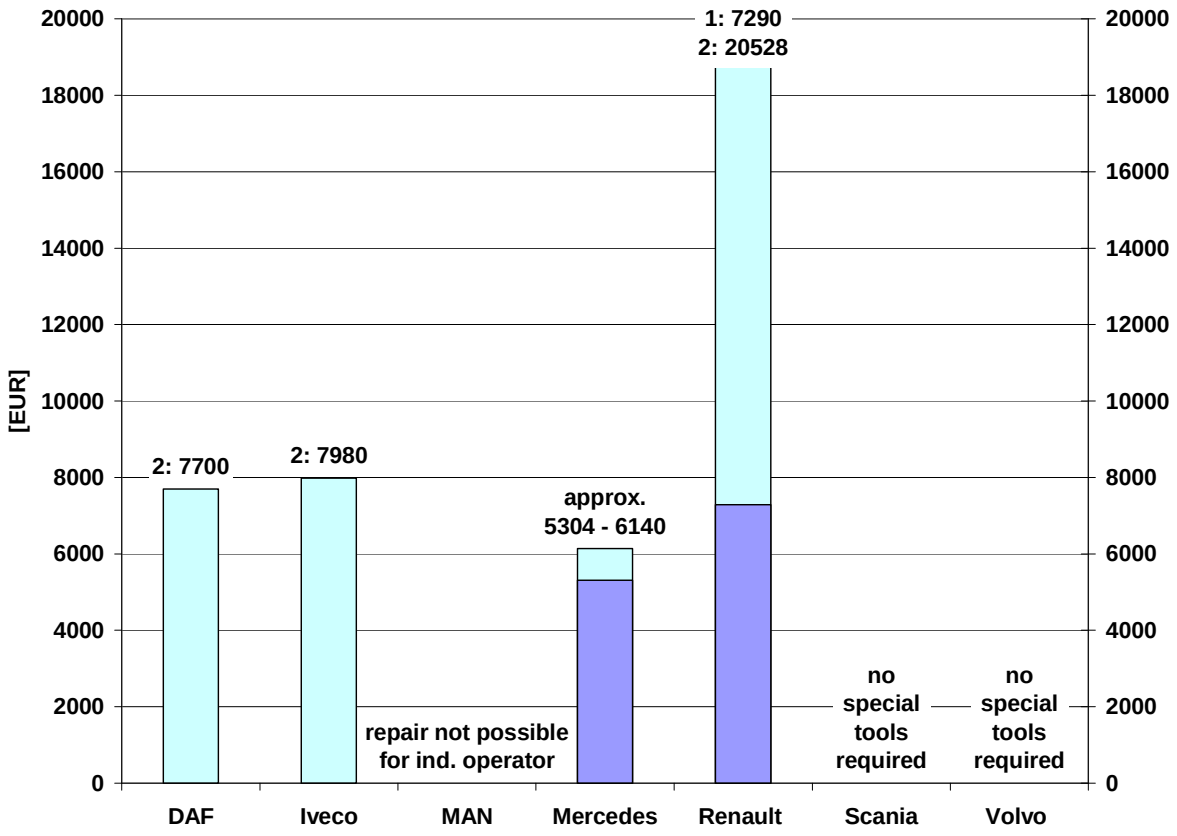

Fig. 17-7: Minimum tool prices in test case 1

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 Scania and Volvo Trucks who implemented all necessary functionalities on board of the trucks show an option, which is in favour of independent repairers.

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

17.1.7 Training information

All truck manufacturers provide the same classroom training for independent operators at the same price as for the authorised operators. Apart from DAF, 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 150,- to EUR 385,-.

17.2 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 enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturers, but no truck manufacturer delivers special information to diagnostic tool manufacturers.

DAF explained, that they have not yet developed a general policy on what specific information they will provide to independent tool manufacturers According to DAF, they will deal with the requests from these parties on their individual merits, when these requests will in fact be received. DAF is still in the process of reviewing the only request they have so far received from an independent parts manufacturer.

According to a statement from Volvo, they have almost no experience with demands from diagnostic tool manufacturers. To their knowledge, they have received no more than one or two general requests since the entry into force of the New Block Exemption Regulation. In these instances, Volvo has offered to provide the same information as made available to the authorised repairers and the independent operators. Volvo explains to await further experience with this type of requests in order to decide on any definitive approach in this matter.

All other truck manufacturers have not delivered any further explanations, why they do not provide special information to independent diagnostic tool manufacturers.

The vehicle manufacturers have also been asked, if they provide information enabling tool manufacturers to install test procedures for specific cars in their tools. Only Iveco and MAN have answered these questions, although they do not offer special information for diagnostic tool manufacturers. This means, that these manufacturers deliver these information together with their “regular” information to independent operators.

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. Thus, they would have the nomenclature for all vehicle components (names, abbreviations and acronyms), the facilities to be provided by a testing tool, the messages, which should pass between the vehicle and the diagnostic tool, the standard diagnostic facilities and particular vehicle malfunctions, as identified by monitoring facilities within the vehicle.

Only MAN provides limited protocol information within the information for independent operators. They deliver information on fault code reading, resetting the service light and details of the diagnostic connector (see Fig. 17-8).

		DAF	IVECO	VOLVO	SCANIA	Renault Trucks	MAN	Mercedes-Benz
2.3.1	prov. any add. protocol not covered by ISO 15031	n/a	no	n/a	no	no	no	no
2.3.2	prov. inf. on fault code reading/interpretation	n/a	no	n/a	no	no	yes	no
2.3.3	prov. live data parameter incl scale inf.	n/a	no	n/a	no	no	no	no
2.3.4	prov. inf. on funct. tests incl device act./control	n/a	no	n/a	no	no	no	no
2.3.5	prov. details how to obtain component/status inf.	n/a	no	n/a	no	no	no	no
2.3.6	prov. inf. on reset./adapt. learns/variant coding	n/a	no	n/a	no	no	no	no
2.3.7	prov. inf. on ECU identification & variant coding	n/a	no	n/a	no	no	no	no
2.3.8	prov. access to sec. codes req. for rep.funct.	n/a	no	n/a	no	no	no	no
2.3.9	prov. inf. how to re-set service lights	n/a	no	n/a	no	no	yes	no
2.3.10	prov. inf. on diagn. connector details	n/a	no	n/a	no	no	yes	no
2.3.11	prov. inf. for unambiguous veh. identification	n/a	no	n/a	no	no	no	no

Fig. 17-8: Communication protocol information

It can be concluded that all truck manufacturers deliver no or quite insufficient information (MAN). Therefore the needs of the independent tool manufacturers, and as a result those of the independent workshops, are not addressed.

17.3 Evaluation for Publisher 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 in this context.

DAF, Iveco and Scania do not offer special information for publishers. For these manufacturers, the information is provided together with the information relevant for the other independent operators. The cover letter from DAF shows that there do not exist many inquiries from publishers. DAF for example explains, that they have not yet developed a general policy on what specific information they will provide to this party. According to DAF, they will deal with the requests on publisher's individual merits, when these requests will in fact be received.

The provided answers from the truck manufacturers show that no specific information and conditions are available, although there has not been a significant demand from publishing companies.

18 Synopsis for each Truck Manufacturer

The following subchapters provide a synopsis and comprehensive presentation for each truck manufacturer. The different criteria only reflect a technical and commercial evaluation, based on chapter 17. 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.

18.1 DAF

From time to time DAF will evaluate all aspects of the way it processes the requests for technical information from independent operators, including its general policies on this subject and the case law on the Block Exemption that may be relevant in this respect. If this evaluation would show that DAF should alter the way it deals with these requests, DAF will consider the changes that may then be necessary, or in the opinion of DAF, be appropriate. It may for instance be, that DAF will, because of a sharp increase in the number of these requests in the future, introduce a web enabled pay-per-view system for independent operators.

18.1.1 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 (paper).
   - + Paper-on-demand option for small or custom-tailored information packages.
   - - Technical information only on printouts via Dealer Systems Helpdesk.
   - - Various delivery times up to 30 days. Immediate access to all required information.

2. Price for technical repair information
   - - Expensive prices for complete documentation of one or all models.
   - - Expensive prices in test case 2 (EUR 275,-)

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 common faults.
+ Information on recalls.
+ Limited number of languages.
- No Vehicle identification by VIN.
- Limited usability because paper-on-demand is the only purchase option (print-outs via Dealer Systems Helpdesk).

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

6. Training information.
   + DAF provides the same classroom training for independent operators at the same price as for authorised operators.
   - DAF does not provide remote training for independent operators.

18.1.2 Synopsis for Manufacturers of Repair Equipment or Tools

DAF has not yet developed a general policy, on what specific information it will provide to independent tool manufacturers, about the technical information mentioned above, and under what conditions this will be done. DAF will deal with the requests from these parties on their individual merits, when these requests will in fact be received. DAF is still in the process of reviewing the only request it has so far received from an independent parts manufacturer.

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

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

DAF has also not yet developed a general policy how it will provide information to publishers and under what conditions this will be done. DAF will deal with the requests from these parties on their individual merits, when these requests will in fact be received.

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

18.2 Iveco

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

1. Registration and access
   - + All technical repair information on one medium (CD).
   - + Availability of information packages for single models.
   - - No small or custom-tailored information packages available.
   - - No immediate access possible.

2. Price for technical repair information
   - - Adequate minimum price (EUR 32,-).
   - - Expensive prices in test case 2 (EUR 413,-)

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 job times.
   - + Sufficient languages.
   - + Information on common faults.
   - o Ordinary usability.
   - - No (automatic) vehicle identification by VIN.
   - - No emission-related information.
   - - No body repair 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 most used special tools have prices under average.
   - + The diagnostic tools enable the majority of the required ECU operations.
   - o The diagnostic tools have average prices.

6. Training information

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

18.2.2 Synopsis for Manufacturers of Repair Equipment or Tools

+ Iveco provides the majority of the required diagnosis information.
- Special information for manufacturers of repair equipment does not exist.
- Iveco provides none of the required communication protocol information.

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

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

18.3 MAN

18.3.1 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 (paper).
+ Paper-on-demand for immediate access (only DK, F, GER, PL).
+ Small or custom-tailored information packages available (only DK, F, GER, PL).
+ Availability of information packages for single models or systems.
- Internet system is a reduced version of the system for authorised operators.
- No small or custom-tailored information packages available (UK and Italy).
- No immediate access possible (UK and Italy).
- Only spare parts and special tools available via Internet.

2. Price for technical repair information
   - Expensive subscription price (EUR 9.000,- for one model).
   - Price discount for authorised operators up to 60 %

3. Availability and prices for spare part information.
   + Information on a separate website is favourable for spare part distributors.
   + Payment by access time (EUR 9,60 per day)
   - Expensive price if system has to be used often (EUR 9,60 per day).

4. Scope of the information system
   + Vehicle Identification by VIN on website
   + Sufficient languages for paper based information.
   + Information on common faults.
   o Ordinary usability.
   - Only German and English language; other languages under progress (Internet).
   - No emission-related information.
   - No service information (only intervals).
   - No diagnostic information.
   - No information on recalls.

5. Prices and capabilities of manufacturer specific tools
   - The most used special tools have prices above average.
   - The diagnostic tools enable none of the required ECU operations.
   - The diagnostic tools have prices above average.
   - Price discounts for authorised operators exist for all special tools up to 38,4 %.

6. Training information
   + MAN provides the same classroom training for independent operators at the same price as for authorised operators.
   + MAN provides the same remote training for independent operators at the same price as for authorised operators.

18.3.2 Synopsis for Manufacturers of Repair Equipment or Tools

+ MAN provides the majority of the required diagnosis information.
- Special information for manufacturers of repair equipment does not exist.
- MAN only provides little information on communication protocols.

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

+ MAN 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.
- MAN has not answered when publishers of technical information and operators offering training for repairers get the information.

18.4 Mercedes

18.4.1 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 (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 (EUR 542,- - 908,-).
   - Expensive minimum price (EUR 542,- - 908,-).
   - Expensive prices in test case 1 & 2 (EUR 884,- - 1.250,-).
   - 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 of CD: EUR 342,-

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 diagnostic tools have prices above average.
   - - The most used special tools have prices above average.
6. Training information
   - + Mercedes provides the same classroom training for independent operators at the same price as for authorised operators.
   - + Mercedes provides the same remote training for independent operators at the same price as for authorised operators.

