

V O L V O

VOLVO STANDARD TIME (VST)

FOREWORD AND INTRODUCTION

Contact
helpdoc@volvocars.com

CONTENTS

1	INTRODUCTION.....	3
1.1	Time units.....	3
1.2	Purpose.....	3
2	OPERATION NUMBER.....	4
2.1	Time explanations.....	5
2.2	Sub stages/sub work.....	6
2.3	Non time set work.....	7
3	VOLVO CARS TECHNICIAN SKILL STANDARD.....	8
4	CUSTOMER SYMPTOM CODES.....	9
4.1	Diagnostic Trouble Codes.....	11

1 INTRODUCTION

Volvo Standard Time (VST) is a function in VIDA under Operations/Operations and Packages depending on level of access. VST contains operation numbers and standard times for the most frequently occurring repair work in a workshop. It covers all existing models from, and including, the 200 series onwards.

The times for the different operations are the basic times that a technician with the proper training needs to perform the work. This is on the condition that all the prescribed equipment, hand tools as well as special tools and technical information, distributed by Volvo Cars, are available within the work area.



Note

The times are continuously updated, in order to guarantee high quality and timeliness of VST.

The times can be adjusted when required, due to changing methods, techniques, equipment or other developments within the automotive industry.

The tasks have been performed and the times studied within Volvo Cars method workshop.

1.1 Time units

The time required to perform a specific operation is measured in Job Value (JV), which is specified in the form of 1/10 hour. "JV 1" is therefore equivalent to six minutes and "JV 10" is equivalent to one hour.

1.2 Purpose

With the introduction of the times in VST, methods can be followed in VIDA. The most common field-work is covered in terms of:

Planning: VST is used for planning work in the workshop. Once you know how long a job takes, you can use the workshop more effectively.

Salary and bonus system: Since all jobs in VST have fixed job values, the system can be used as a basis for different salary and bonus systems.

Budget: VST is ideal for following up operations at the workshop, for example: sold hours, billing per hour, service costs per car etc.

Billing and package pricing: With VST it is possible to provide the customer with fixed price labour costs.

2 OPERATION NUMBER

The Operations and Packages information structure in VIDA is built on the categories Mechanical, Body, Paint, Accessories, General Operations and Local Operations. These categories are sorted into several function groups/chapters (0-8).

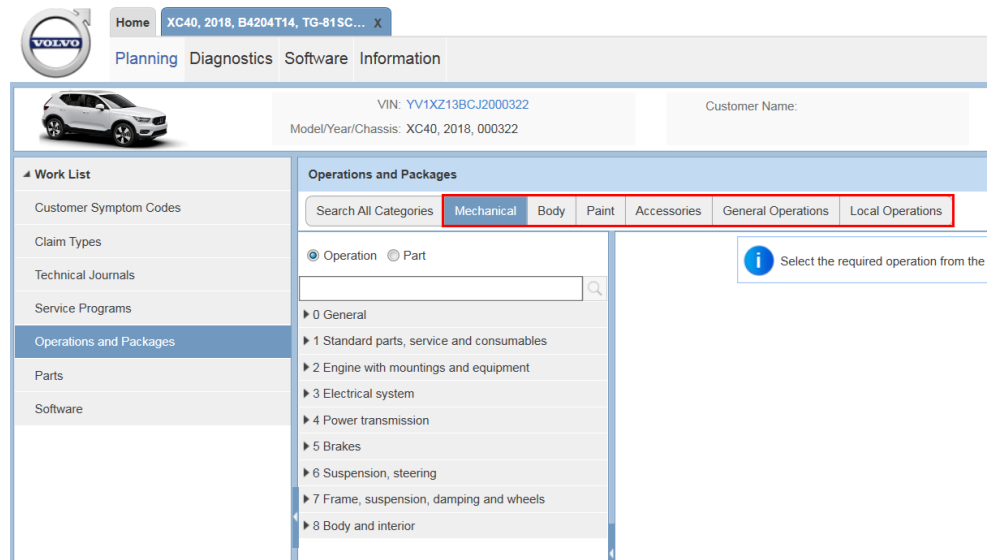


Fig. 1 The categories in Operations and Packages (highlighted in red) in VIDA.



