

Windage Screen Install

This is based on my installation of a Canton Universal Windage Screen kit #20-906 into an aftermarket deep sump oil pan. Canton technical personnel specified 1/8" is the optimal clearance between the screen and rotating assembly. I wanted to be sure to have enough clearance so I used 1/4" in my measurements to start.

NOTE: I do not include the measurements I recorded for my rotating assembly as every motor will vary. I do not want someone to assume their clearances will be the same as they have "the same motor" and install this kit with the wrong distances possibly resulting in damage.

****The only way to properly install this kit is to measure your specific assembly!**

Installation:

1. Hold a straight edge as level as possible with the pan rail on the lowest point at the front of the rotating assembly. For me that was the 1 / 2 connecting rod bolt at its lowest swing / arc. Measure from both pan rail edges of the block to the straight edge to be positive you are getting the same measurement on both sides and that you are holding the straight edge level. Record this measurement on paper.

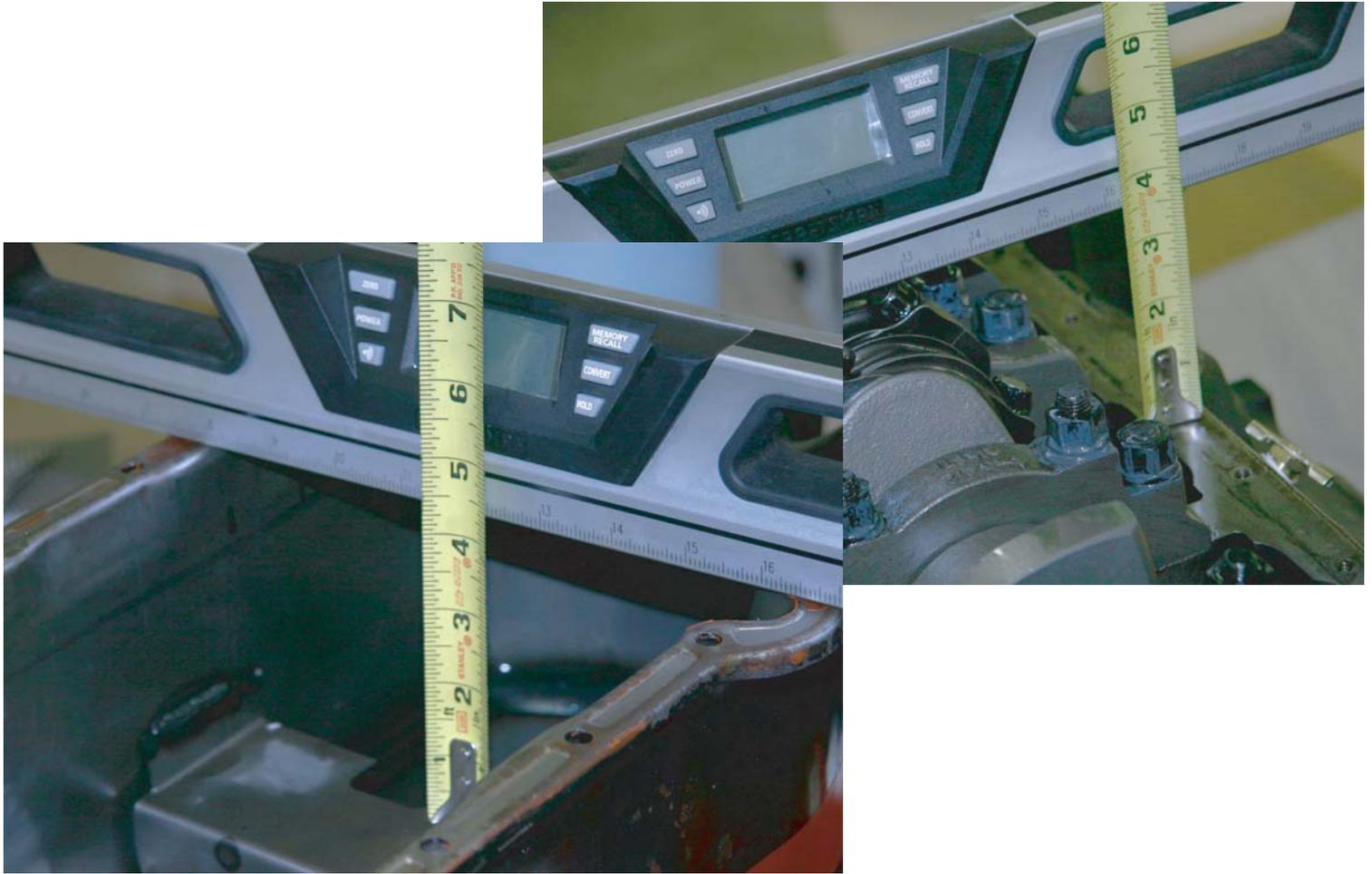


2. Using the oil pan bolt on both sides nearest the 1 / 2 rod combo as reference, measure in the same spot from the oil pan rail to the floor of the pan, again with a straight edge across the pan rails. Record this measurement on paper.