18.4.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Mercedes does not provide diagnosis information.
- Special information for manufacturers of repair equipment does not exist.
- Mercedes only provides little information on communication protocols.

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

- + Mercedes 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.

18.5 Renault Trucks

18.5.1 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 (paper).
   - + Different information packages
   - - Long delivery time of 45 – 55 days. No immediate access.
   - - No small or custom-tailored information packages available.

2. Price for technical repair information
   - + Reasonable one-year subscription price (EUR 1.800,-)
   - - Expensive minimum price (EUR 95,-)
   - - Expensive price in test case 1 & 2 (EUR 239,- and EUR 161,-)

3. Availability and prices for spare part information
   - + Information on a separate CD and separate website is favourable for spare part distributors.
   - + Extraordinary price (EUR 600,-).

4. Scope of the information system
   - + Sufficient languages.
   - + Job times available.
   - + Information on common faults.
   - o Ordinary usability.
   - - No Vehicle identification by VIN.
   - - No welding information.
   - - Limited 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 special tools have prices above average.
   - - The diagnostic tools enable none of the required ECU operations.

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.

18.5.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Renault does not provide diagnosis information.
- Special information for manufacturers of repair equipment does not exist.
- Renault only provides little information on communication protocols.

18.5.3 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.

18.6 Scania

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

1. Registration and access
   - Information provision through different media (40 % Internet/paper, 85 % CD).
   - Advance payment: EUR 60,-

- Minimum subscription period: 3 months
- No small or custom-tailored information packages available.
- No immediate access possible.
- Time consuming installation procedure (Internet).

2. Price for technical repair information
   + Reasonable one-year subscription price for Internet system(EUR 2.000,-)
   - Expensive minimum price (EUR 834,-).
   - Expensive subscription price for CD (EUR 5.000,-).
   - Expensive price for test case 1 & 2
     (Internet: EUR 7.415,- / EUR 3.365,-. CD EUR 9.050,- / EUR 5.000,-).

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
   + Vehicle Identification by VIN (CD).
   + Sufficient languages.
   + Bodywork information without registration and free of charge (Internet).
   + Information on common faults.
   - No Vehicle Identification by VIN (Internet).
   - Limited usability.
   - No welding instructions.
   - No special tools lists (Internet).
   - 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 most used special tools have prices under average.
   - The diagnostic tools only enables one of the required ECU operations.

6. Training information

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

18.6.2 Synopsis for Manufacturers of Repair Equipment or Tools

- Scania does not provide diagnosis information.
- Information for manufacturers of repair equipment does not exist.
- Scania only provides little information on communication protocols.

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

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

18.7 Volvo Trucks

18.7.1 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).
- Long registration process to website (> 60 days). Paper-on-demand provides information only 3 days after payment. No immediate access.
- The total amount has to be paid in advance (Internet: EUR 4.115,-).
- Minimum subscription period: one year.
- Access is only granted if the user has participated in an Impact training course. The intervals between such training courses depend on the demand of candidate subscribers. It can take up to 45 days before a training course is available.
- Extraordinarily difficult installation procedure. It was not possible to get access to the website.

2. Price for technical repair information
   - Expensive minimum price (EUR 101,-: Paper-on-demand EUR 100,- per request, plus EUR 1,- per printed page).
   - Expensive prices in test case 1 & 2 (EUR 107,- + EUR 205,-).
   - Expensive one-year subscription price (EUR 4.115,-).

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.
   + Sufficient languages.
   + Information on common faults.
   - No information on recalls.
   - No special tools information.
   - It was impossible to get access to the website. Therefore the usability is quite poor.

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 special 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.
   + Volvo provides the same remote training for independent operators at the same price as for authorised operators.

18.7.2 Synopsis for Manufacturers of Repair Equipment or Tools

According to a statement from Volvo, they have almost no experience with demands from diagnostic tool manufacturers. Volvo explains to await further experience with this type of requests in order to decide on any definitive approach in this matter.

- Volvo does not provide diagnosis information.
- Volvo information for manufacturers of repair equipment does not exist.
- Volvo only provides little information on communication protocols.

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

+ Volvo 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.

18.8 Overview Truck 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.

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

	DAF	Iveco	MAN	Mercedes	Renault Trucks	Scania	Volvo Trucks
Quality and usability of the media	-	0	0	+	0	-	--
Quantity of information made accessible	+	-	--	+	-	0	+
Registration and Access Conditions	-	-	0	--	+	-	--
Price for the technical information	-	0	--	-	0	--	-
Capabilities manufacturer specific (scan) tools	--	+	--	+	--	-	0
Prices of manufacturer specific tools	-	0	-	-	0	+	+

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

Tab. 18-1: Assessment manufacturer systems

18.8.2 Manufacturers of repair equipment or tools

	DAF	Iveco	MAN	Mercedes	Renault Trucks	Scania	Volvo Trucks
Information for tool manufacturers	--	-	-	--	--	--	--

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

Tab. 18-2: Assessment manufacturer systems

18.8.3 Publishers of technical information and operators offering training for repairers

	DAF	Iveco	MAN	Mercedes	Renault Trucks	Scania	Volvo Trucks
Information for publishers	--	--	+	+	0	--	+

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

Tab. 18-3: Assessment manufacturer systems

19 Summary and Conclusion

Commission Regulation (EC) No 1400/2002 from 31st July 2002 on the application of Article 81(3) of the Treaty to categories of vertical agreements and concerted practices in the motor vehicle sector ("the Regulation") entered into force on 1st October 2002. The Regulation sets out rules under which restrictive agreements caught by the ban laid down in Article 81(1), meet the conditions for an exemption pursuant to Article 81(3). Such rules are deemed to be observed throughout the European Union by suppliers of motor vehicles and spare parts in their contractual and day-to-day business relationship with their downstream partners or buyers.

As with the Block Exemption Regulation (EEC) No 1475/1995, the Commission has undertaken to monitor the operation of the new Regulation on a regular basis. One major element, which has to be monitored, relates to the access of technical repair information for independent operators. In order to protect effective competition in the market for repair and maintenance services, and to prevent fore-closure of independent repairers, motor vehicle manufacturers must allow all interested independent operators to have full access to all technical information, diagnostic and other equipment, tools, including all relevant software, and training required for the repair and maintenance of motor vehicles. Independent operators who must be allowed such access include in particular independent repairers, manufacturers of repair equipment or tools, publishers of technical information, automobile clubs, roadside assistance operators, operators offering inspection and testing services and operators offering training for repairers.

In particular, the conditions of access must not discriminate between authorised and independent operators, access must be granted upon request and without undue delay, and the price charged for the information should not discourage access to it, by failing to take into account the extent, to which the independent operator uses it. A supplier of motor vehicles should be required to grant independent operators access to technical information on new motor vehicles at the same time as such access is granted to its authorised repairers and must not oblige independent operators to purchase more than the information necessary to carry out the work in question. Suppliers should be obliged to grant access to the technical information necessary for re-programming electronic devices in a motor vehicle. It is, however, legitimate and proper for them to withhold access to technical information, which might allow a third party to bypass or disarm on-board anti-theft devices, to recalibrate electronic devices or to tamper with devices, which for instance limit the speed of a motor vehicle, unless protection against theft, re-calibration or tampering can be attained by other less restrictive means. Intellectual property rights and rights regarding know-how including those, which relate to the above-mentioned devices, must be exercised in a manner which avoids any type of abuse.

This study was conducted in order to examine whether and how the motor vehicle manufacturers have implemented the provisions of the new Regulation relating the access to technical information. Besides desk research and the consulting of different aftermarket

representatives, a suitable questionnaire was also developed. This questionnaire asked for both general information, relevant for all 'involved operators', and also target-group oriented information with regard to the different possible requirements of individual independent operators.

In order to obtain a full description of the relevant measures and systems put in place, the questionnaire was addressed to 9 major car manufacturers (BMW, DaimlerChrysler, Fiat, Ford, GM, PSA, Renault, Toyota, Volkswagen) and all major truck manufacturers (DAF, DaimlerChrysler, Iveco, MAN, Renault, Scania, Volvo) to cover the situation in Germany, Italy, France, UK, the Netherlands, Ireland, Denmark and Poland.

The main evaluation on how measures have been taken by the manufacturers to grant independent operators effective access to all relevant repair information, or whether such access is not granted in the respect of certain information, is made in chapters 15/16 (passenger car manufacturer) and chapters 17/18 (truck manufacturer), but the following paragraphs give an overview and some further conclusions with respect to the different groups of operators:

Access to technical repair information is provided via Internet-based systems, CD/DVD's, paper or a combination of these media. Nearly all motor vehicle manufacturers cover 100 % of their models produced within the last 10 years concerning technical information. For an effective and economic access independent repairers require all information on a single medium. Especially for Fiat/Alfa, Renault (Passenger Cars and Trucks), Scania and Peugeot the information is spread among different media, causing additional efforts and costs to obtain the relevant information.

Only an Internet-based system can solve the requirement for immediate access to technical repair information. From an independent operator's point of view the registration, on such a website should be possible without any further costs and the information itself, should be charged when the independent operator requires access to the database. Due to at least several days of delivery time, instant access is not possible with CD and/or paper based systems.[35] Only a few passenger car manufacturers and no truck manufacturer designed their information systems accordingly.

To purchase the required information at a reasonable price, access should only be granted to the information, which is necessary to carry out the work in question. Pay-per-view cost models or the option to subscribe for a short period of time are capable of satisfying this demand, but the website should enable the user to find all relevant information instantly.

[35] To a certain extent paper-on-demand systems or CD's with separate license keys could also provide immediate access.

The difficulty of getting the relevant document on different information systems is one major problem independent operators are faced with. Due to different structures, layouts and qualities of the systems, which are offered by the motor vehicle manufacturers, it is exhausting and often impossible to find the required information.

A standardised structure and layout would clearly benefit independent operators. For emission-related information a technical specification based on a meta data concept was already developed in the OASIS project. A group of manufacturers and aftermarket representatives elaborated a certain standard, which is capable of using the existing manufacturers' databases in combination with a standardised website layout, but the specification does not specify the structure of the information itself[36] and it is not intended that manufacturers should change the structure of the technical information they produce, except to ensure that it is available as discrete information packages.

The OASIS standard could be implemented in two different ways:

1. Motor vehicle manufacturers adapt the OASIS specification to their digital information systems.

2. A third party (e.g. an independent publisher) runs a centralised technical information server, which processes the queries of the independent operators to the required information packages on the manufacturer's databases through a standardised interface.

Both methods would mark a distinct step forward in providing effective access to technical repair information and could also help to solve a second major issue concerning manufacturer specific vocabulary.

Due to the fact that vehicle manufacturers generally have their own vocabulary or dictionaries, they use different terms for identical components or systems. If the user does not know the correct manufacturer specific terms, it will become difficult to obtain any appropriate results. For this reason, a standardised vocabulary is necessary. If all manufacturers would use such vocabulary, or if an automatic electronic converter translates the standard terms to the manufacturers vocabulary and vice versa, the search capabilities would be improved significantly. So far such standardised vocabulary is available for emission-related information (OBD) in French and English only [ISO/TS 15031-2].

Sufficient vehicle identification is also an important requirement. Since vehicles are delivered in different configurations and variants it is absolutely necessary that a given vehicle can be identified adequately in order to obtain the relevant documents and to be able to define the necessary spare parts. Whereas all manufacturers provide identification by a selective list

[36] Except to define a set of preferred electronic formats (e.g. XML, HTML, PDF) for online delivery.

identification by the vehicle identification number (VIN) is not possible in any case. This of course hampers the process of obtaining the required information and identifying the necessary spare parts.

To further the difficulties in finding the relevant information, some vehicle manufacturers are withholding important documents such as service information, body repair information, diagnostic or emission related information which is often missing. No manufacturer delivers the same information at the same time on common faults or recall campaigns to the independent operators as to the authorised network.

Another major problem is the price of the technical information itself. Due to inadequately designed information systems and/or insufficient cost models, independent operators are not able to purchase technical repair information at a price, at which repairs can be conducted under competitive conditions. With respect to average repair costs, the current prices reduce the margins of an independent repairer significantly. Only those repair shops that are specialised on certain brands and who are, from that point of view, comparable to franchised workshops are able to afford these prices. Besides the requirement to obtain the necessary information at a reduced price, there is also a demand for multi-brand technical information as provided by independent publishers and it must be ensured that independent publishers have access to technical repair information under competitive conditions.

