

## Assessment Requirements

### Unit VF03K – Knowledge of Inspection, Repair and Replacement of Commercial Vehicle Tyres

#### Content

##### Tyre construction

- a. Radial
- b. Diagonal (cross) ply
- c. Tube type
- d. Tubeless
- e. Tread designs (e.g. traction, steer, universal etc)

##### Types of commercial vehicle wheel and rim construction

- a. 15° Drop centre rims with diameter codes of 17.5, 19.5, 22.5.
- b. 15° EVA/EVH Drop centre rims.
- c. 15° Wide single drop centre rims.
- d. Wide base or semi drop centre split rims
- e. British Standard conical, DIN spherical and ISO Metric wheel fixings
- f. Heavy commercial valves

##### Tools and equipment used to identify faults or serviceability

- a. Tyre safety inflation equipment (e.g. safety cages, portable 'H' cages and 'bag-it' type devices)
- b. Tyre tread depth gauges
- c. Tyre probes
- d. Bead spreaders
- e. Tyre pressure gauges
- f. Hand lamps or torches
- g. Stud hole gauges

##### Re-fitting and removal methods and procedures for commercial tyres, tubes, wheels and rims

- a. fitting instructions
- b. vehicle protection
- c. use of impact tools
- d. correct tyre safety inflation
- e. final inspection

##### Tools, equipment and information used for removal and replacement of commercial wheels, tyres and tubes

- a. Technical information relating to safe jacking points and wheel torque/tyre pressure data.
- b. Equipment for securing the vehicle and making the area safe (e.g. wheel chocks, traffic cones, 'Do Not Move' signs)
- c. Jacks, axle/chassis stands, loading boards.
- d. Sockets, extensions, 'L' bars, pneumatic impact wrenches, torque wrenches.
- e. Bead unseating tools inc specialist tools for EVA/EVH rims, tyre levers, lock-ring levers, bead lubricant, and tyre stands
- f. Tyre inflation equipment, safety inflation equipment (e.g. safety cages, portable 'H' cages and 'bag-it' type devices)

##### Tools and equipment used:

- a tyre re-grooving equipment
- b tyre safety inflation equipment
- c specialist bead and unseating tools for external valve aperture (EVA) and hole (EVH)

### **Inspection and fault identification methods and procedures**

- a fault identification coverage,
- b accurate measurement
- c adjustments to acceptable tolerances for the vehicle
- d. Inspection:
  - i. on the rim visual (external)
  - ii. removed from wheel (internal)
- e. Use of tread depth indicators, tyre probes and pressure gauges
- f. Information sources including tyre and vehicle manufacturers' technical data

### **Common faults associated with commercial vehicle tyres and wheels.**

- a. Worn tread through normal use
- b. Abnormal wear (e.g. camber, wheel misalignment, incorrect twinning, worn dampers, braking flatspots over/under-inflation)
- c. Carcass damage (e.g. lumps/bulges, cuts, exposed cords, run-flat damage, penetrations, chemical damage)
- d. Incorrect fitment (e.g. load rating, speed rating, size, construction)
- e. Worn or damaged wheels and components (e.g cracks, elongated or worn stud holes, deformations).
- f. Worn, damaged or incorrect wheel fixings
- g. Worn or damaged valves
- h. Worn, damaged or incorrect tubes and flaps.

### **Tools, equipment and information used for minor repairs to tyres and tubes.**

- a. Technical information relating to minor repair areas, repair unit application instructions and injury limitations
- b. Suitable personal protective equipment for tyre and inner tube repairing.
- c. Measuring equipment for determining repairable areas
- d. Reamers, buffers and tyre bead spreaders
- e. Plug patch applicators, tyre probes, cover scrapers, roller stitchers, pliers and side cutters.
- f. Liquid buffing solutions, chemical vulcanising fluids, liner seal solutions and tyre talc (French Chalk)
- g. Combination plug/patches, patch and filler materials, inner tube patches

### **Methods and materials used in the repair of commercial vehicle tyres.**

- a. Internal inspection of tyre for secondary damage.
- b. Preparation of the tyre for application of repair materials
- c. Preparation of inner tube for application of repair materials
- d. Inspection of tyre and tube after repair
- e. Correct storage of materials (including shelf life)
- f. Inflation of tyre and tube to check for leaks
- g. Repair Materials:
  - i. rubber only plug patch
  - ii. rubber only patch and filler material
  - iii. solutions and chemicals

### **Tools and equipment used for regrooving of heavy commercial tyres**

- a. Technical information relating to heavy commercial vehicle tyre regrooving
- b. Suitable personal protective equipment for regrooving.

- c. Measuring equipment for determining tread depths and blade settings
- d. Tyre probes, regrooving equipment, tyre regrooving stand.
- e. Cutting blades

**Methods used to carry out regrooving to heavy commercial tyres**

- a. Inspection of tyre for damage and suitability for regrooving.
- b. Tread measurement to determine blade depth setting
- c. Preparation of tyre for regrooving.
- d. Regrooving following manufacturer's instructions and legal requirements
- e. Inspection of tyre following regrooving

**Dealing with waste materials including:**

- a. scrapped tyres
- b. repair materials
- c. wheel weights

**Legal Requirements to include:**

- a. tread depth
- b. tyre wall and casing damage
- c. tyre pressure
- d. mixing of tyre types
- e. re-grooving legislation