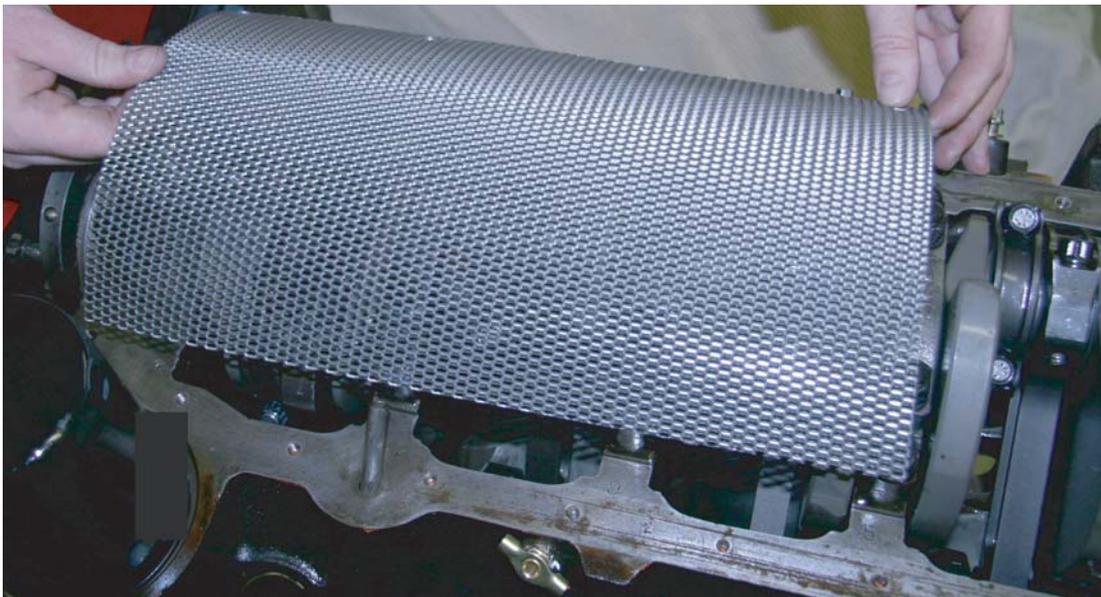


3. Subtraction will show you how much distance there is between the rods lowest swing / arc and the bottom of the pan. Pan depth + pan gasket thickness - connecting rod swing / arc. Don't forget to add in the oil pan gasket thickness to the pan depth! Mine was 3/16" for the oil pan gasket used. Subtract another 1/4" from that total (PD + PGT - CRS/A) and this gives you the distance the screen needs to be set off the floor of the pan. You will need to find something with that height and use that to set the screen to pan distance for the front of the screen.