The new Block Exemption Regulation calls for the supply of fair and indiscriminate information for independent publishers. Whereas the answers provided by the passenger car manufacturers show satisfactory measures to supply independent publishers, this is contradicted by statements from representatives of publishing companies. According to them there are several 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 in fact a worsening of the situation for the independent publishers.

The answers from the truck manufacturers, regarding their policy with independent publishers, show that no specific information and conditions are available, although there has not been any significant demand from publishing companies.

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. Therefore, those tools are only useful for independent repair shops, which specialise in a specific brand or for independent diagnostic tool manufacturers, who want to implement the functionalities in their multi-brand tools, and it has to be ensured that diagnostic tool manufacturers get sufficient information to produce adequate universal tools.

Therefore, all motor vehicle manufacturers have been asked for the arrangements enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturer specific tools. Only a few passenger car manufacturers, but no truck manufacturer, deliver special information, and the information that is provided to diagnostic tool manufacturers, is

mostly insufficient to produce multi-brand diagnostic tools. In particular, protocol information and information which would enable the tool manufacturers to install test and diagnosis procedures on their products are missing. Moreover, the situation has even worsened with the new Block Exemption Regulation and independent manufacturers are referenced to the technical information systems for the independent repairers.

Even with manufacturer specific tools an independent operator on his own premises cannot perform certain repairs. In contrast to the Regulation, which stipulates that suppliers should be obliged to grant access to the technical information necessary for re-programming electronic devices in a motor vehicle, several manufacturers do not grant such access and certain repairs could not be performed.

At first sight, the situation of independent operators has improved with the introduction of the new BER and the motor vehicle manufacturers have implemented the provisions of the new Regulation relating to the access to technical information. However, the unattractive price models and the bad usability of the information systems in particular prohibit access to technical repair information. With certain repairs also the inexistence of adequate multi-brand scan tools and limited possibilities in repairing electronical systems make it difficult to work under competitive conditions. For those groups (independent tool manufacturers or publishers) who try to improve the environment independent operators are working in, the situation has even declined.

20 Literature

[OAS03] OASIS Sub Committee Use Cases and Requirements
Autorepair Requirements Specification – SC1-D2
Version 6.0
Brussels, 10-01-2003

21 Appendix

21.1 Contact Points – Passenger Car Manufacturers

Denmark

BMW	BMW Online Service System (OSS) www.bmw-service.de Email: service-medien.oss@bmw.de Aftersales Assistance Portal (ASAP) www.parts.bmwgroup.com www.aftersales.bmwgroup.com
Citroën	Documentation on DVD-Rom: http://lasertec.Citroën.com CITROËN DANEMARK A/S Mr. Jens JOERGENSEN Sydhavnsgade 16 DK – 2450 Kobenhavn SV (45)°36 18 02 76 ou (45) 36 18 02 21
Fiat/Alfa	Authorised Network – Fiat internal contact: Carsten Ptak +4543228849 or Frank Goth +4543228874
Ford	www.etis.ford.com Technical Hotline: Small Car +49/221-94700-711 Large Car +49/221-94700-722 import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	DaimlerChrysler Danmark AS Tommy Smed Tel. 33785594 eMail: Tommy.Smed@daimlerchrysler.com
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMT's) and Others 1. IMT’s and others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. 2. IMT’s and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. Denmark + 44 1582 694801 For new accession markets, NSC's will centrally handle IMT's and others

requests for Technical Information.

3. Full credit card payment will be required at time of order.
4. Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMT's and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) -

B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX.

Address:
SPX Europe GmbH
Porschestrasse 4,
D-63512 Hainburg
Phone: +49/6182/9590
Fax: +49/6182/959229
spxEurope@servicesolutions.spx.com

Peugeot http://public.infotec.peugeot.com

webmaster-infotec@peugeot.com

Renault www.infotech.renault.com

webmaster.infotech@renault.com

Smart - N/A -

Toyota Toyota Danmark A/S
Dynamovej 10
2730 Herlev. 44850400
www.toyota.dk
toyota@toyota.dk

Volvo Customer Service site: http://vcc.volvocars.se/customerservice/

We show their links to contact names in each major EU market.
We are currently developing a webshop for direct sales of information products. When that webshop is fully functional we will issue a link on the same Customer Service site to this webshop. As the launch of this webshop is eminent within June 2004, we will not update the market contacts for the new EU countries for now./

See for Webshop the following address:
https://www.volvocarstechinfo.ford.com/vss

To see all available products for independent operators a user ID must be created with a valid VAT number.

VW General address for applications is:
www.erwin.volkswagen.de
Hotline +49-1805-5126000
support@erwin-hotline.de
Every Importer has an own homepage with a link to the general address.
Denmark: www.volkswagen.dk

France

BMW	BMW Online Service System (OSS) www.bmw-service.de service-medien.oss@bmw.de Aftersales Assistance Portal (ASAP) www.parts.bmwgroup.com www.aftersales.bmwgroup.com
Citroën	Documentation on DVD-Rom : http://lasertec.Citroën.com
Fiat/Alfa	Authorised Network Fiat internal contact: Pierre-Martin BOS +33(0)130167285 pierremartin.bos@fiat.com
Ford	www.etis.ford.com Technical Hotline: Small Car +49/221-94700-711 Large Car +49/221-94700-722 Import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	DaimlerChrysler Monsieur Michaël DERGUINI Tel. 01.39.23.55.84 eMail: michael.derguini@daimlerchrysler.com
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMT’s) and Others IMT’s and Others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. IMT’s and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. France + 44 1582 694805 For new accession markets, NSC's will centrally handle IMT's and others requests for Technical Information. Full credit card payment will be required at time of order. Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMT’s and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) - B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX. Address: SPX Europe GmbH Porschestrasse 4, D-63512 Hainburg

Phone: +49/6182/9590
Fax: +49/6182/959229
spxEurope@servicesolutions.spx.com

Peugeot http://public.infotec.peugeot.com
webmaster-infotec@peugeot.com

Renault www.infotech.renault.com
webmaster.infotech@renault.com

Smart DaimlerChrysler
Monsieur Michaël DERGUINI
Tel. 01.39.23.55.84
eMail: michael.derguini@daimlerchrysler.com

Toyota Jean-Francois grimaud +33 1 47 10 81 00
jean-francois.grimaud@toyota-Europe.com

Volvo Customer Service site: http://vcc.volvocars.se/customerservice/

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Hotline +49-1805-5126000
support@erwin-hotline.de
Every Importer has an own homepage with a link to the general address.
Homepages importer: France: www.volkswagen.fr

Germany

BMW BMW Online Service System (OSS)
www.bmw-service.de
service-medien.oss@bmw.de

Aftersales Assistance Portal (ASAP)
www.parts.bmwgroup.com
www.aftersales.bmwgroup.com

Citroën Documentation on DVD-Rom: http://lasertec.Citroën.com -

CITROËN DEUTSCHLAND AG
Mr. Fred SIHLER
André-Citroën-Strasse 2
D-51170 Köln

	(49) 22 03 44 310
Fiat/Alfa	Authorised Network Fiat internal contact: Klaus Schühle +497131107282 email: klaus.schuehle@fiat.com
Ford	www.etis.ford.com Technical Hotline: Small Car +49/221-94700-711 Large Car +49/221-94700-722 Import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	DaimlerChrysler AG Herr August Schlagbauer Tel. 0711-17-83170 eMail: august.schlagbauer@daimlerchrysler.com
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMT’s) and Others IMT’s and Others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. IMT’s and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. Germany + 44 1582 694802 For new accession markets, NSC's will centrally handle IMT's and others requests for Technical Information. Full credit card payment will be required at time of order. Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMT’s and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) - B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX. Address: SPX Europe GmbH Porschestrasse 4, D-63512 Hainburg Phone: +49/6182/9590 Fax: +49/6182/959229 spxEurope@servicesolutions.spx.com
Peugeot	http://public.infotec.peugeot.com webmaster-infotec@peugeot.com
Renault	www.infotech.renault.com

webmaster.infotech@renault.com

Smart

DaimlerChrysler AG
Mr. August Schlagbauer
Tel. 0711-17-83170
eMail: august.schlagbauer@daimlerchrysler.com

Toyota

Either
via Toyota repairer
Via Internet Webshop
Access www.toyota.de, > Kundenservice > Serviceliteratur

Volvo

Customer Service site: http://vcc.volvocars.se/customerservice/

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https://www.volvocarstechinfo.ford.com/vss

To see all available products for independent operators a user ID must be created with a valid VAT number.

VW

General address for applications is:
www.erwin.volkswagen.de
Hotline +49-1805-5126000
support@erwin-hotline.de
Every Importer has an own homepage with a link to the general address.
Homepages importer: Germany: www.volkswagen.de

Ireland

BMW

BMW Online Service System (OSS)
www.bmw-service.de
service-medien.oss@bmw.de

Aftersales Assistance Portal (ASAP)
www.parts.bmwgroup.com
www.aftersales.bmwgroup.com

Citroën

Documentation on DVD-Rom: http://lasertec.Citroën.com -

GALLIC Distributors ltd
CITROËN After sales
Mr Pat BYRNE
Gowan House
NAAS ROAD
DUBLIN 12
IRELAND
(3531) 409 24 43

Fiat/Alfa	Authorised Network
Ford	www.etis.ford.com Technical Hotline: Small Car +49/221-94700-711 Large Car +49/221-94700-722 Import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	Motor Distributors Ltd Naas Road, Dublin 12 Ireland Mr. Tom Dalton Tel. 01 - 4094444 eMail: tom.dalton@mdl.ie
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMT's) and Others 1. IMT's and others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. 2. IMT's and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. Ireland + 44 1582 694806 For new accession markets, NSC's will centrally handle IMT's and others requests for Technical Information. 3. Full credit card payment will be required at time of order. 4. Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMT's and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) - B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX. Address: SPX Europe GmbH Porschestrasse 4, D-63512 Hainburg Phone: +49/6182/9590 Fax: +49/6182/959229 spxEurope@servicesolutions.spx.com
Peugeot	http://public.infotec.peugeot.com webmaster-infotec@peugeot.com
Renault	www.infotech.renault.com webmaster.infotech@renault.com
Smart	DaimlerChrysler UK Ltd

Lee Passmoor
Tel: +44 (0)1908 301500
Smart.tech@daimlerchrysler.co.uk

Toyota

All our authorised repairers are issued with lists of workshop manuals, including part Nos. in the event that they or others wish to order workshop manuals. In this way a local independent repairer can order repair information through his local authorised repairer. For details of contact with Toyota Ireland please refer to 1.5.7.2.: Contact with our technical dept. can be made in a number of ways; By phone 353-1-4190200 (Main switchboard), most common route. Technical Dept. 353-1-4190341, the call would then be passed to available technical staff. Through our website www.Toyota.ie via our Customer Service Centre who will then refer the query to Technical dept.