Note

Software download is included in all operations in the Accessories category where download is required. For chapters 2-8 (replacement parts) software downloads are not included, except where specifically stated by the job scope.

An operation number consists of five digits followed by a type code. The first digit represents the function group/chapter, the first two digits make the group, the first three digits make the section. The fourth and the fifth digit represents the serial number. The last digit in the operation number is the type code. Further information regarding these is found after the table below.

Operation number structure						
2	3	4	2	8	-	2
Chapter						
Group						
Section			Serial number			Type code

Chapter

1	Standard parts, service and consumables
2	Engine with mountings and equipment
3	Electrical system

4	Power transmission
5	Brakes
6	Suspension, steering
7	Frame, suspension, damping and wheels
8	Body and interior



Note

For chapter 8 (Body and interior) the times for work on the vehicle's body, e.g. BONNET REPLACEMENT, FRONT WING REPLACEMENT etc. are not intended to be used in the event of collision damage.

The following type codes are used:

-0 = Package work. Type -0 jobs are defined as complete jobs and include everything, such as preparation time, repair time and other additional jobs needed to do the job from start to finish. It contains one or several types of -2 jobs in combination with one or more type -3 jobs.

-1 = Preparatory work, e.g. checking components.

-2 = Normal work. Complete job, i.e. all procedures included from the start of work to finish.

-3 = Additional work. Used in connection with type -2.



Note

Operation number with type code -3 is never used separately.

2.1 Time explanations

The individual times specified in VST consist of the following parts. Combined, they result in the total time.

TOTAL TIME = WORK TIME (WT) + DISTRIBUTION OF TIME (UT) + INTERNAL BI-TIME (ST)

VST does not include removing and installing auxiliary equipment that obstructs the work.

Work time (WT): This time only applies to the technician's own equipment and tools, as recommended for the job. The work time includes:

- The time required for execution of the work
- Collection of standard equipment and tools from the tool cabinet and returning them at each start and end of a job
- Collection and return of hand tools during the work

Distribution of time (UT): The distribution of time is 36 %.

Distribution of time or necessary unproductive time includes among other things:

- Conversation with foreman
- Helping colleagues
- Administrative work
- Conversation with colleague (job related)

- Await access to foreman
- Washing hands
- Reading technical information
- Organising tools
- Await access to tools
- Conversation with customer
- Personal needs

BI-times (ST): Vary from time to time depending on the type of work. The BI-times can consist of:

- Collecting and removing special tools
- Transporting parts to and from washing area
- Transporting parts to and from unit area
- Collecting and transporting away portable, general workshop equipment
- Collecting and transporting away rolling, general workshop equipment, e.g. vacuum cleaners, garage jacks, transmission jacks etc.

Test driving

Test driving when fault tracing CSCs is included in the time for mechanical CSCs which requires it. Note that the time for test driving is based on the average time it takes to detect the problem.

Test driving is included in the time for ordinary repair work if the service solution in VIDA requires it.

All other test drives are included in the distribution of time and must not be allocated via foreman operations.

2.2

Sub stages/sub work

The method technician creates a method by verifying the work in the car.

The time setter verifies the method in time and records all stages of the work, as well as verifying that the method corresponds to the variant and is optimised from a time perspective.

Sub work is created for each sub stage in a job. It includes all screws, nuts, lubrication, tools etc. that are needed for each sub stage of the job. The complete time is then built up by all the sub work and generates an end time. An example of a standard time is: 33118-2 Starter motor remove-install/replace. In the table below, all the sub stages/sub work is found:

900-00-B	Bonnet open and close
863-01-G4	Cover over engine remove-install
311-01-F2	Covers 2x battery remove-install
311-01-D9	Battery remove-install
311-01-DI	Battery tray remove-install
311-01-DK	End battery tray remove-install
863-05-K5	Splash guard under engine remove-install
900-30-A	Unpacking material
254-97-F	Vacuum reservoir remove-install

331-01-P	Starter motor remove-install
• S04B03	Starter motor remove-install (SCREW/NUT<16MM, TX>50,IN<)
• S04B02	Cables remove-install (SCREW/NUT<16MM, TX>50,IN<)
• O05B02	Starter motor remove-install (OBJECT-TIME)

900-10-B	Check function
----------	----------------

= Operation No. 33118-2 Starter motor remove-install/replace

2.3 Non time set work

Non time set work is always designated by the number 9 as the fifth digit in the operation number and is found at the end of each section.

