

Annex 0:

Occupational Standard: STANDARD SERVICE	001
CORE WORK PROCESS	
<p>The purpose of standard service is to maintain the safety of the vehicle in terms of roadworthy operations and functions and therefore maintaining also the utility/ resale value of vehicles and systems. All service tasks required for preparations, execution and commissioning are to be carried out. The focus is on functional checks including the identification of wear and tear using methods of standardized and individual service concepts, routine diagnosis as well as the service-relevant interaction of compound groups and elements. The operational and functional safety with a view on manufacturing service plans, customer requirements, and the state of the vehicle has to be ensured.</p>	
OCCUPATIONAL COMPETENCIES	
<p>In order to master "standard service" as a core work process the following occupational standards are required:</p>	
<ul style="list-style-type: none">● Handling of vehicle reception and identification● Practical application of rules for customer relations and customer care● Knowledge of various service concepts and service standards● Carrying through the standard service/inspection with the aid of service plans● Able to carry through the ordering process of material / spare parts● Use and reading of service plans, service documentations, work / repair order sheets● Acquisition and use of information with diagnostic tools and information systems● Conduct routine diagnosis and procedures of integrated diagnoses● Documentation of work with the aid of work order sheets and part lists● Know how of and making use of electronically controlled service instructions● Safeguarding of driving safety, operational reliability and function of the automobile through service● Knowledge and confident application of different forms of communication with clients/ customers and colleagues in relation to preparing, servicing and commissioning of vehicles	

CORE WORK PROCESS

Wear and tear repair encompasses the preventive exchange of wear parts (drive belt, brake linings, tires, silencer) to ensure the function and the standardized control of vehicle systems prone to wear. The traffic and operational safety must be assessed; the parts subject to wear must be exchanged. Standard checking methods to identify the state of wear in brake and exhaust systems, wheel suspension and steering, drive belts, seals, sleeves and pipes have to be applied. The wear parts are exchanged according to the stipulations of the manufacturer. Quality requirements (parts quality, assembly directives, identification and prevention of wear causes) are in the focus of interest.

OCCUPATIONAL COMPETENCIES

In order to master "WEAR AND TEAR REPAIR" as a core work process the following occupational standards are required:

- Describe measures for preventive wear repair
- Know theoretical principles of preventive exchange of wear parts
- Planning of preventive exchange of spare parts by adhering to the requirements of the car manufacturer
- Carrying through the preventive exchange of wear parts to preserve the functions of the car systems
- Select appropriate spare parts in consideration of customer requests, company prerequisites, quotation and availability
- Exchange of spare parts with limited functions by following the instructions of the manufacturer
- Know how of limits of wear repair, trouble shooting and fault repair
- Assessment of wear components with regard to age, mileage and workload
- Record service works in vehicle-specific and system-specific documents for both, customer and workshop
- Examine tools, methods and diagnostic devices for wear checks and repair with regard to their adequacy under technical/ functional, ergonomic and work process oriented aspects
- Compare and assess forms of organisation for the processing of wear repair orders including availability of spare parts Knowledge and confident application of different forms of communication with clients/customers and colleagues in relation to preparing, servicing and commissioning of vehicles.

CORE WORK PROCESS

Based on the description of faults by the customer, standardized diagnosis procedures are used with the aid of diagnosis flow plans and diagnostic systems. Usage of diagnostic equipment, following the manufacturer's rules/standards is the core of work.

The components of the diagnostic equipment have to be selected and connected to the vehicle; hereby safety regulations have to be observed. The diagnostic tools have to be activated and set up according to the type of vehicle and manufacturer's specifications.

A standard diagnosis has to be carried out, following the different methods possible. The fault memory of the PLCs has to be read out and if necessary re-adjusted. The reading and resetting of fault memories as well as the determination of the faults and their repair in systems such as engine, drive train, chassis, electrical system have to be carried through. Simple repairs are carried out. The overall aim is the repair and the full functional efficiency of all vehicle functions. The amount of repair necessary is determined and basic repairs (repair of leakages, faults in electrical systems or in wheels, repair of worn-out joints) are carried through.

