

Technical product information

Transaction No.: 2030349/1

Mulsanne steering shimmy/vibration - 21 Inch wheels only

Release date: 24-Sep-2013

Customer statement / workshop findings

This TPI is only applicable to Bentley Mulsanne fitted with 21 Inch wheels, This TPI is not applicable to vehicles fitted with Bentley 20 inch wheels, should 20 inch wheels be fitted please raise a DISS ticket.

Should a customer complain of steering wheel shimmy/vibration constantly above 80 kph/50 mph and the condition does not improve when driven please proceed with this TPI, Should the vehicle exhibit different symptoms other than described please raise a DISS ticket.



This TPI also applies to all vehicles which are built and registered for use in the countries listed below
EGYPT – INDIA – LEBANON – SYRIA - SOUTH AFRICA

Technical background

We are aware that under certain conditions of shipment and storage, particularly involving large changes

in ambient temperature, condition can occur where the tread surface of the tyre forming the footprint on the road surface or container floor partly retains the relatively flat form when driven and does not immediately restore to a constant radius. Hence the name of flat spotting which is generally given to this condition.

Flat spotting should not be confused with out of balance, out of round or radial force variation. It is very important that the diagnosis and correction of these different conditions are not confused with each other. Attempting to correct flat spotting by rebalancing the assembly will not correct the problem and worse still, when the flat spots are removed the tyres will then be out of balance.

ATTENTION: During this TPI the Workshop Manual is quoted to help in carrying out various tasks, it is recommended that the procedures referenced are checked by the operative as the process within the Workshop manual may have changed since last viewed.

Production change

Improved Manufacturing, shipping and transportation procedures have been introduced.

Referring to Figure 1, from VIN SCBBA63Y9BC [REDACTED] the front suspension lower lever inner rear bushes with a higher damping frequency were fitted at the time of production.

Increased friction steering racks were fitted in production after VIN SCBBA63Y7CC [REDACTED]

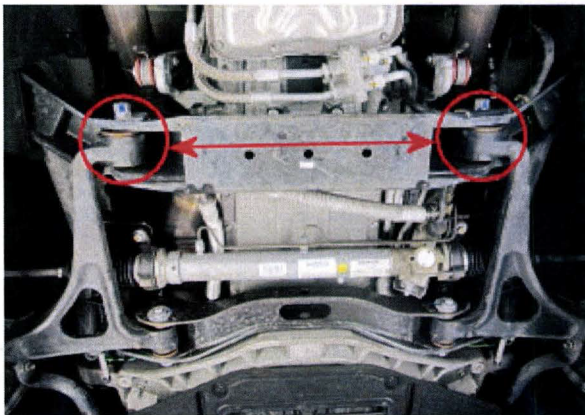


Figure 1

Measure



Check the tyre specification and the date of manufacture code which is stamped on all four tyres, the correct specification tyre that should be fitted is as follows:

- Dunlop SP Sportmaxx GT 265/40/21 with the part number 3Y0 601 313E
- To ensure correct specification the Bentley Mulsanne tyre has a 'B' stamped on the sidewall as shown in Figure 2



Figure 2

Referring to Figure 3, check the date of manufacture code, the code must be on or after 2011, this code translates as week 20 of the year 2011 hence 2011, Figure 3 shows 2811 which is week 28 year 2011.



Figure 3

Should your tyres not meet any of the aforementioned criteria regarding brand, specification and date code please bring the tyres up to the correct specification before proceeding with this TPI, Refer to Workshop manual Rep.Gr 44. please also observe the key points detailed in point 3.

Should the tyres meet all criteria regarding tyre specification and date of manufacture please carry on with the TPI.

