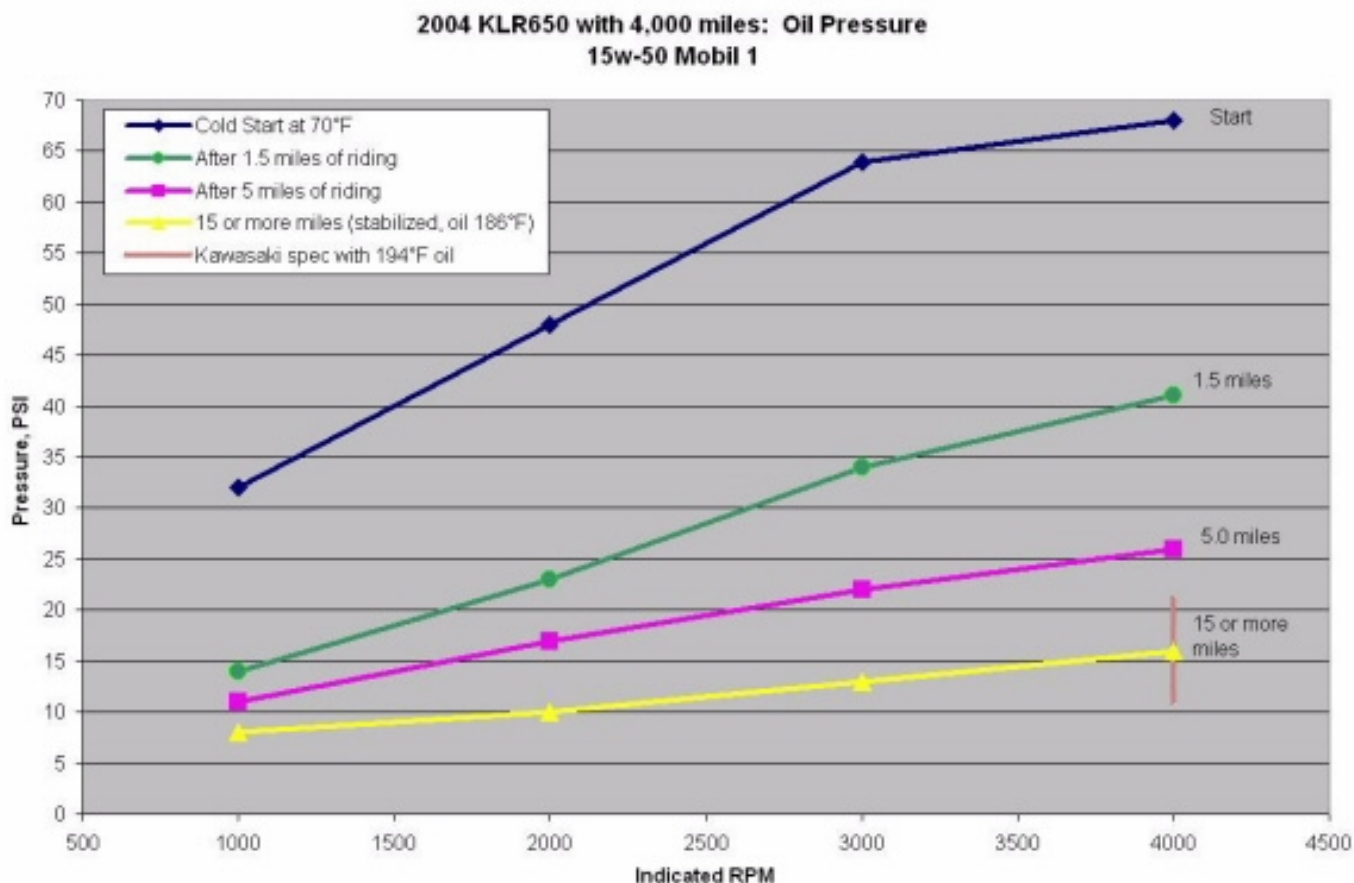


# KLR oil pressure values

Occasionally the subject of oil pressure comes up on the forums – the factory spec is 11 to 21 psi at 4000 rpm when the oil is 194° F. On plain-bearing engines, I tend to use the oil pressure measurement as one of a number of general “engine health” indicators, so I’ll check a vehicle when it’s new to me and then check it 50,000, and 100,000 miles later to see how things are holding up.

