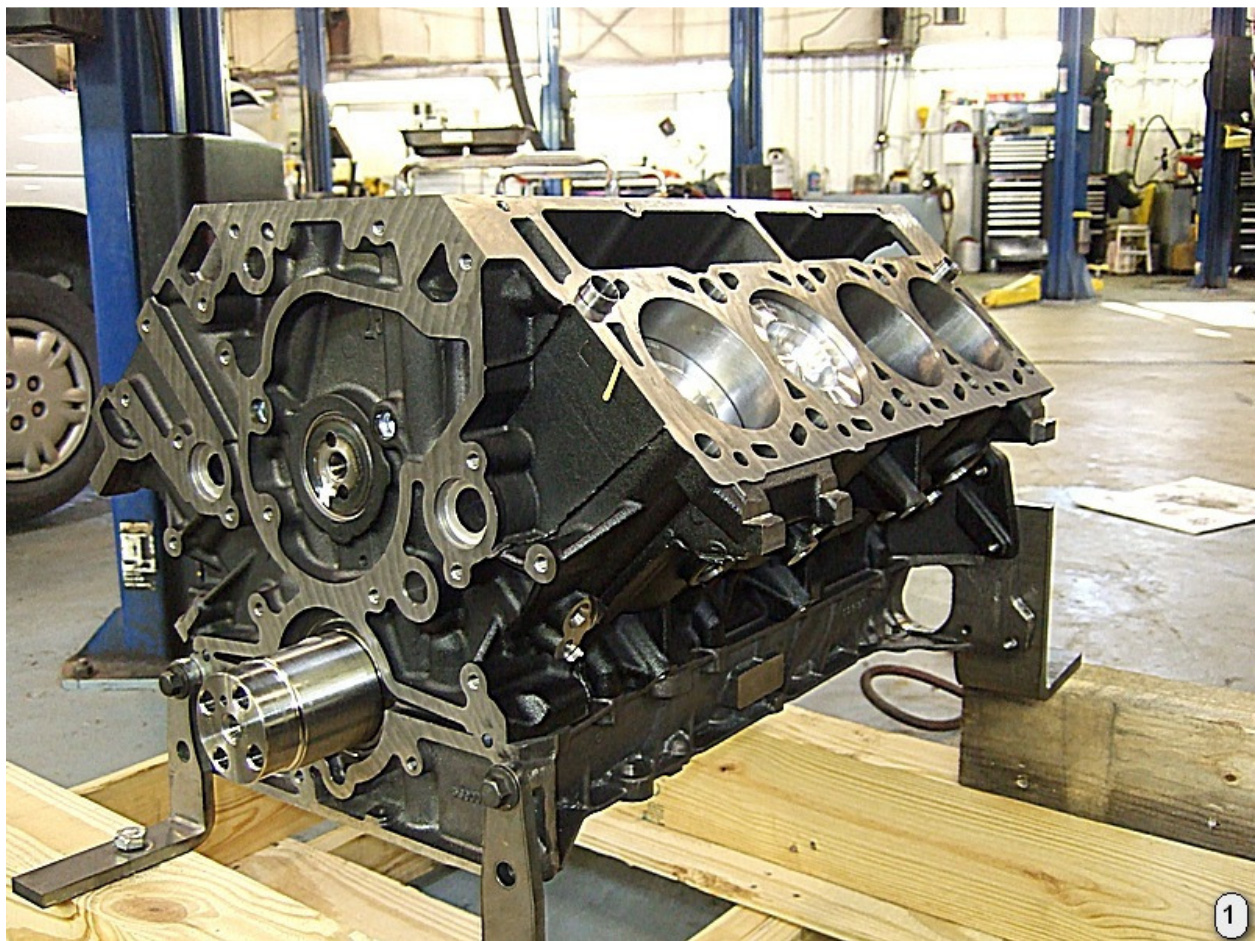


6.4L Short Block/Long Block build

I recently had the pleasure of installing a 6.4L short block. Being the first one, it was a parts logistical nitemare. Well, then I had to do another one. Guess what, it wasn't much better the second time around. So, I broke out my handy dandy camera and put it to work. I hate looking at part numbers and tool numbers. If I have a picture to go with the number then I am a much happier technician. I am going to list the part numbers needed along with a picture as I build up this unit. The parts list is at the end of this document in the appendix. Skip down and print that out so you can highlight what you want and black out what you don't want.



This is her, and has got to be one of the roughest castings I have ever laid eyes on.



Crank sensor "o"-ring, this one gives my parts guys fits.



The block heater "o"-ring is a 4ct., cam "o"-rings is a kit, oil drain back fitting "o"-ring.



I next install the oil cooler kit.



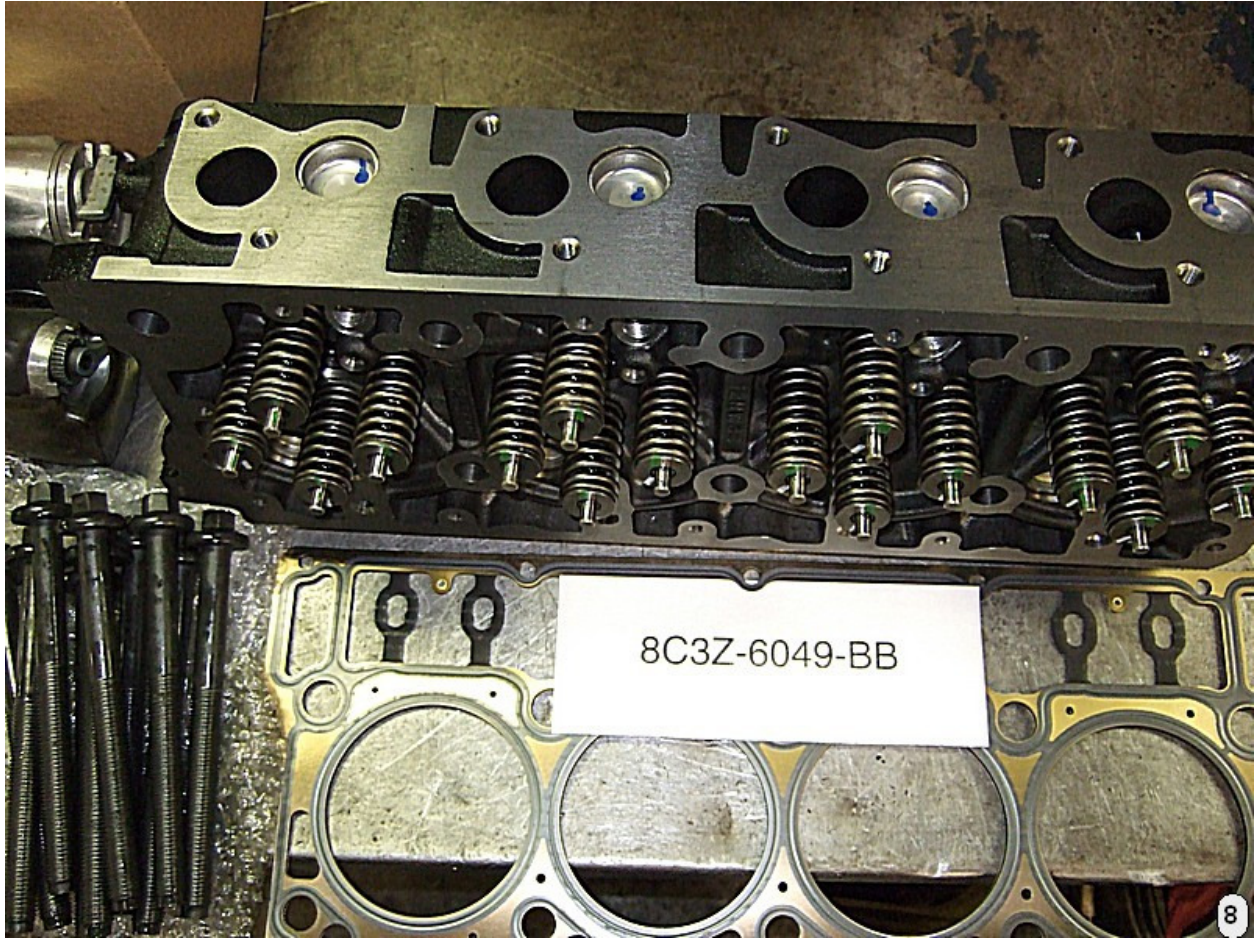
Then the turbo pedestal. This gasket is a 4ct.



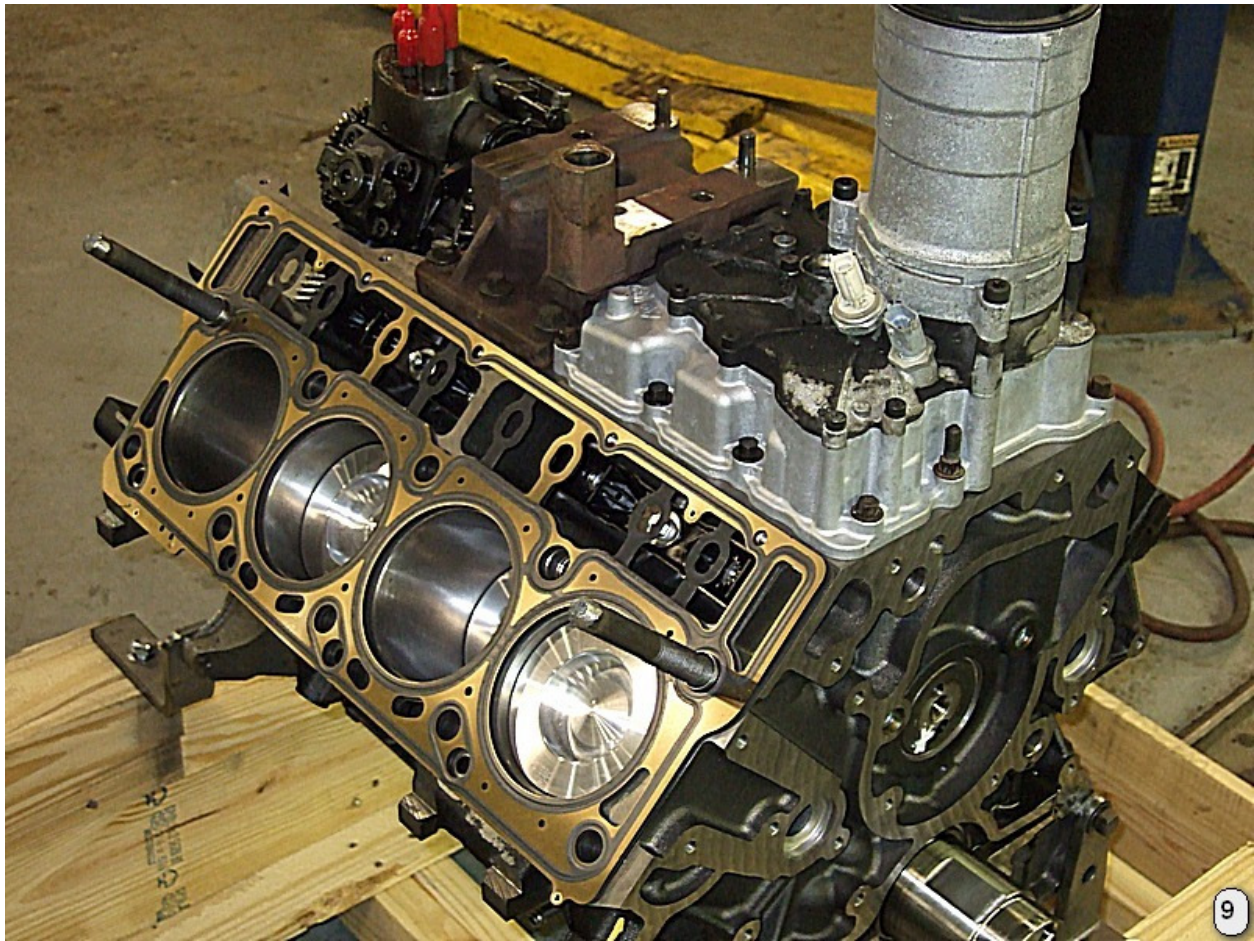
I always prime new oil coolers.



Oil filter stand pipe "o"-ring.