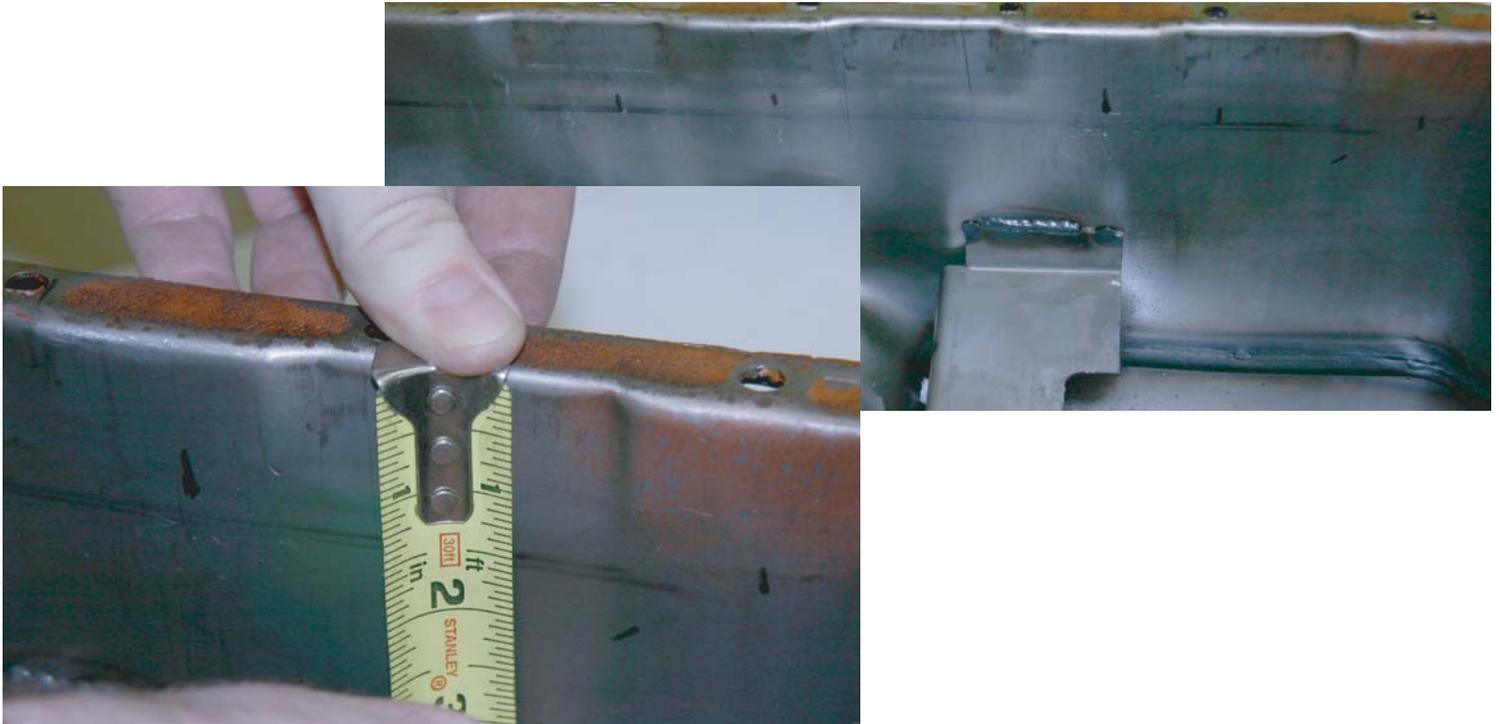
4. Now at the back of the rotating assembly, repeat steps 1-2. For me this was done at the oil pan baffle / trap door assembly in the oil pan as it was the lowest point I could set the screen in the back of the pan. I measured at the 5 / 6 rod combo. Repeating step 3 with your two new measurements will give you the clearance needed at the back of the screen. Again, find something of the height needed and use that to set the screen to pan distance. This measurement for me was the same as the 1 / 2 rod combo measurement. *Do not assume this distance to be the same as the front...measure!*



5. The length of the screen is too long to sit down in the pan at 24". So, for the length of the screen I have it set to bolt on right in the middle of the second main cap (from the front of the motor), and extend back to the oil pump area. I make marks on each side of the pan at this front spot, and at the back edge so that I know where to set the screen into place. I didn't want to place it more forward than that as the pan turns in to meet the timing cover and things start to get tight around the front counterweight of the crank right there. I also figure windage on the 1 / 2 rod combo should not be all that high as the oil that does come off of it should flow back towards the main sump with the vehicle in motion and the slope of the pan floor. I try to keep as much screen towards the back right over the sump area as I assume windage is the highest at this point. The back edge will need to be trimmed to clear the oil pump body, more on that later. I then come up with the length needed, and trim the screen to size.



6. The sides I position 1 1/2" below the rod clearance areas (these are for stroker motor clearance) on the pan sides below the mounting rails. I marked spots at two oil pan bolt holes near each end and with a tape measure on the edge of the rail I measure down along the pan side. I used a smaller straight edge and marked the line.



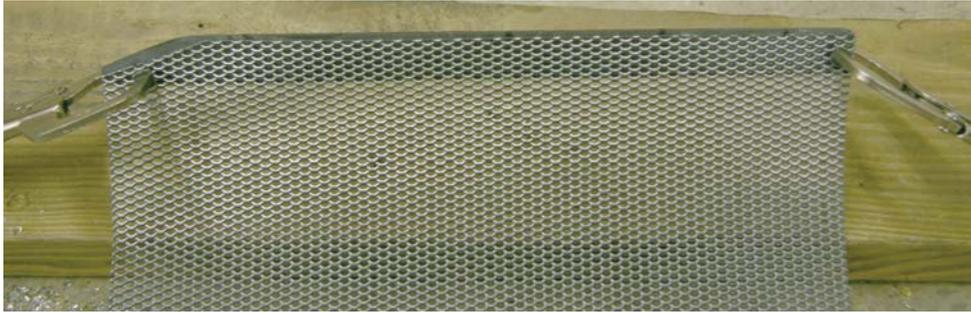
7. My clearance needed from the pan floor came out to 3/4" (steps 1-4) and I was able to use some lug nuts I had laying around that happened to be 3/4" tall. I placed one in each spot on the pan floor. I used a magnet on the underside of the pan in the front, and the trap door baffle in the back to hold them in place where I made my measurements (again.. steps 1-4) and push the screen down into place on top of them. I then marked the screen at the line I have on each pan side to know where to cut the sides of it (step 6). The screen will bow or arc as you push it down into the pan, try to keep it from bending sharply so it keeps a nice arc from pan floor (spaced up of course) to each pan side. **NOTE: 3/4" is just a starting point for the screen height off the pan floor. Tweaking this will be necessary at a later point if there is contact between the rotating assembly and the screen.**



