



How to Change Rotation & Porting Position on a V/VQ Double Pump

1. With the unit secured, loosen and remove the four bolts on the rear cover.
2. After the bolts have been removed, pull the cover off of the unit. When removing the cover the cartridge kit may be pulled out of the unit with the cover. If this happens do not worry, just set it aside with the cover. We will cover installation.
3. Remove the four bolts holding the inlet housing and front body together. Make sure to pull them all the way out and set them aside.
4. Next it is time to remove the inlet cover. Pull the inlet cover off. The cartridge kit will not be pulled out with the housing.
5. Remove the cartridge kit from the front body. Sometimes it can be stuck in the front body fairly good because of the seals on the pressure plate hub. A pretty easy way to do this is to use a couple of the bolt you have just removed and set them on the o-ring groove next to the cam ring. Use a screwdriver to get under the cam ring and pry up. The cartridge kit should pop out.
6. With both kits removed set them on their hub and loosen the crews that hold the kits together.
7. Once the screws are loose set the cartridge kits on their side and finish removing the screws.
8. Slide the inlet plate off the kit then slide off the entire center section (cam ring, rotor vanes and vane inserts) and move it far enough away from the pin that you can spin it around.
9. Spin the center section around half a turn then slide it back on to the pins and outlet pressure plate. Slide the inlet plate back on and insert the screws.
10. Tighten the screws so they are snug, they do not need to be excessively tight since the screws are only used to hold the kit together for installation.
11. The rotation has been changed!
12. Take the large cartridge kit and install it back on the front body and position the locator pins on the cartridge kit so they are at 3 and 9 o'clock with the outlet at 12.

13. Before we start to assemble the rest of the unit, it is a good time to make any porting changes. Make sure you know what configuration you need.

14. Take the inlet housing and look inside, you should see two locating holes that match the pins on the cartridge kit. Slide the cover over the cartridge kit and make sure the pins slip into the holes in the inlet housing.

15. You can visually inspect if the pins properly lined up by looking inside the inlet. After you have checked, get the four bolts for the housing and install. Use a ratchet and socket to snug them up to make sure the inlet and front body are seating properly with nothing pinhead.

16. After the bolts are slightly tightened and there are no pinched o-rings, large gaps between the two bodies and the shaft spins, you can torque down the bolts to the specified specs. Below you will find a table for the appropriate torque specs for each pump size.

Pump Size	Torque Specs
20 V/VQ	45 +/- 5 lb/ft
25-26 V/VQ	70 +/- 5 lb/ft
35-36 V/VQ	150 +/- 10 lb/ft
45 V/VQ	255-275 lb/ft

17. Before installing the rear cartridge kit, look inside the inlet housing and check where the locator pin holes are positioned. Take the rear cartridge kit and install into the housing, make sure that the pins are lined up. While installing the kit you may need to spin the shaft so the splines line up and the kit drops all the way inside the housing.

18. Now that the cartridge kit has been installed, the rear cover can be placed in the porting position needed. The four bolts can be re-installed and tightened down with a socket and ratchet. You will want to make sure that they are snug.

19. Before torquing the bolts down make sure that there are no damaged o-rings. When ready to torque the bolts please use the specs listed in the above table.

20. After everything has been installed and tightened, turn the shaft to make sure it spins freely, if that happens the unit is finished and can be put into service!

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