



TECHNICAL BULLETIN #35

Comparison of Kinney® KT™ Piston Pumps & Systems Versus Stokes® J-series Piston Pumps & Systems

We are often asked about the advantages provided by the Kinney KT series rotary piston pumps as compared to the equivalent Stokes products offered by BOC Edwards. This bulletin is intended to answer some of the most frequently asked questions.

1. What are the performance and engineering differences between Kinney and Stokes booster/rotary piston pump systems?

Boosters:

- A. The Kinney mechanical vacuum boosters, ranging in nominal capacity from 240 to 10,000 CFM, are manufactured by Tuthill Vacuum & Blower Systems at its facility in Springfield, Missouri, USA.
- B. Tuthill Vacuum & Blower Systems is the only manufacturer of mechanical vacuum boosters who offers such a variety of seal types including slinger, mechanical face, or lip.
- C. Kinney pioneered the development of compound systems incorporating mechanical vacuum boosters in conjunction with rotary piston pumps into integrated systems. Our engineering expertise in application of vacuum boosters is second to none.
- D. Kinney mechanical vacuum boosters afford the highest pumping efficiency of any similar product on the market today. As such, the Kinney boosters provide higher pumping speed with equal or even slightly smaller booster displacement.

Rotary Piston Pumps:

- A. The Kinney rotary piston pumps, ranging in nominal capacity from 5 to 850 CFM, are manufactured by Tuthill Vacuum & Blower Systems at its facility in Springfield, Missouri, USA.
- B. All Kinney KT series rotary piston pumps include the unique Kinney triplex piston design, which provides for equal, diametric balance to practically eliminate vibration.
- C. All Kinney KT series rotary piston pumps include a positive displacement oil pump, driven from the main KT pump shaft to provide positive lubrication at any inlet pressure.

2. How are Kinney KT pumps distinguished from the competition?

- A. **Vibration.** Vibration levels are minimal, to the point that the pump does not require bolting or grouting to the floor, but simply rests on resilient mounts or springs. This reduces the installation cost and also reduces the transmission of any residual vibration through the floor to other equipment that could be sensitive to it.
- B. **Lubrication.** All Kinney KT series rotary piston pumps include a positive displacement oil pump, driven from the main KT pump shaft to provide positive lubrication at any inlet pressure. The oil pump is driven from the KT shaft by means of a direct drive coupling. Because the oil pump assembly is accessible externally, it can easily be opened for inspection or cleaning. The oil supplied by the gear pump is directed through porting in the KT shaft where it is distributed to each of the triplex pistons. Because the oil is pressurized it prevents contact of the pistons with their respective eccentric cams. This reduces operational wear and also allows the pump to operate continuously at any inlet pressure without losing lubrication.
- C. **Full Motor HP.** The KT pump is powered by a properly sized motor that is large enough to allow full operation at any inlet pressure from blank off to atmosphere without overloading the motor outside of its design service factor.



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Below is a matrix outlining some of the many features that distinguish Kinney KT rotary piston pumps from the competition.

Vacuum Equipment	Kinney MB1600C/KT300	Stokes 615/412J
Balancing of rotary internals	Triplex design produces the best balanced piston pump in the world. Kinney pumps can operate at higher rotational speeds because they are better balanced. This reduces the size of the equipment.	Uses old style duplex piston design that Kinney used forty years ago.
Vibration Level	Essentially vibration free	Moderate vibration levels
Installation	Bolting to the floor is <u>NOT</u> required. Pump can be placed on any floor that will support its weight. Rests on resilient mounts.	Bolting or grouting recommended.
Noise Level	Lowest in the industry	Low
Lubrication System	Forced feed oil pump to insure adequate lubrication at all inlet pressures is standard.	Optional oil pump is available
Motor HP	Adequate for continuous operation at all inlet pressures without overloading.	412J motor can overload at high inlet pressures.
Slide Pins	Four sided, unitized slide pin insures that pump will not wear prematurely	Two separate slide pin pieces that move independently of each other, increasing risk of loss of timing as pump wears, causing seizure.
Weights & Dimensions	More compact and lighter	Larger and heavier
Booster Seals	Slinger or time-tested reliable mechanical face seals. Lip seals also available.	Slinger, labyrinth or lip seals
Service & Repair	Factory service centers in Springfield, MO, Canton, MA and San Dimas, CA, as well as a network of authorized service centers located around the world.	Authorized service centers. Minimal factory service available.
Experience	Staffed by knowledgeable people with many years of experience.	Many Stokes application engineers and service personnel were let go after Stokes was purchased by BOC Edwards.
Manufacturing of Pumps & Components	All Kinney booster and rotary piston pumps and pumping components are manufactured in USA for better availability.	Stokes pumps and components are now manufactured in the Czech Republic, which can delay shipments of pumps or parts, resulting in excessive downtime when a pump needs service or repair.



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3. What are the service and maintenance differences?

Both Kinney and Stokes Booster/Rotary piston Pump Systems have similar maintenance requirements:

- A. Check oil levels on Boosters and pumps daily.
- B. Change oil on equipment periodically based upon application. Typical oil change interval is 2000 hours; however, this can vary depending upon level of contamination in the process.
- C. Check drive belt tension of rotary piston pump every 2000 hrs.
- D. Change exhaust oil mist eliminator element annually.
- E. Change shaft seals and discharge valves every 2 to 5 years depending on application.

4. What are the reliability differences?

Reliability is designed into all Kinney KT series pumps through constant diametric balance and forced feed lubrication. Also resilient mounts isolate the pumps from the transmission of dynamic forces from any other operating equipment.

All Kinney mechanical vacuum boosters are protected from overpressure or overheating by a cut-in pressure switch and cut-out temperature switch. Also, Tuthill Vacuum & Blower Systems recommends electrically interlocking the wiring of the booster motor with that of the backing pump to prevent the booster from operating when the backing pump is off.