8. After cutting the screen to the width needed I then had to make the "side rails" of the windage screen kit. These weld to the pan sides, then the screen bolts to these. I first put the screen into place spaced from the pan floor, sides at the 1 1/2" down line and the front edge inline with middle of second main cap (step 7). Then with cardboard templates of the supplied rails, I trimmed the cardboard rail template to the same length as the screen. This is now my template of what length to trim the Canton rails to since they come supplied at 24".



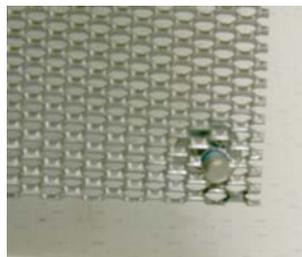
I started on the passenger side rail and trimmed it to length. I then clamped the screen on top of the rail, leaving about 1/16" of the rail sticking above the screen to leave room to weld to the pan side



I then drill the mounting holes through the screen and rail (away from the pan, on a piece of wood) using a 1/4" drill bit. I then remove the screen and drill (enlarge) the holes in the rail using a 3/8" drill bit.



This serves two purposes: 1. It keeps the hole in the screen the same size (1/4") as the supplied bolt shank to just pass through so there is no slop under head, to keep from weakening the screen.



2. The rail clip needs a 3/8" hole to securely snap into place. I then installed the supplied clips onto the rails and with washers on the allen head bolts,

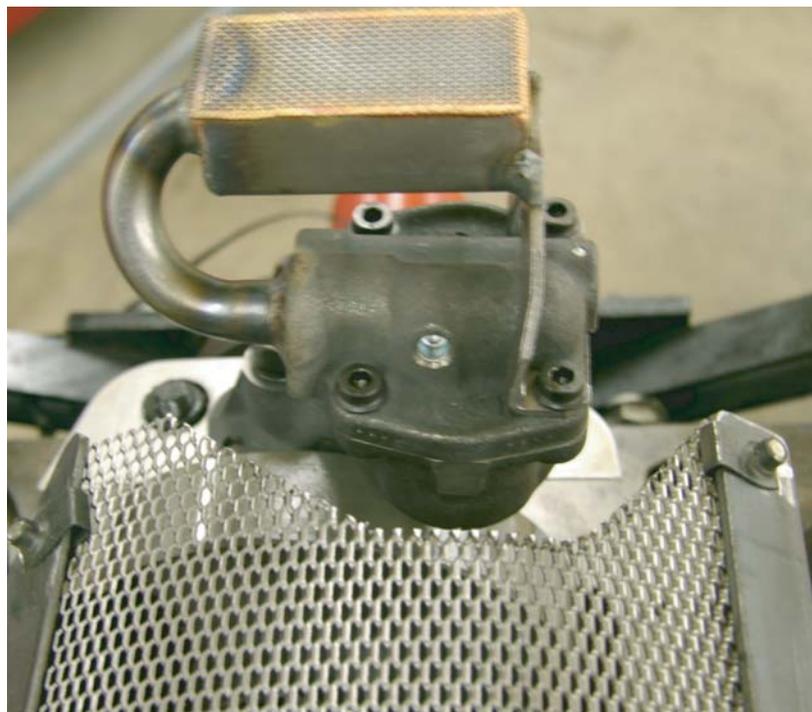


then bolt the screen to the rail. I then place the screen back into the pan. Then using this same method, I make the second side rail for the opposite side of the pan. The screen width may need additional trimming with the second rail in place. Now I have both side rails cut to length, holes drilled and the screen is bolted to each one.

NOTE: The windage screen rail clips may contact the sides of the pan due to the angle the rails install at. The backside of the clips hit the pan sides and hold the rails out from sitting flat against the side. I decided to trim the back side of the clips, there is a little lip that curves out that hits the pan sides. Once trimmed off, the rails sit nice and flat against the pan sides allowing a tight weld joint.