IMPORTANT: Do not initially balance the wheel and tyre assemblies, before commencing ensure the initial checks below are carried out

- Check the wheels and tyres for damage

- Check that Bentley approved 21 inch wheels are fitted and the tyres are to the correct specification
 - Check the front and rear suspension for any damage and wear
 - Check all steering components for damage and wear
1. Ensure the tyres are set at Normal pressure and adjust if required, drive the car until the flat spots come out or the flat spotting condition improves, then drive for approximately 10 minutes at the lowest speed possible to allow cooling
 - Within a maximum of two minutes of returning from the road test raise the vehicle off the ground
 2. Remove all four wheel assemblies Refer to Workshop Manual Rep.Gr 44
 3. Using the Hunter GSP 9712 (VAS 6230) vibration control balancer (or similar) force match and balance all four assemblies, the assembly Radial Force Variation (RFV) should be no more than 85N after the force matching process has been conducted.
 - To seat the tyre beads to the rim inflate to 3.5 Bar, once satisfied that the tyre beads are fully seated readjust to the correct measuring pressure of 3.0 Bar - Refer to Workshop Manual Rep.Gr 44 and also observe the following key points.



Does the vehicle have accessory valve caps fitted as shown in Figure 4? If Yes please ensure the force match and balance process is always conducted with accessory valve caps fitted



Figure 4

IMPORTANT: Apply a thin smear of silicon based grease for example Dow Corning high vacuum grease to the external threads of the valve stem prior to fitting the accessory valve cap. Grease should be applied any time the cap is removed and the grease is not evident

- For applicable Hunter machines, it is imperative that the adaptor cone with part number 158 F+ with a light Blue coloured face as shown in Figure 5.
- The cone must be fitted on the spindle as shown in Figure 6 ensuring the light Blue face of the cone is facing towards the end of the spindle

NOTE: Should the initial RFV reading be above 85 N this does not necessarily mean the assembly

cannot be adjusted to within specified tolerance, please ensure that the force matching process is adhered to as instructed within the workshop manual Rep.Gr 44 – Tyres – Checking condition and replacement

