Vehicle Servicing and Repairing

Level II

Learning Guide -#37

Unit of Competence: - Carrying out Wheel Alignment

Module Title: - Carrying out Wheel Alignment

LG Code: EIS VSR2 M10 LO1-LG-37

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LO 3: Complete documentation and service history document

Instruction Sheet	**Complete documentation and service history document**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- ❖ Update service history
- ❖ Document before and after alignment measurements
- ❖ Process Job card

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- ➢ Carry out wheel alignment pre-checks
- ➢ Perform vehicle wheel alignment
- ➢ Complete documentation and service history documents
- ➢ Clean-up work area and maintain equipment

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet and 3 Sheet”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check and 3 Self-check in page -72, 75, and 80 respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 ” in page -81
6. Do the “LAP test” in page – 16 (if you are ready).

Information Sheet-1	Update service history

Update service history

if you want to check a vehicle's history for free, first find its vehicle identification number, or “vin,” on the driver's side door jamb. you can then go online and enter the vin to get a free vehicle history report from a service like auto check or car fax the. Service history of a car consists of any maintenance work done on a vehicle, regardless of the frequency, difficulty, or cost. Perhaps the most common maintenance performed on a vehicle is to regularly change the oil. Other typically quick and common forms of maintenance are the replacement of cabin and engine air filters, windshield wipers, and batteries. These are all typically quick, easy ways to maintain a vehicle.

This means extra fuel costs, and can lead to a breakdown in the future. It’s also important to ensure the tires are balanced and rotated. Having the car properly aligned also prevents the need to replace all four tires at once (which can be very expensive) due to uneven wear.

But there are some records in the service history of a car which are more important to look out for.

A snapped timing belt can also lead to an engine replacement being necessary, which increases the costs of repair significantly.

Without having the service history of a car, it’s very difficult to know if and when this maintenance has been performed.

SERVICE HISTORY REPRESENTS GOOD OWNERSHIP

One of the greatest benefits of buying a vehicle which includes with the service history, is the peace of mind it brings with it.

If the previous owner kept all of the service and maintenance receipts, one could assume they drove the car with pride and wanted to ensure it was in the best technical condition possible.

This is usually seen as a plus for used car shoppers, as it is preferable to buy a vehicle which was driven with love, rather than abuse. While a stack of service records doesn't automatically mean the vehicle is in perfect condition, it is still a good sign.

Used cars shoppers will learn quickly that the previous owner doesn't always keep the service history of a car. If the owner of vehicle you're interested in doesn't have the records available, this doesn't necessarily equal a red flag for the vehicle. Some owners perform the regular maintenance, but aren't the type to keep records. Or sometimes the owner simply lost them .

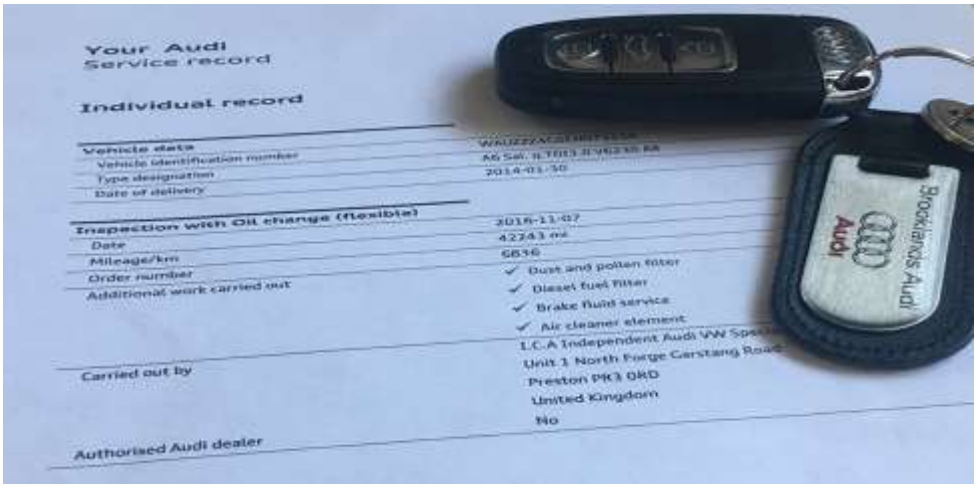
If the vehicle was serviced by an official manufacturer or franchised dealership, records are maintained in their computer system. It is often easy enough to obtain them from the dealership directly.