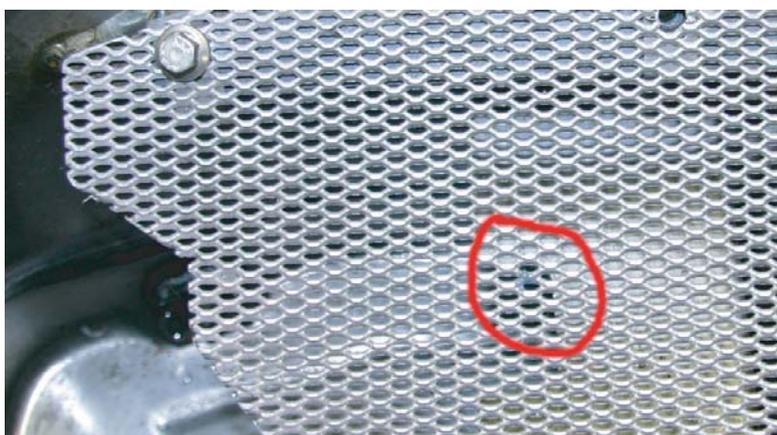
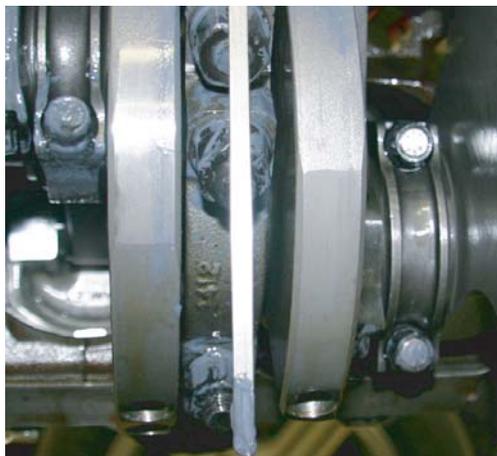
9. Now I trim for the oil pump clearance. I hold the screen in place according to the placement near the main caps (step 5). I then mark a line on the screen around the oil pump body, then trim it (screen) with a cut off wheel. I then move the screen up and down in a vertical movement past the pump to make sure it clears the body as if I was putting the pan on with the screen installed. This may need additional attention once in position in the pan, but it gets you close.



10. Place the screen/rail assembly in the pan on the 1 1/2" lines marked on the pan sides (step 6). At this point use earth magnets on the outside of the pan inline with the rails to hold them in place. Make note of each sides measurement down from the pan rail so you can remeasure after removing the pan to make sure nothing moved. I generously coat the rod bolts of the 3/4, 5/6, and 7/8 combo with engine assembly grease so if any of them contact the screen anywhere it will be visual where. Slowly install the oil pan on the motor. I rotate the motor to an upright position and raised the pan (NO gasket at this point) from underneath so as not to chance having the screen fall out, as it would if the pan was installed upside down. I then place a bolt in each pan corner and rotate the crank slowly (using a crank socket, rotate clockwise). Any contact will be audible, and if you do hear any..**STOP**. Slowly remove the pan and see where the contact was. There will be grease markings so it should be easy to locate. Adjust the screen as needed. *Mine did hit!* I was able to lower the passenger side rail 1/16" and test fit again. At this point I was able to rotate the motor clockwise through several revolutions with no contact. If there still is contact, remove the pan and lower the opposite side of the screen 1/16" as well. Continue this process till no contact is heard. Now with the gasket installed in place I have at least 3/16" clearance (gasket thickness) to the rotating assembly which is 1/16" more than optimal as specified from Canton. Slowly remove the pan and remeasure to make sure nothing moved. If all measurements check out, tack weld each rail in place. Remove the screen from the rails and stitch weld the rails in place. I welded a 1" bead or so right above each of the bolt holes on each rail.



11. Insert the dipstick in the motor and take note of where it falls in relation to the rotating assembly. I generously coat the tip of the dipstick with engine assembly grease so I can see where it makes contact on the screen. It will be visual where this way. Or you can take measurements from the pan rail of the block, transfer it to the screen and drill a 1/2" hole. With the pan in place, insert the dipstick to make sure it does not get caught on the screen and that it passes through into the sump. If not, tweak as necessary.



12. Make sure to clean the pan and windage screen related parts extremely well of all metal dust, shavings, etc. and reinstall the screen into the pan, then the pan to the motor (with gasket this time). At this point you are done and you have just installed a windage screen in your oil pan for better oil control!