1st timer PB105

Posted by 1stPB105 - 19 Nov 2012 22:31

Well after a bit of research and paying for my last fillup of fuel oil I broke down and bought a used PB105. Got it hooked into a series with oil boiler, the PB105 is a nice boiler (but working in Engineering and Infomation Technolgy field for the last 35+ years I can say it could be better), anyway it was the right price. It's a older model (MFG date 12/2006) but it has a newer ignitor, the burn pot looks great, and I think I can make it work for me. The first few times using it (burning pellets) the thing wouldn't heat over 140%, I kept saying to myself "this isn't right". So I cured that by getting a new red wired ESP (and yes I had to splice it to make it reach). I have the the 1st 3 dip switches set to on and of course the #5 dip set on also ((red wired ESP). It's got the newer control board but I don't know if it's working properly or not, can those be reset in anyway (firmware or mapping) ? Being new at this I don't know how these things are suppose to act. Anyway, this was a DIY install and have some questions if anyone don't mide sharing there knowledge. When the max temp is set to 160% (with or without the OAT sensor, I've tried both ways), does the control board adjust the feed rate ? Seems like if I have the feed rate at 1 the boiler temp stays around 140%, 2 at 155%, 3 at 165-175%, 4 is beyond 180%. I thought no matter what you have the feed rate set at in auto mode and you were using the OAT and Aquastat sensors (by the way same sensors) your suppose to set the min and max temps and that is what the boiler temps would adjust to depending on the outside temp ? Not mine, if I have the feed rate at 3 and the max temp at 155 the temp will reach 175 and never go out (in auto mode I thought it wa suppose to go out?) Enough for now, gotta say it's going to be a challenge but I think I'll get at to work for me with some of your help. Thanks.

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Re: 1st timer PB105

Posted by wil - 20 Nov 2012 17:11

First, congrats on the purchase of the pb105. My boiler is one of the first produced also,12/06, been installed nearly 6 years now. Even though I, along with many others, have had the burnpot bubble issue, I would certainly buy the boiler again. The new burnpot that was installed in my boiler 3 weeks ago shows promise that the bubble issue could be resolved, only time will tell. I have my pellet boiler piped in parallel with the oil boiler so as to supply DHW usage, I do not use the OAT sensor because it didn't workout for my DHW usage. IMHO, I don't think your issue with your boiler not heating above 140 degrees was the ESP, I recommend setting the feed rate to #5, adjust the minimum water temp pot setting to 160 degrees, high setting to 180 degrees. This will take some time because the actual pot adjustments will not match the actual water temps. When the feed rate is set at lower set points, it is possible that the boiler will never reach the high operating setting, higher settings of the feed rate adjustment will produce a larger fire which will allow the boiler to reach operating temps faster. I found that pellet usage is less when using a higher feed rate. You have mentioned that you have the newest control board, what part number is on this board? you also mention that you have the new igniter, is it the 15 fin igniter or is it the pressure ignition system? I ask because depending upon what igniter and control board determines where the dip switches are positioned.

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Re: 1st timer PB105

Posted by 1stPB105 - 20 Nov 2012 17:51

Thanks for replying. The control board I am currently using is the 6143. I was really worried about the smoke issues that I read about but mine at the most is 7 minutes from a cold start to the time it ignites, butn pot might be 2/3 full with the first 3 dip swithes set on. No pressure ignitor, just the 15 fin ignitor. When on auto, isn't the flame suppose to go out after it reaches the max temp ?

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Re: 1st timer PB105
Posted by wil - 21 Nov 2012 00:04

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The dip switch settings using the finned ignition are: #1 off, #2 off, #3 off, off position is down. I don't remember but I think when I had the finned ignition I set the swithes #1 off, #2 on, #3 off, less pellets in burnpot for quicker ignition. When in auto the boiler should come up to the max temp setting and shut down. Set the feed rate to #5 and it should shut down when the max temp setting is reached. IMHO, dip switches 1,2,3 in the on position feed to many pellets into the burnpot for good ignition.