Volvo

Customer Service site: http://vcc.volvocars.se/customerservice/

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VW

General address for applications is:
www.erwin.volkswagen.de
Hotline +49-1805-5126000
support@erwin-hotline.de
Every Importer has an own homepage with a link to the general address.
Homepages importer: Ireland: www.volkswagen.ie

Italy

BMW

BMW Online Service System (OSS)
www.bmw-service.de
service-medien.oss@bmw.de

Aftersales Assistance Portal (ASAP)
www.parts.bmwgroup.com
www.aftersales.bmwgroup.com

Citroën

Documentation on DVD-Rom: http://lasertec.Citroën.com

CITROËN ITALIA SPA
Mr. Nicola LUCCI
Via Gattamelata 41
20149 MILANO
(39) 02 39 76 22 11

Fiat/Alfa

Authorised Network
Fiat internal contact:

Gilli Loredana, +390119860682,
eMail: loredana.gilli@fiat.com

Ford www.etis.ford.com

Technical Hotline:
Small Car +49/221-94700-711
Large Car +49/221-94700-722
Import Car +49/221-94700-733

Jaguar http://www.jaguartechinfo.com

Mercedes-Benz DaimlerChrysler Italia S.p.A.
Sig. K. W. Baumann / G. Lippi
Tel. 06.90809512
eMail: gianluca.lippi@daimlerchrysler.it

Opel IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature –
A. Process for Independent Motor Traders (IMTs) and Others
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Italy + 44 1582 694807

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Address:
SPX Europe GmbH
Porschestrasse 4,
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Phone: +49/6182/9590
Fax: +49/6182/959229
spxEurope@servicesolutions.spx.com

Peugeot http://public.infotec.peugeot.com
webmaster-infotec@peugeot.com

Renault www.infotech.renault.com
webmaster.infotech@renault.com

Smart DaimlerChrysler Italia S.p.A.
Sig. K. W. Baumann / G. Lippi
Tel. 06.90809512

eMail: gianluca.lippi@daimlerchrysler.it

Toyota
Jacopo D'Andria
+39.06.60230.472
jacopo.d'.andria@toyota-Europe.com

Volvo
Customer Service site: http://vcc.volvocars.se/customerservice/

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VW
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support@erwin-hotline.de
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Homepages importer: Italy: www.volkswagen-italia.it

Netherlands

BMW
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www.bmw-service.de
service-medien.oss@bmw.de

Aftersales Assistance Portal (ASAP)
www.parts.bmwgroup.com
www.aftersales.bmwgroup.com

Citroën
Documentation on DVD-Rom: http://lasertec.Citroën.com -

CITROËN NEDERLAND BV
Mr Niek RENES
Stadionplein 26-30
Postbus 75895
1070 AW AMSTERDAM
(31) 20 570 14 11

Fiat/Alfa
Authorised Network - Fiat internal contact:
Mark Mooy
tel. 0031228591538
mark.mooy@fiat.com

Ford
www.etis.ford.com

Technical Hotline:
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Large Car +49/221-94700-722

	Import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	DaimlerChrysler Nederland B.V. Dhr Arjaan Griffioen Tel. 033-2473251 eMail: arjaan.griffioen@daimlerchrysler.com
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMTs) and Others IMTs and Others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. IMTs and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. Netherlands + 44 1582 694809 For new accession markets, NSC's will centrally handle IMT's and others requests for Technical Information. Full credit card payment will be required at time of order. Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMTs and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) - B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX. Address: SPX Europe GmbH Porschestrasse 4, D-63512 Hainburg Phone: +49/6182/9590 Fax: +49/6182/959229 spxEurope@servicesolutions.spx.com
Peugeot	http://public.infotec.peugeot.com webmaster-infotec@peugeot.com
Renault	www.infotech.renault.com webmaster.infotech@renault.com
Smart	DaimlerChrysler Nederland B.V. Dhr Arjaan Griffioen Tel. 033-2473251 eMail: arjaan.griffioen@daimlerchrysler.com
Toyota	technical dept. +31 162 585855 techniek@toyota.nl
Volvo	Customer Service site: http://vcc.volvocars.se/customerservice/ We show their links to contact names in each major EU market. We are currently developing a webshop for direct sales of information products.

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Homepages importer: Netherlands: www.volkswagen.nl

Poland

BMW

BMW Online Service System (OSS)
www.bmw-service.de
service-medien.oss@bmw.de

Aftersales Assistance Portal (ASAP)
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Citroën

Documentation on DVD-Rom : http://lasertec.Citroën.com -
CITROËN POLSKA
Mr. Marek KALWA
al. Krakowska 206,
02-219 Warszawa
Polska
(00) 48 22 436 25 63

Fiat/Alfa

Authorised Network - Fiat internal contact:
Jerzy Szabelski
+48 33 813 58 34
jerzy.szabelski@fiat.pl

Ford

www.etis.ford.com

Technical Hotline:
Small Car +49/221-94700-711
Large Car +49/221-94700-722
Import Car +49/221-94700-733

Jaguar

http://www.jaguartechinfo.com

Mercedes-Benz

DaimlerChrysler Automotive Polska Sp. z o.o.
Marcin Mazurowski
tel +48 22 721 4534
email: marcin.mazurowski@daimlerchrysler.com

Opel

IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box

Literature –
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D-63512 Hainburg
Phone: +49/6182/9590
Fax: +49/6182/959229
spxEurope@servicesolutions.spx.com

Peugeot http://public.infotec.peugeot.com
webmaster-infotec@peugeot.com

Renault www.infotech.renault.com
webmaster.infotech@renault.com

Smart DaimlerChrysler Automotive Polska Sp. z o.o.
Marcin Mazurowski
tel +48 22 721 4534
email: marcin.mazurowski@daimlerchrysler.com

Toyota General phone number is +48 22 449 05 00.
But publications has to be ordered by independent at Authorised Repairers.

Volvo Customer Service site: http://vcc.volvocars.se/customerservice/

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United Kingdom

BMW	BMW Online Service System (OSS) www.bmw-service.de service-medien.oss@bmw.de Aftersales Assistance Portal (ASAP) www.parts.bmwgroup.com www.aftersales.bmwgroup.com
Citroën	Documentation on DVD-Rom : http://lasertec.Citroën.com - CITROËN UK Ltd Mr. Arne WILLERSLEV 221 Bath Road SLOUGH SL1 4 BA Berkshire (44) 17 53 84 30 38
Fiat/Alfa	Authorised Network
Ford	www.etis.ford.com Technical Hotline: Small Car +49/221-94700-711 Large Car +49/221-94700-722 Import Car +49/221-94700-733
Jaguar	http://www.jaguartechinfo.com
Mercedes-Benz	DaimlerChrysler UK Ltd Lee Passmoor +44 (0)1908 301500 MBPC@DaimlerChrysler.co.uk
Opel	IMT's Placing Orders for EPC, TIS 2000, Technical Video's, DVD's and Glove Box Literature – A. Process for Independent Motor Traders (IMTs) and Others IMTs and Others can order the "non-network version" through the GME Customer Assistance Centre (CAC), located in the U.K. IMTs and Others wishing to use the service should be advised by their respective National Sales Company, (NSC) to call the relevant number as shown in the attached table and be prepared to quote a valid credit card number. UK + 44 1582 694814 For new accession markets, NSC's will centrally handle IMT's and others requests for Technical Information.

Full credit card payment will be required at time of order.
Once an order has been received·- Order form will be e-mailed to Portica GmbH who will dispatch the information. - Copy of order form will be faxed/e-mailed to the IMTs and Others placing the order - E-mail confirmation of credit card payment sent to owner of the credit card (if e-mail address provided) -

B. Process For Diagnostic Tools and Special Tools Orders - Information and hardware can be ordered via SPX.

Address:
SPX Europe GmbH
Porschestrasse 4,
D-63512 Hainburg
Phone: +49/6182/9590
Fax: +49/6182/959229
spxEurope@servicesolutions.spx.com

Peugeot
http://public.infotec.peugeot.com
webmaster-infotec@peugeot.com

Renault
www.infotech.renault.com
email : webmaster.infotech@renault.com

Smart
DaimlerChrysler UK Ltd
Lee Passmoor
Tel: +44 (0)1908 301500
Smart.tech@daimlerchrysler.co.uk

Toyota
0906 6640061

Volvo
Customer Service site: http://vcc.volvocars.se/customerservice/

We show their links to contact names in each major EU market.
We are currently developing a webshop for direct sales of information products. When that webshop is fully functional we will issue a link on the same Customer Service site to this webshop. As the launch of this webshop is eminent within June 2004, we will not update the market contacts for the new EU countries for now./

See for Webshop the following address:
https://www.volvocarstechinfo.ford.com/vss

To see all available products for independent operators a user ID must be created with a valid VAT number.

VW
General address for applications is:
www.erwin.volkswagen.de Hotline +49-1805-5126000
support@erwin-hotline.de
Every Importer has an own homepage with a link to the general address.
Homepages importer: United Kingdom: www.volkswagen.co.uk
UK + 44 1582 694814

21.2 Contact Points – Truck Manufacturers

Denmark

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler Danmark AS Tommy Smed Tel. 33785594 Tommy.Smed@daimlerchrysler.com
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Peter Mose - peter.mose@scania.dk
Volvo Truck	vios@volvo.com

France

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler France Monsieur Michaël DERGUINI Tel. 01.39.23.55.84 michael.derguini@daimlerchrysler.com
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Claude Eme - claude.eme@scania.com
Volvo Truck	vios@volvo.com

Germany

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884

	DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler AG Herr August Schlagbauer Tel. 0711-17-83170 august.schlagbauer@daimlerchrysler.com
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Jörg Franzke - joerg.franzke@scania.de
Volvo Truck	vios@volvo.com

Ireland

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	Motor Distributors Ltd Naas Road Dublin 12 Ireland Mr. David Farrell Tel. 01 - 4094444 david.farrell@mdl.ie
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Michael Cuddy - michael.cuddy@westwardscania.com
Volvo Truck	vios@volvo.com

Italy

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	

MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler Italia S.p.A. Sig. K. W. Baumann / G. Lippi Tel. 06.90809512 gianluca.lippi@daimlerchrysler.it
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Franco Giuliani - formazone.tecnica@scania.it
Volvo Truck	vios@volvo.com

Netherlands

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler Nederland B.V. Dhr Arjaan Griffioen Tel. 033-2473251 arjaan.griffioen@daimlerchrysler.com
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Wim Poot - wim.poot@beers.nl
Volvo Truck	vios@volvo.com

Poland

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler Automotive Polska Sp. z o.o. Marcin Mazurowski tel +48 22 721 4534 marcin.mazurowski@daimlerchrysler.com

Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Maciej Lewandowski - maciej.lewandowski@scania.pl
Volvo Truck	vios@volvo.com

United Kingdom

DAF	DAF Dealer Systems HelpDesk +31-40-214-4884 DAF.Dealersystems.helpdesk@DAF tracks.com / www.daftrucks.com
Iveco	
MAN	Jereon Lagarde Phone 0049 89 1580-01
Mercedes-Benz	DaimlerChrysler UK Ltd Lee Passmoor +44 (0)1908 301500 MBPC@DaimlerChrysler.co.uk
Renault Truck	Hubert Giraud (+33.4.72.96.99.37) ber@renault-trucks.com
Scania	Les Rooney - les.rooney@scania.co.uk
Volvo Truck	vios@volvo.com

Part A

Core questionnaire

Type in the brand name(s) relating to this questionnaire:	
This questionnaire relates to the following countries:	
Denmark	☐
France	☐
Germany	☐
Ireland	☐
Italy	☐
Netherlands	☐
Poland	☐
United Kingdom	☐

1 Arrangements relating to independent repairers, roadside assistance operators and automobile clubs

1.1 Information provision

1.1.1 What is the percentage of covered vehicles produced within the last 10 years, for which you provide repair information?	%
1.1.2 What is the percentage of this information available in the Internet?	%
1.1.3 What is the percentage of this information available on CD/DVD?	%
1.1.4 What is the percentage of this information available in paper form?	%
1.1.5 Please indicate for which models produced within the last 10 years technical repair information are not available!	Please list in AA
1.1.6 Please give the complete contact information to get access to technical repair information (contact person, phone, email, website)!	Please list in AA
1.1.7 By which medium is technical repair information provided to your authorized dealer network?	CD/DVD

1.2 Diagnostic Tools

1.2.1 Which are the most costly diagnostic tools? (most expensive first)

1.2.1.1 Tool 1: (describe function in AA)	EURO
1.2.1.2 Tool 2: (describe function in AA)	EURO
1.2.1.3 Tool 3: (describe function in AA)	EURO
1.2.1.4 Tool 4: (describe function in AA)	EURO
1.2.1.5 Tool 5 (describe function in AA)	EURO

1.2.2	Do independent operators pay the same price for these diagnostic tools as authorized operators?	☐ yes ☐ no
	If no to 1.2.2, please specify the differences for each tool.	
	1.2.2.1 for tool 1:	EURO
	1.2.2.2 for tool 2:	EURO
	1.2.2.3 for tool 3:	EURO
	1.2.2.4 for tool 4:	EURO
	1.2.2.5 for tool 5:	EURO
1.2.3	Please list all other conditions which independent operators, who wish to purchase scan tools, have to fulfil (training, professional experience, other qualifications)?	Please list in AA
1.2.4	How long is the average delivery period for these diagnostic tools?	days
1.2.5	Are there differences concerning the delivery diagnostic tools between independent operators and authorized operators?	☐ yes ☐ no
1.2.6	Are there special financing models to purchase diagnostic tools (e.g. leasing)?	☐ yes ☐ no if yes, explain in AA
1.2.7	Are these tools available from other producers/sources?	☐ yes ☐ no if yes, explain in AA

1.3 Operations relating to ECUs

1.3.1	Is it possible for independent operators to flash software updates / to carry out re-programming?	☐ yes ☐ no
	If yes to 1.3.1, please fill in the needed tool plus the needed software and specify their price.	
	1.3.1.1 Tool:	EURO
	1.3.1.2 Software:	EURO
1.3.2	Is it possible for independent operators to carry out variant coding (e.g. coding due to replacement of ECUs)?	☐ yes ☐ no
	If yes to 1.3.2, please fill in the needed tool plus the needed software and specify their price.	
	1.3.2.1 Tool:	EURO
	1.3.2.2 Software:	EURO
1.3.3	Is it possible for independent operators to carry out initialisation or re-initialisation (e.g. due to replacement of ECUs)	☐ yes ☐ no
	If yes to 1.3.3, please fill in the needed tool plus the needed software and specify their price.	
	1.3.3.1 Tool:	EURO
	1.3.3.2 Software:	EURO

1.3.4 Is it possible for independent operators to carry out pass-through programming?	☐ yes	☐ no

If yes to 1.3.4, please fill in the needed tool plus the needed software and specify their price.