A non time set operation number, so-called foreman arrangement, is usually used when a suitable operation number is not available.

When using a non time set operation number, it is important to specify the work as accurately as possible. This way, the customer will know what is done.



Note

The use of general operation numbers may only occur when ordinary operation numbers are not available, or when difficult problems arise during the work.

For general operations, there is no predefined job value. In these cases an input field is available so that the job value can be entered manually.

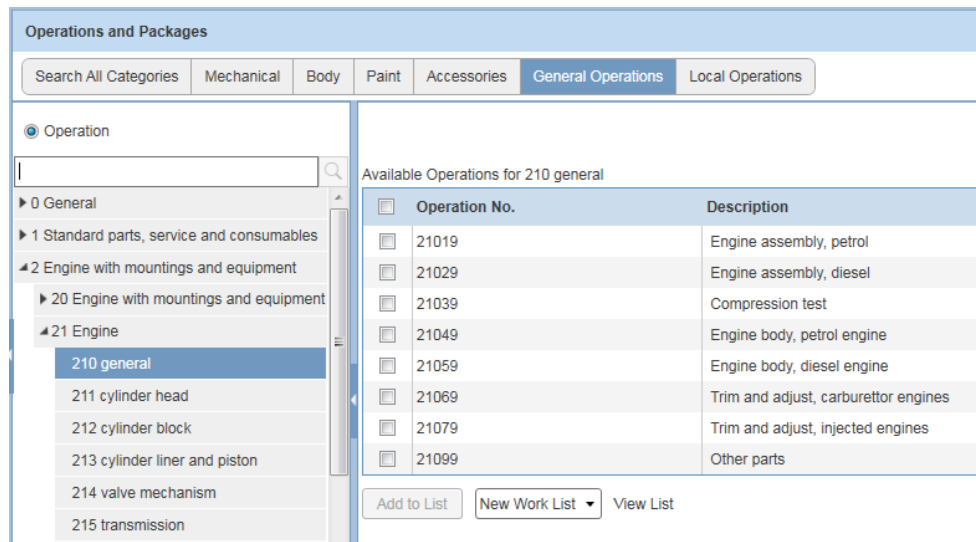


Fig. 2 The General Operations tab in VIDA showing non time set work with the number 9 as the fifth digit.

3 VOLVO CARS TECHNICIAN SKILL STANDARD

The following information is an overview related to the skill level of each Volvo Cars technician. In VIDA, the required skill level for each operation is displayed in the Skill column.

There are these levels for Volvo Cars technicians:

- Level 1
- Level 2
- Level 3
- Level 4

Operations and Packages																																																											
<div>Search All Categories</div> <div>MechanicalBodyPaintAccessoriesGeneral OperationsLocal Operations</div>																																																											
<div> <input checked="" type="radio"/> Operation <input type="radio"/> Part </div> <div> <input type="text"/> <input type="button" value="Search"/> </div> <div> <div>General</div> <div>Standard parts, service and consumables</div> <div>Engine with mountings and equipment</div> <div>Electrical system</div> <div>Power transmission</div> <div>41 Clutch system</div> <div>43 Transmission <div>430 gearbox</div> <div>431 manual gearbox</div> <div>432 gear lever carrier, gear select controls</div> <div>433 adapter trans., angle gear and overdrive</div> <div>437 auto, transmission (hydromechanical)</div> </div> <div>45 Propeller shaft</div> <div>46 Rear axle, drive shafts</div> <div>49 Miscellaneous</div> </div>																																																											
<div>Available Operations for 432 gear lever carrier, gear select controls</div> <table> <tr> <th><input type="checkbox"/></th><th>Operation No.</th><th>Description</th><th>Variant Desc</th><th>Skill</th></tr> <tr> <td><input type="checkbox"/></td><td>43212-2</td><td>Gear lever knob without lighting replace</td><td>XC40</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>43214-2</td><td>Gear selector replace Excl. 36004-2</td><td>XC40</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>43220-2</td><td>Solenoid PNP switch / shift lock replace</td><td>XC40</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>43227-2</td><td>Gear cable adjusting</td><td>XC40</td><td>1</td></tr> <tr> <td><input type="checkbox"/></td><td>43230-2</td><td>Gear lever knob with lighting replace</td><td>XC40</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>43237-2</td><td>Transmission actuator remove-install/ replace</td><td>XC40</td><td>3MH</td></tr> <tr> <td><input type="checkbox"/></td><td>43238-2</td><td>Control mod elect gear actuator (TACM) remove-install/replace Excl. 36004-2 Software control module download</td><td>XC40</td><td>1</td></tr> <tr> <td><input type="checkbox"/></td><td>96176-3</td><td>Troubleshooting gearbox: MQ</td><td>VOLVO All</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>96320-2</td><td>Troubleshooting gearbox: F5</td><td>VOLVO All</td><td>2</td></tr> <tr> <td><input type="checkbox"/></td><td>96408-2</td><td>Troubleshooting gearbox: V9</td><td>VOLVO All</td><td>3MH</td></tr> </table> <div> <input type="button" value="Add to List"/> <input type="button" value="New Work List"/> <input type="button" value="View List"/> </div>					<input type="checkbox"/>	Operation No.	Description	Variant Desc	Skill	<input type="checkbox"/>	43212-2	Gear lever knob without lighting replace	XC40	2	<input type="checkbox"/>	43214-2	Gear selector replace Excl. 36004-2	XC40	2	<input type="checkbox"/>	43220-2	Solenoid PNP switch / shift lock replace	XC40	2	<input type="checkbox"/>	43227-2	Gear cable adjusting	XC40	1	<input type="checkbox"/>	43230-2	Gear lever knob with lighting replace	XC40	2	<input type="checkbox"/>	43237-2	Transmission actuator remove-install/ replace	XC40	3MH	<input type="checkbox"/>	43238-2	Control mod elect gear actuator (TACM) remove-install/replace Excl. 36004-2 Software control module download	XC40	1	<input type="checkbox"/>	96176-3	Troubleshooting gearbox: MQ	VOLVO All	2	<input type="checkbox"/>	96320-2	Troubleshooting gearbox: F5	VOLVO All	2	<input type="checkbox"/>	96408-2	Troubleshooting gearbox: V9	VOLVO All	3MH
<input type="checkbox"/>	Operation No.	Description	Variant Desc	Skill																																																							
<input type="checkbox"/>	43212-2	Gear lever knob without lighting replace	XC40	2																																																							
<input type="checkbox"/>	43214-2	Gear selector replace Excl. 36004-2	XC40	2																																																							
<input type="checkbox"/>	43220-2	Solenoid PNP switch / shift lock replace	XC40	2																																																							
<input type="checkbox"/>	43227-2	Gear cable adjusting	XC40	1																																																							
<input type="checkbox"/>	43230-2	Gear lever knob with lighting replace	XC40	2																																																							
<input type="checkbox"/>	43237-2	Transmission actuator remove-install/ replace	XC40	3MH																																																							
<input type="checkbox"/>	43238-2	Control mod elect gear actuator (TACM) remove-install/replace Excl. 36004-2 Software control module download	XC40	1																																																							
<input type="checkbox"/>	96176-3	Troubleshooting gearbox: MQ	VOLVO All	2																																																							
<input type="checkbox"/>	96320-2	Troubleshooting gearbox: F5	VOLVO All	2																																																							
<input type="checkbox"/>	96408-2	Troubleshooting gearbox: V9	VOLVO All	3MH																																																							

Fig. 3 The Skill column (highlighted in red) in VIDA.

4 CUSTOMER SYMPTOM CODES

Customer Symptom Codes (CSCs) are used to describe how the customer/user experiences a problem/fault, i.e. how it manifests itself. It is a collection of codes designed to facilitate the dialogue with customers and considerably facilitates the work of, for example, searching for Technical Journals.

CSCs are chosen according to the customer's description and found in the relevant group (e.g. Noise in Function Group) in VIDA. When the CSC is added to the Work List, the connected operation is also included in the planned work. In VIDA Help, it is described further how to perform this procedure.

Cause codes

Cause codes always need to be included in a claim. The list below shows the cause codes at the time of writing. The latest ones can be found in QW90.