OCCUPATIONAL COMPETENCIES

In order to master "standard diagnosis, diagnostic procedures & trouble shooting" as a core work process the following occupational standards are required:

- Knowing the procedures of using the various components of diagnostic equipment
- Application of manufacturer's instructions for standard diagnosis
- Selection of the specific diagnostic hard- and software for the model of vehicle to be tested
- Selection of the relevant electrical circuit diagram (via manual or diagnostic equipment)
- Reading and understanding the electrical circuit diagram in order to point out possible faults
- Rectification of minor faults
- Re-adjustment of PLC memories
- Use of diagnostic systems for trouble shooting including the selection of diagnostic strategies
- Status inquiry of the condition of electrical systems of the vehicle
- Carry through minor repairs of vehicle systems (engine, chassis, drive train, electrical and electronic systems)
- Knowledge and confident application of different forms of communication with clients/customers and colleagues in relation to preparing, servicing and commissioning of vehicles

CORE WORK PROCESS

The inspection of vehicles required by the manufacturer is carried out. Individual customer requirements, safety precautions and special service actions are taken into consideration. The amount of inspection and service tasks is assessed and determined. Necessary spare parts are provided. The task comprises safety inspections concerning functions, operations, and road worthiness according to legal, manufacturer specific and individual requirements. Vehicle systems are identified by means of technical information systems. Fault finding methods including visual inspection, noise and function tests, integrated and rule oriented diagnosis are applied and documented. Defects are repaired by tuning, adjustment and repair works. Replacements during inspections such as toothed belts and checks (e.g. brake and hydraulic fluids; basic settings) are mastered confidently.

All systems of a vehicle are checked on their flawless functioning. Environmental and safety aspects (perfect exhaust gas composition, tightness of exhaust system, engine, gear box, brake systems, cooling system, air conditioning) are adhered to.

OCCUPATIONAL COMPETENCIES

In order to master "GENERAL INSPECTION" as a core work process the following occupational standards are required:

- Apply inspection procedures and tools to test road worthiness, operational and functional safety and vehicle systems
- Prepare and carry out inspection tasks according to manufacturers' specifications
- Handle workshop- and customer-specific service documents and information systems
- Ensure the function of vehicle and system conditions
- Repair of existing defects through tuning and adjustment works, repair of wear and damages upon determination of required work
- Prepare for operational safety and environmental compliance on behalf of the customer
- Servicing and preparation of the components and systems of the car such as the engine and engine system, the drive train, the chassis and electrical system
- Assess the function of the entire car
- Cooperation with the manufacturer to get all the data necessary for an efficient service
- Knowledge and confident application of different forms of communication with clients/customers and colleagues in relation to preparing, servicing and commissioning of vehicles

CORE WORK PROCESS

This work task encompasses the repair of undercarriage and suspension elements such as brake and steering support systems, undercarriage control and steering geometry as well as parts of the suspension and shock absorber systems for restoration of their functions and effectiveness. The task concentrates on using, describing, comparing and assessing the various trouble shooting and diagnosis processes in aggregates and components as well as on the application of repair methods and procedures.

OCCUPATIONAL COMPETENCIES

In order to master "undercarriage and suspension repair" as a core work process the following occupational standards are required:

- Narrow down, identify and find the reasons of defects and malfunctions with the aid of specific trouble shooting and diagnosis procedures and documenting the results for customers and the company/ the manufacturer.
- Determine the amount of repair to be carried through, time and cost calculations, resource planning and customer advisory tasks for an efficient and customer-friendly repair.
- Repair of aggregates, components and elements according to manufacturer's standards by using special tools and the required technical information.
- Adjustment and check of repaired functions and documentation of the repairs carried through and the status of functions.
- Dispose of/ reuse exchanged parts and materials according to work safety, health and environmental stipulations by taking into consideration procedures for manufacturer's damage evaluation.
- Compile damage symptoms, specify order, and determine repair method.