1.3.4.1 Tool:	EURO
1.3.4.2 Software:	EURO

1.3.5 Is it possible for independent operators to re-set the security system (re-mobilisation)?	☐ yes	☐ no

If yes to 1.3.5, please fill in the needed tool plus the needed software and specify their price.

1.3.5.1 Tool:	EURO
1.3.5.2 Software:	EURO

1.4 Special Tools excluding diagnosis tools

1.4.1 Please fill in the **five most used** special tools over EURO 150,- and specify their price. Furthermore, assuming an authorized repairer services 100 cars per month, how many of the 100 cars per month need these tools for repair? Please explain the function of these tools in Annex A (AA).

1.4.1.1 Tool 1: (describe function in AA)	EURO	cars per month
1.4.1.2 Tool 2: (describe function in AA)	EURO	cars per month
1.4.1.3 Tool 3: (describe function in AA)	EURO	cars per month
1.4.1.4 Tool 4: (describe function in AA)	EURO	cars per month

1.4.1.5 Tool 5 (describe function in AA)	EURO	cars per month

1.4.2 Please fill in the **five most expensive special** tools and their price. Furthermore, assuming an authorized repairer services 100 cars per month, how many of the 100 cars per month need these tools for repair? Please explain the function of these tools in Annex A (AA).

1.4.2.1 Tool 1: (describe function in AA)	EURO	cars per month
1.4.2.2 Tool 2: (describe function in AA)	EURO	cars per month
1.4.2.3 Tool 3: (describe function in AA)	EURO	cars per month
1.4.2.4 Tool 4: (describe function in AA)	EURO	cars per month
1.4.2.5 Tool 5 (describe function in AA)	EURO	cars per month

1.4.3 Are there special financing models to purchase special tools (e.g. leasing)?	☐ yes ☐ no if yes, explain in AA

1.5 Actualisation of information

1.5.1 Do independent operators get the same information on common faults as authorized operators?	☐ yes ☐ no
1.5.1.1 if yes to 1.5.1, which information medium do you use?	
1.5.1.2 if yes to 1.5.1, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA

1.5.2	Do independent operators get the same information on recall campaigns (including “silent” or “hidden” recalls which are not publicly announced) as authorized operators?	☐ yes ☐ no
1.5.2.1	if yes to 1.5.2, which information medium do you use?	
1.5.2.2	if yes to 1.5.2, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.3	Do independent operators get the same technical bulletins as authorized operators?	☐ yes ☐ no
1.5.3.1	if yes to 1.5.3, which information medium do you use?	
1.5.3.2	if yes to 1.5.3, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.4	Do independent operators get the same information on modified parts as authorized operators?	☐ yes ☐ no
1.5.4.1	if yes to 1.5.4, which information medium do you use?	
1.5.4.2	if yes to 1.5.4, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.5	Do you provide information on updated spare part numbers for independent operators?	☐ yes ☐ no
1.5.5.1	if yes to 1.5.5, which information medium do you use?	
1.5.5.2	if yes to 1.5.5, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.6	Do independent operators get the same information on software updates as authorized operators?	☐ yes ☐ no
1.5.6.1	if yes to 1.5.6, which information medium do you use?	

1.5.6.2	if yes to 1.5.6, do independent operators get the information at the same time as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.7	Do you provide hotline support on technical questions?	☐ yes ☐ no
1.5.7.1	If yes to 1.5.7, do independent operators get the same information as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.5.7.2	Please give the phone numbers and website links!	Please list in AA

1.6 Training information

1.6.1	Do you provide remote training programmes (CD, DVD, Internet)?	☐ yes ☐ no
1.6.1.1	If yes to 1.6.1, do independent operators get the same material as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.6.1.2	If yes to 1.6.1, do independent operators pay the same price for the training material as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.6.2	Do you provide directly Class Room training?	☐ yes ☐ no
1.6.2.1	If yes to 1.6.1, can independent operators participate in the same lessons as authorized operators?	☐ yes ☐ no if no, explain why in AA
1.6.2.2	If yes to 1.6.1, do independent operators pay the same price for the lessons as authorized operators?	☐ yes ☐ no if no, explain why in AA

1.6.3 Should training not be carried out by you directly but by an authorized repairer or a training institution, do independent operators have access to it?	☐ yes	☐ no
1.6.3.1 If yes to 1.6.3, what is the price for a training program on engine management?	EURO	
1.7 Price discounts and rebates for authorized repairers		
1.7.1 Do you apply special price discounts or rebates to authorized repairers when providing them with technical information, diagnostic tools, special tools or training?	☐ yes	☐ no
1.7.1.1 If yes to 1.7.1, please explain the rebate system in AA and provide us with copies of contracts signed with repairers in which these rebates are settled.	explain in AA	
1.7.1.2 If yes to 1.7.1, please detail in AA the reasons for such discounts.	explain in AA	

2 Arrangements enabling diagnostic tool manufacturers to produce devices with the same functions as manufacturers' devices

2.1 Information provision

2.1.1	What is the percentage of covered vehicles produced within the last 10 years, for which you provide special information for tool manufacturers?	%
2.1.2	Which information media do you use?	1. 2. 3.
2.1.3	Are there information packages (e.g. for vehicle models, or technical operations)?	☐ yes ☐ no if yes, explain in AA
2.1.4	What is the price for the complete information to be paid by an authorized repairer for servicing and repairing of all car/truck models serviced by your network?	EURO
2.1.4.1	Please describe the fee scheme.	Explain in AA
2.1.5	What is the price for the complete information for a mid-size vehicle / heavy duty truck (2004 in series production)?	EURO
2.1.5.1	Please indicate the models.	Explain in AA
2.1.6	Do the independent diagnostic tool manufacturers get the information for a new vehicle at the same time as licensed diagnostic tool manufacturers?	☐ yes ☐ no
2.1.7	When do the independent diagnostic tool manufacturers get the information for a new vehicle?	months before start of sales
2.1.8	Is the complete information provision relating to diagnostic tool manufacturers distributed by a centralized entity?	☐ yes ☐ no
2.1.8.1	If yes, has this entity the mandate to decide which information will be provided (e.g. considering intellectual property rights)?	☐ yes ☐ no

2.1.9 Do you provide technical support for the tool manufacturers?	☐ yes	☐ no
2.2 Test and diagnosis of information		
2.2.1 Do you provide descriptions of test procedures (steps to be executed)?	☐ yes	☐ no
2.2.1.1 If yes to 2.2.1 in which form do you deliver the information?		
2.2.2 Do you provide test parameters?	☐ yes	☐ no
2.2.3 Do you provide connection details incl. min/max input/output driving/loading values?	☐ yes	☐ no
2.2.4 Do you provide values expected under certain driving conditions incl. idling?	☐ yes	☐ no
2.2.4.1 If yes to 2.2.4, do you provide failure mode values for these scenarios?	☐ yes	☐ no
2.2.5 Do you provide electrical values in static and dynamic states?	☐ yes	☐ no
2.2.5.1 If yes to 2.2.5, do you provide failure mode values for these scenarios?	☐ yes	☐ no
2.2.6 Do you provide failure mode diagnostic sequences incl. fault trees and guided diagnostics elimination (e.g. assignment symptom to diagnostic sequence)?	☐ yes	☐ no
2.2.7 Do you provide information on ECU and component initialisation (e.g. sensors)?	☐ yes	☐ no
2.3 Communication Protocol Information		
2.3.1 Do you provide any additional protocol information not covered by ISO 15031?	☐ yes	☐ no
2.3.1.1 If yes to 2.3.1 in which form do you provide the information?		
2.3.2 Do you provide information on fault code reading including details on how to obtain and interpret digitally all fault codes not detailed by ISO 15031?	☐ yes	☐ no

2.3.3	Do you provide live data parameter incl. scaling information (e.g. assignment Volt to digital)?	☐ yes	☐ no
2.3.4	Do you provide information on functional tests incl. device activation or control?	☐ yes	☐ no
2.3.5	Do you provide details on how to obtain component and status information (e.g. of actuator or sensors, not live data parameter)?	☐ yes	☐ no
2.3.6	Do you provide information on resetting, adaptive learns, variant coding, replacement component set-up, customer preferences, etc.?	☐ yes	☐ no
2.3.7	Do you provide information on ECU identification and variant coding?	☐ yes	☐ no
2.3.8	Do you provide access to security codes required for repair functions and control module updating required to effect the repair?	☐ yes	☐ no
2.3.9	Do you provide details of how to re-set service lights?	☐ yes	☐ no
2.3.10	Do you provide information on diagnostic connector details (including information on free pins of OBD plug covered by ISO 15031-3)?	☐ yes	☐ no
2.3.11	Do you provide information for an unambiguous vehicle identification (incl. clearly identification of complete installed electronic equipment)?	☐ yes	☐ no

3 Arrangements relevant for publishers

3.1 Information provision

3.1.1	What is the percentage of covered vehicles produced within the last 10 years, for which you provide special information to publishers?	%
3.1.2	Which information media do you use?	1. 2. 3.
3.1.3	Are there information packages (e.g. for models, technical operations or published exemplars)?	☐ yes ☐ no if yes, explain in AA
3.1.4	What is the price for the complete information for a mid-size vehicle / heavy duty truck relevant for 1000 published exemplars (2004 in series production)?	EURO
3.1.4.1	Please describe the fee scheme in AA.	
3.1.5	When do the publishers get the information for a new vehicle?	months before start of sales
3.1.6	Do you provide technical support for the publishers?	☐ yes ☐ no
3.1.6.1	If yes, has this entity the mandate to decide which information will be provided (e.g. considering intellectual property rights)?	☐ yes ☐ no

Annex A (AA)

Explanation to 1.1.5	
Explanation to 1.1.6	
Explanation to 1.1.7	
Explanation to 1.2.1.1	
Explanation to 1.2.1.2	
Explanation to 1.2.1.3	
Explanation to 1.2.1.4	
Explanation to 1.2.1.5	
Explanation to 1.2.3	
Explanation to 1.2.6	
Explanation to 1.2.7	
Explanation to 1.4.1.1	
Explanation to 1.4.1.2	
Explanation to 1.4.1.3	
Explanation to 1.4.1.4	
Explanation to 1.4.1.5	
Explanation to 1.4.2.1	
Explanation to 1.4.1.2	
Explanation to 1.4.2.3	
Explanation to 1.4.2.4	
Explanation to 1.4.2.5	
Explanation to 1.4.3	
Explanation to 1.5.1.2	
Explanation to 1.5.2.2	

