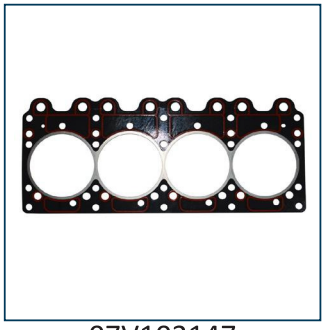
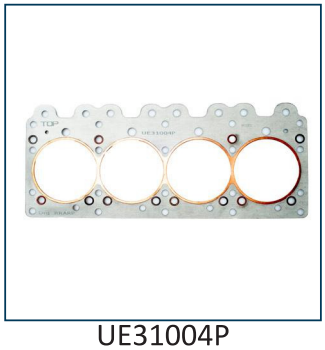
PRODUCT INFORMATION SHEET - V8 CYLINDER HEAD GASKETS



07V103147



UE31004P

Part Numbers Applicable To:

UE31004 - UT12890PD - 07V103147
All models from 1959 to 2004 with a V8 engine – see Appendix A

Introduction

In 2015 customers started to report failures of the OE (Original Equipment/ Genuine Bentley) cylinder head gaskets (07V103147 – which are stamped with the previous part number UT12890PD) which we felt were caused by blistering of the red bead on the gasket which
allowed coolant to bypass the gasket.
In 2019 further failures were reported of the OE cylinder head gaskets (07V103147) with engines which were leaking immediately after the head gaskets had been replaced.
This document aims to explain the history of the development of the cylinder head gasket, the issues experienced and **why we now only recommend using our aftermarket gasket UE31004P.**

History

In 1959 the Silver Cloud and Bentley S models, fitted with the final version of the straight six engine, were replaced by the Silver Cloud II and Bentley S2. The principal enhancement was the introduction of a 6.2 litre V8 engine, commonly known as the L410 engine, after the bore size of 4.10” (inches).
The 6.2 litre version was fitted to all Series II and III Silver Cloud and Bentley S models, Phantom V and early VI, and the early Silver Shadow and Bentley T models (prior to VIN 8742- albeit with a different crankcase).
In 1970 a longer stroke version was introduced which increased the capacity to 6.75 litres and it is this basic design and capacity that was used on all subsequent models (23 in total) covering 60 years of production.
Throughout these 60 years the factory at Crewe have only supplied one head gasket at any given time for all the V8 engine models. The head gasket has been modified and changed over the years in order to be suitable for the latest incarnation of the engines, but each new head gasket has always been suitable for all earlier models.
The table in Appendix B shows the part numbers produced and their main characteristics.
As previously stated, we have witnessed failures of the OE cylinder head gaskets (07V103147) in service. The most recent failures included instances where the engines would leak even before they were run.
Further information is available in Appendix C which we produced in September 2019 when we withdrew the OEM cylinder head gaskets (07V103147) from sale and returned our stock to Bentley Motors, who in turn returned them to the manufacturer, who admitted that some head gaskets were out of tolerance.
All head gaskets (07V103147) were inspected by the manufacturer. Those deemed to be within specification were returned to Bentley Motors who made them available for sale **but they still failed**.

Therefore, we strongly advised against fitting the OE gasket (07V103147) and recommended our replacement aftermarket gasket UE31004P.