01	PERFORMED INSPECTION
02	PERFORMED REPAIR
03	INTERRUPTED DOWNLOAD SERVICE 2.0
04	EXCHANGE/REPAIR OF HYBRID BATTERY
09	COMMERCIAL GOODWILL
10	DEFECT COMPONENT
11	WRONG COMPONENT FITTED
12	COMPONENT MISSING
13	INSUFFICIENT AMOUNT
14	OVERFULL
15	WRONGLY FITTED, WRONGLY CONNECTED
16	WRONG SETTING
20	LOOSE
21	SCREW JOINT LOOSE
22	POOR ADHESION
23	DEFORMED
24	BURNT
25	JAMMED
26	BLOCKED
27	POOR SEAL, LEAKAGE
28	MOISTURE
40	WORN
41	RUBBED
42	SEIZED UP
43	BROKEN

44	STICKS
45	OUT OF ROUND
50	OPEN CIRCUIT
51	SHORT-CIRCUIT
60	CASTING FAULT
61	WELDING FAULT
62	SEALANT FAULT
63	SURFACE CORROSION
64	CORRODED THROUGH
80	COLOUR DEVIATION
81	PAINT RUN
82	DIRT IN PAINT
83	ORANGE PEEL SURFACE
84	PAINT COAT TOO THIN
85	TOUCH-UP VISIBLE
86	GRINDING SCRATCHES
87	SCRATCHES IN PAINT
88	CRACKED SURFACE
89	BLISTERING
90	PAINT SCRAPED
91	CHIPPED PAINT
92	AIRBORNE CONTAMINATION
93	MECHANICAL IMPACT ON PAINTWORK
97	INTERRUPTED DOWNLOAD
98	VOLVO PROGRAM
99	CAUSE UNKNOWN

Operation number for fault tracing CSCs

The operation numbers for fault tracing are based on what the customer experiences as problems with the car. All operation numbers of this kind cover the currently active CSCs that might be fault traceable, the exception is appearance related operation numbers.

As what the customer experiences is highly subjective, the nature of the fault can vary from one time to another. This means that a single CSC can be traced to several different types of problems with the car. The time needed for fault tracing may therefore differ, which is also reflected in the time that is an average time for all possible fault tracing on the CSC.

This section is based on the fact-based studies conducted at Volvo Cars Global Customer Service in connection with the production of the new time work, based on the most frequent faults that the fleet suffers from today. All operation numbers for fault tracing CSCs are running numbers under the 96XXX number series in no particular order. Searches can be made on operation title in VIDA as follows:

1. Click on the **SEARCH** tab
2. Click on **CSC**
3. Enter the CSC



Note

The search function searches for anything that has to do with CSCs, even combinations found in the title for example. This is why several hits may appear in the results.

Using CSC fault tracing operation number

As CSC fault tracing operations exist to increase customer satisfaction, it is of the utmost importance that these are not used incorrectly. It is important that the correct CSC is used for the problem the customer experiences. If the fault on the vehicle is established without the need of significant fault tracing, above and beyond what is included within the specific VST for repair, the VST for CSC fault tracing should not be invoiced regardless of the end customer (retail job or warranty repair).

When using CSC fault tracing for warranty it is not permitted to allocate more than one fault tracing VST per job. The CSC on the repair order must match the CSC fault tracing VST that is claimed. Jobs submitted incorrectly will be amended in analysis.

Example of an incorrect warranty order: CSC PE is stated on the warranty order, but the stated operation number for the fault tracing is 96002-2 Fault tracing instrumentation: 7G, and the replacement part is fuel pump. In this example it is perceived that the customer indicated a problem with the wheel brakes, but the instrumentation has been fault traced and the fuel pump replaced. This is an example that would be amended in analysis.

Example of a correct warranty order: CSC PE is stated on the warranty order, the stated operation number for fault tracing is 96377-2 Fault tracing wheel brakes: PE, and corrective action part is suspension adjustment. In this example there is an obvious logic that can be followed systematically.

4.1 Diagnostic Trouble Codes

Diagnostic Trouble Codes (DTCs) are used to show that one or several of the car control modules have detected a fault. To determine which DTC is to be analysed, a CSC must always be allocated before performing a readout on the car. The DTCs are then fault traced according to standard practice for fault tracing.