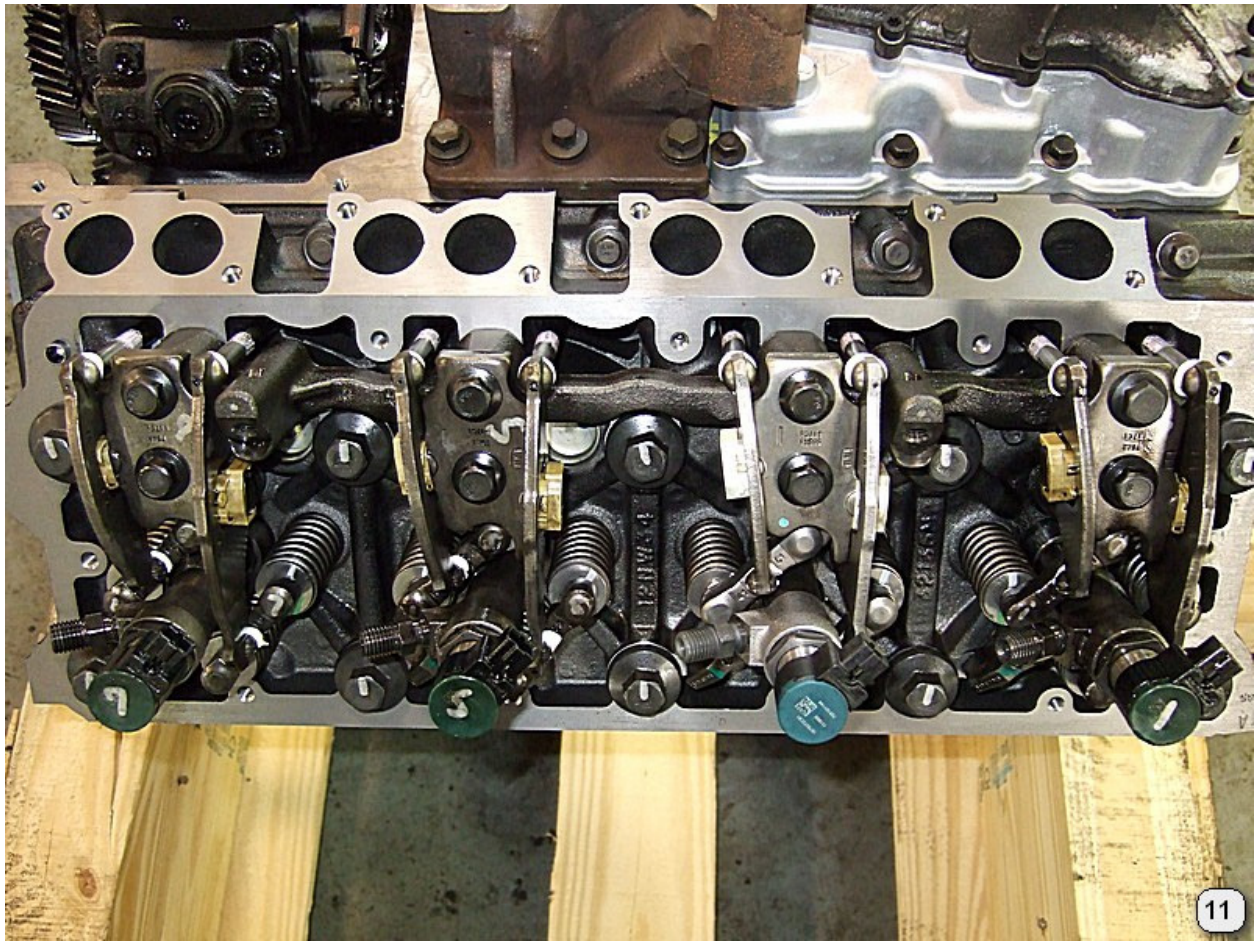
If you are turning a short block into a long block, then this is the cylinder head kit.



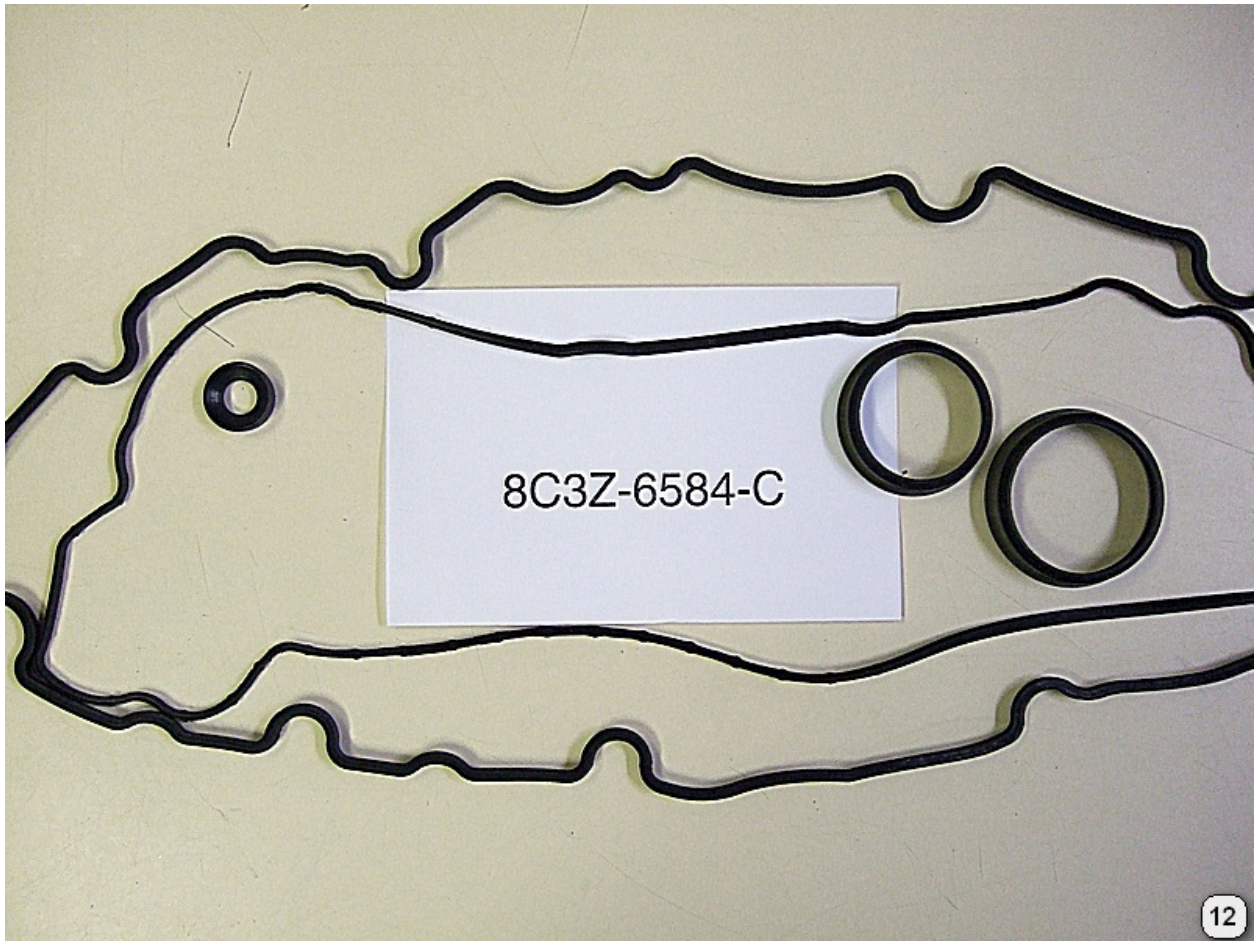
Here it is so far with the deck ready for the heads. The new 6.4 gaskets are black



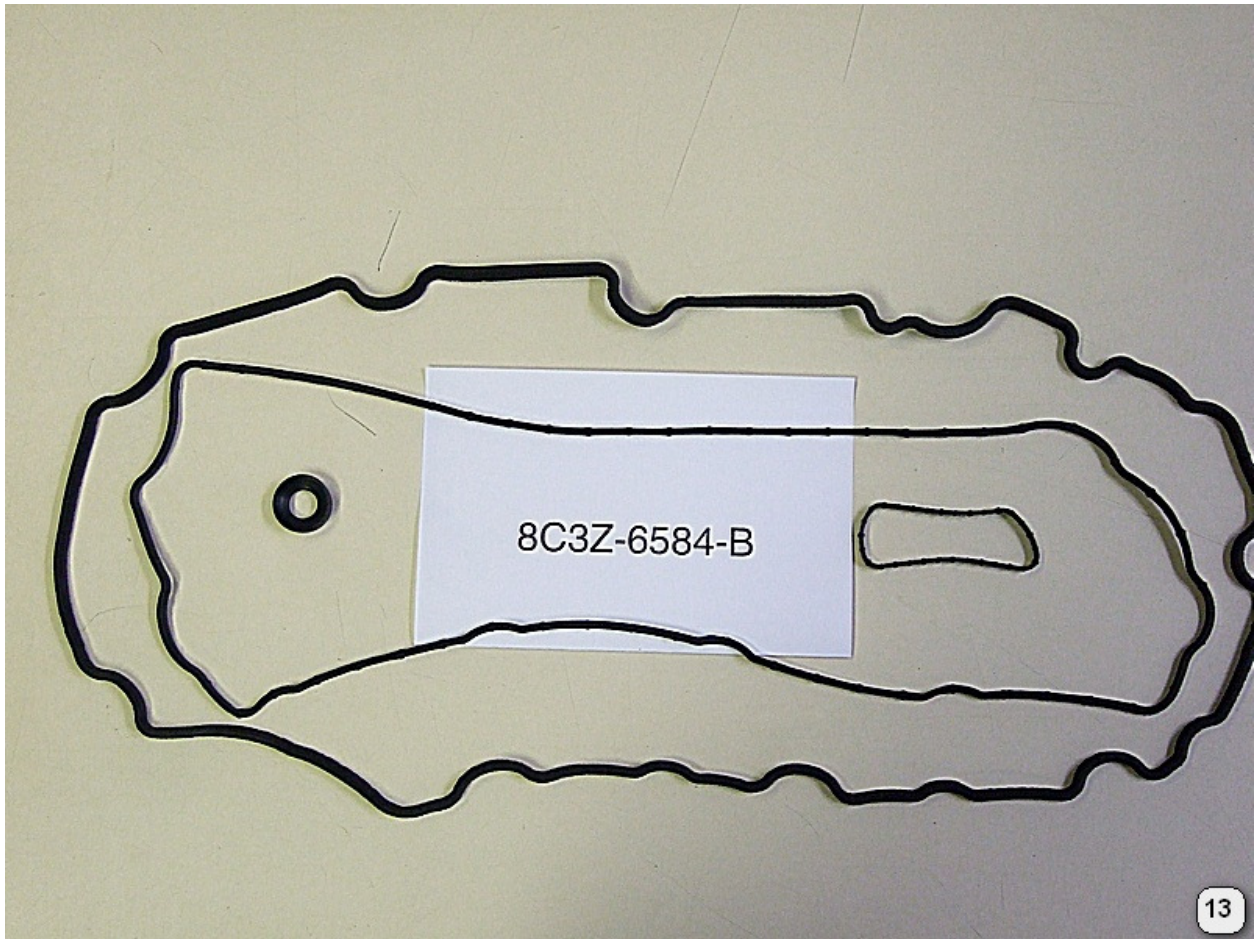
Gonna need 8 of these kits. A valve grind set will have them included.



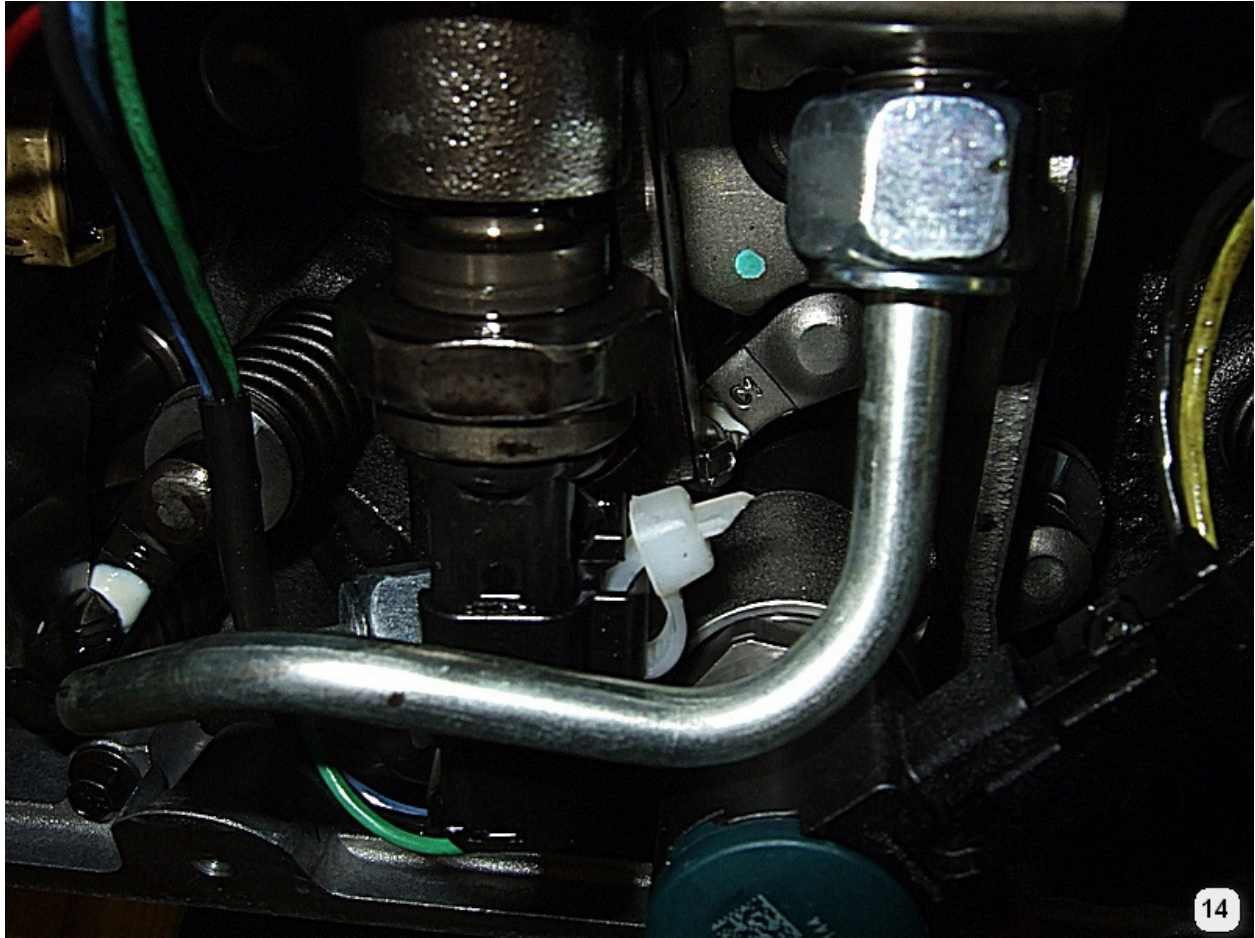
Alright, all of those items are in and torqued, ready for the rocker boxes.