UE31004P

With respect to Bentley Motors position, their gasket (07V103147) was designed to be fitted to a brand new engine with maximum cylinder head and crankcase surface finishes of just 1.96 microns.
Where gaskets are being fitted to engines that are as much as 60 years old there are multiple potential reasons that the gaskets could fail, principally related to the amount of material that may have previously been machined from the cylinder heads and/ or the crankcase faces, as well as the poor condition of those faces. See Appendix D.
As previously stated, we have experienced several failures of the OE cylinder head gaskets (07V103147) in our workshops, as have many of our customers. Understandably, we now deem that the OE cylinder head gasket (07V103147) is no longer fit for purpose.
We have, therefore, been involved in the manufacture and procurement of an alternative head gasket, UE31004P.
Our head gasket bears more similarity to the pre-Turbo gasket UE31004, hence the new part number of UE31004P.
It includes the use of copper in the fire ring and the coolant and lubrication channels as well as a modern composite material which confers chemical and thermal resistance as well as strength.
We have extensively tested these new head gaskets both our own inhouse engine rebuild programme (which involves running the engines up on a test rig) and on roadgoing vehicles.
The UE31004P gaskets are slightly thicker than the OE cylinder head gaskets (07V103147) but compress more easily. This has several potential advantages including:
A) We have, in the past, identified that over-machining of cylinder heads is a potential cause of tappet noise and we offer a shorter push rod kit (UT14120-0.050P) to overcome this issue.
Our gasket UE31004P can similarly assist when cylinder heads have been machined to or beyond their limits.
B) The use of copper allows the gasket to “crush” more easily than the 07V103147, giving a better seal between crankcase and cylinder head, especially when the surfaces are not perfectly flat.
C) Previous failures caused by insufficient or inadequate beading on 07V103147 have been overcome by not using this type of beading on UE31004P.

Both 07V103147 and UE31004P should be fitted dry (without the use of Wellseal). Both gaskets have TOP stamped into the upper face of the gasket to ensure correct fitment.

Conclusion

We hope that the information we have provided is useful, clear and concise and it has helped you to make an informed decision when choosing a new cylinder head gasket.
At the time of writing (Sept '24) we have sold over 1800 of our re-designed UE31004P gaskets and experienced no failures whatsoever.
Our gasket is covered by a 3 year warranty.

If you have any questions or concerns, please do not hesitate to contact our sales team.
(sales@flyingspares.co.uk)

Appendix A

Models to which this information sheet is applicable:

- Silver Cloud II & Bentley S2 & all variants
- Silver Cloud III & Bentley S3 & all variants
- Phantom V & VI
- MPW Two Door, Corniche & Continental
- Camargue
- Silver Shadow & Bentley T & Series II models & all LWB variants
- Silver Spirit, Spur & Dawn and all later variants
- Bentley Mulsanne, Eight, Mulsanne Turbo, Turbo R, Brooklands, Continental R – T - SC, Azure
- Bentley Arnage Red Label and Bentley Mulsanne

Appendix B

The table below shows each known gasket, its part number, the date and model at which it was introduced and its basic composition. All these part numbers supersede up to the current cylinder head gasket from Bentley Motors, 07V103147.

The cylinder head gasket has been of the same basic design and composition since the major change of design in the early 1980s, when the Mulsanne Turbo was first introduced, and asbestos was banned. See Appendix E.

Up until now there has only been one company manufacturing 07V103147 for Bentley Motors.

Table of Cylinder Head Gasket Part Numbers, Date of Introduction and Characteristics

PART NUMBER	YEAR	INTRODUCED FOR	DESCRIPTION
UE5693	1959	Silver Cloud II Bentley S2	Cadmium plated Copper Nickel alloy Gasket varnished after plating
UE31004	1962	Silver Cloud III Bentley S3	Butyrate composite body Recommended to use Wellseal when fitting
UE44041	1983	Mulsanne Turbo	Butyrate beads on both sides. Steel central layer Introduced for the first Turbo engines
UE45215	1984	From VIN 9868	Similar to UE44041. To be fitted dry This is the last gasket we have an original drawing for
RH13109	1990	From VIN 31001	No drawing details available for this gasket
UE74798	1994	From VIN 50001	No drawing details available for this gasket
UT12890PD	2000	From VIN 63350	Similar to UE45215 but with silk screen beading around push rod holes, oil & coolant passages