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Re: 1st timer PB105
Posted by 1stPB105 - 21 Nov 2012 14:18

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I'll try the 1-off 2-on 3-off dip setting and see what that does. Like I stated before I don't think I've gone over 7 minutes before I see flames. As a matter of fact last evening I put a bag of pellets in where some of them were like saw dust. Hey if your like me you want to see how this beast ig going to react, that's how you learn. Anyway it wasn't 2 minutes before I had flames. Yep, it was some of those "Sawdust" pellets that probably ignited quicker. I also set the max temp to 150 and min temp to 120, feed rate was 4 (If I set higher I get 3/4 burnt pellets falling in the ash box). After about 30 minutes the boiler temp was 180% and the flames were still wraping around all 3 heat exchangers. So like I said I think it's either the control board or the aquastat sensor. BTW - before I got onto any forums I was playing around with the flame/draft by using a restriction on the air inlet and a damper on the exhaust. The best flame I've seen was nice and blue for about 1.5 inches and then a nice bright yellow (almost white), from bottom to top, and that was with the inlet restricted to about 75 percent and the damper about 3/4 closed. The 1st heat exchanger accumulates the ash dust that is almost white. My take on this is just like a spark plug on car engine (my hobby is muscle cars / drag racing), the air/fuel ration has to be set right for a good combustion. Harmon should be aware of this and build in another sensor in the firebox to set feed rate, air inlet, and exhaust blower to get the proper mix. That's my opinion for what it's worth.

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Re: 1st timer PB105
Posted by wil - 21 Nov 2012 16:52

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1stPB105 wrote:

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inches and then a nice bright yellow (almost white), from bottom to top, and that was with the inlet restricted to about 75 percent and the damper about 3/4 closed. The 1st heat exchanger accumulates the ash dust that is almost white. My take on this is just like a spark plug on car engine (my hobby is muscle cars / drag racing), the air/fuel ration has to be set right for a good combustion. Harmon should be aware of this and build in another sensor in the firebox to set feed rate, air inlet, and exhaust blower to get the proper mix. That's my opinion for what it's worth.I totally agree with you but..... a word of caution to you. A couple months ago I had 3 people from Harman along with my dealer come to inspect my boiler because of the burnpot bubble issue which I've had for the past 5+ years.One of the Harman reps adjusted the draft screw on the controller so that it would always run at full speed. It had been adjusted per Harman spec but he felt that not enough air was passing through the burnpot which was causing the bubble to form in the burnpot, as of right now I think he is correct,so, be careful restricting the air going through the burnpot .

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Re: 1st timer PB105

Posted by 1stPB105 - 21 Nov 2012 17:17

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Note taken. I think there is a fine line between getting enough air across not to form a bubble and getting too much air where the fin ignitors won't light a flame because too much air is basically blowing the fire out, my opinion. What's your take on my aquastat issue ?

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Re: 1st timer PB105

Posted by wil - 21 Nov 2012 18:50

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I'm not sure if you have an aqustate problem, the reason, the fire has to be big enough to satisfy the high temp setting of the boiler. I recall back when I first installed my boiler, I had the feed rate setting on the lower settings, the boiler would never reach the high temp setting of the boiler, basicly would run all the time because it didn't have a fire large enough. I found and it is MHO the feed rate needs to be adjusted up to the point that pellets are not overflowing into the ash pan. It is quite possible that this adjustment has to be made whenever you change brands of pellets. I've had to adjust to the maximum when longer pellets are being used, as low as #4 with shorter pellets. It's a trial and error with the feed adjustment, like I've mentioned, adjust so as no unburnt pellets going into the ash pan. The amount of pellets that are fed into the burnpot prior to ignition may result in pellets overflowing into the ash pan at a higher setting of the feed. For example if the burnpot fills 3/4 full of pellets before ignition, when it ignites and pellets start feeding, it is quite possible to overflow pellets into the ash pan. If you adjust the feed rate to compensate, after the initial fill of pellets are burned, it's quite possible that not enough pellets will be fed creating a small fire which won't allow the boiler to reach maximum temp setting.

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