Tyre Fitting Risk Assessment / Method Statement

The following method statement covers the areas concerned with the repair and replacement of a vehicle tyre and provides the guidelines by which staff, comply with the Health and Safety at Work Act 1974.

The following sections set out a method for vehicle manoeuvre, jacking, lowering, tyre removal and replacement, tyre repair and wheel balancing, that ensures safe working practices for technicians as well as procedures that meet industry standards.

1.0: Risk Assessment & Vehicle Position

Prior to any work being carried out, a dynamic Risk Assessment for the vehicle and location of work will be conducted.

The following should be considered:

1.1 Is it safe to deal with the broken down vehicle in situ or should it be moved to a safe location
1.2 Will any 3rd parties who may be affected by your presence.
1.3 Road conditions at time of arrival.
1.4 Can other road users see the work in progress as they approach the scene?
1.5 Is assistance required from the Highways Agency / Police.
1.6 Can the fitting vehicle be positioned to give maximum visual awareness and protection.
1.7 Are traffic cones required to quarantine the repair area and do the Vehicle Emergency Flashing Beacons need to be activated during the activity.
1.8 Is the use of reflective high visibility clothing required.
1.9 Can any work equipment required be operated safely without any trip hazards or impact on pedestrians if working on or near a footpath.
1.10 Can members of the public and occupants of vehicle be to move to a safe place.
1.11 Is the vehicle on which work is to be carried out positioned in a safe manner. If not can it be.
1.12 Notify any potential drivers that the vehicle is going to be out of use, if possible secure the keys so that the vehicle is fully immobilised.
1.13 If on a Customer site are there any specific Health and Safety constraints or requirements which need to be adhered to.

2.0: Jacking the vehicle

2.1. Position vehicle on firm level ground.
2.2. Use wheel chocks if the surface is not level.
2.3. Ensure hand brake is ‘ON’ and any suspension locking activities, specific to that type of vehicle are applied.
2.4. Carefully remove hub cap/nave cover and replace in a safe position.
2.5. Select a suitable jack of the correct lifting capacity.
2.6. Check the jack is in working order and there are no obvious oil leaks or mechanical damage.
2.7. Select a suitable jacking point.
2.8. Loosen wheel nuts/studs, whilst wheel is still on the ground.
2.9. Place jack in position and vehicle there are no brake lines, fuel pipes or electrical wires that may be fouled or damaged. If in doubt consult the handbook.
2.10 Jack vehicle to a sufficient height for the removal and replacement of wheels.
2.11. Raise the jack handle to the vertical position to avoid it becoming a trip hazard.
2.12. If at any stage access to the underneath of the vehicle is required, an axle stand MUST be used. Place axle stands in a suitable position and lower the vehicle onto them.

3.0: Removal of nuts/bolts with Impact wrench and wheel removal.

3.1. Check for obvious damage.
3.2. Before use check the operation and direction of rotation
3.3. Select correct size socket. Ensure condition of socket and ensure it is not cracked or rounded out and locate any Locking Wheel nut adaptor which may be required.
3.4. Carefully remove nuts/bolts, to end of stud and finally remove by hand.
3.5. Using an Impact Wrench
Select correct impact socket and check its condition
Do not use impact wrench on locking wheel nuts.
Before use check the operation and direction of rotation.
Carefully tighten the nuts/bolts onto the nave in the correct sequence taking care not to over tighten.

3.6 Remove wheel carefully. Lift correctly to avoid personal injury, and to avoid damage to threads.
3.7 Inspect hub abutment (mating) surfaces. Clean off any dirt, corrosion, rust or oil as necessary. It is particularly important to remove corrosion as it’s possible that any remaining corrosion may not allow the wheel to sit properly on the hub.

3.8 Check condition of threads.
3.9 Check condition of wheel.
3.10 Damage to flanges.
3.11 Cracks in nave.
3.12 Check for Stud hole damage.