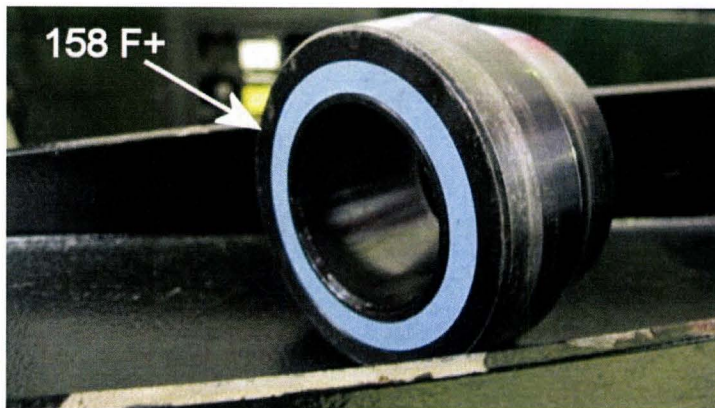


Figure 5

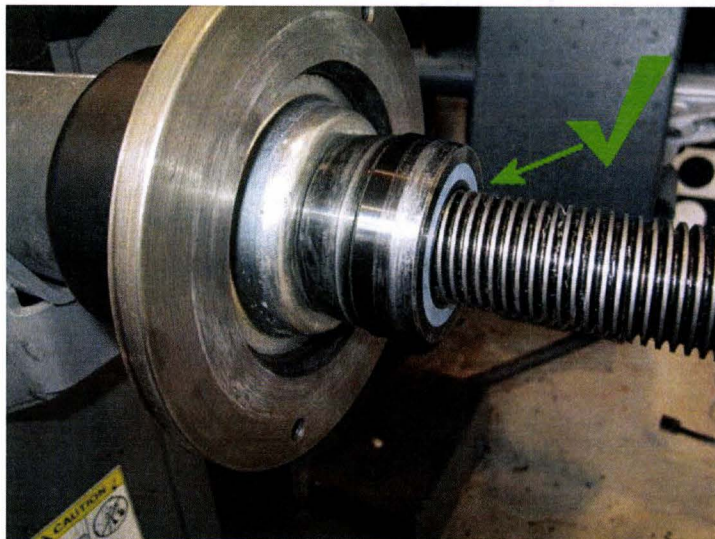


Figure 6

Important: When conducting the Mulsanne wheel and tyre force matching process or the tyres need replacing, a specific tyre fitting lubricant should be used. The lubricant is Rema Tip Top Anti Gliss Lube with the Bentley Part Number of RH 14530. On drying the Anti Gliss has adhesive properties that increases friction between the tyre and wheel rim to prevent slippage. Please Refer to Workshop Manual Rep.Gr 44 Tyres - Checking Condition and Replacement - Radial force variation - Best fit practice.

- Once the force matching process is complete, the assembly high spot is identified with a brown dash (Figure 7).

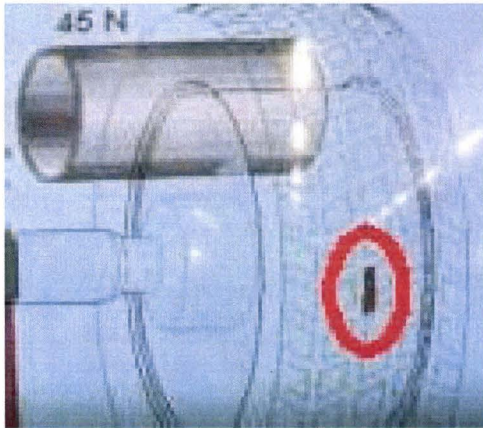


Figure 7

- Rotate the assembly on the spindle until the high point is at 12 o'clock and the Brown dash turns to Green (Figure 8).

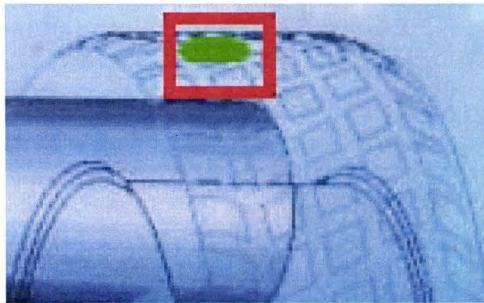


Figure 8

- Mark the RFV high point with a paint pen or similar (Figure 9) this will be required when refitting the wheels



Figure 9

IMPORTANT: All four tyres must be no more than 85N after force matching and balancing should this not be achievable replace the applicable tyres using Dunlop Sportmaxx GT 265/40/21 tyres with the part number 3Y0 601 313E Refer to Workshop Manual Rep.Gr 44

4. Check the part number of the steering rack, if the part number on the existing steering rack is 'F' level

suffix or lower replace the steering rack - Refer to workshop manual Rep.Gr 48

NOTE: The Link loom with the part number 3Y0 970 089 will require fitting along with the latest level steering rack up to VIN SCBBA63Y7C0 [REDACTED] as detailed in the workshop manual Rep.Gr 48 – Steering rack – To Remove and Fit.

NOTE: When refitting the wheels Refer to Workshop manual Rep.Gr 44 Tyres – Checking Condition and Replacement – Radial force variation – Best fit practice

IMPORTANT: All Mulsannes post VIN SCBBA63Y9B0 [REDACTED] do not require the right and left hand front suspension lower lever inner rear bushes replacing as shown in Figure 1 (unless worn or damaged) as the latest level specification bushes have been fitted at the time of production

5. If applicable replace the right and left hand front suspension lower lever inner rear bushes Refer to Workshop Manual Rep.Gr 40 Front suspension, drive shafts – Front Suspension Levers, Arms and Links – To Remove and Fit.

- Visually check the condition of the two remaining lever bushes as shown in Figure 10 point A and B, these should only be replaced if worn or damaged.