CORE WORK PROCESS

This task encompasses the damage repair in system components and elements such as electrical and electronic systems, chassis in order to restore the system functions. Focus is on diagnostic procedures, standardized diagnosis and their evaluation. Special tools have to be applied.

OCCUPATIONAL COMPETENCIES

In order to master "electrical and electronic repair" as a core work process the following occupational standards are required:

- Compile damage system, specify order, efficiently plan workshop resources and spare parts, calculate expenditure of time and costs, customer advice with regard to alternative/ individual modes and procedures of repair.
- Selection and use of adequate tools, transparent documentation of diagnosis and results for customers, company and manufacturer.
- Repair of electronic and electrical components and aggregates with adequate methods and procedures by making use of the required technical information systems and transparent documentation for customers.
- Selection and use of circuit diagrams for trouble shooting and repair.
- Applying expert aids for repair of malfunctions.
- Making use of methods and procedures for measuring, testing and adjustment of repaired components and elements and transparent documentation.
- Dispose of exchanged parts and replaced materials according to the stipulations of work safety, health protection and environmental standards and taking into consideration procedures for manufacturer's damage evaluation

CORE WORK PROCESS

The repair of aggregates is carried through and causes for trouble in complex vehicle systems are repaired.

The task comprises the repair of aggregates, component groups and –elements, e.g. parts of the engine, differential, brake and steering system, chassis control and steering geometry for the re-establishment of functions and mode of operation. Apart from methods of repair, focus is on the application, description, comparison and assessment of different aggregate and component group oriented trouble shooting and diagnosis procedures especially in networked electronic vehicle systems.

OCCUPATIONAL COMPETENCIES

In order to master “Advanced Diagnosis and repair of aggregates, component groups and elements” as a core work process the following occupational standards are required:

- Determination of defects by analyzing the fault characteristic of components
- Analyzing the effects of occurred component defects on the networked vehicle
- Overhauling of engine components (cylinder head, ...)
- Maintenance/ repairs of component assemblies and component elements using appropriate methods and procedures by applying relevant technical information systems, transparent documentation for customer, workshop and manufacturer
- Repair and replacement of add-on aggregates, clutch, brake systems
- Repair and adjustment of components in the steering system and chassis
- Apply appropriate methods and procedures for checking, testing and tuning of restored component assembly and elements respectively and document in a transparent way
- Knowledge and confident application of different forms of communication with clients/ customers and colleagues in relation to preparing, servicing and commissioning of vehicles

CORE WORK PROCESS

Engines, gear boxes and complex aggregates are completely overhauled and the functioning of the entire vehicle is restored. Apart from the mounting and removal of the aggregates, this includes the following tasks: dismantling of components, failure investigation of spare parts and determination of the amount of repair necessary. Prior to this, adequate checks and measurements (compression check, pressure loss check, noise analysis, determination of faults, especially in automatic transmissions) have to be carried out for trouble shooting. Fault tables are applied. Assembly and disassembly techniques are applied with the aid of adequate special tools. The determination of wear limits and tolerances (crankshaft drive, gear wheels, hydraulic units) as well as the adjustment of required tolerances and alignments play a special role.

OCCUPATIONAL COMPETENCIES

In order to master "REPAIR AND OVERHAULING OF AGGREGATES" as a core work process the following occupational standards are required:

- Handling of databases, manuals and information systems for damage identification, cost estimates and repair planning
- Carrying through assembly and disassembly of whole aggregates
- Dismantling of engines, gearboxes and complex mechatronic aggregates
- Determination of damages in dismantled engines, gearboxes and complex mechatronic aggregates
- Making use of special tools for determination of axial and radial clearance in crankshaft drive and cylinder/ piston systems / tooth backlash
- Compare and assess repair methods and replacement procedures with regard to cost reduction and efficiency
- Handling of measurement tools and diagnosis of damages with different methods like noise analysis, compression check, test drives on the road
- Managing and carrying through special overhauling processes (regrinding of valves, fit in of pistons)
- Knowledge about impact of damages and malfunctions caused by inadequate work, material and parts quality, lubricant shortages etc