Explanation to 1.5.3.2	
Explanation to 1.5.4.2	
Explanation to 1.5.5.2	
Explanation to 1.5.6.2	
Explanation to 1.5.7.1	
Explanation to 1.5.7.2	
Explanation to 1.6.1.1	
Explanation to 1.6.1.2	
Explanation to 1.6.2.1	
Explanation to 1.6.2.2	
Explanation to 1.7.1.1	
Explanation to 1.7.1.2	
Explanation to 2.1.3	
Explanation to 2.1.4.1	
Explanation to 2.1.5.1	
Explanation to 3.1.3	
Explanation to 3.1.4.1	

Part B1

Information medium: *Internet*

Type in the brand name(s) relating to this questionnaire:	
This questionnaire relates to the following countries:	
Denmark	☐
France	☐
Germany	☐
Ireland	☐
Italy	☐
Netherlands	☐
Poland	☐
United Kingdom	☐

Arrangements relevant to independent repairers, roadside assistance operators and automobile clubs

1 Information Access

1.1 Registration and Access Conditions

1.1.1 How long does it take to get first access?	hours
1.1.2 Is there a special contract that comes to terms?	
1.1.2.1 If yes, what is the minimum contract period?	months
1.1.2.2 If yes, what is the cancellation period of this contract?	months
1.1.3 Is registration and access to your technical information website possible from your standard website?	☐ yes ☐ no

1.2 Registration Costs

1.2.1 Initial non-recurring registration fee	EURO
1.2.2 Is there an account on which the user has to pay in advance?	☐ yes ☐ no
1.2.2.1 How much has to be paid in advance?	EURO

1.3 Which cost models exist?

1.3.1 Pay per view / Pay per website	☐ yes ☐ no
1.3.1.1 Costs for one page	EURO/page
1.3.2 Payment by access time	☐ yes ☐ no
1.3.2.1 Costs for one hour access time	EURO/hour
1.3.3 Payment by job	☐ yes ☐ no

1.3.3.1 Costs for a repair of one hour	EURO/hour
1.3.4 Payment for Diagnostic Trouble Code Identification	☐ yes ☐ no
1.3.4.1 Costs for one DTC identification	EURO/DTC
1.3.5 Subscription	☐ yes ☐ no
1.3.5.1 Costs for one month	EURO/month
1.3.5.2 Minimum subscription period	days
1.3.6 Other payments	☐ yes ☐ no If yes, explain in AB1
1.4 How is the payment to be made?	
1.4.1 By bank transfer	☐ yes ☐ no
1.4.2 By credit card	☐ yes ☐ no
1.4.3 By debit	☐ yes ☐ no
1.4.4 Other payment methods	☐ yes ☐ no If yes, explain in AB1
1.4.5 Do you offer special discounts?	☐ yes ☐ no If yes, explain in AB1
1.5 Number of users	
1.5.1 How many registered independent users have access to your website?	[users]

1.5.2 How often is your website visited by them?	[total logins / month]

1.6 Covered vehicles and update periods

1.6.1 What is the percentage of covered vehicles produced within the last 10 years?	%
1.6.2 How often is your technical information updated?	months

1.7 Hard- and software requirements

1.7.1 Minimum processor requirements?	[MHz]	
1.7.2 Minimum working memory?	[MByte]	
1.7.3 Minimum display resolution?	x	
1.7.4 Which software is needed?	1. 2. 3.	
1.7.5 Are special plug-ins needed?	☐ yes	☐ no
1.7.5.1 If yes, how many?		
1.7.5.2 If yes, at what cost?	EURO	

1.8 Which languages are provided?

1.8.1 Czech	☐ yes	☐ no	1.8.2 Danish	☐ yes	☐ no
1.8.3 Dutch	☐ yes	☐ no	1.8.4 English	☐ yes	☐ no
1.8.5 Estonian	☐ yes	☐ no	1.8.6 Finnish	☐ yes	☐ no
1.8.7 French	☐ yes	☐ no	1.8.8 German	☐ yes	☐ no
1.8.9 Greek	☐ yes	☐ no	1.8.10 Hungarian	☐ yes	☐ no
1.8.11 Italian	☐ yes	☐ no	1.8.12 Latvian	☐ yes	☐ no

1.8.13 Lithuanian	☐ yes	☐ no	1.8.14 Norwegian	☐ yes ☐ no
1.8.15 Polish	☐ yes	☐ no	1.8.16 Portuguese	☐ yes ☐ no
1.8.17 Romanian	☐ yes	☐ no	1.8.18 Slovenian	☐ yes ☐ no
1.8.19 Spanish	☐ yes	☐ no	1.8.20 Swedish	☐ yes ☐ no
1.8.21 Other	☐ yes	☐ no If yes, explain in AB1		

1.9 Information structure

1.9.1 Is there a difference between the information structure provided to authorized operators and to independent operators?	☐ yes	☐ no If yes, explain in AB1

2 Scope of Technical Information

2.1 How do you ensure an unambiguous vehicle identification?

2.1.1	By VIN (Vehicle Identification Number)	☐ yes ☐ no
2.1.2	By a selective list (e.g. model, model year, engine capacity)	☐ yes ☐ no
2.1.3	Other	☐ explain in AB1
2.1.4	Does this identification clearly identify all original equipment (incl. respective part numbers)?	☐ yes ☐ no If no, explain why in AB1

2.2 Which search criteria are supported?

2.2.1	Search by Diagnostic Trouble Codes (DTC)	☐ yes ☐ no
2.2.2	Search by symptoms (e.g. gearbox rattling)	☐ yes ☐ no
2.2.3	Search by systems (e.g. brake system)	☐ yes ☐ no
2.2.4	Search by components (e.g. brake pad)	☐ yes ☐ no
2.2.5	Search by OE Part Number	☐ yes ☐ no
2.2.6	Search by special tools names	☐ yes ☐ no
2.2.7	Search by warning indication (e.g. ABS indicator lamp)	☐ yes ☐ no
2.2.8	Full text search	☐ yes ☐ no
2.2.9	Others	☐ yes ☐ no If yes, explain in AB1

2.3 How are the search results displayed?

2.3.1 Title of the information	☐ yes	☐ no
2.3.2 Short description	☐ yes	☐ no
2.3.3 Creation date or version	☐ yes	☐ no
2.3.4 Others	☐ yes If yes, explain in AB1	☐ no

2.4 Which kind of information does your system provide?

2.4.1 General Information

2.4.1.1 Functional descriptions (e.g. Common Rail Injection)	☐ yes	☐ no
2.4.1.2 Fitting and removal processes (e.g. gearbox replacement)	☐ yes	☐ no
2.4.1.3 Work plans and job times	☐ yes	☐ no
2.4.1.4 Electrical wiring diagrams	☐ yes	☐ no
2.4.1.5 Hydraulic wiring diagrams	☐ yes	☐ no
2.4.1.6 Pneumatic wiring diagrams	☐ yes	☐ no
2.4.1.7 Emission related information	☐ yes	☐ no
2.4.1.8 Body repair information (e.g. dimensions, tolerances, corrosion protection)	☐ yes	☐ no
2.4.1.9 Welding instructions (e.g. welding temperature)	☐ yes	☐ no
2.4.1.10 Pick-up points lifting platform	☐ yes	☐ no

2.4.1.11 Tightening torque figures	☐ yes	☐ no
2.4.1.12 Axle settings (e.g. toe, camber)	☐ yes	☐ no
2.4.1.13 Brake clearance	☐ yes	☐ no
2.4.1.14 Operating fuels	☐ yes	☐ no
2.4.1.15 Wheel-tire combinations	☐ yes	☐ no
2.4.2 Maintenance and service information		
2.4.2.1 Service intervals	☐ yes	☐ no
2.4.2.2 Service instructions incl. work plans	☐ yes	☐ no
2.4.2.3 Re-initialisation of maintenance indicator	☐ yes	☐ no
2.4.3 Test and diagnosis information		
2.4.3.1 Location of diagnostic connector	☐ yes	☐ no
2.4.3.2 Meaning of manufacturer specific Diagnostic Trouble Codes (DTC)	☐ yes	☐ no
2.4.3.3 Information on ECU software versions	☐ yes	☐ no
2.4.3.4 Test procedures	☐ yes	☐ no
2.4.3.5 Test parameters (e.g. temperature of transmission fluid)	☐ yes	☐ no
2.4.3.6 Test values under certain driving conditions (e.g. signal of yaw rate sensor at straight-line driving in Volt)	☐ yes	☐ no
2.4.4 Spare Parts		
2.4.4.1 Spare part numbers	☐ yes	☐ no

2.4.4.2 Matching of spare part list with identified vehicle is possible	☐ yes	☐ no
2.4.4.3 Spare part identification by graphical representation is possible	☐ yes	☐ no
2.4.5 Special tools (except diagnostic scan tools)		
2.4.5.1 A list of special tools is provided for each vehicle	☐ yes	☐ no
2.4.5.2 Description of intended use exists for each tool	☐ yes	☐ no

3 Test Cases

Please specify for each of the following test cases the costs to purchase the necessary repair information and the name and price of all special tools that are needed to complete the job in an independent workshop (assuming that the repair shop uses the most economic solution to get the information and tools).

Assumption for Passenger Cars: Mid-size vehicle
Assumption for Trucks: Heavy-duty truck

Please attach the relevant technical information in a digital format or on paper.

3.1 Test Case 1: Replacement of a defective engine ECU

Necessary technical information:

- Vehicle identification
- Diagnosis and fault identification
- Fitting and removal process
- Spare parts
- Special tools
- Job times
- Re-initialisation, coding and pass-through programming (if necessary) procedures
- Re-mobilisation of vehicle immobiliser (if necessary)
- Reset of fault memory

3.1.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.1.2 Minimal costs for necessary technical information	EURO
3.1.3 What is the data amount for the necessary technical information?	kbyte

Necessary special tools:

- Diagnostic scan tool for fault identification and reset of fault memory
- Diagnostic scan tool for re-initialisation and coding
- Pass-through programming tool (if necessary)
- Tool for re-mobilisation of vehicle immobiliser (if necessary)

3.1.4 Minimal costs for necessary special tools	EURO

3.2 Test Case 2: Maintenance and service instructions

Necessary technical information:

- Vehicle identification
- Fault memory reading
- Oil change
- Filter change (oil/air/petrol/passenger compartment)
- Check of operation fluids
- Brake system check
- Emission control
- Axle system check (tires, suspension)
- Reset of service interval
- Spare parts
- Special tools
- Job times

3.2.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.2.2 Minimal costs for necessary technical information	EURO
3.2.3 What is the data amount for the necessary technical information?	kbyte

Necessary special tools:

- Diagnostic scan tool for fault memory reading and resetting
- Diagnostic tool for emission control
- Diagnostic scan tool for reset of service interval

3.2.4 Minimal costs for necessary special tools	EURO

4 Please name any differences in the information systems provided to authorized operators and those to independent operators

4.1	Are the registration conditions different (1.1)?	☐ yes ☐ no if yes, explain in AB1
4.2	Are the registration costs different (1.2)?	☐ yes ☐ no if yes, explain in AB1
4.3	Are the cost models different (1.3)?	☐ yes ☐ no if yes, explain in AB1
4.4	Are the covered vehicles and update periods different (1.6)?	☐ yes ☐ no if yes, explain in AB1
4.5	Are the hard- and software requirements different (1.7)?	☐ yes ☐ no if yes, explain in AB1
4.6	Are the provided languages different (1.8)?	☐ yes ☐ no if yes, explain in AB1
4.7	Are the methods and procedures for an unambiguous vehicle identification different (2.1)?	☐ yes ☐ no if yes, explain in AB1
4.8	Are the provided search criteria different (2.2)?	☐ yes ☐ no if yes, explain in AB1

4.9	Are the display of search results different (2.3)?	☐ yes ☐ no if yes, explain in AB1
4.10	Is the content of general technical repair information different (2.4.1)?	☐ yes ☐ no if yes, explain in AB1
4.11	Is the content of maintenance and service information different (2.4.2)?	☐ yes ☐ no if yes, explain in AB1
4.12	Is the information on test and diagnosis different (2.4.3)?	☐ yes ☐ no if yes, explain in AB1
4.13	Is the information on spare parts different (2.4.4)?	☐ yes ☐ no if yes, explain in AB1
4.14	Is the information on special tools different (2.4.5)?	☐ yes ☐ no if yes, explain in AB1

5 Please provide us with a copy on CD/DVD of all the technical information available on your web-based system or, alternatively, give us an online access for a period of 8 weeks starting on 5 May 2004.

