

RRF Tech Seminar

Derby Bentley Head

Lloyd Hart (PA)

In *FL10-1* my friend and fellow RRF volunteer Alex Key reported on the disassembly of the timing case and removal of the cylinder head on **B140FB**, the Foundation's 1935 Bentley 3½ Litre Hooper sedan. The car is otherwise beautifully restored, a past RREC concours class winner. It is everything you could want in a Derby Bentley, except it didn't go. B140FB had sat unused for several years due to an ominous knocking noise in the front end of the engine. Frankly, we were as afraid of damaging the car as we were of finding out what the problem was.

But, growing tired of apologizing for our magnificent paperweight, and with a swift kick in the pants from Ralph Curzon, it was time to see what's what. As it happened, the cause was a bad generator bearing, about as benign a problem as could have been, considering the awful and awfully expensive alternatives. After all, what other part for your pre-war car is still available almost anywhere, and cheap? The head, on the other hand, had an internal casting fault in the water jacket near number 5 and 6 cylinders. As we discovered during disassembly, the head is aluminum and virtually new, if cracked. Simon Curzon handled the welding repair, which while perhaps not the purest solution, was at least worth trying given that, somehow, "buy new head

from Fiennes" didn't quite make it into the budget again this year. Alex had closed his January article with an invitation to all to join the re-assembly effort on October 3 and 4. One could be forgiven for assuming he meant October 2010. Actually, the "tear apart" seminar occurred in March 2009. The plan had been to have the car back together in the Fall of that year. Due to the vagaries of time, money, interest, and publishing deadlines, the Fall of 2009 came and went with the car still "headless" and on blocks in the shop. We all know the grim statistics. Once taken apart, the chances of a car ever getting put back together grow more remote with each passing season.

Finally, with a repaired head in hand, Tim Jayne of Dennison-Jayne Motors of West Chester, PA lead seminar attendees through the odyssey of engine re-assembly on October 23 and 24, 2010. Along with several Friends of the Foundation stalwarts, we welcomed first-timers Greg Thomas (OH), Jim Conley (MO), and Ed Anstead (PA). Ed, from nearby Elizabethtown, attended not only as a Club and Foundation member, but also as a representative of the Harrisburg Area Community College (HACC) automotive technologies program. The RRF's brand

new scholarship there will bring a HACC student or professor to each future seminar. A retired financial advisor, Ed is a non-traditional student amidst the younger men and women learning the mechanic's trade. No stranger to an engine compartment, having worked on many American cars, one of Ed's first questions was whether we'd be using metric or SAE tools. Ah, well.

Fighting the effects of too many doughnuts, we gazed with glazed eyes into the boxes of bits, hesitant to get started. Tim, who was leading his first Foundation seminar, gave perhaps the soundest advice of the day, saying "If it's working alright, don't take it apart." Nevertheless, he dove right in, getting a new head gasket in place and carefully lowering the head past the delicate studs. The head was torqued from the center out, alternating from front to back, slowly ratcheting up the settings from 10 to 14 to 18 lbs. We left it there for now, holding off on the last 2 lbs for another day, until retorquing after a gentle 50-mile run-in. With the head in place, we poured in some fresh water and, using a hand pump with a gauge, placed it under pressure to see if the water jacket repair was still holding. So far, so good.



Bob Staffner

(l-r) Colin Tucci, Harry Tucci, Tim Jayne, Lloyd Hart, Ed Anstead, Denny Dilger (hidden behind Ed Anstead), Greg Walker.



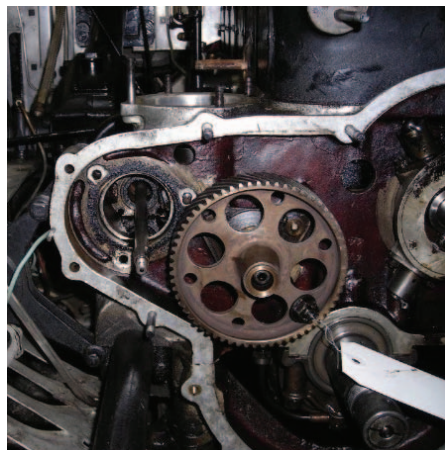
Top: Tim Jayne (l) and George Kalin install new head gasket.



R: Tim Jayne torques head as Jim Conley (l) and George Kalin look on.