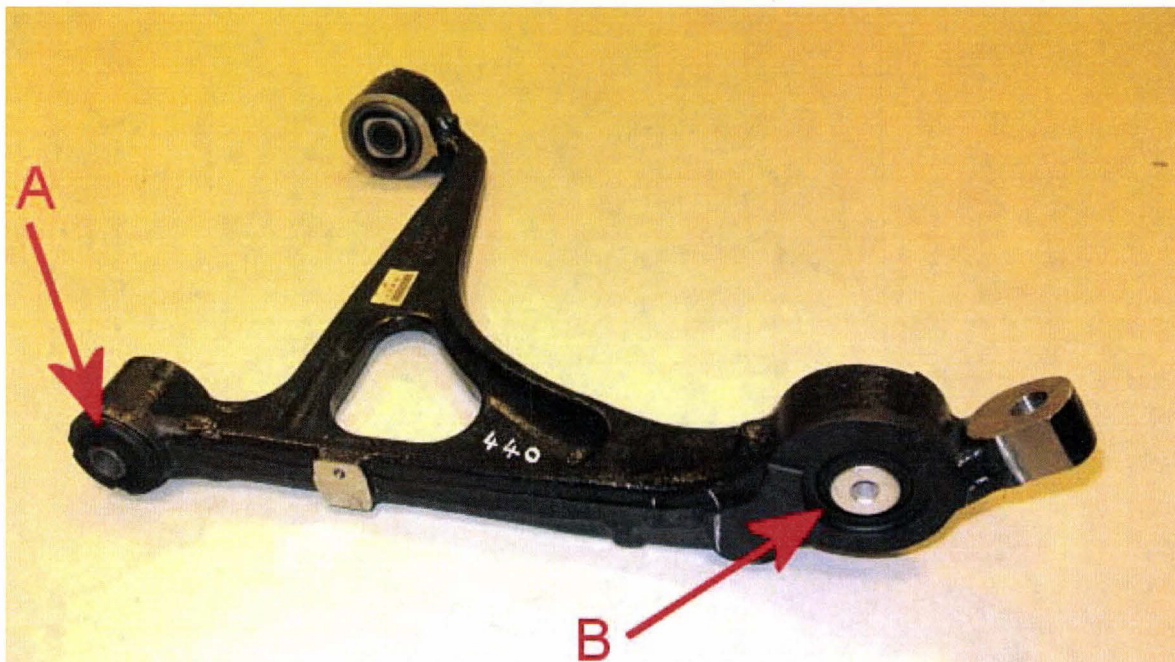


Figure 10

- Refit the lower levers – Refer to Workshop Manual Rep.Gr 40 Lower suspension lever - To remove and fit

NOTE: When refitting the wheels Refer to Workshop manual Rep.Gr 44 Tyres – Checking Condition and Replacement – Radial force variation – Best fit practice

6. Place a Blue paint completion mark on the power steering reservoir bracket (Figure 11) to confirm the steering rack and the lower lever bushes (if pre VIN SCBBA63Y9B [REDACTED]) have been replaced.

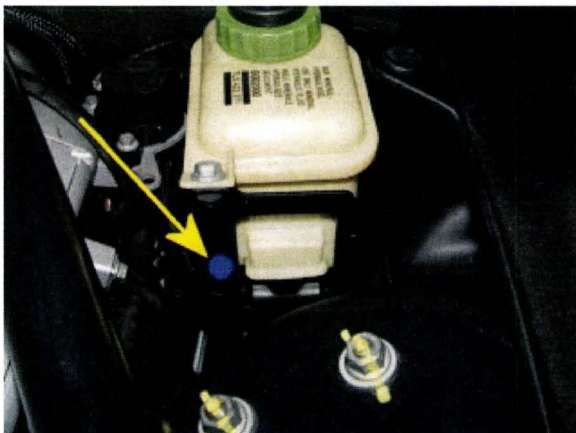


Figure 11

7. Drive the vehicle on the same route as previously covered and re-asses, should the condition still be evident please raise a DISS ticket and wait for further instruction from your TSC. Should the issue now be rectified please return the car to the customer.

