

### Syllabus for Touring Caravans

#### Introduction

The caravan engineer will be expected to fulfil the following safety and efficiency criteria in relation to all work specified under the technical syllabus sections 1-22 below.

- All relevant legislation covering Health & Safety at work to be adhered to.
- Working areas to be kept in a clean and tidy condition.
- Work to be carried out in a responsible manner having consideration for others at all times.
- Time and materials to be used efficiently, minimising waste.
- Working areas, caravan and equipment to be left in a safe and secure condition.
- The safety of the general public and the candidate to be ensured at all times.
- Clothing to be appropriate for the work being carried out.
- The candidate to follow company policies and procedures with respect to accident prevention.

#### 1. Chassis & Running Gear

##### 1.1 Coupling head and safety catch

- 1.1.1 Check for obvious signs of wear/damage by inserting a correct size ball (50mm).
- 1.1.2 Clean out cup and re-grease (except when used with ball-acting stabilisers).
- 1.1.3 On ball-acting stabilisers, check friction pads are in good condition.
- 1.1.4 Clean pads with the manufacturer's recommended cleaning fluid.
- 1.1.5 Check safety catch for correct functioning. Clean, grease, and renew worn parts.

##### 1.2 Breakaway cable and clip

- 1.2.1 Check condition correctly routed and attachment integrity.
- 1.2.2 Check clip is operational and lubricated.
- 1.2.3 Head springs and damper.
- 1.2.4 Check operation, security and lubricate connections and moving parts.
- 1.2.5 Check shaft seals. Renew as required.
- 1.2.6 Check shaft for excessive wear. Remove corrosion and lightly grease. Apply grease at grease nipples.
- 1.2.7 Check correct function
- 1.2.8 Examine rubber gaiter and renew if required.
- 1.2.9 Damper bracket – check and tighten bolts to correct torque.

##### 1.3 DRAWBAR

- 1.3.1 Check and tighten coupling assembly to drawbar nuts/bolts (if accessible).

### **1.4 Jockey wheel**

- 1.4.1 Check condition operation and lubricate.
- 1.4.2 Check for free rotation.
- 1.4.3 Check that clamp holds and is not distorted or damaged.
- 1.4.4 Clean/lubricate wheel spindle, screw thread and bearing stem.
- 1.4.5 Ensure washer is fitted under boss on clamp handle.
- 1.4.6 If a pneumatic tyre is fitted, check condition and pressure.

### **1.5 CHASSIS**

- 1.5.1 Check condition and security of assemblies.
- 1.5.2 Check for damage/corrosion especially in vicinity of drawbar and suspension mounting points.
- 1.5.3 Check and tighten if necessary chassis/drawbar, chassis/axle bracket bolts and any chassis assembly bolts to recommended torque.
- 1.5.4 Check under flooring and report any damage.
- 1.5.5 Check condition of any stabiliser fitted; Clean and report any damage as necessary.
- 1.5.6 Check security of chassis to body.

### **1.6 Corner steadies and spare wheel carrier (where fitted)**

- 1.6.1 Check corner steadies for damage, lubricate and repair as required.
- 1.6.2 Check spare wheel carrier for damage, lubricate and repair as required.

### **1.7 Road wheels**

- 1.7.1 Raise the caravan in a safe manner and remove the wheels.
- 1.7.2 Check wheel studs/bolts for wear.
- 1.7.3 After carrying out service items required from sections 8 to 11, replace road wheels and tighten nuts/bolts with a torque wrench to manufacturer's specifications.

### **1.8 Tyres - check condition**

- 1.8.1 Assess age and advise replacement if over five years.
- 1.8.2 Check condition and wear pattern .
- 1.8.3 Check that the size, load index value and type of construction of tyres are the same for each axle.
- 1.8.4 Check the condition of the tyre valves - make sure the valve stem is undamaged, and is correctly aligned with the valve aperture in the wheel, and not distorted when the wheel trim (if fitted) is installed. Valve caps must also be fitted.
- 1.8.5 Check condition of spare tyre (if carried) and ensure it is compatible with tyres in use.
- 1.8.6 Check for any damage or deterioration such as lumps, bulges, cracks and splits on side walls and between tread patterns.
- 1.8.7 Check that the tyre sits correctly in the road wheel rim.
- 1.8.8 If tyre wear is uneven, visually check if camber angle is excessive.
- 1.8.9 Check tracking and rectify if required.
- 1.8.10 Check and record tyre tread depths.
- 1.8.11 Check and adjust tyre pressures (incl. spare) - note pressures on service schedule.