All photos Lloyd Hart unless otherwise noted

While others were putting the rocker shaft in place, Tim attacked the timing case and all those Roycean gears. Just as it appeared things were moving along rather nicely, progress came to a screeching halt, courtesy of a missing water pump drive gear, and for good measure, its shaft and bearing. Now, if you don't feel like putting on, say, the generator, until later, that's no problem. But not so with the part we couldn't find.



The missing water pump drive gear (r).

Clearly, without it, our whole weekend was in jeopardy. We searched the bins, the trunk, and under the car. We double-checked all the meticulously marked bags. No luck. When you take something apart and leave it sitting in pieces for a year and a half, it can't be a surprise when something goes missing. And when it does, what's the likelihood that your coffee can of odd nuts and bolts will yield an early small hp water pump drive gear? Exactly. Even a search of the Foundation's parts tables, with everything that didn't sell back at the Fall Hershey show, produced nothing.



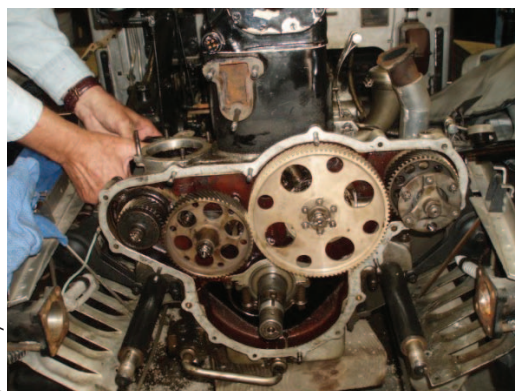
Lowering cylinder head into place.

About a year ago, a generous benefactor had given the RRF the lower halves of two small hp engines. Unbelievably, right there, leaning against the wall, was just what we needed! Or so we hoped. The first try yielded a gear that was just slightly too small. This engine turned out to be from an early 20/25. (Now I see why Robotham campaigned for the rationalized range!) The second try was the charm, this engine being from a Derby, of all things. Chesapeake Region chairman George Kalin did the honors, extracting the gear and shaft and a perfectly serviceable bearing. That stroke of luck carried through the rest of the day and the next.



Colin Tucci makes new timing case cover gasket.

Parts went on quickly. George continued his winning streak with the twin SU carburetors. RRF President Chuck Jensik made short work of the water pump and new sparking plugs. After Tim set the rest of the gears in place and re-assembled the slipper flywheel, Greg Thomas took on the seemingly endless castellated nuts, cotter pins, lock tabs, and square head bolts associated with the gears and timing case cover. Harry Tucci



Water pump drive gear in place.

wrangled the exhaust manifold and downpipe into place, as well as the radiator, while his grandson Colin, a ninth-grader, made all new paper gaskets. Denny Dilger got dirty changing the oil, as well as removing all the coolant that had accumulated in the sump due to the cracked water jacket. To make sure the top end of the engine didn't start dry, we poured two quarts of fresh oil over the rocker arms and valve springs, letting it seep down through the passages into the block. And we went back to the well one more time on the spare engine block and crankcase, finding the nipped washers needed to re-attach the generator.

Meanwhile, Tim circled back to the valve timing and the ignition timing. Terms such as Top Dead Center (TDC) and Battery Advanced Ignition (BAI) were flying fast and furious, almost as if we knew what they meant. Jim Conley, already the owner of a late Silver Wraith II, was so taken by the quality and engineering of the Derby's 75-year-old engine, that he was talking seriously of acquiring a prewar car for touring. But, as the best advice always goes, Jim knew he was looking for a car that was already done, saying, "I'm 71. I don't have time for another project." Still, Jim's checkbook seems likely to suffer.

Somewhere in all this was a dinner, a few bad jokes, and a good night's sleep. By 3 PM Sunday, B140FB was running, and fairly smoothly at that, for the first time in at least five years. You know you are a Rolls-Royce enthusiast when seeing the temperature gauge hold at 75° C and the oil pressure at a very nice 25, is a thing of beauty. There was no noise from the generator bearing, and no leak at the back of the head. But the exhaust hot spot didn't hold, so a new "doughnut" and gaskets will be installed there. Tim put new water hoses, fan belt, and a fuel pump overhaul on our list for the coming months. He promised a return visit to retorque the head, re-adjust the valves and fine-tune the ignition timing.

So, with these items to come in the next month, a couple more oil changes, and a little luck from the Pennsylvania weather, B140FB should get a road test before winter and be once again the Silent Sports Car it was meant to be.