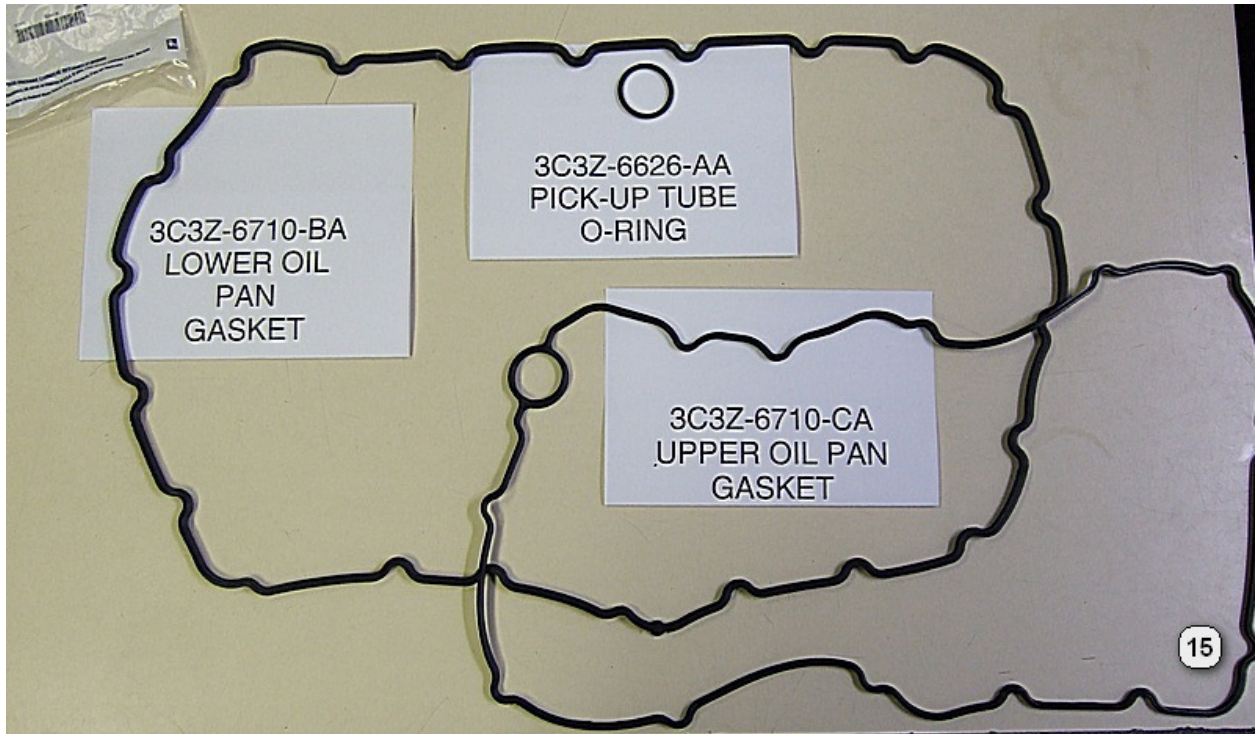
These kits are nice and you can use them for both short and long block builds. This takes care of the left side.



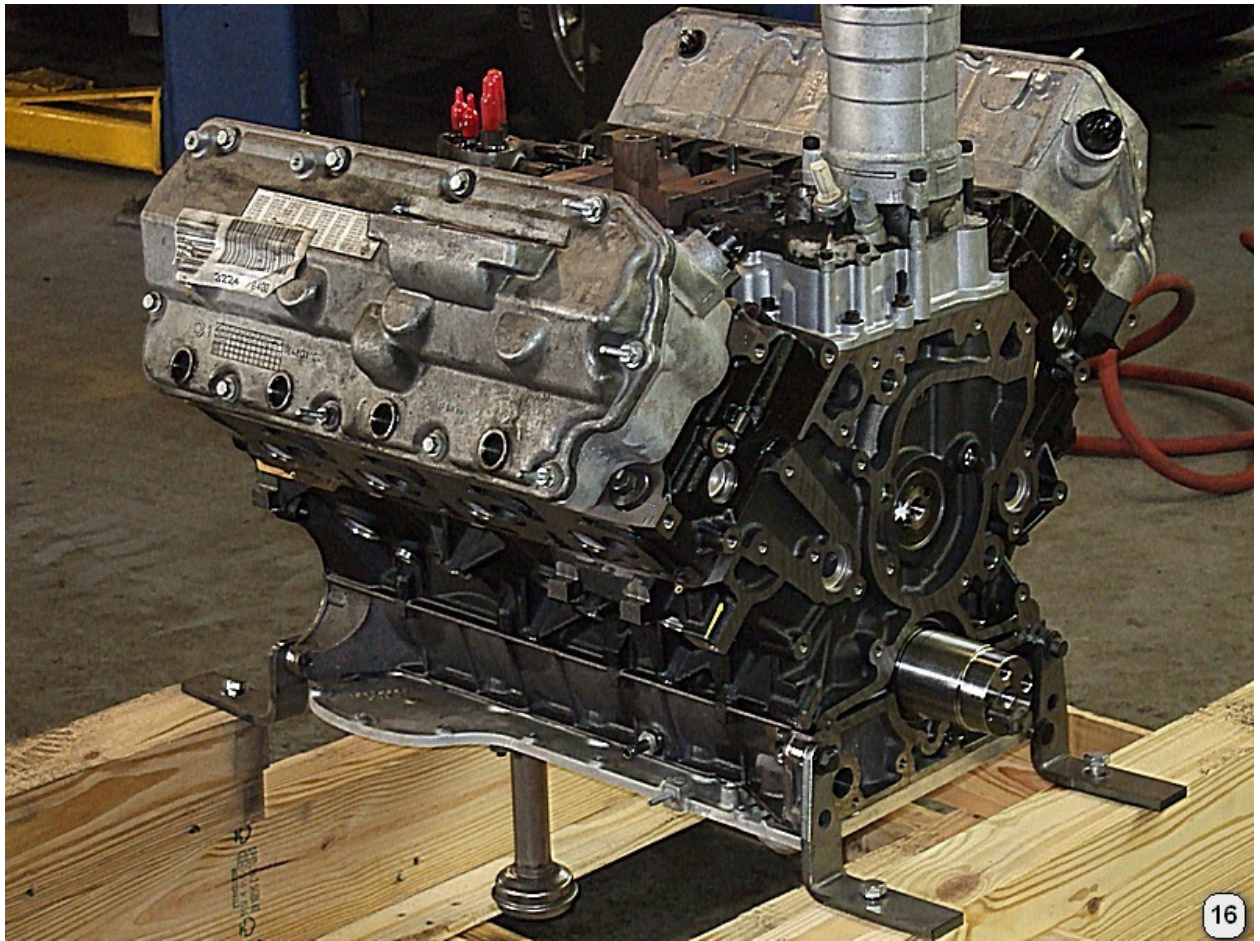
This takes care of the right side.



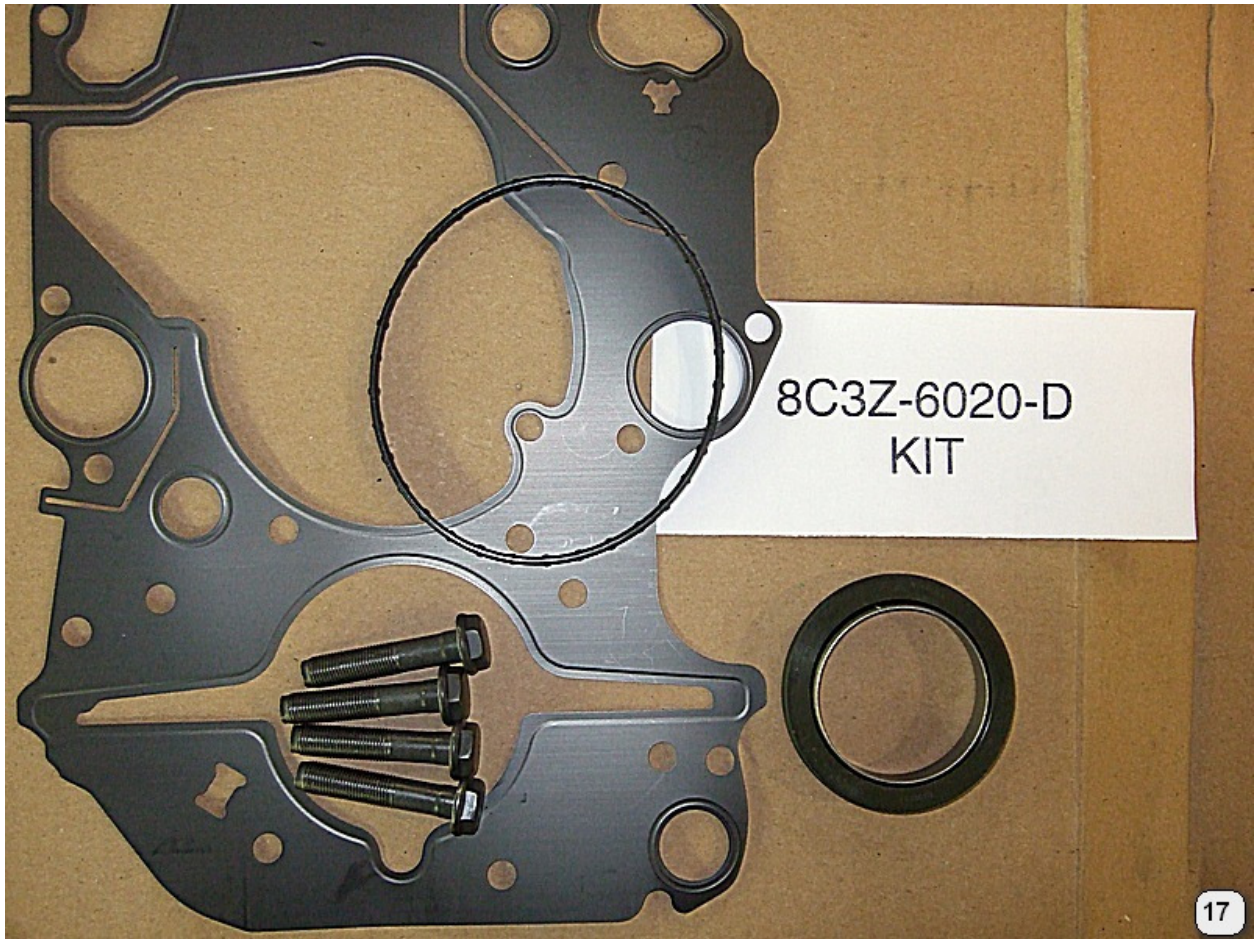
Before I button up the right side, I ALWAYS zip tie the FRP sensor connector.



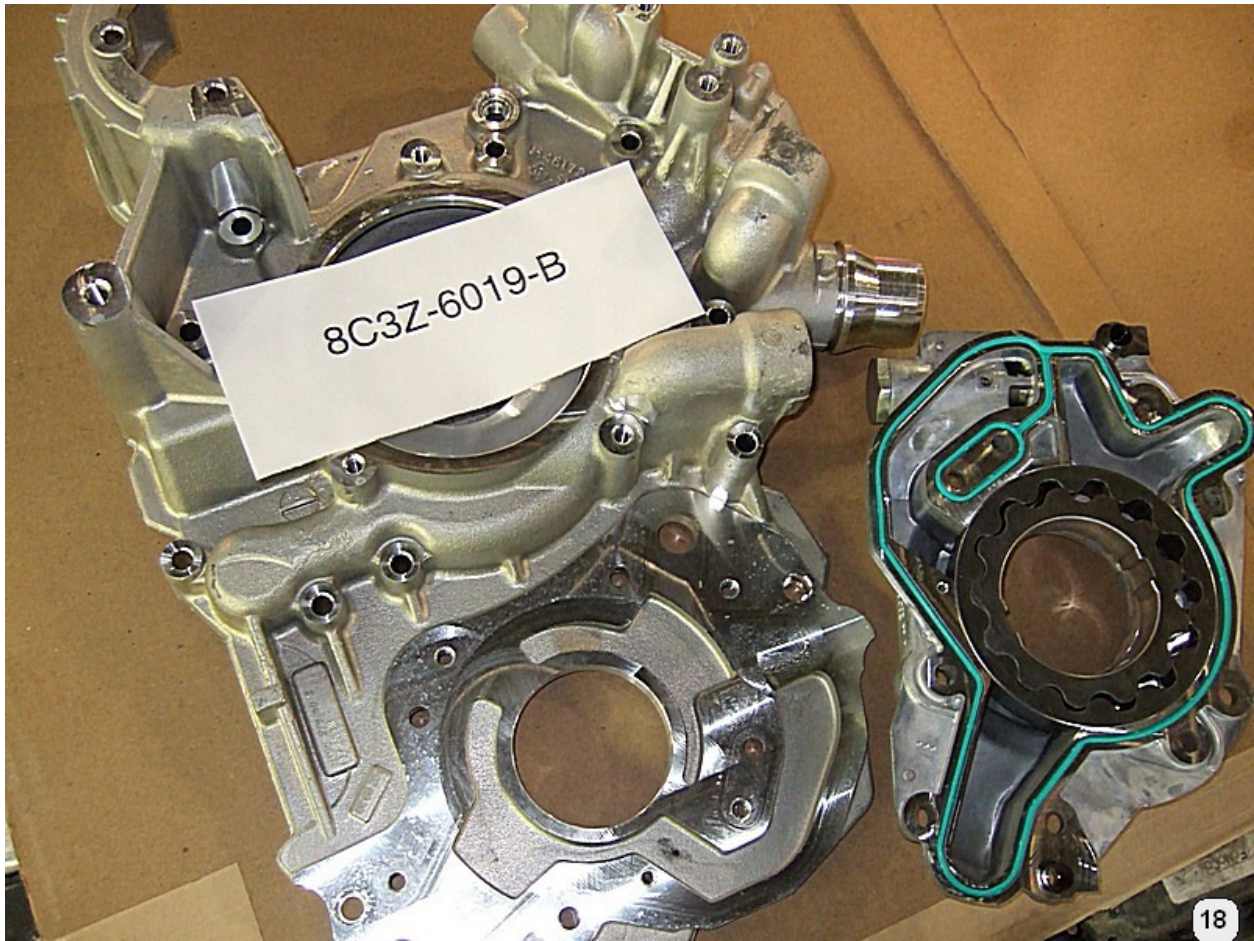
I keep asking for a bottom end gasket set with no luck, so I have to get all the gaskets separately.