Annex B1 (AB1)

Information medium: ***Internet***

Explanation to 1.3.6	
Explanation to 1.4.4	
Explanation to 1.4.5	
Explanation to 1.8.21	
Explanation to 1.9.1	
Explanation to 2.1.3	
Explanation to 2.1.4	
Explanation to 2.2.9	
Explanation to 2.3.4	
Explanation to 4.1	
Explanation to 4.2	
Explanation to 4.3	
Explanation to 4.4	
Explanation to 4.5	
Explanation to 4.6	
Explanation to 4.7	
Explanation to 4.8	
Explanation to 4.9	
Explanation to 4.10	
Explanation to 4.11	
Explanation to 4.12	
Explanation to 4.13	
Explanation to 4.14	

Part B2

Information medium: *CD/DVD*

Type in the brand name relating to this questionnaire:	
This questionnaire relates to the following countries:	
Denmark	☐
France	☐
Germany	☐
Ireland	☐
Italy	☐
Netherlands	☐
Poland	☐
United Kingdom	☐

Arrangements relevant to independent repairers, roadside assistance operators and automobile clubs

1 Information Access

1.1 What kind of information packages are available?

1.1.1 Package with technical information for all models	☐ yes	☐ no
1.1.1.1 If yes, fill in costs for a one-time delivery	EURO	
1.1.1.2 If yes, fill in costs for a subscription	EURO/year	
1.1.2 Package with technical information for one single model	☐ yes	☐ no
1.1.2.1 If yes, fill in costs for a one-time delivery	EURO	
1.1.2.2 If yes, fill in costs for a subscription	EURO/year	
1.1.3 Package with technical information for one specific vehicle system (e.g. engine system) for all models	☐ yes	☐ no
1.1.3.1 If yes, fill in costs for a one-time delivery	EURO	
1.1.3.2 If yes, fill in costs for a subscription	EURO/year	
1.1.4 Other	☐ yes	☐ no If yes, explain in AB2

1.2 Access Conditions

1.2.1 One-time delivery of a package of CDs/DVDs	
1.2.1.1 How long does it take to get the first access to information (delivery time)?	days
1.2.1.2 What is the percentage of covered vehicles produced within the last 10 years?	%

1.2.2 Subscription of CDs/DVD packages	
1.2.2.1 What is the minimum subscription period?	months
1.2.2.2 What is the cancellation period of this contract?	months
1.2.2.3 What is the percentage of covered cars produced within the last 10 years?	%
1.2.2.4 How long does it take to get the first access to information (delivery time)?	days
1.2.2.5 How often do you provide updates?	times/year

1.3 How is the payment to be made?		
1.3.1 By bank transfer	☐ yes	☐ no
1.3.2 By credit card	☐ yes	☐ no
1.3.3 By debit	☐ yes	☐ no
1.3.4 Other payment method	☐ yes	☐ no If yes, explain in AB2
1.3.5 Do you offer special discounts?	☐ yes	☐ no If yes, explain in AB2

1.4 How are the information packages (CD/DVD) distributed?		
1.4.1 Directly by the manufacturer?	☐ yes	☐ no
1.4.2 By the local authorized dealers?	☐ yes	☐ no
1.4.3 By any other organisation?	☐ yes	☐ no

	If yes, explain in AB2

1.5 Number of users

1.5.1 How many independent users are purchasing technical information on CD/DVD per year?	[users/year]

1.6 Hard- and software requirements

1.6.1 Minimum processor requirements?	[MHz]
1.6.2 Minimum working memory?	[MByte]
1.6.3 Minimum display resolution?	x
1.6.4 Minimum disk space for standard installation?	[MByte]
1.6.5 Which software is needed?	1. 2. 3.
1.6.6 Are special plug-ins needed?	☐ yes ☐ no
1.6.6.1 If yes, how many?	
1.6.6.2 If yes, at what cost?	EURO

1.7 Which languages are provided?

1.7.1 Czech	☐ yes	☐ no	1.7.2 Danish	☐ yes	☐ no
1.7.3 Dutch	☐ yes	☐ no	1.7.4 English	☐ yes	☐ no
1.7.5 Estonian	☐ yes	☐ no	1.7.6 Finnish	☐ yes	☐ no
1.7.7 French	☐ yes	☐ no	1.7.8 German	☐ yes	☐ no
1.7.9 Greek	☐ yes	☐ no	1.7.10 Hungarian	☐ yes	☐ no
1.7.11 Italian	☐ yes	☐ no	1.7.12 Latvian	☐ yes	☐ no

1.7.13 Lithuanian	☐ yes	☐ no	1.7.14 Norwegian	☐ yes	☐ no
1.7.15 Polish	☐ yes	☐ no	1.7.16 Portuguese	☐ yes	☐ no
1.7.17 Romanian	☐ yes	☐ no	1.7.18 Slovenian	☐ yes	☐ no
1.7.19 Spanish	☐ yes	☐ no	1.7.20 Swedish	☐ yes	☐ no
1.7.21 Other	☐ yes	☐ no If yes, explain in AB2			

1.8 Information structure

1.8.1 Is there a difference between the information structure provided to authorized operators and to independent operators?	☐ yes	☐ no If yes, explain in AB1

2 Scope of Technical Information

2.1 How do you ensure an unambiguous vehicle identification?

2.1.1	By VIN (Vehicle Identification Number)	☐ yes ☐ no
2.1.2	By a selective list (e.g. model, model year, engine capacity)	☐ yes ☐ no
2.1.3	Other	☐ yes ☐ no If yes, explain in AB2
2.1.4	Does this identification clearly identify all original equipment (incl. respective part numbers)?	☐ yes ☐ no If no, explain why in AB2

2.2 Which search criteria are supported?

2.2.1	Search by Diagnostic Trouble Codes (DTC)	☐ yes ☐ no
2.2.2	Search by symptoms (e.g. gearbox rattling)	☐ yes ☐ no
2.2.3	Search by systems (e.g. brake system)	☐ yes ☐ no
2.2.4	Search by components (e.g. brake pad)	☐ yes ☐ no
2.2.5	Search by OE Part Number	☐ yes ☐ no
2.2.6	Search by special tools names	☐ yes ☐ no
2.2.7	Search by warning indication (e.g. ABS indicator lamp)	☐ yes ☐ no
2.2.8	Full text search	☐ yes ☐ no
2.2.9	Other	☐ yes ☐ no

	If yes, explain in AB2

2.3 How are the search results displayed?

2.3.1 Title of the information	☐ yes	☐ no
2.3.2 Short description	☐ yes	☐ no
2.3.3 Creation date or version	☐ yes	☐ no
2.3.4 Other	☐ yes	☐ no
	If yes, explain in AB2	

2.4 Which kind of information does your system provide?

2.4.1 General information

2.4.1.1 Functional descriptions (e.g. Common Rail Injection)	☐ yes	☐ no
2.4.1.2 Fitting and removal processes (e.g. gearbox replacement)	☐ yes	☐ no
2.4.1.3 Work plans and job times	☐ yes	☐ no
2.4.1.4 Electrical wiring diagrams	☐ yes	☐ no
2.4.1.5 Hydraulic wiring diagrams	☐ yes	☐ no
2.4.1.6 Pneumatic wiring diagrams	☐ yes	☐ no
2.4.1.7 Emission related information	☐ yes	☐ no
2.4.1.8 Body repair Information (e.g. dimensions, tolerances, corrosion protection)	☐ yes	☐ no
2.4.1.9 Welding instructions (e.g. welding temperature)	☐ yes	☐ no

2.4.1.10 Pick-up points for lifting platform	☐ yes	☐ no
2.4.1.11 Tightening torque figures	☐ yes	☐ no
2.4.1.12 Axle settings (e.g. toe, camber)	☐ yes	☐ no
2.4.1.13 Brake clearance	☐ yes	☐ no
2.4.1.14 Operating fuels	☐ yes	☐ no
2.4.1.15 Wheel-tire combinations	☐ yes	☐ no
2.4.2 Maintenance and service information		
2.4.2.1 Service intervals	☐ yes	☐ no
2.4.2.2 Service instructions incl. work plans	☐ yes	☐ no
2.4.2.3 Re-initialisation of maintenance indicator	☐ yes	☐ no
2.4.3 Test and diagnosis information		
2.4.3.1 Location of diagnostic connector	☐ yes	☐ no
2.4.3.2 Meaning of manufacturer specific Diagnostic Trouble Codes (DTC)	☐ yes	☐ no
2.4.3.3 Information on ECU software versions	☐ yes	☐ no
2.4.3.4 Test procedures	☐ yes	☐ no
2.4.3.5 Test parameters (e.g. temperature of transmission fluid)	☐ yes	☐ no
2.4.3.6 Test values under certain driving conditions (e.g. signal of yaw rate sensor at straight-line driving in Volt)	☐ yes	☐ no

2.4.4 Spare Parts		
2.4.4.1	Spare Part numbers	☐ yes ☐ no
2.4.4.2	Matching of spare part list with identified vehicle is possible	☐ yes ☐ no
2.4.4.3	Spare part identification by graphical representation is possible	☐ yes ☐ no
2.4.5 Special tools (except diagnostic scan tools)		
2.4.5.1	A list on special tools is provided for each vehicle	☐ yes ☐ no
2.4.5.2	Description of intended use exists for each tool	☐ yes ☐ no

3 Test Cases

Please specify for each of the following test cases the costs to purchase the necessary repair information and the name and price of all special tools that are needed to complete the job in an independent workshop (assuming that the repair shop uses the most economic solution to get the information and tools).

Assumption for Passenger Cars: Mid-size vehicle
Assumption for Trucks: Heavy-duty truck

Please attach the relevant technical information in a digital format or on paper.

3.1 Test Case 1: Replacement of a defective engine ECU

Necessary technical information:

- Vehicle identification
- Diagnosis and fault identification
- Fitting and removal process
- Spare parts
- Special tools
- Job times
- Re-initialisation, coding and pass-through programming (if necessary) procedures
- Re-mobilisation of vehicle immobiliser (if necessary)
- Reset of fault memory

3.1.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.1.2 Minimal costs for necessary technical information	EURO

Necessary special tools:

- Diagnostic scan tool for fault identification and reset of fault memory
- Diagnostic scan tool for re-initialisation and coding
- Pass-through programming tool (if necessary)
- Tool for re-mobilisation of vehicle immobiliser (if necessary)

3.1.3 Minimal costs for necessary special tools	EURO

3.2 Test Case 2: Maintenance and service instructions

Necessary technical information:

- Vehicle identification
- Fault memory reading
- Oil change
- Filter change (oil/air/petrol/passenger compartment)
- Check of operation fluids
- Brake system check
- Emission control
- Axle system check (tires, suspension)
- Reset of service interval
- Spare parts
- Special tools
- Job times

3.2.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.2.2 Minimal costs for necessary technical information	EURO

Necessary special tools:

- Diagnostic scan tool for fault memory reading and resetting
- Diagnostic tool for emission control
- Diagnostic scan tool for reset of service interval

3.2.3 Minimal costs for necessary special tools	EURO

4 Please name any differences in the information systems provided to authorized repairers and those to independent operators

4.1	Are the purchase options different (1.2)?	☐ yes ☐ no if yes, explain in AB2
4.2	Is the payment different (1.3)?	☐ yes ☐ no if yes, explain in AB2
4.3	Are the hard- and software requirements different (1.6)?	☐ yes ☐ no if yes, explain in AB2
4.4	Are the provided languages different (1.7)?	☐ yes ☐ no if yes, explain in AB2
4.5	Are the methods and procedures for an unambiguous vehicle identification different (2.1)?	☐ yes ☐ no if yes, explain in AB2
4.6	Are the provided search criteria different (2.2)?	☐ yes ☐ no if yes, explain in AB2
4.7	Is the display of search results different (2.3)?	☐ yes ☐ no if yes, explain in AB2
4.8	Is the content of general technical repair information different (2.4.1)?	☐ yes ☐ no if yes, explain in AB2

4.9	Is the content of maintenance and service information different (2.4.2)?	☐ yes ☐ no if yes, explain in AB2
4.10	Is the information on test and diagnosis different (2.4.3)?	☐ yes ☐ no if yes, explain in AB2
4.11	Is the information on spare parts different (2.4.4)?	☐ yes ☐ no if yes, explain in AB2
4.12	Is the information on special tools different (2.4.5)?	☐ yes ☐ no if yes, explain in AB2