Appendix C

Product Update Sheet – Version 1 – 04/09/2019

PRODUCT UPDATE SHEET - REMOVED FROM SALE

Cylinder Head Gaskets (07V103147 - formerly UT12890PD)

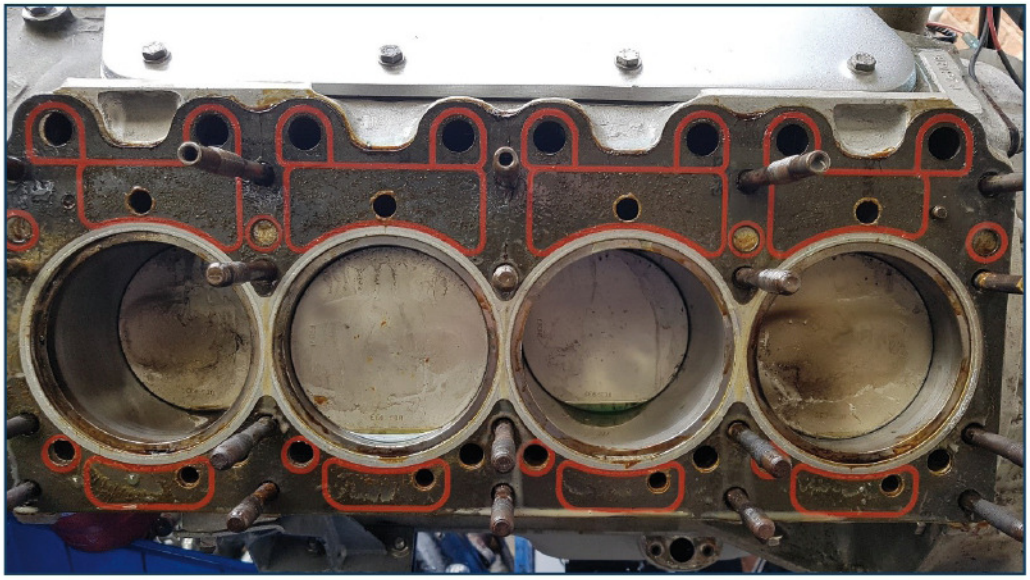
Version 1 - 04/09/2019

Parts affected

07V103147 - CYLINDER HEAD GASKETS

Introduction

Since March 2019 we have become aware that some engines, having had the head gaskets replaced, have leaked externally and/or internally. We believe that it is the head gasket itself that is the cause of these failures.
As part of our investigations into these failures we have been measuring batches of gaskets and recording the dimensions. This has led us to conclude that the most likely cause of the gasket failure is that the difference in height between the steel firing ring (the section around the top of the cylinder liner) and the composite material (that forms the principal part of the gasket) exceeds acceptable tolerances. Allied to this is a suspicion that the red silicone beading has not been correctly applied to the gasket.
Regardless of who has been supplying these gaskets they have all been manufactured by the same company.
Bentley Motors are currently in discussions with the manufacturer to resolve this issue.
We have regrettably removed these gaskets from sale as we are unable to offer any warranty on them.
Some franchised Bentley dealers continue to supply the gaskets. If you purchase gaskets from them then we strongly advise that you request that they give you a written guarantee as to what warranty they are offering.
Flying Spares are communicating with the Aftermarket team at Bentley to resolve this matter, whilst also investigating the production of an alternative gasket.
Images show examples of both internal and external leaks.



Appendix D

Information Sheet Relevant to V8 Cylinder Head Gasket (07V103147)

INFORMATION SHEET RELEVANT TO V8 CYLINDER HEAD GASKET (07V103147)

This information was produced by Rolls-Royce Motors in Service Bulletin TSD2933 (15/5/1973)

CATEGORY C - CYLINDER HEADS

APPLICABLE TO:

All Rolls-Royce Silver Shadow and Corniche cars.
All Bentley 'T' Series and Corniche cars.

DESCRIPTION:

It is apparent that cylinder heads in service are being machined to remove bow which can occur under certain circumstances.