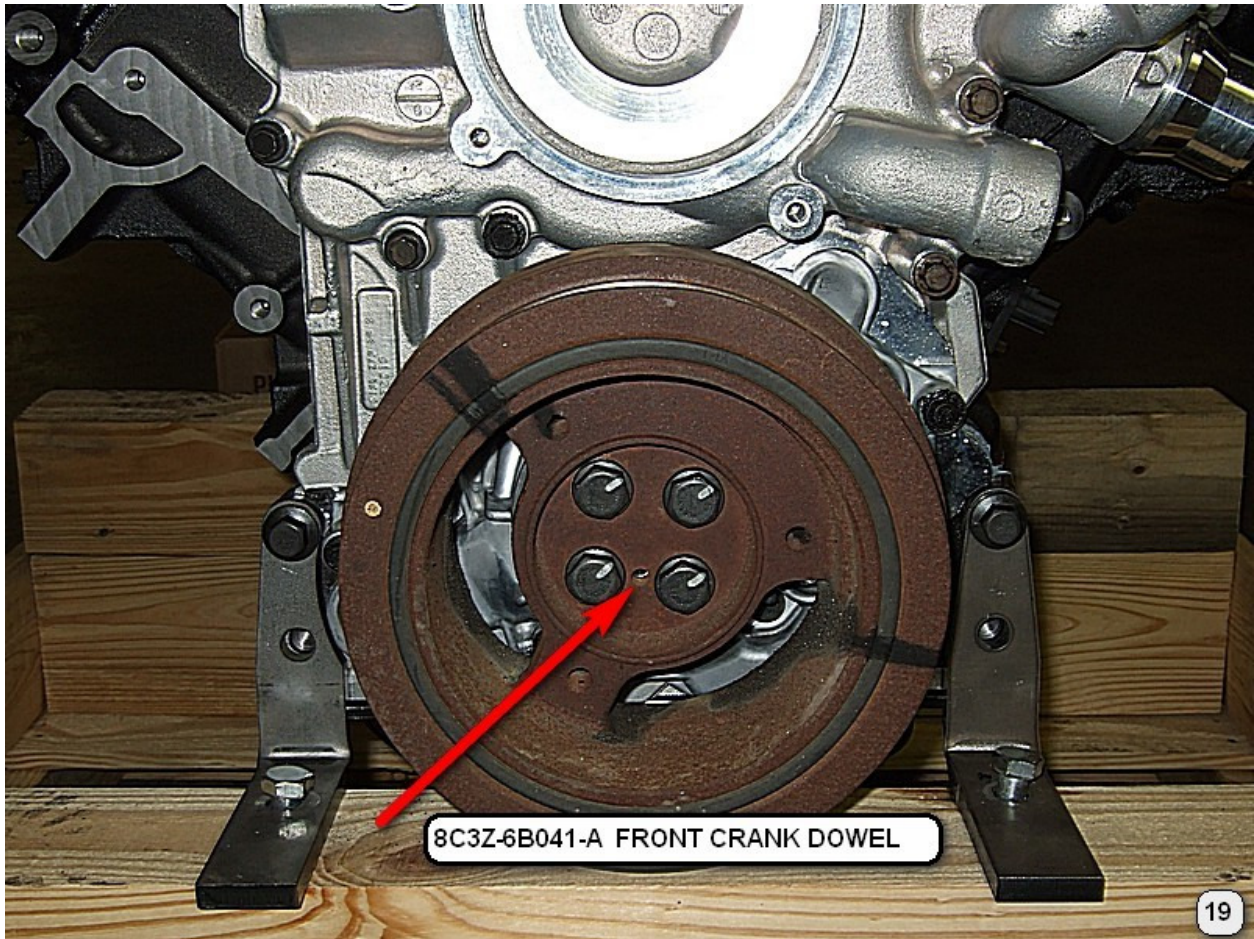
That brings me to this point and I am getting ready to install the lower oil pan.



OK, my front cover was cavitated as just about all of them are. A front cover does not come with gaskets only an oil pump. If you are reusing the front cover, you need to order an oil pump. Either way you will need this front cover gasket set.



Front cover assy. If you reuse the old cover and order an oil pump it will come as pictured in the lower corner with green gasket. (# 8C3Z-6600-A oil pump assy)



These guys are seriously confused when it comes to dowel pin usage on this motor. The front crank will not come with a pin. You will have to transfer it over and if you can't, use this number.



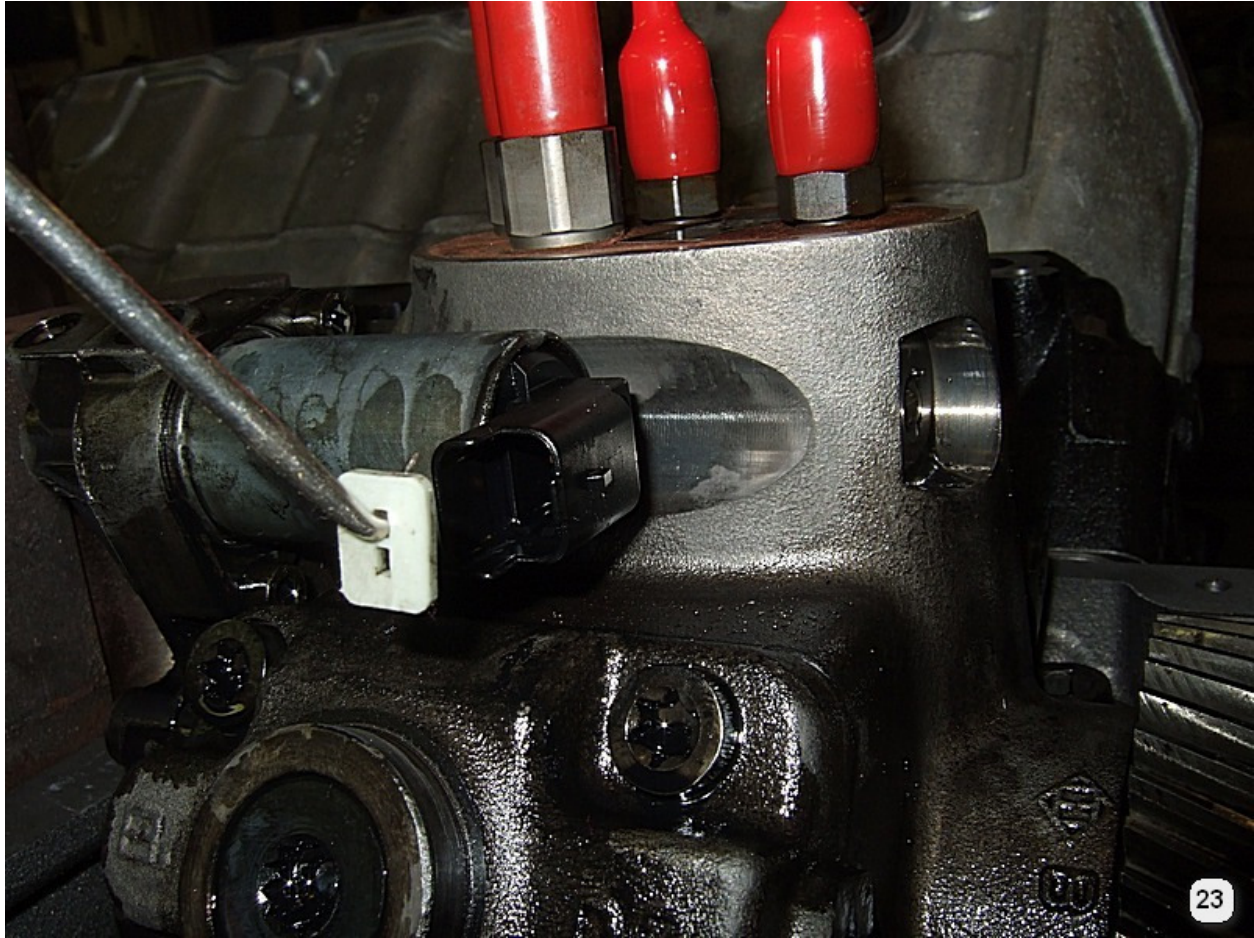
If your replacing the motor, it's gonna get a water pump, this part number comes with a gasket also.



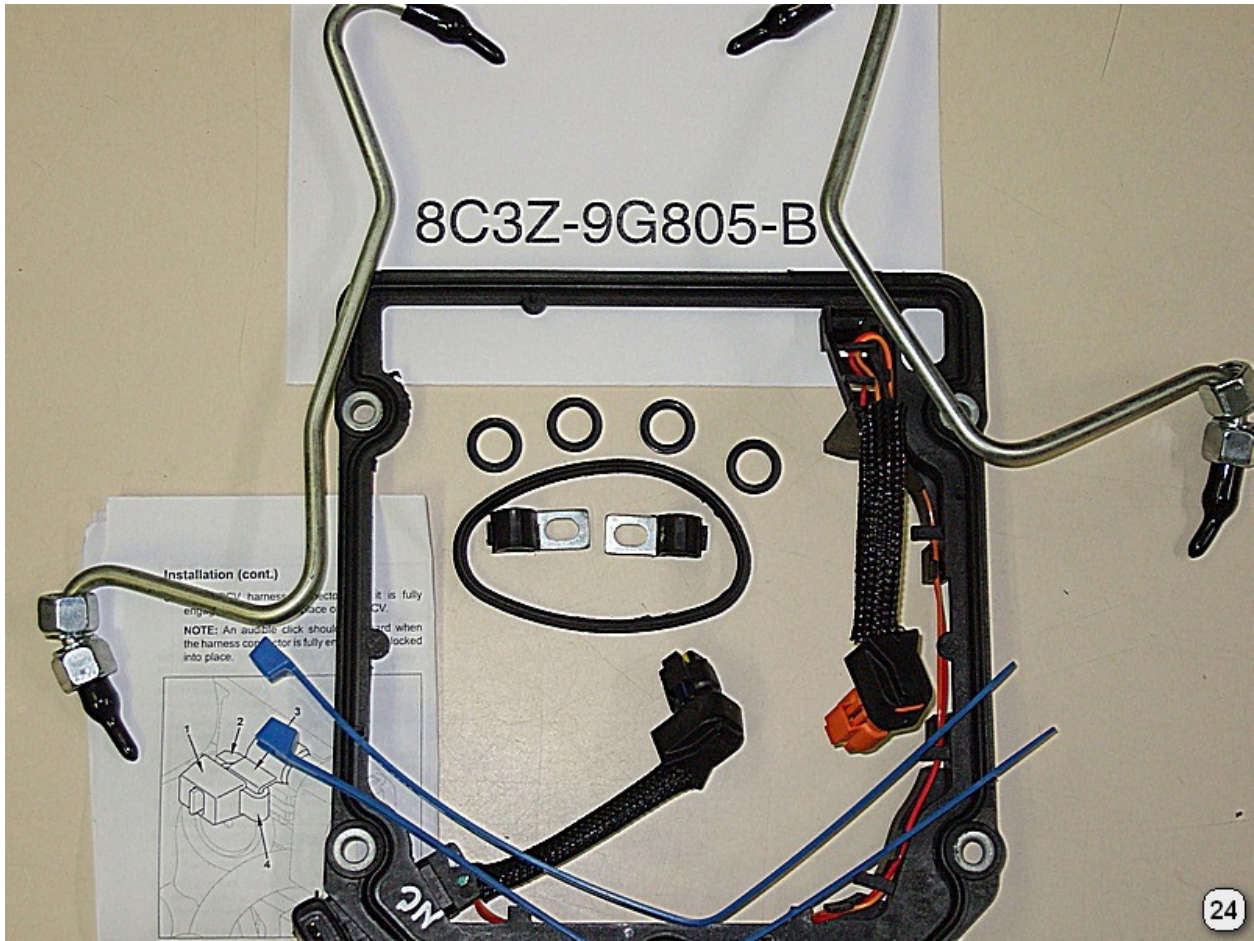
Rear cover gasket.



Updated rear main seal with full sleeve and loc-tite preapplied.