Warranty accounting instructions

Please Note: Normal Warranty policies are applicable.

Time to carry out the initial flat spot recovery process including the force matching and balancing process.

Warranty type	910 or 110
Labour Operation Code	44 40 94 00
Damage Service Number	44 40
Damage Code	00 13
Time	Shop time

Time to replace the steering rack.

Warranty Type	910 or 110
Labour operation code	48 40 19 50
Damage Service Number	48 40
Damage Code	00 13
Time	90 Time Units

Time to replace the right hand side and left hand side lower lever rear bushes.

Warranty Type	910 or 110
Labour operation code	40 20 56 52
Damage Service Number	40 20

Damage Code 00 13
 Time 210 Time Units

Time to check and set the vehicle geometry without ACC.

Warranty Type 910 or 110
 Labour operation code 44 95 03 00
 Damage Service Number 44 95
 Damage Code 00 13
 Time 80 Time units

Time to check and set the vehicle geometry with ACC.

Warranty Type 910 or 110
 Labour operation code 44 95 03 10
 Damage Service Number 44 95
 Damage Code 00 13
 Time 180 Time units

Time to replace 2 Tyres.

Warranty Type 910 or 110
 Labour operation code 44 40 56 00 *
 Damage Service Number 44 40
 Damage Code 00 13
 Time 50 Time units

* Enter twice to allow 100Time Units for the replacement of all 4 tyres

Road Test.

Warranty Type 910 or 110
 Labour operation code 01 21 00 00
 Damage Service Number 48 10
 Damage Code 00 13
 Time 50 Time Units

Parts information

Description	Part Number	Quantity
Anti Gliss	RH 14530	1 x 500 Gram tin can be used for multiple applications

Description	Part Number
Dunlop SP Sportmaxx GT 265/40/21	3Y0 601 313E



Should tyres be required, please ensure the new tyres are of the correct specification as detailed within the Workshop Manual Rep.Gr 44 – Tyres – Checking, Condition and Replacement

Parts required when replacing Steering rack and lower lever bushes

Description	Part Number	Quantity
Steering rack (Left hand drive)	3Y1 422 075G	1
Steering rack (Right hand drive)	3Y2 422 075G	1
Link loom (Up to VIN SCBBA63Y7CC016888)	3Y0 970 089	1
Lower lever inner bush	3Y0 407 172A	2
Sealing Washer (single use)	N013 849 5	2
Steering coupling bolt (single use)	N105 184 05	1
Hexagon Bolt (single use)	N105 029 02	4
Hexagon Bolt (single use)	N102 412 02	2
Self locking Nut (single use)	N101 064 02	2
Track rod end Nut (single use)	WHT 000 785A	2
Upright ball joint nut	WHT 003 822	2
Collared bolt	N911 422 01	4
Bolt	N104 253 02	2
Nut	N102 861 10	2
Bolt	N106 999 01	2

Power steering fluid	JNV 862 564F	2 Litres
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Customer information

The customer may notice an initial difference in the feel of the steering, however this is normal, the difference is due to the fitment of the latest level higher friction steering rack and lower lever bushes which have a higher damping frequency (Where applicable).

Bentley branded Tyre Cradles are now supplied as an approved Bentley accessory.

The tyre cradles have been designed and manufactured specifically for Bentley providing simple and effective tyre protection.

Tyre flat spotting can be caused by medium to long term storage or from parking after a long drive, especially where the tyre experiences large changes in temperature.

To prevent flat spotting, tyres need to be cooled in a controlled manner to enable the tyre to restore to a constant radius.

Made from a unique polymer that moulds to the shape of the tyre the new Bentley Tyre Cradles maintain the tyre shape whilst cooling and in storage.

The tyre cradles are easy to use, simply drive the car onto them in the desired parking area