. These vehicles carry a much higher risk. Buyers should be aware that problems can, and often do, arise when a vehicle has no service history. Accidents can occur due to an unforeseen mechanical failure. Repairs tend to accumulate as one problem is often times connected to another. For these reasons and more, it's very important to find out if the vehicle has been properly maintained.

Thankfully there is another, easier way to find out the service history of a car.

Check the service history on the car fax report

The car fax Vehicle History Report contains all reported service and maintenance records over the course of a vehicle's lifetime. The records are displayed in a clear, easy to read format which details the date and location of the maintenance, as well as which service was performed. The service history of a car should show most of the above mentioned ypes. Below is an example of how the car fax Reportdisplays a vehicle's service history in a clear and easy-to-read way.



Self-Check 1	Written Test

1 **WHAT ABOUT VEHICLES WITH NO SERVICE HISTORY?**

2 What is the purpose of wheel alignment update service history?

3 What is the SERVICE HISTORY REPRESENTS GOOD OWNERSHIP?

Information Sheet-2	Document before and after alignment measurements

Document before and after alignment measurements

Alignment equipment adjustment calibration and documentation

it is important to ensure that the alignment rack and equipment you use at your dealership is properly calibrated, and make certain that it is level. Your alignment equipment should be routinely caliber in order for it to give accurate readings. A copy of the yearly alignment machine calibration certification must be held on file in the service dept. if any instrument that is part of the alignment machine is dropped or damaged, calibration should be checked immediately.

Important: in order to properly document any warranty alignment claim, a copy of the alignment machine printout showing the before and after alignment readings must be attached to the repair order. If you do not attach the before and after alignment readings item to the repair order, the claim may be denied (rejected or charged back. turn plates and slide plates.

Make sure the “turn plates” and “slide plates” are in good working order. The surface of the front turn plates must be level with (the same height as) the rack surface. If height is not the same; have the equipment repaired before performing any alignments.

Updated may 16, 2019 the term "wheel alignment" refers to all the elements that make your car go straight. It involves three main measurements: caster, camber, and toe. To realign your car, a technician will uses standard measurements as targets for adjustment. Most modern cars have adjustments only for toe.

Caster and camber were rendered unnecessary by the McPherson strut, which began to be widely adopted in the 1960s. A backward tilt is positive; a forward tilt is negative. Caster is affected by vehicle height, so it is important to keep the body at its designed height. An overloaded vehicle or one with a weak or sagging rear spring will affect caster. When the rear of the vehicle is lower than its designated trim height, the front suspension moves to a more positive caster. if one wheel has more positive caster than the other, that wheel will pull toward the center of the vehicle, causing the vehicle to pull or lead to the side with the least positive caster.

Camber

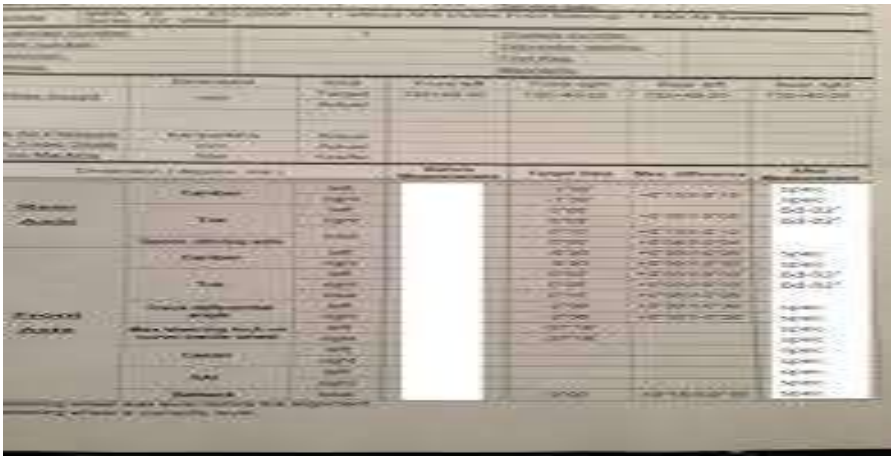
Wheel alignment: camber is the tilting of the wheels from the vertical when viewed from the front of the vehicle. When wheels tilt outward at the top, the camber is positive; when wheels tilt inward at the top, the camber is negative. The amount of tilt is measured in degrees from the vertical. Camber settings influence directional control and tire wear.