### 1.9 SUSPENSION ASSEMBLIES

- 1.9.1 Inspect suspension as fitted. Grease where applicable.
- 1.9.2 Check suspension pivots for wear and fit replacement bushes where required.
- 1.9.3 If fitted, adjust coil spring tension if required. Refer to manufacturer's servicing instructions.
- 1.9.4 Check wheel clearance to wheel arch (normally, at least 25 mm unless specified in the manufacturer's handbook).
- 1.9.5 Check for corrosion.
- 1.9.6 Examine condition of chassis frame in vicinity of suspension mounting points for corrosion, fracture and distortion.
- 1.9.7 Check and tighten any securing nuts.
- 1.9.8 Check rubber bump stops if fitted for condition and wear.
- 1.9.9 Examine dampers (if fitted) for performance, damage, leakage, corrosion and security of attachment.

### 1.10 BRAKE ASSEMBLIES

- 1.10.1 Examine condition of brake shoes, springs and expanders. Where no manufacturer's data is available the following guidelines for minimum brake lining thickness may be used: riveted linings - at least 0.5 mm above rivet heads. Bonded linings - at least 0.75 mm thick.
- 1.10.2 Where applicable, check that the brake expander slides freely on back plate.
- 1.10.3 Examine condition of rubber boot on expander pull rod.
- 1.10.4 Check free movement on star wheel adjuster assembly. Lubricate with appropriate grease only.
- 1.10.5 Renew components as required.
- 1.10.6 Check correct assembly of automatic reversing mechanism if fitted (check carrier shoe location and carrier springs).
- 1.10.7 Lubricate as recommended (see caravan manufacturer's/brake manufacturer's service manual).

#### Adjust brakes

- 1.10.8 Ensure coupling draw shaft is fully extended. Adjust brakes and check operation. For auto-reverse systems, rotate drum in forward direction only. Adjust brakes according to manufacturer's servicing instructions.

#### Brake Drums

- 1.10.9 Remove brake drums.
- 1.10.10 Check condition of oil seals and bearings and renew as necessary.
- 1.10.11 Clean drum and check condition.

### 1.11 BRAKE RODS, CABLES & SUPPORTS

- 1.11.1 Check general condition for corrosion, wear and distortion. Lubricate clevis pins, compensators, linkages and axle pivots with oil/grease, as appropriate.
- 1.11.2 Check and adjust brake rod/cable return springs if fitted.
- 1.11.3 Check fork end on front of brake rod/cable is sliding correctly on over-run lever.
- 1.11.4 Check brake rod/cable is correctly supported as recommended by the chassis manufacturer.
- 1.11.5 On AL-KO Tandem Axle ensure brake rod extension tube (on rear of rod) is fitted and passes through the hole on the axle bracket for correct support (as shown in the AL-KO drawing).check operation, lubricate & adjust.

### 1.12 HANDBRAKE MECHANISM

- 1.12.1 Correctly adjust handbrake.
- 1.12.2 Check full travel of handbrake is possible with fairing fitted.
- 1.12.3 Check the handbrake efficiency.

## 2. ELECTRICS

### 12V

#### 2.1 12N, 12S & 13 pin plugs/cables (As appropriate)

- 2.1.1 12N 7 pin plug - check external condition of plug, pins, tubes, body and cable entry. Check 7-core cable, condition, connections and clamping. Check for correct fit in test socket.
- 2.1.2 12S 7 pin plug - check external condition of plug, pins, tubes, body and cable entry. Check 7-core cable, condition, connection (grey), and clamping. Check for correct fit in test socket.
- 2.1.3 13 pin plug - check external condition of plug, pins, tubes, body and cable entry.

