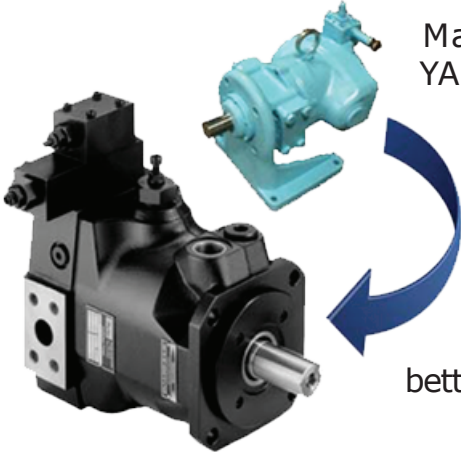


# Denison PV09 Pump Replacement



## After Seven Decades of Service, The Popular Denison PV09 Piston Pumps are Retiring



Many Denison PV09 YA(S)-053-31R-04-Y2-S5 and PV09 YA(S)-032-31R-YP-Y2-S5 pumps have been in service since the early 1950s. Today, several of the genuine Denison repair parts are no longer available. These older generation pumps are no longer repairable.

However, we do have good news. MFCP technicians have been rebuilding PV09s for 30+ years and as a result, identified the causes of their failures. We have developed a better solution to replace the obsolete pumps.

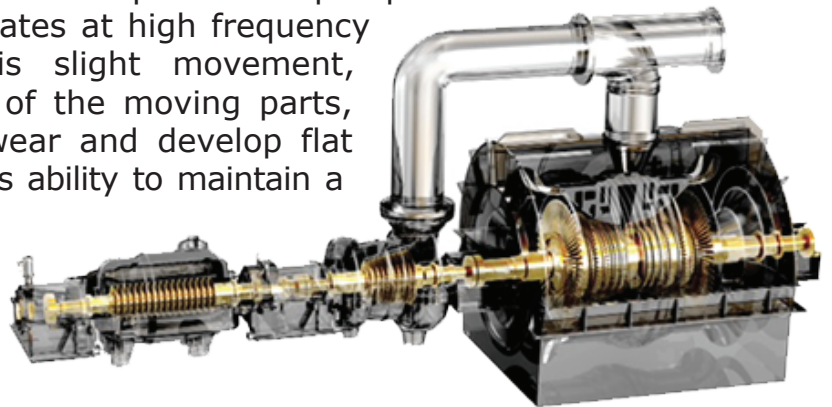
MFCP's design incorporates the benefits of current technology and materials to replace the obsolete PV09 series.

## PV09 - Common Failures

Denison PV09 pumps suffer from two common failures. The first is the wear of rollers and bearings, and the second is the erosion of the cast iron bore of the compensator mechanism.

The wear of rollers and bearings occurs in the part of the pump that controls the output flow. It oscillates at high frequency over a very small amplitude. This slight movement, combined with the excessive weight of the moving parts, causes the rollers and bearings to wear and develop flat spots. This causes the pump to lose its ability to maintain a stable pressure setting.

The erosion of the cast-iron bore of the compensator mechanism causes the compensator to lose its ability to maintain the proper pressure setting, which causes the pressure setting to drift.

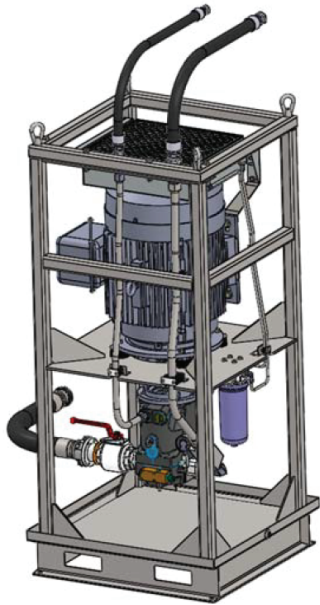


MFCP's PV09 replacement skid provides hydraulic oil flow to multiple servo valves, throughout the larger power output GE steam turbines, controlling a variety of steam functions.

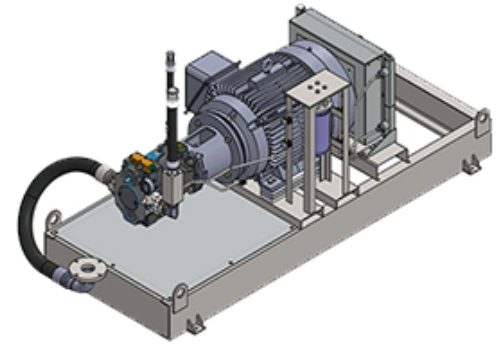
## MFCP PV09 Replacement Skid

The MFCP engineers took on the challenge of developing a more modern, reliable system than the old PV09. Here are the highlights:

- The pump/motor assembly rests on a cushioning pad to reduce noise and vibration.
  - The response time of the compensator and stroking mechanism is less than half of PV09. The mechanical and volumetric efficiency of the pump is increased.
  - A hydrostatic saddle bearing/swashplate design replaces the rollers and bearings. (Tested to over 50,000 hours without failure) Improved suction characteristics of the new pump are particularly important at higher altitudes.
  - A cooling and filtration loop uses a small amount of pump discharge oil to continually cool the shaft bearings, shaft seal, and hydrostatic bearing surfaces. It also cleans the oil to a much more stringent ISO requirement. The system circulates 5,000 gallons of oil per day through the skid's medium pressure filter, which means that with continuous operation the oil in the entire system will meet or exceed servo valve cleanliness standards.



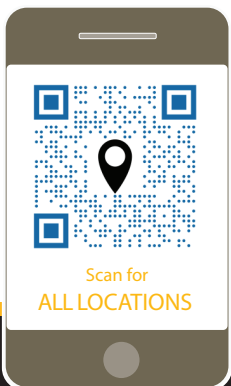
MFCP's vertical arrangement allows for a PV09 pump replacement solution with a small foot print.



MFCP has the engineering and design capabilities to ensure proper fit and function for each specific installation. MFCP's horizontal skid arrangement shown above.

Whether you choose a vertical or horizontal arrangement, the MFCP PV09 Replacement Skid is a cost-effective alternative to rebuilding Denison PV09 piston pumps. This enhanced efficiency will offer decades of future serviceability.

## Contact Us Today



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Obsolete PV09 pumps are common in the power generation industry, particularly in EHC systems controlling aspects of GE Steam Turbines.