Too much positive camber will result in premature wear on the outside of the tire and excessive wear on the suspension parts. Too much negative camber will result in premature wear on the inside of the tire as well as excessive wear on the suspension parts. An unequal side-to-side camber of 1° or more will cause the vehicle to pull or lead to the side with the most positive camber.

Toe is a measurement of how much the wheels are turned in or out from a straight-ahead position. When the wheels are turned in, toe is positive; when the wheels are turned out, toe is negative. The actual amount of toe is normally only a fraction of a degree. The purpose of toe is to ensure that the wheels roll parallel. Thrust angle, included angle, and steering axis inclination

The thrust angle is the angle between the thrust line and centerline. if the thrust line is to the right of the centerline, the angle is said to be positive; if the thrust line is to the left of center, the angle is negative. It is the primary cause of an off-center or crooked steering wheel. Correcting rear axle or toe alignment is necessary to eliminate the thrust angle. if that isn't possible, using the thrust angle as a reference line for aligning front toe can restore center steering.

The included angle is the sum of the camber



and steering axis inclination (Sais) angles in a front suspension. this angle is measured indirectly and is used primarily to diagnose bent suspension parts such as spindles and struts.the kingpin offset/scrub radius is the distance from the center of the wheel contact face to the intersection point of the kingpin extension.. The scrub radius is influenced by camber, kingpin angle, and wheel offset of the wheel rim. this is set at the factory and is not adjustable.

Set back is measured with both wheels straight ahead and is used as a diagnostic angle along with caster to identify chassis misalignment or collision damage. The presence of setback can also cause differences in toe-out on turn angle readings side-to-side.

Ride height is the distance between a specified point on the chassis, suspension, or body and the ground. Measuring ride height is an indirect method of determining spring height, which is important because it affects camber, caster, and toe.

NOTE: All specifications are given in degrees.

NOTE: All wheel alignments are to be set with the vehicle at curb height.

NOTE: Each of the following tables refers to a vehicle equipped with a specific size OEM wheel (except Expert).

ALL WITH 15 INCH WHEELS

FRONT WHEEL ALIGNMENT	PREFERRED SETTING	ACCEPTABLE RANGE
CAMBER	-0.30°	-0.90° to -0.10°
Cross Camber (Maximum Side-To-Side Difference)	0.00°	-0.50° to +0.50°
CASTER* - LEFT	+2.90°	+1.90° to +3.80°
CASTER* - RIGHT	+2.60°	+1.60° to +3.60°
Cross Caster (Maximum Side-To-Side Difference)	0.30°	-1.30° to +0.70°
TOE - INDIVIDUAL	+0.10°	0.00° to +0.20°
TOE - TOTAL**	+0.20°	0.00° to +0.40°
REAR WHEEL ALIGNMENT	PREFERRED SETTING	ACCEPTABLE RANGE
CAMBER	-0.40°	-0.80° to 0.00°
Cross Camber (Maximum Side-To-Side Difference)	0.00°	-0.30° to +0.30°
TOE - INDIVIDUAL	+0.10°	0.00° to +0.20°
TOE - TOTAL**	+0.20°	0.00° to +0.40°
THRUST ANGLE	0.00°	-0.10° to +0.10°
Notes:		
* For reference only. These are uncalculatable angles.		
** TOTAL TOE is the sum of both the left and right wheel toe settings. TOTAL TOE must be equally split between each wheel on the same axle to ensure the steering wheel is centered after setting toe.		
Positive toe (+) is toe-in and negative toe (-) is toe-out.		

A **document** is a material that provides official information as evidence. It is Information used to support an effective and efficient organizational operation. A **document** consists of any information you use to run your company.
A **record** is an evidence of the past facts documented.

Self-Check 1	Written Test

1 what is the important of Document before and after alignment measurements?

2 written the wheel alignment before and after procedure of measurement?