#### 2.2 12V EQUIPMENT TEST - USING PROPRIETARY TEST EQUIPMENT.

Note: In the time allowed, it is not possible to check thoroughly all the complex equipment now fitted, but it is possible to check the operation of lights, fans and pumps etc.

##### Wiring & fuses

- 2.2.1 Check fusing and replace as required.
- 2.2.2 Inspect all visible wiring for security, condition and current carrying capacity - frayed or chafed insulation, unsupported wiring.

##### Fridge

- 2.2.3 Check continuity of circuit.
- 2.2.4 Check operation.

##### Battery

- 2.2.5 Check for condition - damage, corrosion, spillage, security and that it is correctly vented.
- 2.2.6 Clean terminals and grease with petroleum jelly.
- 2.2.7 Check battery charging system (12V & 240V).
- 2.2.8 Check indicator if sealed battery fitted. Otherwise check electrolyte level and top up if necessary.

##### Awning light

- 2.2.9 Check operation.
- 2.2.10 Check lamps for water ingress.

##### Other equipment

- 2.2.11 Check operation of any other 12V equipment.

##### DIY additions

- 2.2.12 Check that an appropriately rated fuse protects circuits fed by the battery.

### 2.3 ROAD LIGHTS, REFLECTORS

- 2.3.1 Check condition of all road lights and reflectors. Report where legal requirements are not met.
- 2.3.2 Check operation of all road lights with proprietary test equipment.
- 2.3.3 Check lamps for water ingress.

### 240V

#### 2.4. Inlet plug

- 2.4.1 Check condition of inlet plug and report if replacement is necessary.

#### 2.5 Cables and equipment

- 2.5.1 Check cables and cable connections (including earthing).
- 2.5.2 RCD - check operation of Residual Current Device and report if defective.
- 2.5.3 Check earth bonding.
- 2.5.4 Check transformers, inverters and report if defective.
- 2.5.5 Check connection cable for damage operation and report if replacement is necessary.

#### 2.6 Outlets & permanent connections

- 2.6.1 Socket outlets - check polarity and report if defective (check DP sockets date).
- 2.6.2 Check interior and exterior lights; repair or fit replacement parts as required.

#### 2.7 Appliances

- 2.7.1 Check operation of fridge.
- 2.7.2 Check operation of blown air heating (where fitted)
- 2.7.3 Check water heater (where fitted).

### 3. VENTILATION

#### 3.1 Ventilation openings

- 3.1.1 Check all fixed ventilation openings for free flow of air (as per relevant British or European standards).
- 3.1.2 Remove any material/obstructions blocking the ventilators.
- 3.1.3 Check ventilation of all LPG appliances and report where provision has NOT been made.
- 3.1.4 Check gas drop holes are unobstructed and report where provision has NOT been made.

#### Adjustable ventilators

- 3.1.5 Check adjustable ventilators for function.

#### Roof lights

- 3.1.6 Check roof lights are free of obstructions.

### **4. GAS SYSTEM**

#### **4.1 Regulator**

##### **Pre September 2003**

4.1.1 Check operation.

##### **Post September 2003**

4.1.2 Check operation.

#### **4.2 Installation pipework**

4.2.1 Carry out soundness test.

#### **4.3 Appliances**

4.3.1 Cooker - check for safe and secure installation.

4.3.2 Check oven/Grill/hotplate operation and report if faulty.

4.3.3 Check fridge operation and report if faulty.

4.3.4 Check water heater operation and report if faulty.

4.3.5 Check space heater operation and report if faulty.

4.3.6 Check heat shielding of appliances and report where faulty.

#### **4.4 Flues**

4.4.1 Check that space heater flue is securely fitted to heater and terminal connection point.

4.4.2 Check that space heater flue is undamaged throughout its entire length.

4.4.3 Check that water heater flue is clear of obstructions.

4.4.4 Check that water heater flue is undamaged.

#### **4.5 Flexible hoses**

4.5.1 Check date on flexible hose (BS 3212) replace hose and clips where necessary.

4.5.2 Check flexible hose is undamaged and replace hose and clips where necessary.

#### **4.6 Flame failure device**

4.6.1 Check operation of FFD on all appliances.

#### **4.7 Gas Cylinder Compartment**

4.7.1 Check that gas cylinders are able to be securely located upright.

4.7.2 Check straps, if used, are in serviceable condition.

4.7.3 Check condition of gas cylinder locker. Ensure that the ventilation is unobstructed.

4.7.4 Check gas bottle locker lid and repair damaged hinges or locks.

#### **4.8 Gas dispersal holes**

4.8.1 Check that each gas appliance has a gas dispersal hole.

4.8.2 Check all gas dispersal holes are free from blockage.

### 5. WATER SYSTEM

Note: Before connecting any water to the system or operating any taps carry out a visual inspection of the water pipes and their connections.

