Table of Contents

REF: Engine Mechanicals - Sub-05G 1
86-90 Engine Breather Mod Using #4 Cam as an Oil Slinger 1

Go To Technical Menu

REF: Engine Mechanicals - Sub-05G

86-90 Engine Breather Mod Using #4 Cam as an Oil Slinger

Article by norseXL of the XLFORUM [1)]

This is an idea based from the breathing on the BMW Rotax twins.
They have holes on the outer edge of the gear for the water-pump and the gear sits on the end of the inlet-cam.
CC pressure exits the center of the cam without any oil in the air-box.

The idea is to let the engine breathe thru one of the cams, thereby use the rotation to fling the oil out of the air.
(preventing oil mist coming out when going fast over an extended period)

This set-up is just to separate the oil from the air (thru the cam).
Air comes into the cam thru an opening as far from the center of the cam as possible to let centrifugal force fling the oil out of the air.
Then, the air exits the engine thru the center of the cam via an extension through the cam-cover.
The cam is to have a fixed tube straight through the cam-cover and into the cam.
And then a seal on the end of the cam where the tube goes in the cam cover.

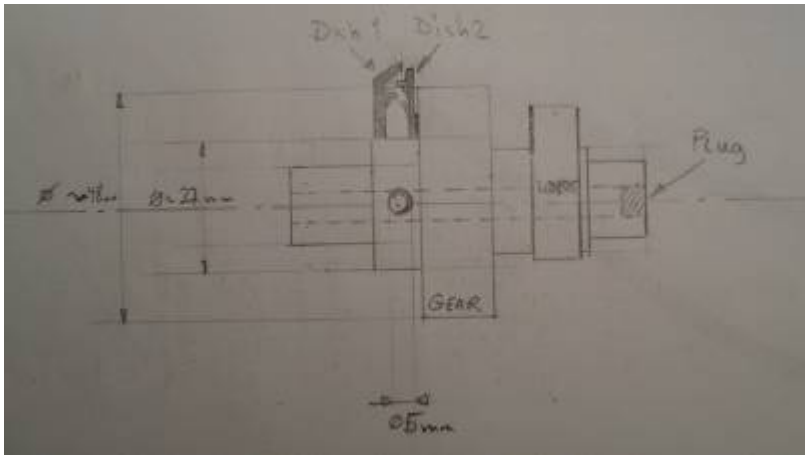
From there the air is fed through a reed or umbrella valve to atmosphere.

In drilling the hole in the cam:
The chances of either carbide or HSS drills working well are not high. [2)]
They tend to walk over the required distance. A gun drill is good or EDM is best for this process.
You do not want to change to properties of the case hardening (which conventional even with coolant, drilling would do).

A Tungsten carbide was used on the cam below and did work well.
High speed-slow feed and thru the hard layer it went.
Once the hardness is penetrated, it's best to swap to a cheap drill bit to drill through the softer inside of the cam.
Feeding too fast through the soft part with the tungsten can snap the bit.

The plan:
In the drawing below, the engine pressure will go in between those two dishes (drawing is for example only… NTS). The dishes should be as big in diameter as possible on the #4 cam (front ex).
They will have, like pictured, a labyrinth to fling the oil from the air.

Air will then exit the center of the cam into a fixed tube in the cam-cover.
Then the oil seal ring on the end of the cam running on the tube.
The back hole in the cam has to be plugged.
It was just drilled from that end because it's easier to fit in the lathe.
Without the plug, the air will not be forced to enter at a big radius/large centrifugal force.



Cam after drilling:

The hole in the outside end of the cam is for the breathing, it is the sole exit for the engine pressure.
Air from that hole in the cam will go to an external reed valve.
The original breather exit in the cam-case (4-speed) is to be plugged off.

Go To Technical Menu

1)
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-bottom-end/179674-breathing-thru-the-cam?t=1930406&highlight=reed+valve
2)
Ireeman of the XLFORUM
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-bottom-end/179674-breathing-thru-the-cam/page3?t=1930406&highlight=reed+valve&page=3