Information Sheet-3	Process Job card

❖ Process Job card

A job card is a detailed description of work that is performed for a work order. ... When you create a job card, you specify planning and scheduling information that can be used by the Task Cards and Work Order Tracking applications. A job card is a detailed description of work that is performed for a work order. You use the Job Cards application to create and manage job cards. When you create a job card, you specify planning and scheduling information that can be used by the Task Cards and Work Order Tracking applications. Choose the New action, and then fill in the fields as necessary. Hover over a field to read a short description. Job Card is a key document that records workers' entitlements under MGNREGA.

A record card is related to a specific job. It gives details of the time taken to do a piece of work and the materials used in the process. This is used to allocate direct labor and materials costs. ... A job card is used to keep a close watch on the time spent by a worker on each job. A work order is usually a task or a job for a customer that can be scheduled or assigned to someone. Such an order may be from a customer request or created internally within the organization.

The Gram Panchayat will issue Job Cards to every registered household. This is a critical legal document, which also helps to ensure transparency and protect against fraud. The Job Card is issued immediately after verification, i.e. within a fortnight of the application for registration. It sounds like you are referring to work orders, also known as repair orders. These job cards detail the work required on a specific vehicle including maintenance, customer concerns, and recall campaigns. An Automotive job card is a card related to a specific job. The job card can be used to allocate labor and material cost to a specific job.

AUTOMOTIVE JOB CARD
reach auto erp, December 22, 2017, Uncategorized,2

An Automotive job card is a card related to a specific job. It gives details of the time taken to do a piece of work and the materials used in the process. The job card can be used to allocate labor and material cost to a specific job. Job cards are used in many in industries such as electrical contracting, plumbing and facilities management, Repair Workshops.

Operations that are on the job card include information that is gathered from other applications and describe the following aspects of the work;

1. Details of the labor and information about skill sets and labor cost that are required for the job.
2. The materials that are required to complete the work include parts that are available from the Inventory application and consumable parts that are defined in the Equipment application.
3. Service items that are required to complete the work are available from the Service Items application, which can include unit costs and vendor information if they are available.
4. The tools required to complete the work and their costs are available from the Tools application
5. Access items that must be opened and closed to provide access for the work are available from the Models application

ADVANTAGES OF AUTOMOTIVE JOBCARD

1. Provides First Hand Job-Related Information-Automotive Job card provides first hand information about a job, the materials required, the skill set that is required can all be analyses from the job card.

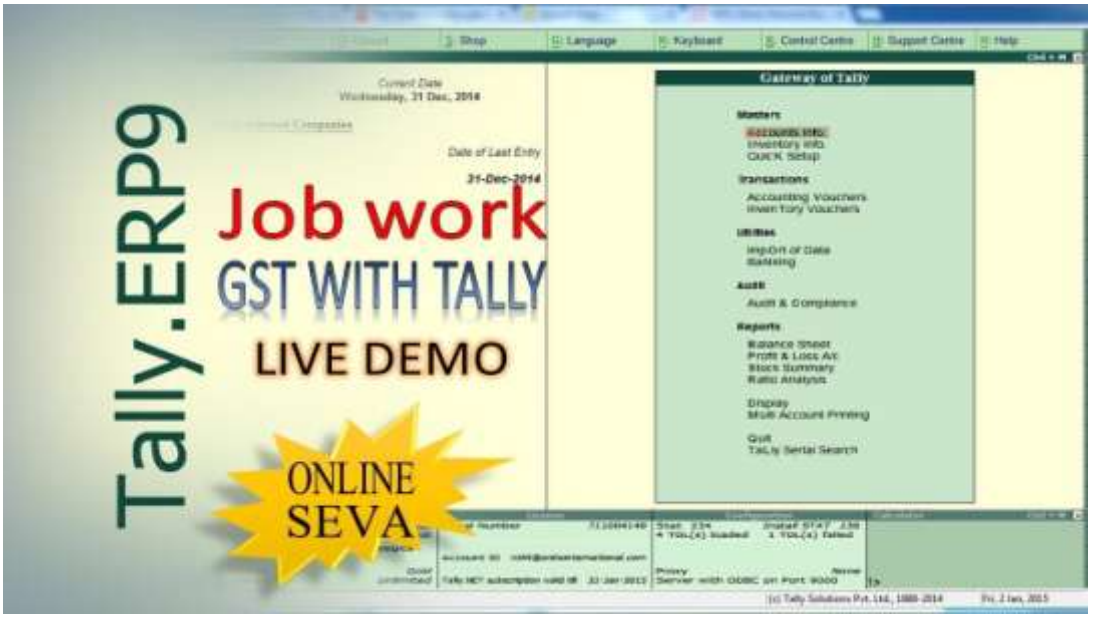
2. Helps in Creating Right Job-Employee Fit – Job Analysis helps them understand what type of employee will be suitable to deliver a specific job successfully.