5 Please provide us with a copy of the CDs/DVDs intended to operators and containing technical information.

Annex B2 (AB2)

Information medium: *CD/DVD*

Explanation to 1.1.4	
Explanation to 1.3.4	
Explanation to 1.3.5	
Explanation to 1.4.3	
Explanation to 1.7.21	
Explanation to 1.8.1	
Explanation to 2.1.3	
Explanation to 2.1.4	
Explanation to 2.2.9	
Explanation to 2.3.4	
Explanation to 4.1	
Explanation to 4.2	
Explanation to 4.5	
Explanation to 4.6	
Explanation to 4.8	
Explanation to 4.9	
Explanation to 4.10	
Explanation to 4.11	
Explanation to 4.12	

Part B3

Information medium: *Paper*

Type in the brand name(s) relating to this questionnaire:	
This questionnaire relates to the following countries:	
Denmark	☐
France	☐
Germany	☐
Ireland	☐
Italy	☐
Netherlands	☐
Poland	☐
United Kingdom	☐

Arrangements relevant to independent repairers, roadside assistance operators and automobile clubs

1 Information Access

1.1 What kind of information packages are available?

1.1.1 Package with technical information for all models	☐ yes ☐ no
1.1.1.1 If yes, fill in costs for a one-time delivery	EURO
1.1.1.2 If yes, fill in costs for a subscription	EURO/year
1.1.2 Package with technical information for one single model	☐ yes ☐ no
1.1.2.1 If yes, fill in costs for a one-time delivery	EURO
1.1.2.2 If yes, fill in costs for a subscription	EURO/year
1.1.3 Package with technical information for one specific vehicle system (e.g. engine system) for all models	☐ yes ☐ no
1.1.3.1 If yes, fill in costs for a one-time delivery	EURO
1.1.3.2 If yes, fill in costs for a subscription	EURO/year
1.1.4 Other	☐ yes ☐ no If yes, explain in AB3

1.2 Access Conditions

1.2.1 One-time delivery of a package of documents	
1.2.1.1 How long does it take to get the documents (delivery time)?	days
1.2.1.2 What is the percentage of covered vehicles produced within the last 10 years?	%

1.2.2	Subscription for a package of documents	
1.2.2.1	What is the minimum subscription period?	months
1.2.2.2	What is the cancellation period of this contract?	months
1.2.2.3	What is the percentage of covered vehicles produced within the last 10 years?	%
1.2.2.4	How long does it take to get the documents (delivery time)?	days
1.2.2.5	How often do you provide updates?	times/year

1.3	How is the payment to be made?	
1.3.1	By bank transfer	☐ yes ☐ no
1.3.2	By credit card	☐ yes ☐ no
1.3.3	By debit	☐ yes ☐ no
1.3.4	Other payment method	☐ yes ☐ no If yes, explain in AB3
1.3.5	Do you offer special discounts?	☐ yes ☐ no If yes, explain in AB3

1.4	How are the paper information packages distributed?	
1.4.1	Directly by the manufacturer?	☐ yes ☐ no
1.4.2	By the local authorized operators?	☐ yes ☐ no
1.4.3	By any other organisation?	☐ yes ☐ no

	If yes, explain in AB3

1.5 Number of users

1.5.1 How many independent users are purchasing technical information on paper per year	[users/year]

1.6 Which languages are provided?

1.6.1 Czech	☐ yes	☐ no	1.6.2 Danish	☐ yes	☐ no
1.6.3 Dutch	☐ yes	☐ no	1.6.4 English	☐ yes	☐ no
1.6.5 Estonian	☐ yes	☐ no	1.6.6 Finnish	☐ yes	☐ no
1.6.7 French	☐ yes	☐ no	1.6.8 German	☐ yes	☐ no
1.6.9 Greek	☐ yes	☐ no	1.6.10 Hungarian	☐ yes	☐ no
1.6.11 Italian	☐ yes	☐ no	1.6.12 Latvian	☐ yes	☐ no
1.6.13 Lithuanian	☐ yes	☐ no	1.6.14 Norwegian	☐ yes	☐ no
1.6.15 Polish	☐ yes	☐ no	1.6.16 Portuguese	☐ yes	☐ no
1.6.17 Romanian	☐ yes	☐ no	1.6.18 Slovenian	☐ yes	☐ no
1.6.19 Spanish	☐ yes	☐ no	1.6.20 Swedish	☐ yes	☐ no
1.6.21 Other	☐ yes	☐ no If yes, explain in AB3			

1.7 Information structure

1.7.1 Is there a difference between the information structure provided to authorized operators and to independent operators?	☐ yes	☐ no If yes, explain in AB1

2 Scope of Technical Information

2.1 How do you ensure an unambiguous vehicle identification?

2.1.1	By VIN (Vehicle Identification Number)	☐ yes ☐ no
2.1.2	By a selective list (e.g. model, model year, engine capacity)	☐ yes ☐ no
2.1.3	Other	☐ yes ☐ no If yes, explain in AB3
2.1.4	Does this identification clearly identify all original equipment (incl. respective part numbers)?	☐ yes ☐ no If no, explain why in AB3

2.2 Which search criteria do you use (e.g. in the index?)

2.2.1	Search by Diagnostic Trouble Codes (DTC)	☐ yes ☐ no
2.2.2	Search by symptoms (e.g. gearbox rattling)	☐ yes ☐ no
2.2.3	Search by systems (e.g. brake system)	☐ yes ☐ no
2.2.4	Search by components (e.g. brake pad)	☐ yes ☐ no
2.2.5	Search by OE Part Number	☐ yes ☐ no
2.2.6	Search by special tools names	☐ yes ☐ no
2.2.7	Search by warning indication (e.g. ABS indicator lamp)	☐ yes ☐ no
2.2.8	Other	☐ yes ☐ no If yes, explain in AB3

2.3 Which kind of information do your documents provide?

2.3.1 General Information

2.3.1.1 Functional descriptions (e.g. Common Rail Injection)	☐ yes	☐ no
2.3.1.2 Fitting and removal processes (e.g. gearbox replacement)	☐ yes	☐ no
2.3.1.3 Work plans and job times	☐ yes	☐ no
2.3.1.4 Electrical wiring diagrams	☐ yes	☐ no
2.3.1.5 Hydraulic wiring diagrams	☐ yes	☐ no
2.3.1.6 Pneumatic wiring diagrams	☐ yes	☐ no
2.3.1.7 Emission related information	☐ yes	☐ no
2.3.1.8 Body repair Information (e.g. dimensions, tolerances, corrosion protection)	☐ yes	☐ no
2.3.1.9 Welding instructions (e.g. welding temperature)	☐ yes	☐ no
2.3.1.10 Pick-up points for lifting platform	☐ yes	☐ no
2.3.1.11 Tightening torque figures	☐ yes	☐ no
2.3.1.12 Axle settings (e.g. toe, camber)	☐ yes	☐ no
2.3.1.13 Brake clearance	☐ yes	☐ no
2.3.1.14 Operating fuels	☐ yes	☐ no
2.3.1.15 Wheel-tire combinations	☐ yes	☐ no

2.3.2 Maintenance and service information			
2.3.2.1	Service intervals	☐ yes	☐ no
2.3.2.2	Service instructions incl. work plans	☐ yes	☐ no
2.3.2.3	Re-initialisation of maintenance indicator	☐ yes	☐ no
2.3.3 Test and diagnosis information			
2.3.3.1	Location of diagnostic connector	☐ yes	☐ no
2.3.3.2	Meaning of manufacturer specific Diagnostic Trouble Codes (DTC)	☐ yes	☐ no
2.3.3.3	Information on ECU software versions	☐ yes	☐ no
2.3.3.4	Test procedures	☐ yes	☐ no
2.3.3.5	Test parameters (e.g. temperature of transmission fluid)	☐ yes	☐ no
2.3.3.6	Test values under certain driving conditions (e.g. signal of yaw rate sensor at straight-line driving in Volt))	☐ yes	☐ no
2.3.4 Spare Parts			
2.3.4.1	Spare part numbers	☐ yes	☐ no
2.3.4.2	Matching of spare part list with identified vehicle is possible	☐ yes	☐ no
2.3.4.3	Spare part identification by graphical representation is possible	☐ yes	☐ no
2.3.5 Special tools (except diagnostic scan tools)			
2.3.5.1	A list on special tools is provided for each vehicle	☐ yes	☐ no
2.3.5.2	Description of intended use exists for each tool	☐ yes	☐ no

3 Test Cases

Please specify for each of the following test cases the costs to purchase the necessary repair information and the name and price of all special tools that are needed to complete the job in an independent workshop (assuming that the repair shop uses the most economic solution to get the information and tools).

Assumption for Passenger Cars: Mid-size vehicle
Assumption for Trucks: Heavy-duty truck
Please indicate the assumed models in AA

Please attach the relevant technical information in a digital format or on paper.

3.1 Test Case 1: Replacement of a defective engine ECU

Necessary technical information:

- Vehicle identification
- Diagnosis and fault identification
- Fitting and removal process
- Spare parts
- Special tools
- Job times
- Re-initialisation, coding and pass-through programming (if necessary) procedures
- Re-mobilisation of vehicle immobiliser (if necessary)
- Reset of fault memory

3.1.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.1.2 Minimal costs for necessary technical information in paper format	EURO

Necessary special tools:

- Diagnostic scan tool for fault identification and reset of fault memory
- Diagnostic scan tool for re-initialisation and coding
- Pass-through programming tool (if necessary)
- Tool for re-Mobilisation of vehicle immobiliser (if necessary)

3.1.3 Minimal costs for necessary special tools	EURO

3.2 Test Case 2: Maintenance and service instructions

Necessary technical information:

- Vehicle identification
- Fault memory reading
- Oil change
- Filter change (oil/air/petrol/passenger compartment)
- Check of operation fluids
- Brake system check
- Emission control
- Axle system check (tires, suspension)
- Reset of service interval
- Spare parts
- Special tools
- Job times

3.2.1 Please indicate the assumed model for the Mid-size vehicle or the Heavy-duty truck.	
3.2.2 Minimal costs for necessary technical information in paper format	EUR

Necessary special tools:

- Diagnostic scan tool for fault memory reading and resetting
- Diagnostic tool for emission control
- Diagnostic scan tool for reset of service interval

3.2.3 Minimal costs for necessary special tools	EUR

4 Please name any differences in the documents provided to the authorized operators and those for independent operators

4.1	Are the purchase options different (1.2)?	☐ yes ☐ no if yes, explain in AB3
4.2	Is the payment is different (1.3)?	☐ yes ☐ no if yes, explain in AB3
4.3	Are the provided languages different (1.6)?	☐ yes ☐ no if yes, explain in AB3
4.4	Is the vehicle identification different (2.1)?	☐ yes ☐ no if yes, explain in AB3
4.5	Are the provided search criteria different (2.2)?	☐ yes ☐ no if yes, explain in AB3
4.6	Is the content of general technical repair information different (2.3.1)?	☐ yes ☐ no if yes, explain in AB3
4.7	Is the content of maintenance and service information different (2.3.2)?	☐ yes ☐ no if yes, explain in AB3
4.8	Are the information on test and diagnosis different (2.3.3)?	☐ yes ☐ no if yes, explain in AB3

4.9	Are the information on spare parts different (2.3.4)?	☐ yes ☐ no if yes, explain in AB3
4.10	Are the information on special tools different (2.3.5)?	☐ yes ☐ no if yes, explain in AB3

5 Please provide us with a copy of the documents/papers intended to operators and containing technical information.

Annex B3 (AB3)

Information medium: *Paper*

Explanation to 1.1.4	
Explanation to 1.3.4	
Explanation to 1.3.5	
Explanation to 1.4.3	
Explanation to 1.6.21	
Explanation to 1.7.1	
Explanation to 2.1.3	
Explanation to 2.1.4	
Explanation to 2.2.8	
Explanation to 4.1	
Explanation to 4.2	
Explanation to 4.4	
Explanation to 4.5	
Explanation to 4.6	
Explanation to 4.7	
Explanation to 4.8	
Explanation to 4.9	
Explanation to 4.10	