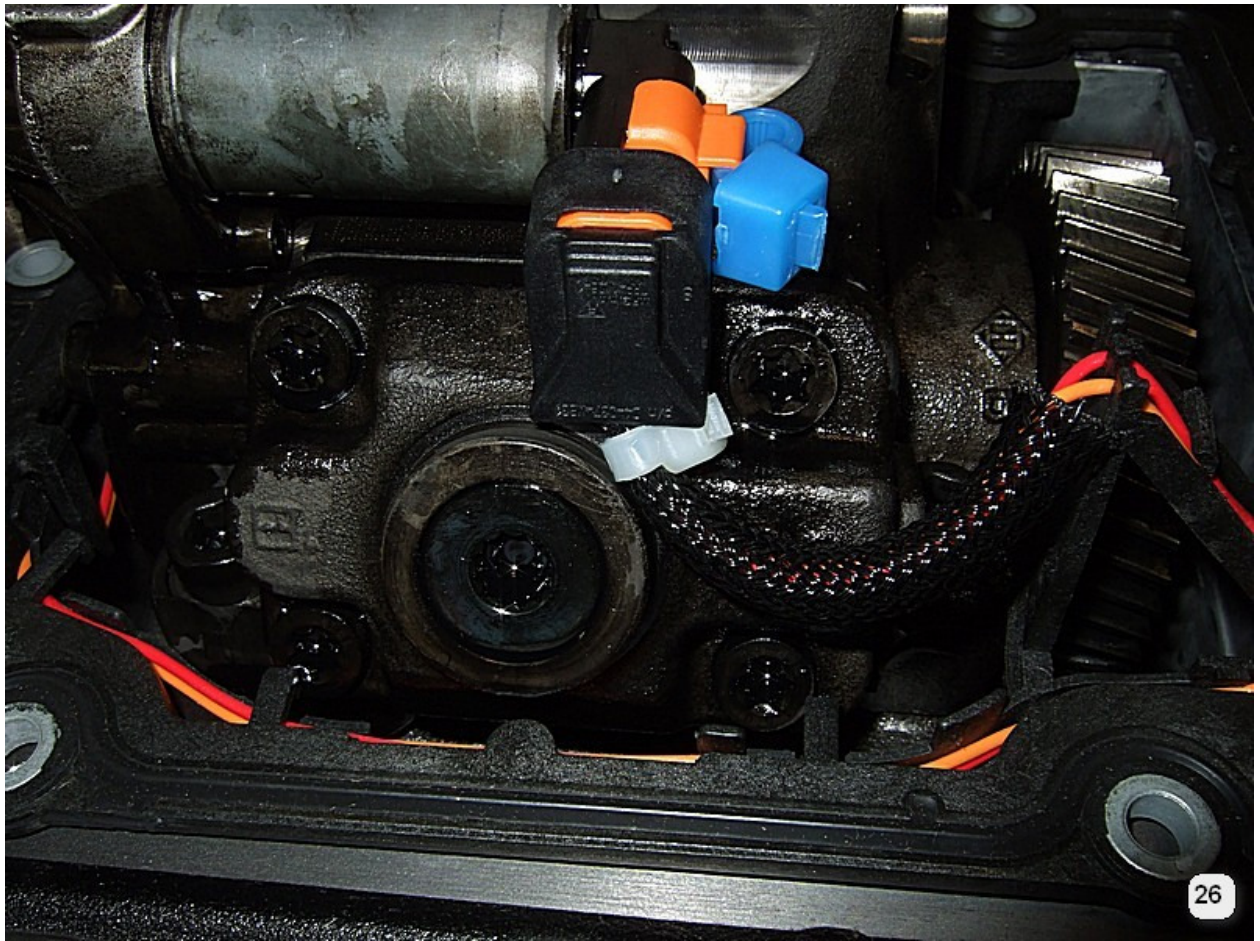
Do yourself a favor and take these rubber spacers out of the PCV, VCV connectors while the pump is still on the bench.



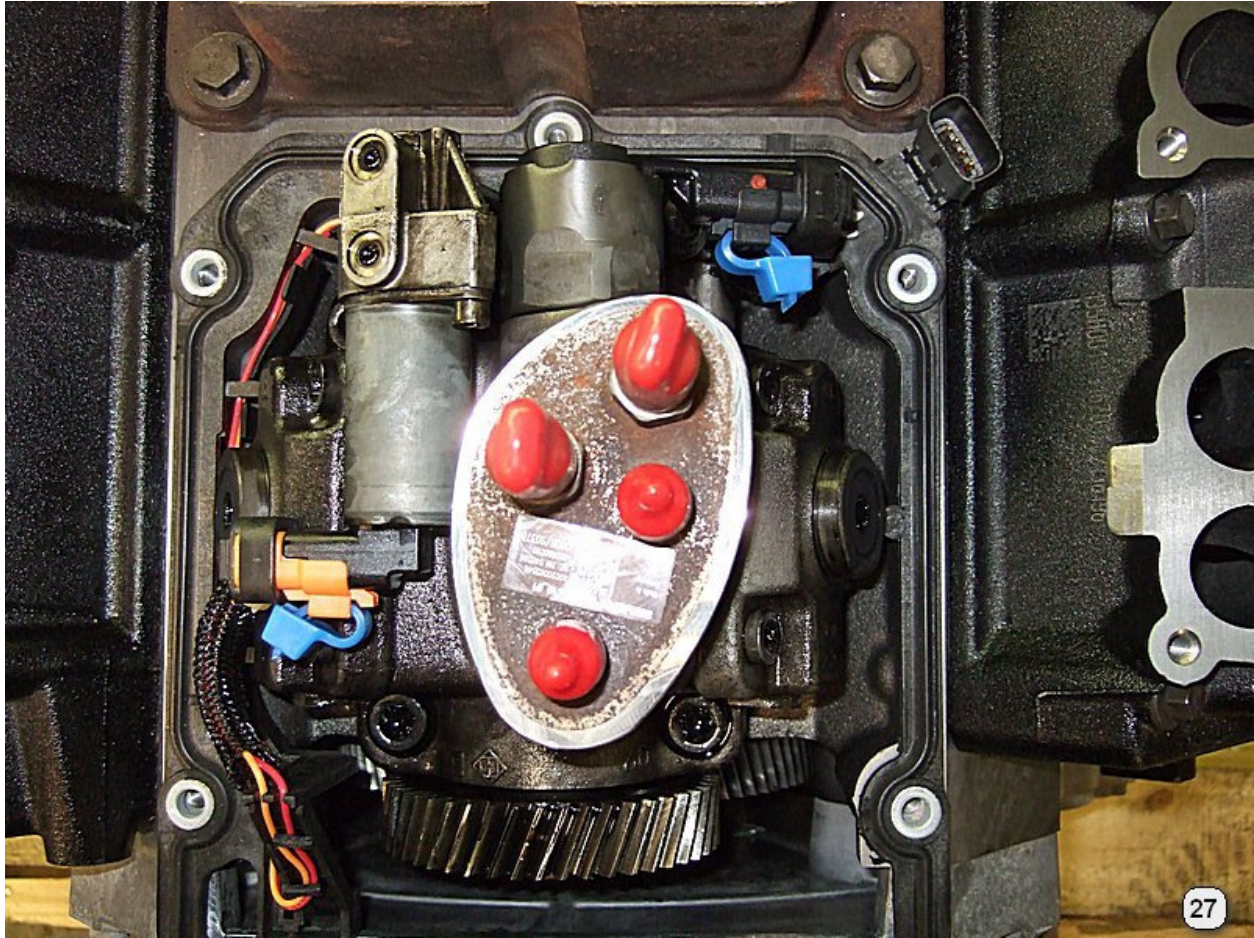
HPFP cover gasket kit.



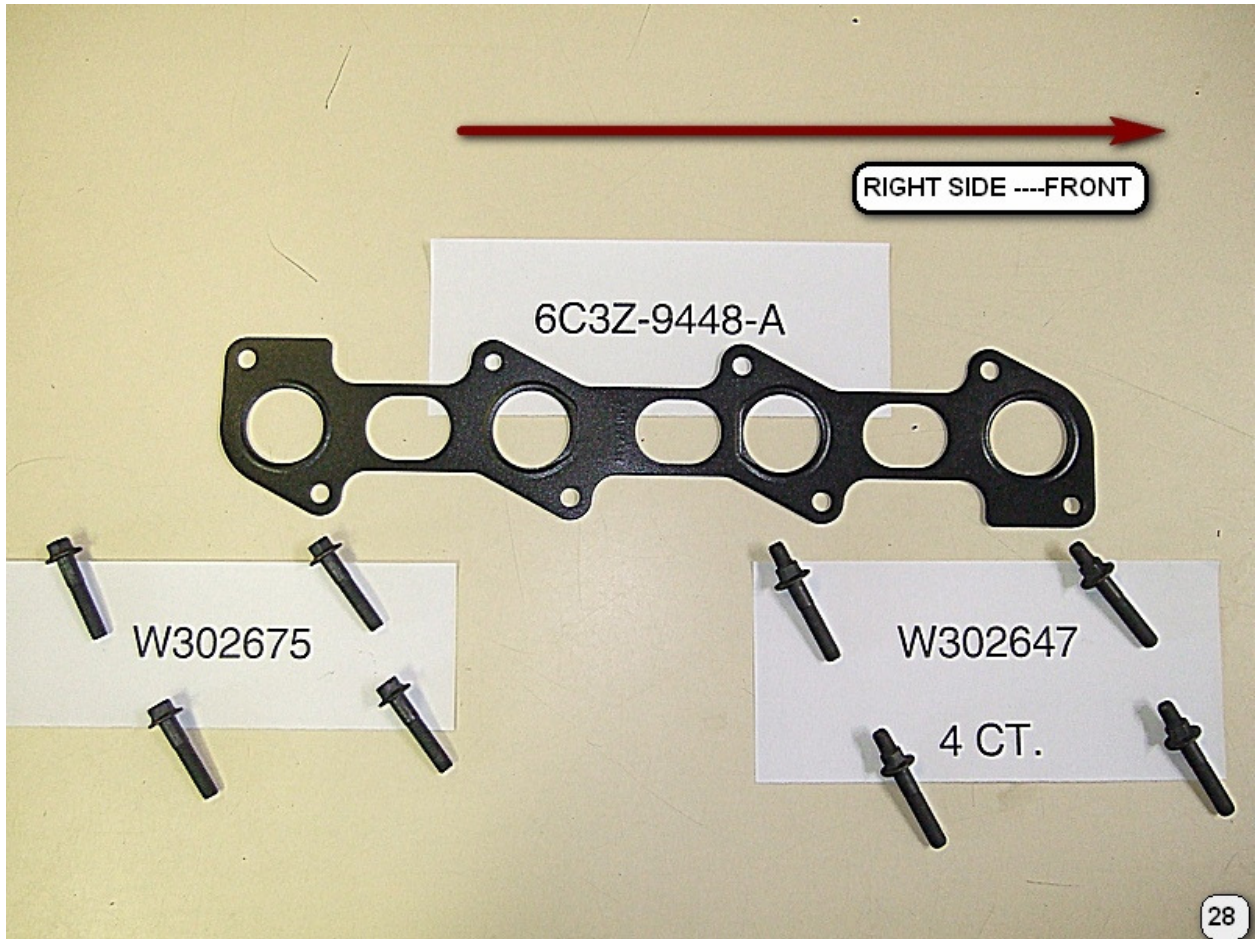
Ford did not do a good job with the convolute solution to chaffing, as you can see if left alone it will still chafe on the pump piston housing.



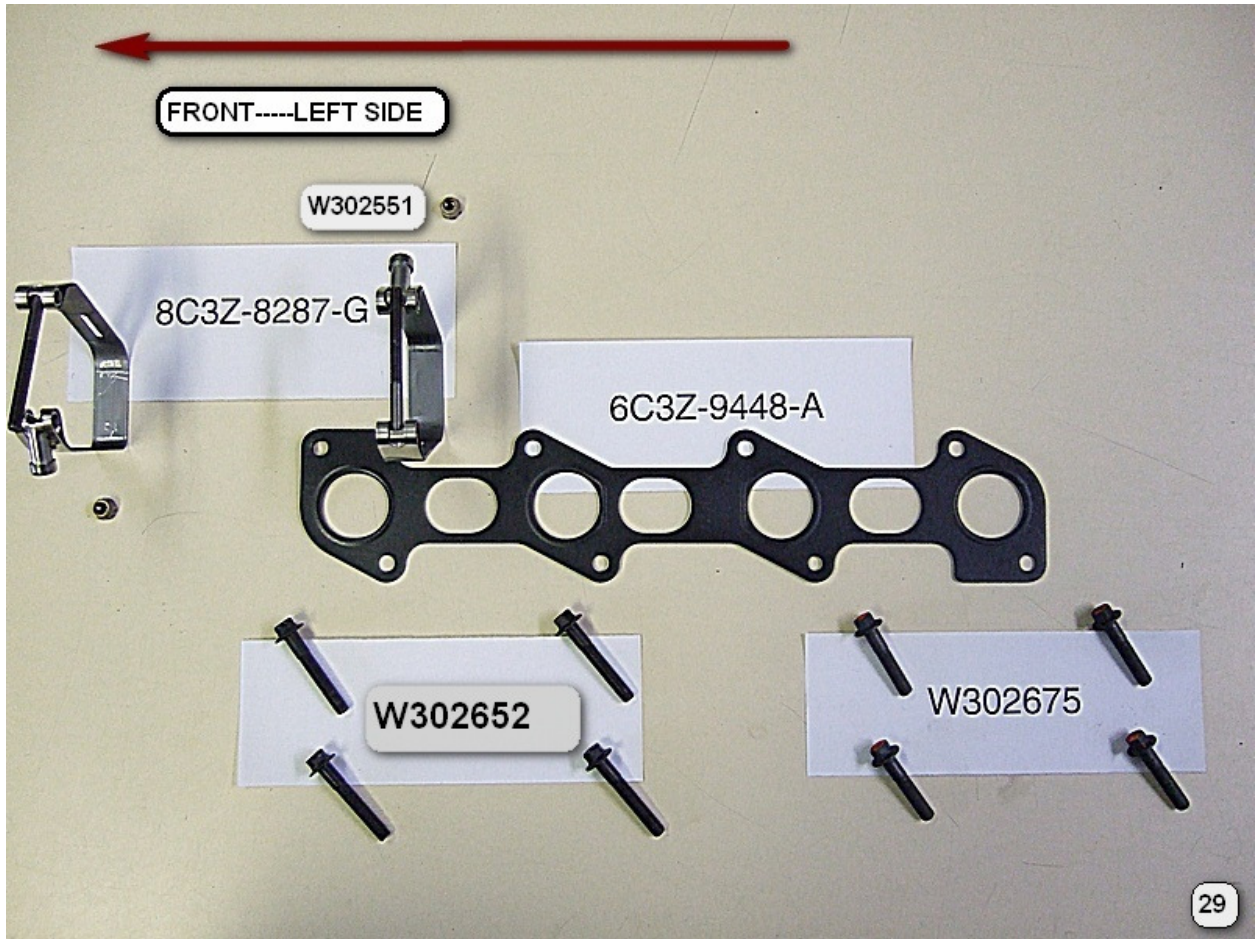
This also gets another zip tie to keep the convolute over the wiring.