3. Helps in Establishing Effective Hiring Practices–Job analysis process gives answers to all these questions and helps managers in creating, establishing and maintaining effective hiring practices.

4. Guides through Performance Evaluation and Appraisal Processes – Job Analysis help managers evaluating the performance of employees by comparing the standard or desired output with delivered or actual output. On these bases, they appraise their performances. The process helps in deciding whom to promote and when. It also guides managers in understanding the skill gaps so that right person can be fit at that particular place in order to get desired output.

5. Helps in Analyzing Training & Development Needs: Who to impart training,

ELECTRONIC AUTOMOTIVE JOB card



An electronic automotive job card is simply a way to get rid of paper, replacing it with a form on a computer, tablet or mobile phone which can be filled out by you and your engineers. An automotive job card will have two parts

1. Details of the job – including the address, contact details and any pertinent information about what work is required.
2. A work sheet which your engineer can complete with the details of what has been done.

Ongoing improvements

Putting your information into electronic form also means that you can better analysis what work has been done over time. This may be required by particular customers but could also help you streamline and improve your business allowing you to better allocate resources and concentrate on the jobs that add the most to your bottom line.

Leads from all sources, Leads extractions via mail server, Converting leads to appointments, Quotes,Converting quotes to Invoices, Email-SMS update, Delivery status update, Work pending strategy

Operations and Process Product & Service Grouping, Customized Invoice with Logo, Small, Medium or Large scale operations ,Retail or Whole sale enabled ,Product service and maintenance, Go down & Showroom wise operations etc.

Access across tabs, iPods, phones and android phones, pick photos of expense vouchers and attach to expenses, raise invoices, check cash and bank balances, daily profitability and other key reports on phone.

Repair Management

Create Job sheets and sums quotes to customers for approval. Manage both in-house and on-field repair staff. Pre-set the consumables needed for every repair and bring them automatically when you prepare the job sheets. Track the items which came in for repair.

CUSTOMER APPROVAL

Approval on the job, need not be obtained from customer through calls, instant approvals can be obtained through sums/whatsapps. This saves the time of both the customer and the mechanic and also the customer is saved from annoying calls.

MECHANIC MANAGEMENT

The job card feature in the software enables work to be assigned to mechanics. This acts a quality assurance check for every job.

Self-Check 1	Written Test

1 **WHAT IS VEHICLE STATUS ALERT**?

2 WHAT IS THE ADVANTAGES OF AUTOMOTIVE JOB CARD?

Operation sheet	Learning Guide #3	Learning Guid

Operations that are on the job card include information that is gathered from other applications and describe the following aspects of the work;

1. Details of the labor and information about skill sets and labor cost that are required for the job.
2. The materials that are required to complete the work include parts that are available from the Inventory application and consumable parts that are defined in the Equipment application.
3. Service items that are required to complete the work are available from the Service Items application, which can include unit costs and vendor information if they are available.
4. The tools required to complete the work and their costs are available from the Tools application
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You should now have the knowledge and skills to:

– Recognize opportunities for documentation

– Apply electronic charting guidelines

– Locate appropriate documentation resources

– Understand staff's responsibility to provide and document patient education resources

– Identify the medical record as protected and confidential information

– Identify legal aspects of proper documentation

List of Reference Materials

1. AUTOMOTIVE TECHNOLOGY Principles, Diagnosis, and Service FOURTH EDITION by James D. Alderman, publishing as Pearson Education, in 2012
2. Automobile Mechanical and Electrical Systems First published 2011, Copyright © 2011 Tom Denton. Published by Elsevier Ltd. All rights reserved
3. Bob Goodman and Rodney G. Brown (3M). "Electrical Taping Skills: A Lost Art?", EC&M, p.2
4. https://www.pfjones.co.uk/PCT/FD3166.pdf