



## How to Change Rotation on V and VQ Cartridge Kit

There are a few differences between a V and VQ. A standard “V” kit has solid pressure plates, standard cam ring and is a 12 vane rotor. The “VQ” has two piece pressure plates with the flex plates and seal packs underneath them with a standard cam ring and a 10 vane rotor. The vanes for both V and VQ have small intra-vanes.

### “V” Rotation Change:

1. With the cartridge kit standing up, loosen the two screws holding the kit together.
2. Before removing the screws lay the cartridge kit on its side so nothing falls out while changing rotation. Fully remove the screws and pins.
3. Once the screws and alignment pins have been removed, slide off the pressure plates and swap them. It is okay if the rotor fell out of the ring and if a few of the vanes came out.
4. Set the pressure plate with the hub flat and install the alignment pins back into the plate. On the cam ring there is an arrow to indicate rotation, set this back on the plate with the new direction you need the cartridge kit to be. The rotation is viewed from the shaft end of the unit.
5. Pick up the rotor and check around the outside; it should also have a directional arrow. You will want to make sure that it matches with the cam ring arrow and set it inside the cam ring.
6. Next, the vanes have a tapered edge to straight edge on one side and a cutout area on the other side for an intra-vane. It needs to be installed with the sharp edge leading rotation or going the same direction as the arrows. When installing the vanes they should move in the slot freely. Set them in and push them down until they bottom out.
7. After all the vanes have been installed you can now install the pressure plates. It should just slide over the location pins. Push down on the plate to make sure it is flush against the cam ring and install the two screws.
8. Lightly tighten the screws. Slide the cartridge kit into the housing and align the plates and ring before fully snugging up the screws. You can now install it back into the pump and bolt it back together.

## “VQ” Rotation Change:

1. Remove the cartridge kit out of the unit and set it down flat on the hub of the outlet plate, just like the “V” cartridge kit. Loosen the two screws holding it together.
2. Before removing the screws completely lay the cartridge kit on its side then remove the screws. (Keeping the screws slightly in the kit will keep it from sliding apart, especially if it is full of oil).
3. Remove the screws and slide off the top of inlet plate leaving the flex plate in place. Under the inlet plate there are a set of seal packs. If they fall out they can be easily re-installed without damage.
4. Hold the cam ring and flex plates so they will not move and slide off the outlet plate. Make sure you leave the flex plate in place.
5. You should be left with the cam ring assembly sandwiched between the flex plates.
6. You can do one of two things to change the rotation. Either spin the cam ring assembly 180° and re-install the pressure plates from their current position, or swap the position of the port plates from their original dis-assembly position. You cannot do both procedures. You have to pick one or the other.
7. After the parts have been switched around, you can install the screws and lightly tighten them. Leave them a little loose so you can align the cartridge kit in the housing before fully tightening the screws down. These screws are just like the “V” kit. Hold the kit together during installation and it does not have to be extremely tight.
8. Set the cart kit upright and slip the inlet housing or cover over the cartridge kit until it slides over the entire thing. When it bottoms out it can be removed. You have to align the plates and cam ring. Now you can tighten the screws. It can be re-installed back into the unit.

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