#### 5.1 Water pump

- 5.1.1 Connect portable water source
- 5.1.2 Check operation of water pump.

#### 5.2 Taps

- 5.2.1 Check condition and operation of taps, micro switch, valves, pipes & tank (if fitted).
- 5.2.2 Repair or replace taps, mixer taps and shower heads, waste outlets.

#### 5.3 Water filter

- 5.3.1 Check integrity of water system housing.
- 5.3.2 CHECK FILTER AND REPLACE IF NECESSARY.

### 5.4 WASTE SYSTEM

- 5.4.1 Connect waste water collection tanks.
- 5.4.2 Check all pumps ( foot, hand, electric ) and repair or fit replacement parts as required.
- 5.4.3 Check for leaks.

#### 5.5 Toilet

- 5.5.1 Check seals and lubricate where necessary.
- 5.5.2 Check blade operation.
- 5.5.3 Check flush operation.
- 5.5.4 Check operation of level indicator.

### 6. FIRE SAFETY

#### 6.1 DIY additions

- 6.1.1 Carefully check any DIY modifications or additions. Faults should be identified in writing.

#### 6.2 Alarms

- 6.2.1 Check operation of any security alarms fitted.
- 6.2.2 Check operation of smoke alarm.

#### 6.3 Extinguisher (if fitted)

- 6.3.1 Check correct type fitted and expiry date.

#### 6.4 Fire blanket (if fitted)

6.4.1 Check location and fixing.

## **7. BODYWORK**

### **7.1 Body panels**

7.1.1 Check mouldings, gutters, beads and seals. Refit or replace as required.

7.1.2 Check and report upon any damage & sealant condition.

### **7.2 Door locks & hinges**

7.2.1 Check operation and lubricate.

### **7.3 External fittings**

7.3.4 Check security (including ladders, cycle racks, lockers, aerials, satellite dishes etc).

### **7.4 FLOOR & WALLS**

7.4.1 Check for de-lamination.

### **7.5 GRAB HANDLES**

7.5.1 Check condition & security. Repair / replace as required.

### **8. Internal Structure**

#### **8.1 Integrity of weatherproofing**

8.1.1 Check weather penetration, beading and seals, report if defective.

#### **8.2 Doors and windows**

8.2.1 Check doors, report damage and replace if necessary.

8.2.2 Check door aperture trim; refit or replace and reseal as required.

8.2.3 Check door alignment, hinges, catches and locks; lubricate, adjust, repair or fit replacement parts as required.

8.2.4 Check windows and their sealing; replace and reseal as required.

8.2.5 Check opening window alignments, hinges, catches and stays; lubricate, adjust, repair or fit replacement parts as required.

8.2.6 Check opening window aperture trim; refit or replace and reseal as required.

#### **8.3 FURNITURE**

8.3.1 Check condition and operation of cupboard doors and drawers (incl. hinges, stays etc).

8.3.2 Check table legs and their hinges and catches.

8.3.3 Check partition doors and curtain racks.

8.3.4 Check security of internal fittings.

8.3.5 Check furniture edge banding and replace as required.

8.3.6 Check window curtain rails.

8.3.7 Check bed bases.

8.3.8 Check bunk beds, including protective elements and ladders, for integrity.

8.3.9 Check blinds for operation and re-tension if required.

8.3.10 CHECK CURTAINS, CUSHIONS AND FLOOR COVERINGS.

#### **8.4 Damp test**

8.4.1 Check integrity of test equipment.

8.4.2 Carry out damp test in appropriate manner.

8.4.3 Record findings and advise any necessary action.