So I got around to this test on my KLR when it had just turned over 4,000 miles. The results were quite different from what I’m used to, and one reason might be the roller-bearing bottom end. Nonetheless, what I found is that the oil pressure is VERY dependent on oil temperature. Check it out!



Look at the blue line in the plot above. It shows oil pressure at 1000, 2000, 3000 and 4000 rpm right at engine start on a 70°F morning. Knowing the spec was essentially 16 psi at 4000 rpm, I was quite surprised to find the pressure up at 32 psi at only 1000 rpm! As engine rpm was increased, pressure climbed quickly and seemed to hit a relief valve around 65 psi, reporting 68 psi at 4000 rpm! Wow!

If I rode the bike immediately after start and did this test about 1.5 miles from my house, I would get the green line data – significantly lower pressure and no more pressure-relief kink on the top end. The pink line is representative of 5 miles away. These “distances from home” are not rush-hour traffic which would take a long time – it was simply riding down a lonely street at 40 mph, timing the traffic lights so “5 miles” is about 8 minutes after engine start.

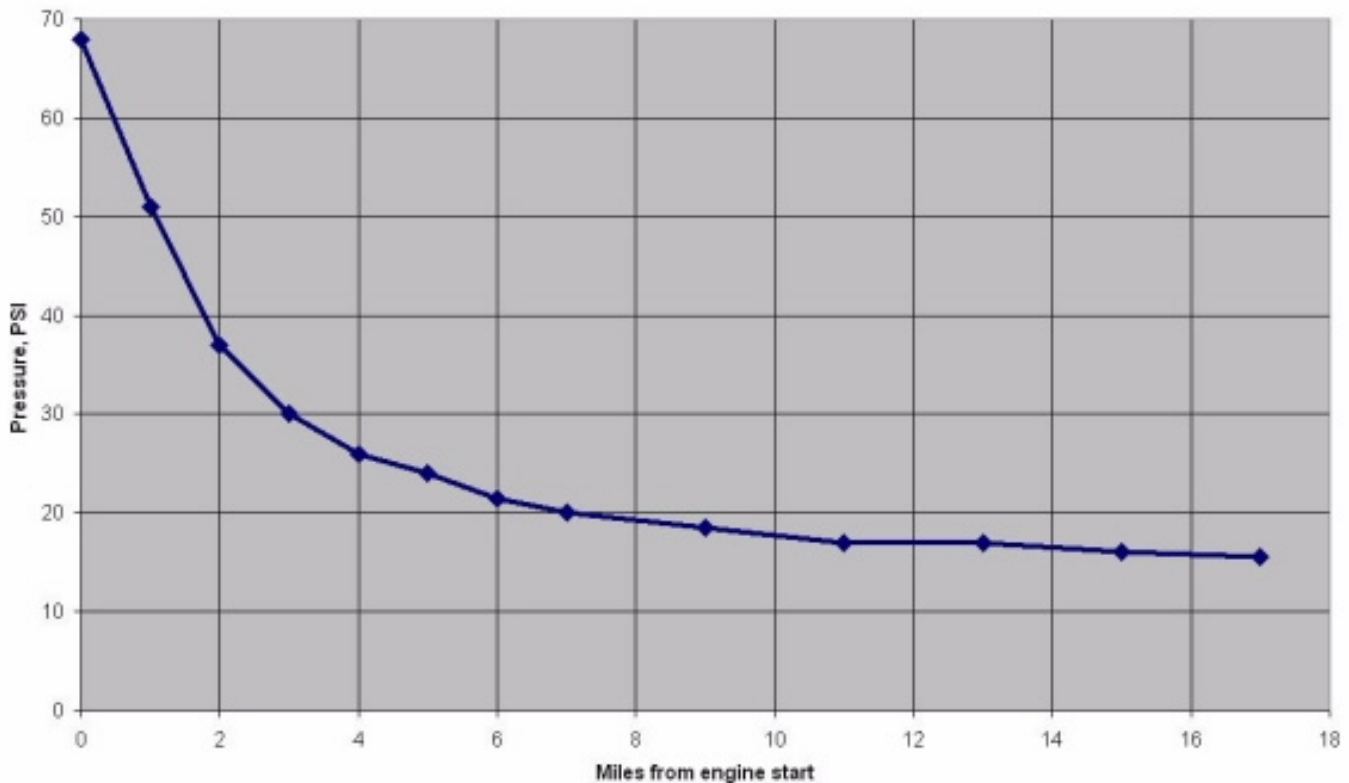
By 15 to 20 miles, things were stabilized and the yellow line was the result with oil around 185-190° F. I was seeing 16 psi of oil pressure at 4000 rpm – the Kawasaki specification range is shown as well at 11 to 21 so I