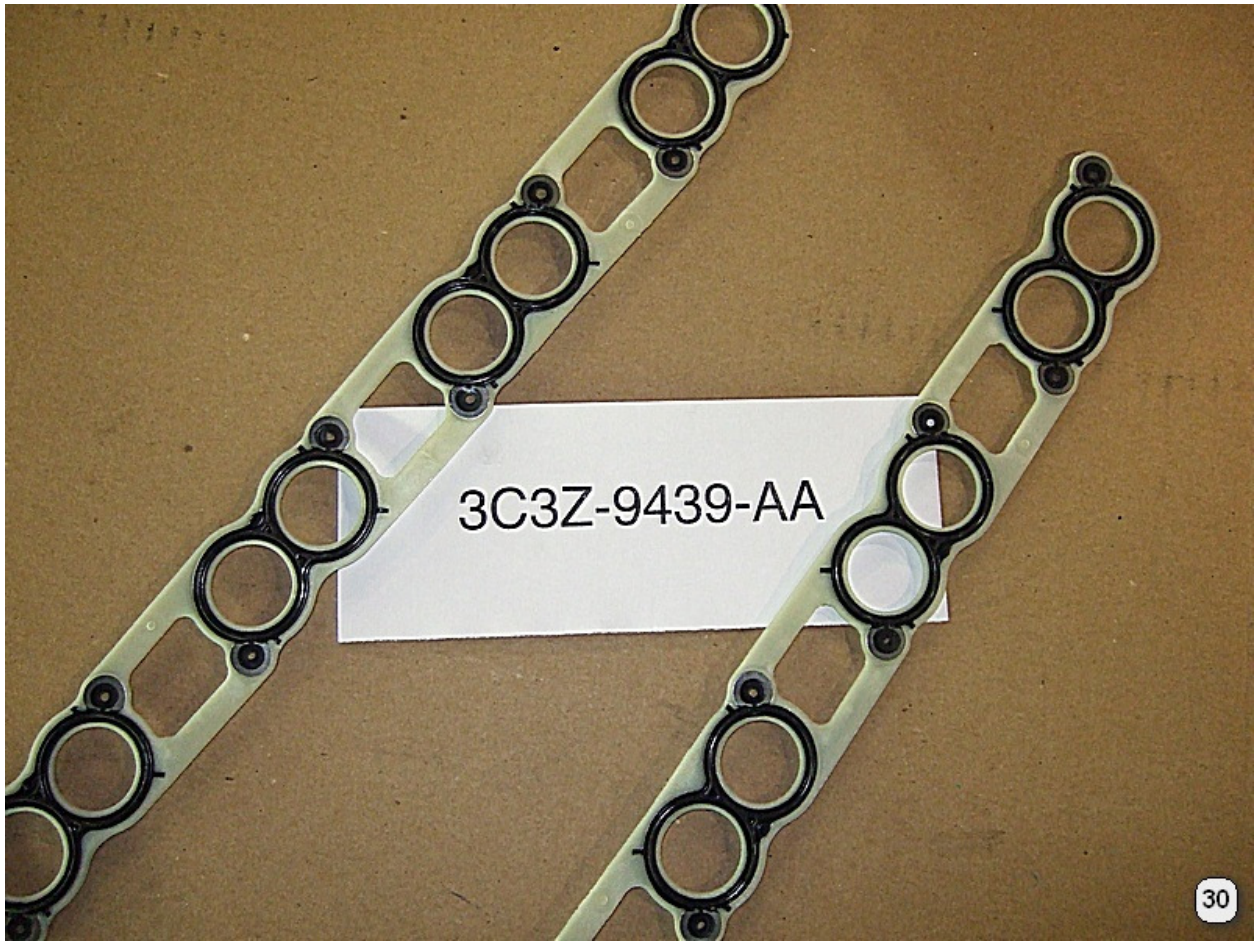
Cover is ready to go on after more factory approved zip ties are in place.



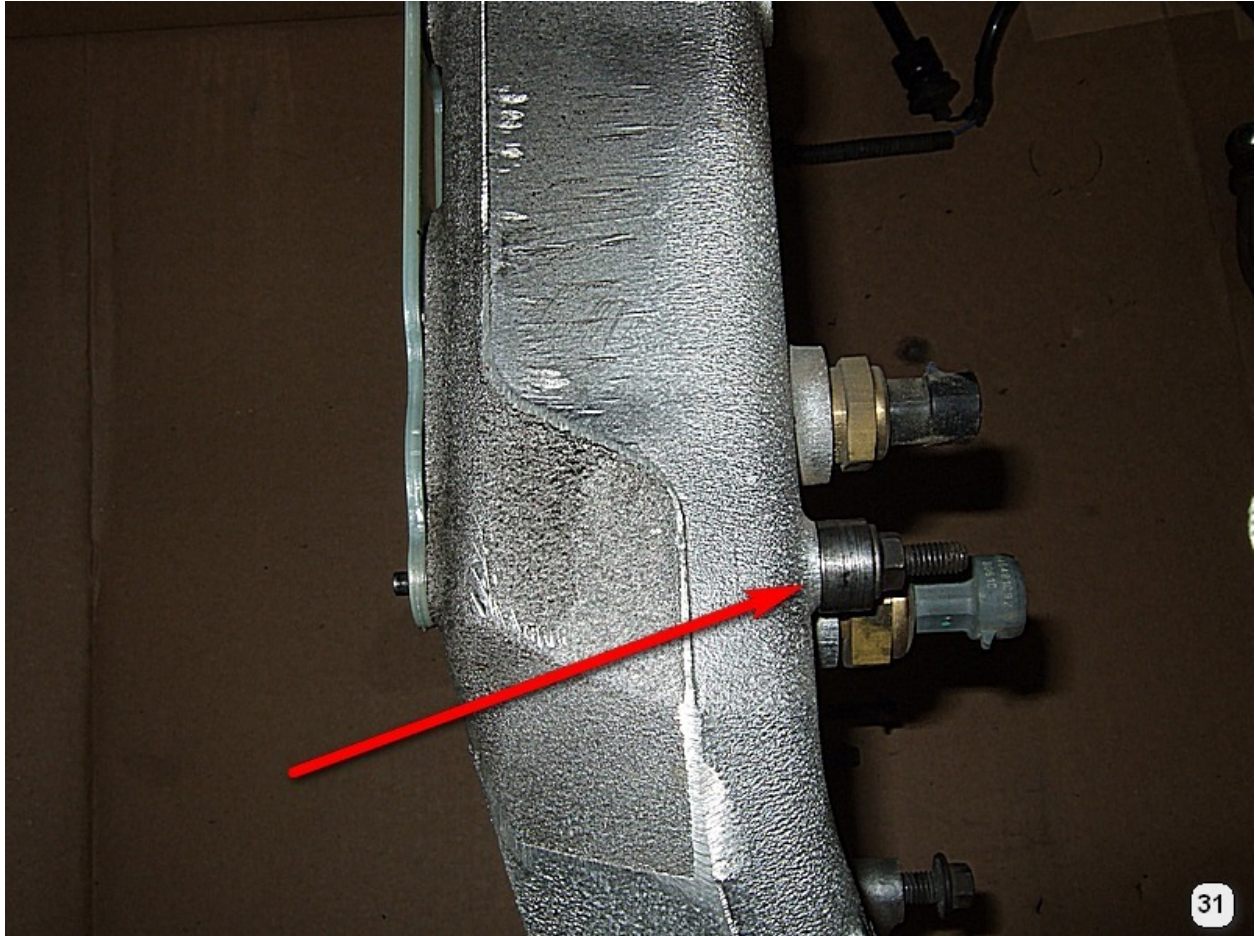
Exhaust manifolds are next. This is the right side.



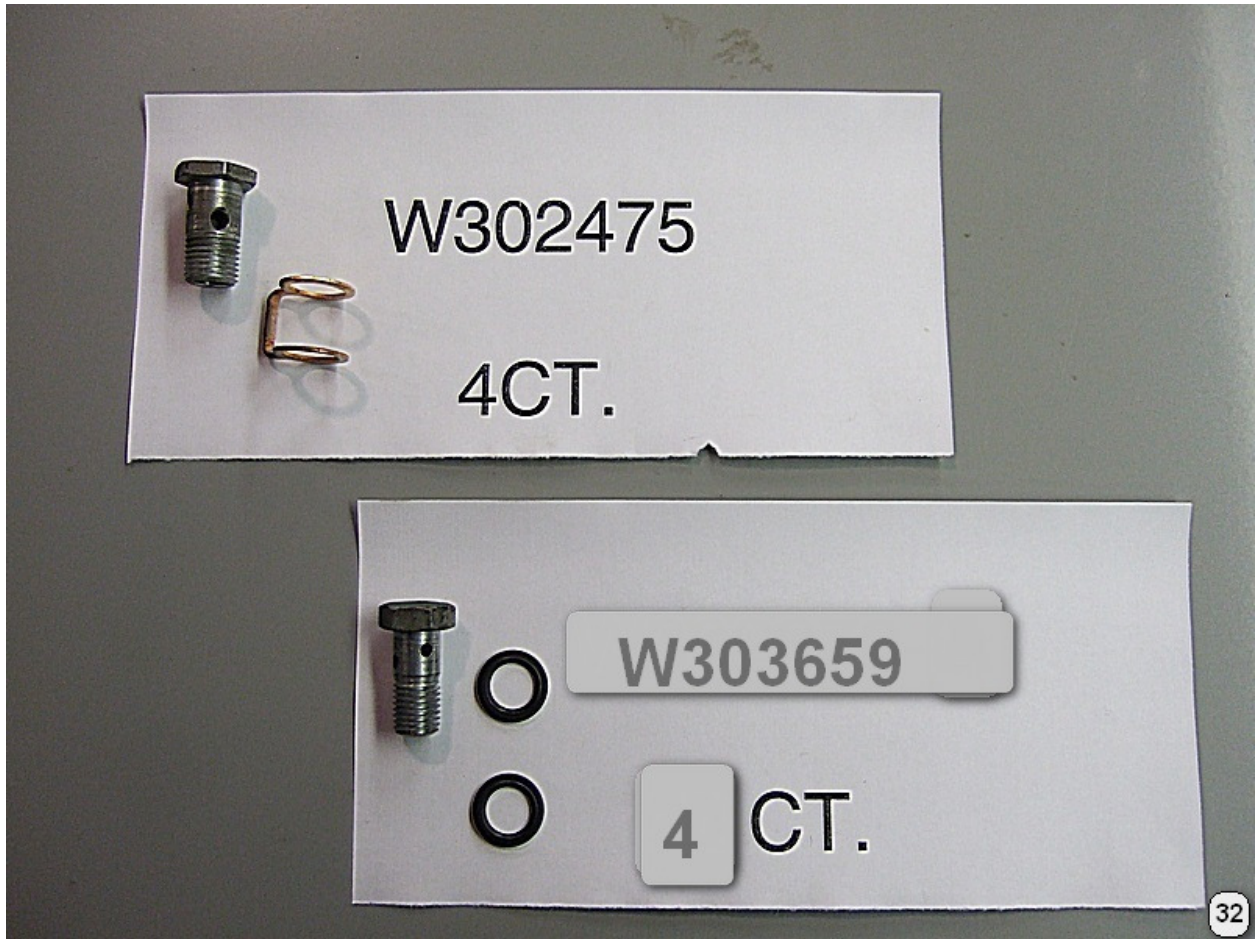
And the left side. Staring at a microfish trying to pick this stuff out is about as fun as getting a root canal.



Intake manifold next.