Previously service personnel have not been aware of the permissible amount of material which may be removed from the cylinder head face. As a result of this it has been found that some cylinder heads have been machined well below limits.

The maximum of material which may be machined from the cylinder head face is 0.025"(0.635 mm).

It has been found however that more than the necessary amount has often been removed such that any further machining would reduce the face thickness below the permissible limits. Thus the head has been scrap after only a small service life.

The following procedure must be strictly adhered to when machining cylinder heads: -

PROCEDURE:

The cylinder head must first be measured to determine whether there is sufficient material to permit machining.

1. The depth from the rocker aperture sealing face to the cylinder head sealing face is nominally 4.420" (112.27 mm). The minimum permissible depth after machining is 4.393" (111.58 mm).

2. The amount of bow evident on the cylinder head face should be determined.
If there is insufficient material on the cylinder head to eliminate the bow by machining, advice should be sought from the factory before proceeding further.

3. When machining, the cylinder head must be clamped level and must be well supported.

4. The cutting tool should be adjusted until it is just touching the 'high spot' on the head. The head should then be machined preferably using a minimum of two cuts. The total depth of machining should be equal to the bow which has been previously measured. The final cut should be of approximately 0.002" – 0.003" (0.05mm - 0.075mm).

5. If there is no suitable equipment available for accurately measuring the bow evident then several light cuts should be taken until the head is nearly machined its full length. The final cut should not be deeper than 0.0015" – 0.002" (0.035mm - 0.05mm).

UNDER NO CIRCUMSTANCES SHOULD A LARGE UNCALCULATED CUT BE TAKEN SINCE THIS INVARIABLY RESULTS IN THE REMOVAL OF MORE MATERIAL THAN IS NECESSARY. THIS IN TURN REDUCES THE POSSIBILITY OF ANY FURTHER MACHINING SHOULD IT EVER BE NECESSARY.

CYLINDER HEAD GASKETS

APPLICABLE TO

All Rolls-Royce Silver Spirit, Silver Spur, Corniche and Camargue cars and all Bentley Mulsanne, Mulsanne Turbo and Corniche cars from the following vehicle identification numbers (VIN).

SCAZS0007ECH10031	-	Silver Spirit and Bentley Mulsanne
including		
SCAZS0002ECH09868		
SCAZN42A2ECX10021	-	Silver Spur
including		
SCAZN42A6ECX09891		
SCAZD42A1FCX10130	-	Corniche
SCAYJ42A5FCX09941	-	Camargue
SCBZSOTO1ECH10064	-	Mulsanne Turbo

INTRODUCTION

An improved cylinder head gasket has been introduced on the above cars. Minor changes have also been made to the cylinder head.

DESCRIPTION

The new cylinder head gasket is similar to that used previously on the Bentley Mulsanne Turbo engine. However, changes have been made to the push rod hole size and one of the coolant hole passages has been deleted (see figs.1 and 3).

The latest gasket (UE 45215) can be used for ALL Bentley Mulsanne Turbo engines, but MUST NOT be used on normally aspirated engines prior to vehicle identification numbers listed above. UE 31004 must be used on all these earlier engines.