4.0: Removal and Refitting of Tubeless Tyre on a standard or alloy wheel using a tyre fitting machine.
4.1 Remove the valve core to deflate the tyre. The tyre must be fully deflated before attempting to break the beads from the rim. Beware of exhausting air blowing dirt or valve core into eyes.
4.2 Remove all balance weights to prevent damage to bead of tyre and possibly rim (alloy) and fouling the machine, and to prevent balance weights falling inside tyre.
4.3 Position the tyre on the bead breaker in a position away from the valve and so that the breaker does not catch the rim of the wheel. Both beads must be broken before attempting to remove the tyre from the rim. Keep hands free from the moving parts of the bead breaker.
4.4 Lubricate both beads and rim flange if the beads feel tight or for run flat tyres.
4.5 Place wheel on machine with narrow bead seat uppermost.
Alloy wheel should be clamped from the outside, steel wheels from the inside (or outside if necessary)
The wheel should be central and secure on the machine, this helps prevent wheel damage.
For alloy wheels use protectors as necessary to avoid damage to wheel.
4.6 Start removing the tyre at a point near the valve, ensuring the opposite bead is pushed as deeply as possible into the wheel well and it is away from the rim.
4.7 Remove first bead fully over rim.
4.8 Remove second bead in the same manner.
4.9 Inspect wheel for:
Damage
Obvious cracks
Damaged or excessively worn stud holes
Bent rim flange
Rust/dirt on bead seats which should be cleaned with a wire brush. If there is excessive corrosion that has been removed, apply bead seal.
4.10 Remove old valve (Rubber stem valves only). TPMS valve remains in position. Visual check of TPMS valve for signs of damage within the tyre space.
4.11 Replace valve if old one removed. – short for alloy wheels, long for steel wheels.
4.12 Check suitability of tyre for – Tubeless, asymmetric, direction of rotation, fitment and legality. Check for correct size, speed and load rating.
4.13 Inspect interior causing to ensure there are no foreign bodies.
4.14 Lubricate both tyre beads, and wheel rim and flanges.
4.15 Fit each bead separately. Ensure that as the bead passes over the rim flange it is pushed into the well of the rim. Otherwise this could prevent the tyre being fitted to the rim and could cause damage to the bead.
4.16 Fit new valve core TPMS and Standard Valves.
Ensure valve core is secure.
4.17 Inflate tyre to 15-psi and check for lumps, cuts etc
4.18 Inflate to 40-psi, Do Not exceed 40 psi. This ensures the beads are correctly seated on the rim and makes a fully air-tight seal. If the beads fail to seat correctly, deflate, re-lubricate the bead and rim and re-inflate. If it still fails, use a Bead Seating tool to seat the beads. If a portion of the bead remains in the well as the pressure builds up it may demount from the rim.
 Whilst inflating ensure both beads are moving into position on the bead seats. There are fitting lines on the sidewall of the tyre and these should be concentrically spaced around the rim flange. Replace the valve dust cap.

4.19 Finally check that the tyre is fitted centrally on the rim.

5.0 Repair of Tubeless Tyre

5.1 Ensure tyre complies with Tyre Safety Laws. Do not repair a tyre that has sidewall damage, cracks in the sidewall or tread (a sign of ageing) or does not meet minimum legal tread depth requirements.

5.2 Inspect casing for obvious objects penetrating and mark the locations. Do not remove object at this stage.

5.3 Inflated tyre. Do not exceed 15 psi., as casing may be damaged internally.

5.4 Spray the sidewall and tread with a soapy leak detection solution.

5.5 Inspect the tyre surface for air leaks, also check for leaks at:
  - Valve core.
  - Valve seating.
  - Bead seating on rim.

5.6 Mark the location of the penetration / leak.

5.7 Remove the valve core to deflate the tyre. The tyre must be fully deflated before attempting to break the beads from the rim. Beware of exhausting air blowing dirt or valve core into eyes.

5.8 Remove the tyre from the rim as described in points 4.2 to 4.10.

5.9 All repairs must be carried out in accordance with BSI AU 159F as updated.

5.10 Inspect both beads of tyre for damage, particularly the bead toes.

5.11 Inspect casing for secondary damage caused by:
  - The penetrating object.
  - Tyre having been run flat or at low pressure.
  - Casing cord damage.
  - Ply separation.

