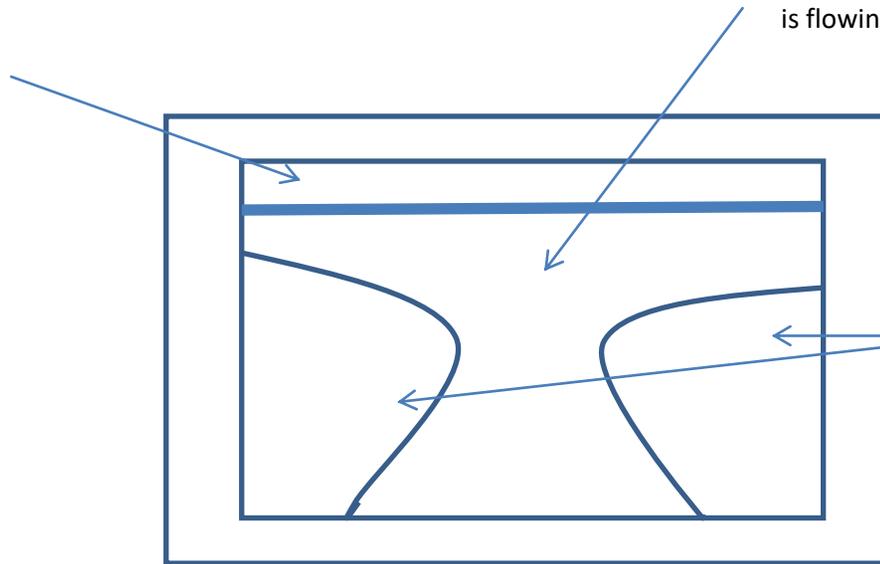


For lack of better term I define this as a manifold, the area between the glass and angled steel plate; this is the air feed

The area between the stains represents where the air is flowing into the system

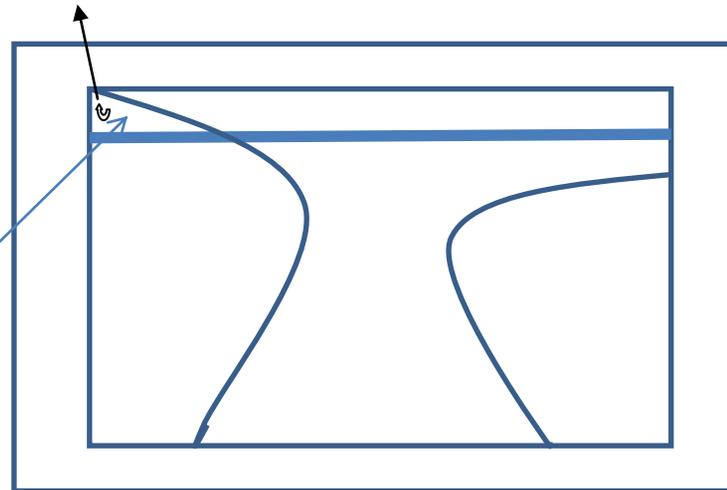


Stain areas; size is function of air velocity. When air velocity is low air wash does not reach the outer edges of glass

In my case when stain pattern does not enter the manifold (above illustration) there are no gases exiting the stove at door (No Smell)

Note the stain patterns are not at the same height; this is related to uneven air velocity between left and right sides possibly caused by air path disturbances around temperature control flapper creating turbulence and uneven flow at the horizontal distribution manifold located at the back of the stove

Gases forced out



Stain pattern (represents fuel) enters the manifold; oxygen allows combustion and some type of vortex / localized pressure is created. Gases forced out through gasket most likely due to fuel combustion and expansion in the manifold

When stain pattern enters the manifold gases are exiting the stove (Smell). The stain approaches the manifold when air velocity is low, contrary to popular believe this can happen when the temperature control is set to HI. Regardless where the temp control is set if the BTU demand is less than the available BTU the thermostat flapper closes, stack temperature lowers, and velocity is low causing the logs to smolder at which time the off gases are circulating around the corners of the manifold

Comment about when the stove is actually up to temperature. The stove is up to temperature when the flame is out or near out and just modulating. This temperature may not be reached during a burn cycle if the heat demand is greater than the maximum heat output of the stove which varies depending on the specific fuel load.

I mention this because under this condition the flapper is open, the air velocity is high, the stain is minimal, and there is no leak, no smell. This condition can be created by smaller wood loads.

Conclusion:

I believe the leak/smell is related to the air wash systems when air velocity is low and fuel (smolder gas) enters the manifold.

The mystery is why this appears to be an isolated incident considering, to the best of my knowledge, there are thousands of KE40 in operation that are not suffering with the issue- TBD