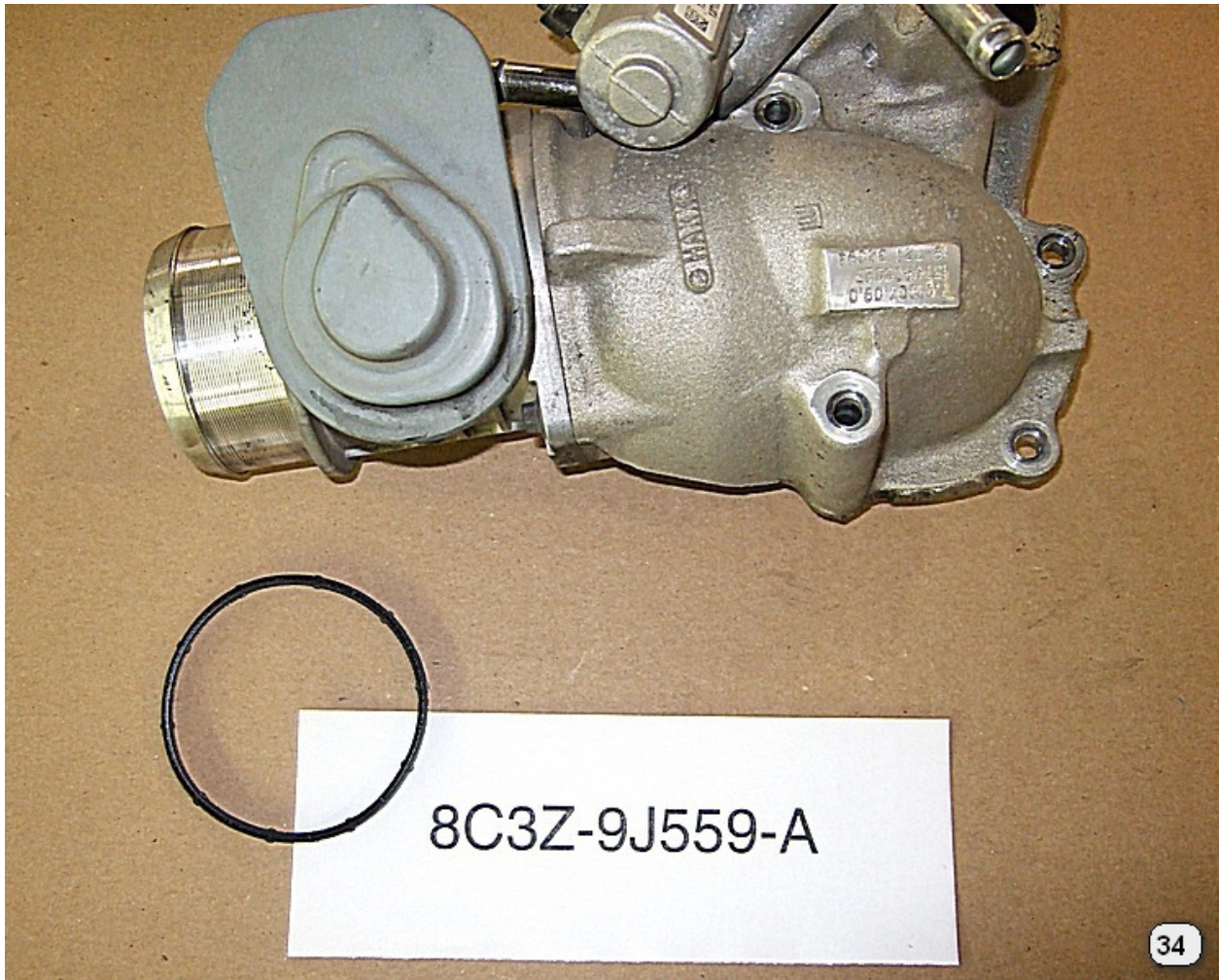


This is a little trick I use to put 6.0 and 6.4 manifolds on while keeping the gaskets lined up. The spacer under the bolt is from a 6.0 turbo bolt kit. I put 1 bolt and spacer at each corner and it keeps the gasket in place on the manifold with out hanging up on everything.



Fuel supply line (14mm) seals, and return line (12mm) seals. At the time of this build the only supply line seals available were coppers. The Viton sealing rings above come in a bag of 4.

PICTURE 33 OMITTED



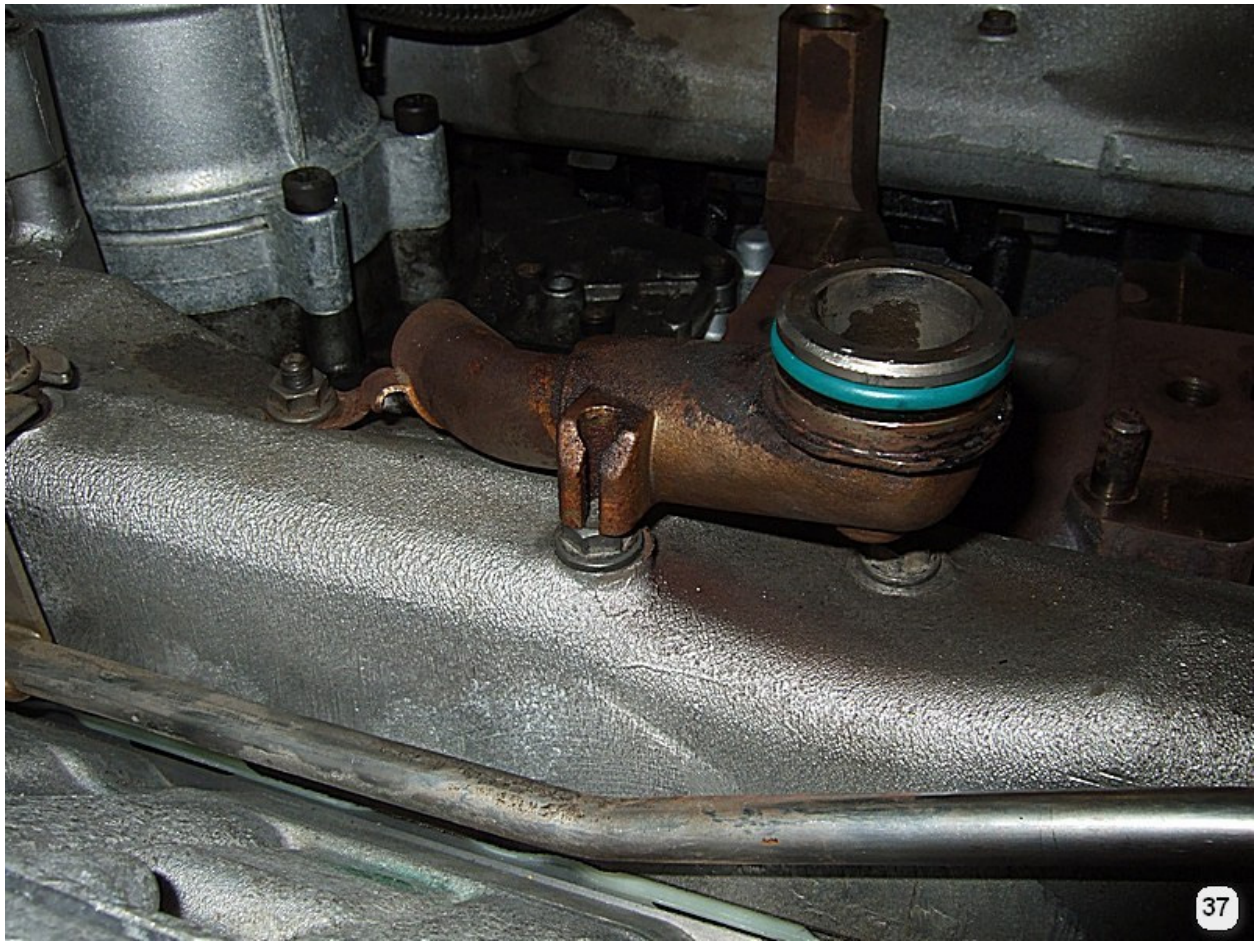
Throttle body gasket.



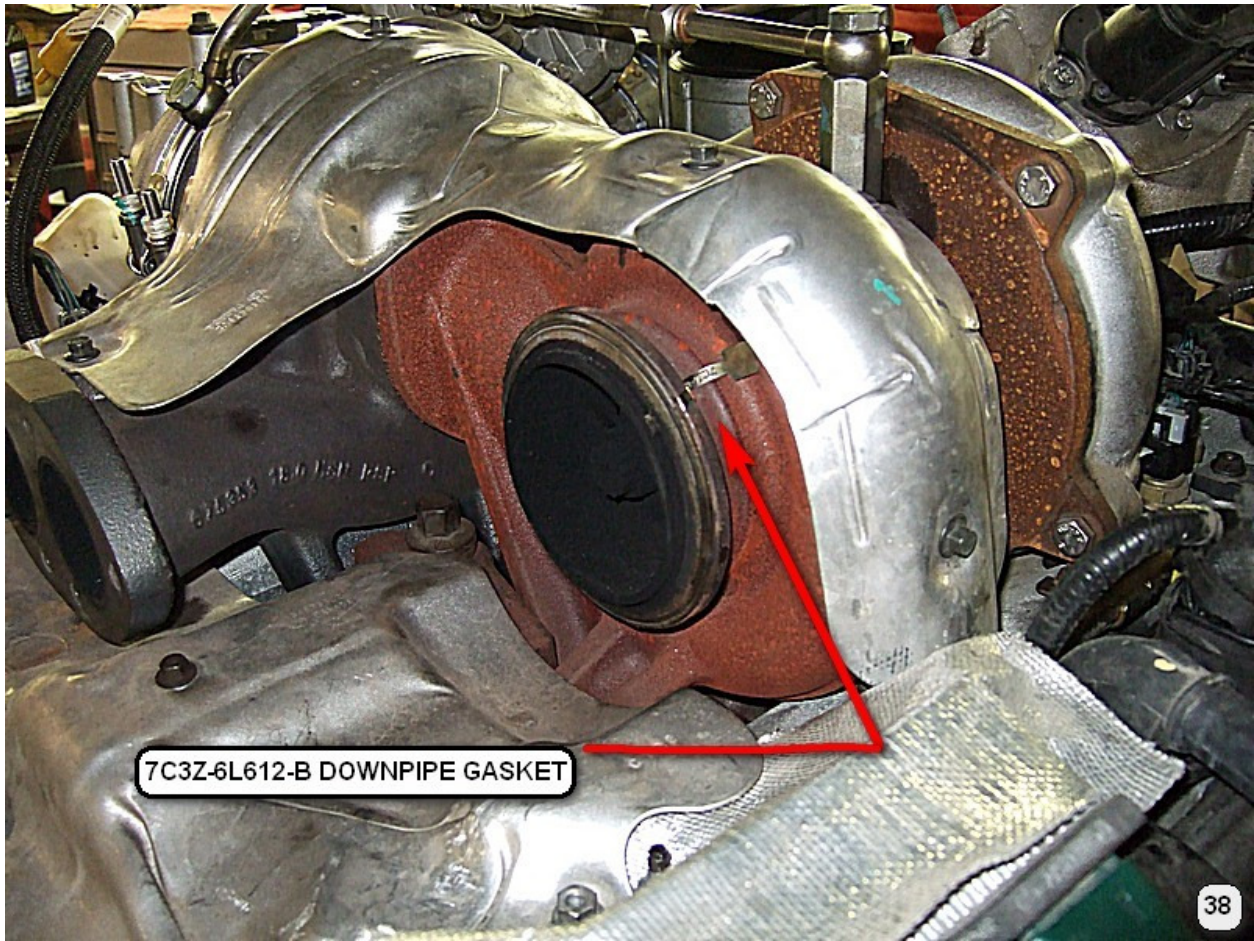
Thermostat kit.



Turbo bolt kit.



Make sure there is not a stud in this location!



Turbo down pipe gasket and clamp (not shown). Clamp # 7C3Z-5A231-AC.



Turbo up pipe bolts and gaskets.



The only need for cab off, in my opinion.



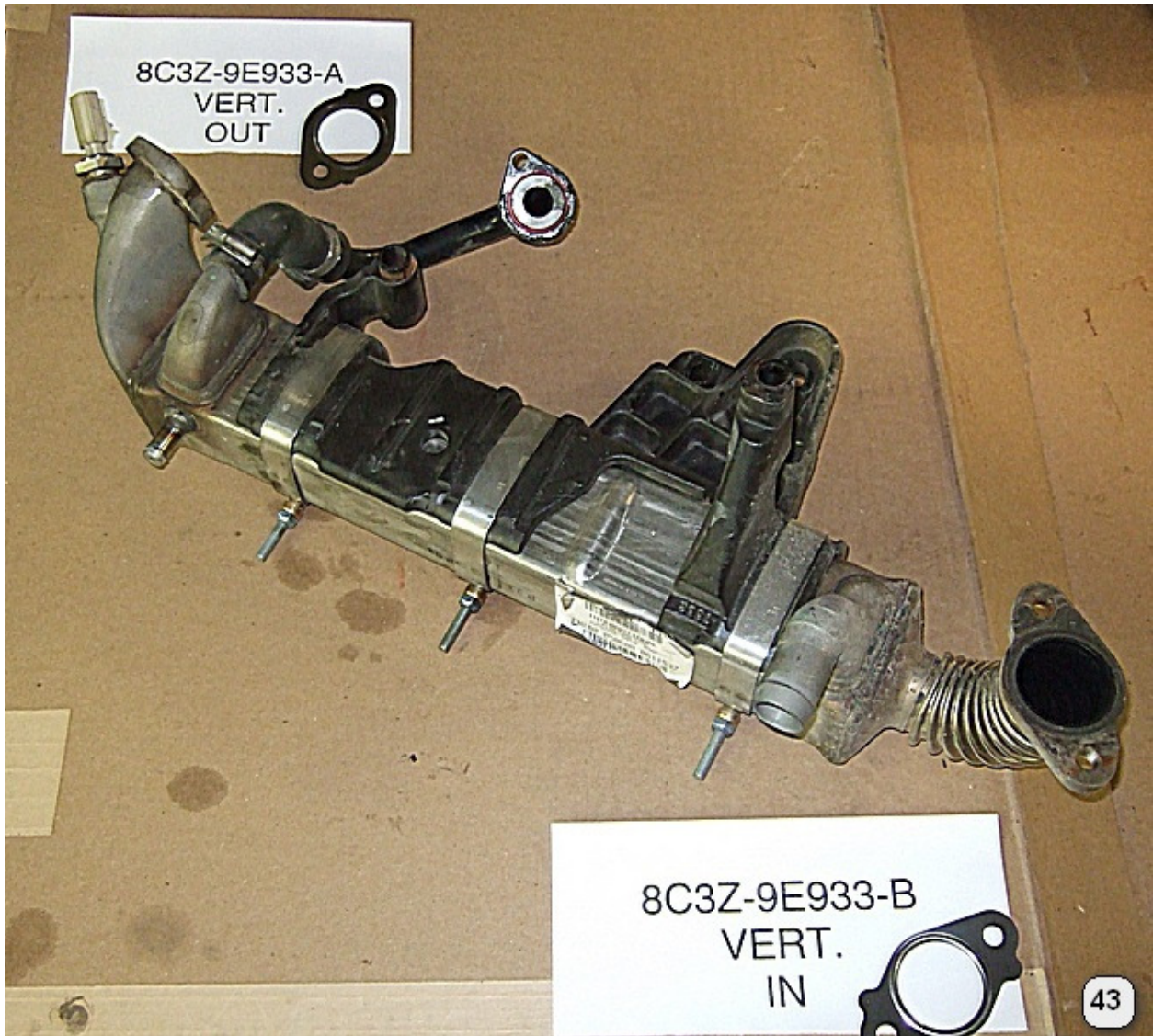
Dipstick tube o-ring.