5.12 Inspect previous repairs and make good if necessary.

5.13 Remove penetrating object.

5.14 Note the direction of penetration. This indicates if damage has penetration been caused across the casing cords.

5.15 When a combination patch is used for the repair the stem must follow the line of the hole caused by the penetration. If the penetration has caused damage which is found to be outside the laid down repair limits, DO NOT repair the tyre.

5.16 Lightly buff the area to be repaired on the inside of the tyre to an area slightly larger than the material to be used. Mechanical buffing only is acceptable. Chemical buffing is not acceptable.

5.17 Ream out the penetration hole using a tungsten carbide rotary milling tool.

5.18 Ensure that the hole and buffed area is:
  - Clean - (Free of dirt). Use a clean cloth (non-fibrous)
  - Free from moisture. Use approved cleanser if necessary.

5.19 Apply vulcanising cement to buffed area.

5.20 Select suitable combination patch.

5.21 When the cement is dry, apply combination unit, as per the manufacturer's instructions, ensuring that the tyre is in a relaxed state. Check that base of combination patch does not lift.

5.22 Using a stitching tool, and applying pressure, ensure that the base of the combination patch fully adheres to the tyre.

5.23 Refit tyre, as per points 4.11 to 4.19.

5.24 Cut off the excess stem of the repair unit as per manufacturer's recommendations.

6.0 Wheel Balancing

6.1 Ensure old weights have been removed and remove if necessary.

6.2 Clean wheel and remove road dirt etc.

6.3 Check tyre pressure, adjust if necessary and replace valve cap.

6.4 De-flint tyre tread, checking for tyre legality.

6.5 Locate wheel accurately on balancer and secure in place. Take care to lift the wheel to avoid damage to the wheel and personal injury.
6.6 Check wheel dimensions and programme into balancer.
6.7 Balance wheel. Stand clear of rotating wheel. To stop rotating wheel always use the brake. NEVER BY HAND
6.8 Choose correct size and type of weights.
6.9 Use only new weights
6.10 Ensure weights are correctly positioned and securely fixed.
6.11 Make final check for accuracy and if necessary reposition weights. Stand clear of rotating wheel. To stop rotating wheel always use the brake. NEVER BY HAND.

7.0 Wheel Replacement
7.1 Check abutment (mating) surfaces, Clean off, dirt, corrosion or oil as necessary. If wheel is found to be unsuitable it must not be refitted.
7.2 Check the condition of nuts/studs/bolts.
7.3 Carefully lift wheel on to the hub and fix in place. Lift correctly to avoid personal injury. Take care not to rasp threads.
7.4 Start nuts/bolts by hand to ensure they are not cross threaded.
7.5 Tighten nuts/bolts until nave is flush with hub. This must be done in the correct sequence. Do not tighten fully at this stage.

8.0 Lowering the Vehicle
8.1 If required carefully raise the vehicle and remove any axle stands/vehicle supports.
8.2 Ensure there is nothing underneath the vehicle and carefully lower the vehicle to the ground. Avoid saddle slipping off jacking point and possibly causing damage.
8.3 Remove jack taking care not to damage underside of vehicle.
8.4 Final tightening of wheel nuts/studs must be done using a calibrated torque wrench set to the correct torque setting. (again, in the correct sequence)- For the correct torque wrench settings use NTDA Torque Data Manual or reference sheets. Always torque all nuts/bolts once in sequence and then again as a final QC check.
8.5 On completion of nut/stud tightening, reduce tension in torque wrench back to zero.
8.6 Replace hub cap/nave cover. When replacing ensure the recess for the valve is correctly positioned.
8.7 Ensure nave cover and trim are secure.
8.8 Replace any Locking Wheel Nut Adaptor back into the vehicle.

9.0 Job Card Completion
9.1 Ensure the full details of all activities carried out on the vehicle and the tread depth readings are recorded on the job sheet.
9.2 Ensure the Driver signs the job card and
   Understands what work has been completed
   Understands their responsibility to check the tightness of the wheels once the vehicle has been driven.