was dead in the center of it. At 1000 rpm, pressure was around 8 psi. On hot days in the summer, I've measured around 5 psi at idle.

If you wanted to add a low-pressure-warning light to this bike, you'd have to set the switch around 3 to 5 psi! Pretty interesting.

Since the pressure at 4,000 rpm was so dependent on oil temperature, I made this second plot which might provide perspective.

**Oil Pressure at 4,000 rpm as the bike warms up  
(70° F day)**



In this case I started the bike, got an oil pressure reading at 4000 rpm, then rode away normally. For the first 5 miles I was on city streets at about 40 mph so every mile I would downshift to get a reading at 4000 rpm, then upshift and ride normally. After mile 8, I was on the freeway and simply held 4000 rpm for this particular test and noted the oil pressure reading every mile or so. Anyway, that's quite a curve as the bike is warming up!

I'm used to most automobiles having reasonably constant oil pressure over a wide range of temperatures and rpm levels, so the KLR's swings of 5 to 68 psi was quite the change of pace.

### **How the data was obtained**

This is extraneous info for those who want to know how the pressure was measured. It is actually an interesting story...

I could see the oil pressure tap in the side of the right case on the engine, and per the shop manuals it was clear that Kawasaki had a test fitting that could be used to check pressure. I went to my local dealer and asked the service manager if I could see the fitting first, figuring he might tell me a few details in the process. His

response? “We don’t check oil pressure with a gauge. We start the bike, loosen the factory plug in the pressure passage, and if oil squirts out, it has pressure”.

I was underwhelmed. “You don’t even have the gauges and fittings?” I asked. “Nope” was his response.

So I ordered the fitting from Kawasaki. Took a week or so to get. And once it arrived, I could see how it would fit the engine case, but I didn’t have any metric oddball fittings to hook up my pressure gauge to it. I took the fitting to a few NAPA stores to get ideas. We got nowhere. This was getting silly.

So. Time to get inventive. I went to my local ACE hardware and purchased a 10mm x 1.25 bolt with a large flanged head.



Then I drilled a through-hole, cut an o-ring groove on the back, chopped it off at a shorter length, and tapped the other side for 1/8” NPT. I bought an appropriate o-ring, screwed the freshly-made part into the side of the KLR’s case and hooked up an oil pressure line and gauge from there.

Clearly there was a lot exposed at the bottom of the engine with this method, you wouldn’t want to go dirt riding this way. But it allowed me to get the data.

The beauty of this fitting is it can also be used for oil *temperature* testing by inserting a thermocouple probe and sealing ferrule as shown below.

Hope this helps you,

Watt-man