Appendix E-2

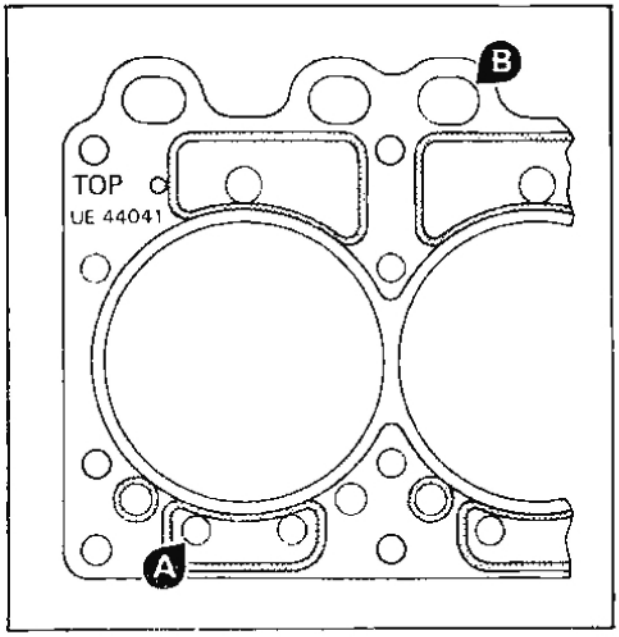


Fig 1 Early Bentley Mulsanne Turbo Gasket (UE 44041)

A Two coolant passage holes
B Size of push rod hole

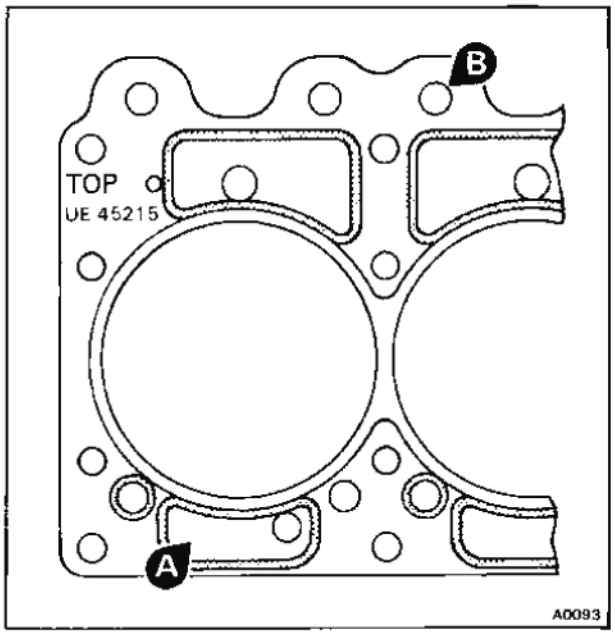


Fig 3 New Gasket Now Used on ALL Engines (UE 45215)

A One hole has been deleted
B Push rod hole decreased in size

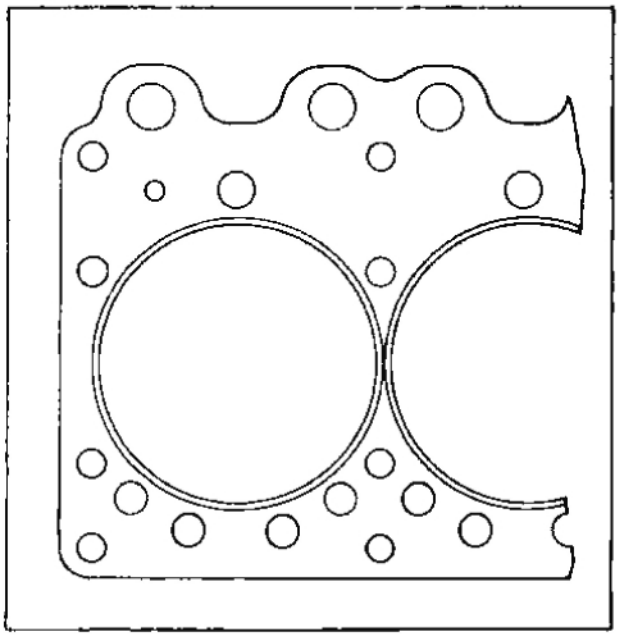


Fig 2 Standard Gasket Used on Early Normally Aspirated Engines (UE 31004)

PARTS AFFECTED

Displaced Part		New Part
UE 44041	Gasket, Cylinder Head (Turbo)	UE 45215
UE 31004	Gasket, Cylinder Head (later cars only)	UE 45215

GC/Br