8C3Z-8287-K



42

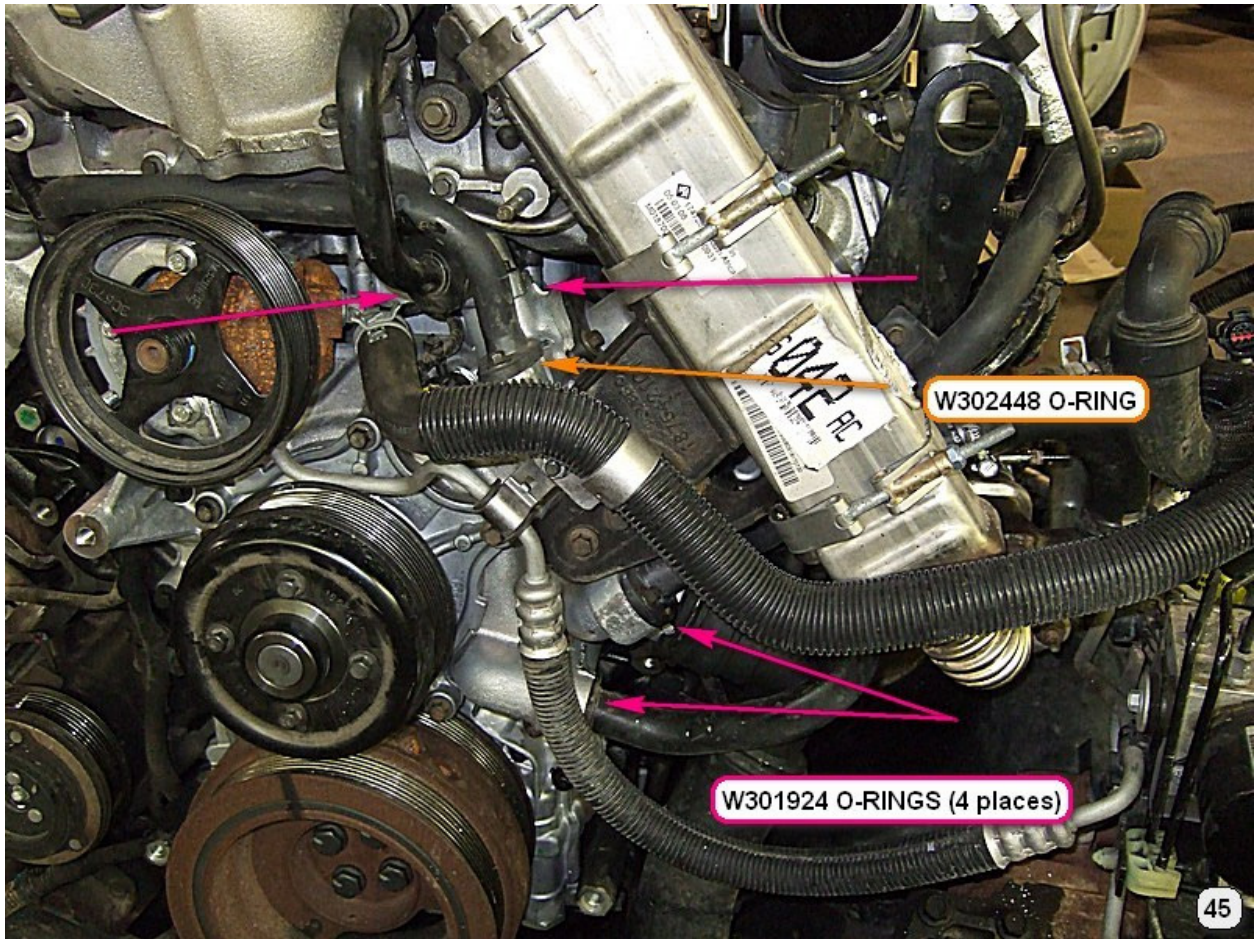
EGR cooler line clamps. Up to six may be needed. I use a bare minimum of two.



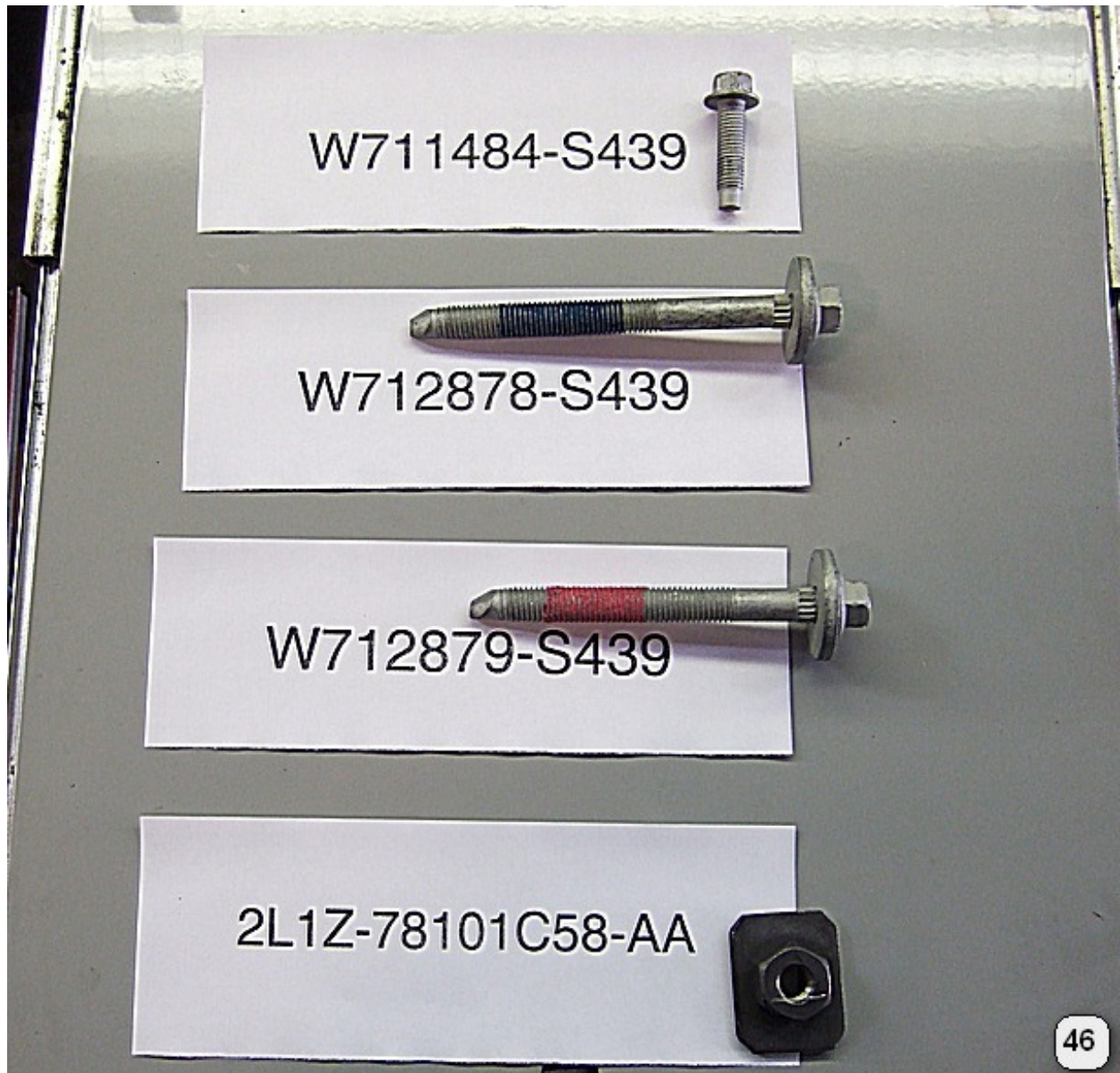
EGR vertical cooler inlet and outlet gaskets.



Coolant tube o-rings, the orange one is for the heater line supply, the white Teflon seals are needed for the hydroboost lines. I use 4 pink o-rings, 1 orange o-ring, and 2 Teflon seals.



Visual of the above quantities mentioned.



The top bolt is the steering shaft bolt and a new one is required. The rest of the bolts are to be reused but if they are damaged use these numbers as needed.

Document prepared by Bradley C Clayton

9/10/2009

Photography by Bradley C Clayton

Appendix: parts list

6.4L longblock parts list

<u>photo #</u>	<u>part number</u>	<u>part description</u>	<u>quantity as packaged</u>	<u>as needed</u>
#1	8C3Z-6009-A	short block	1 ct.	1
#2	3C3Z-9C064-DA	ckp o-ring	1 ct.	1
#3	W300132	block heater o-ring	4 ct.	1
	3C3Z-9N693-BA	oil drain back o-ring	1 ct.	1
	3C3Z-9229-B	cmp o-ring kit	1 ct.	1
#4	8C3Z-6A642-A	oil cooler kit	1 ct.	1
#5	W302508	turbo pedastal gasket	4 ct.	1
#7	3C3Z-6691-AA	oil filter standpipe o-ring	1 ct.	1
#8	8C3Z-6049-BB	cylinder head kit	1 ct.	2
#10	8C3Z-9229-A	injector o-ring kit	1 ct.	8
#12	8C3Z-6584-C	left rocker box kit	1 ct.	1
#13	8C3Z-6584-B	right rocker box kit	1 ct.	1
#15	3C3Z-6710-CA	upper oil pan gasket	1 ct.	1
	3C3Z-6710-BA	lower oil pan gasket	1 ct.	1
	3C3Z-6626-AA	pick up tube o-ring	1 ct.	1
#17	8C3Z-6020-D	front cover gasket kit	1 ct.	1
#18	8C3Z-6019-B	front cover w/t oil pump	1 ct.	1
	8C3Z-6600-A	oil pump		
#19	8C3Z-6B041-A	front crank dowel	1 ct.	1
#20	8C3Z-8501-B	water pump w/t gasket	1 ct.	1
#21	3C3Z-6D083-AA	rear cover gasket	1 ct.	1
#22	3C3Z-6701-B	rear main oil seal	1 ct.	1
#24	8C3Z-9G805-B	HPFP cover gasket kit	1 ct.	1
#28	6C3Z-9448-A	exhaust manifold gasket	1 ct.	2
	W302675	hardware bolt	1 ct.	8
	W302647	hardware stud	4 ct.	4
#29	6C3Z-9448-A	covered above for requirements		
	W302675	covered above for requirements		
	W302652	hardware longer bolt	1 ct.	4
	8C3Z-8287-G	egr clamps (cooler)	1 ct.	2
	W302551	egr clamp nuts	4 ct.	2
#30	3C3Z-9439-AA	intake gasket set	1 ct.	1
#32	W302475	14mm fuel line seal (copper)	4 ct.	1
				min of 8 seals/ up to 20
	W303659	12mm fuel line seal (Viton)	4 ct.	
#34	8C3Z-9J559-A	throttle body gasket	1 ct.	1
#35	8C3Z-8575-D	thermostat kit	1 ct.	1
#36	8C3Z-9T514-C	turbo bolt kit	1 ct.	1
#38	7C3Z-6L612-B	downpipe gaket	1 ct.	1
	7C3Z-5A231-AC	downpipe clamp	1 ct.	1
#39	W300003	EDOC bracket bolts	4 ct.	2
	8C3Z-6N640-B	EDOC gaskets	1 ct.	2
	W302649	EDOC bolts	4 ct.	4

	W302494	uppipe nuts	4 ct.	6
	8C3Z-6N640-A	uppipe gaskets	1 ct.	2
	W302495	manifold studs to uppipes	4 ct.	6
#41	8C3Z-6753-A	dipstick tube o-ring	1 ct.	1
#42	8C3Z-8287-K	EGR coolant hose clamps	1 ct.	up to 6
#43	8C3Z-9E933-A	vert. cooler out gasket	1 ct.	1
	8C3Z-9E933-B	vert. cooler in gasket	1 ct.	1
#44	W301924	coolant o-rings	10 ct.	4
	W302448	heater outlet o-ring	4 ct.	1
	388898-S	Teflon P/S seal	6 ct.	2
#46	W711484-S439	steering shaft bolt	4 ct.	1
	W712878-S439	body bolt (long) do not use unless damaged	4 ct.	6 only as needed [CC only]
	W712879-S439	body bolt (short) do not use unless damaged	4 ct.	2 only as needed
	2L1Z-78101C58-AA	body nut	1 ct.	as needed

Parts list compiled by Bradley C Clayton