

WHEN DEPENDABLE PERFORMANCE IS CRITICAL

HOW TO AVOID COSTLY REPAIRS - THE TESCORN GUIDE



35+ years as a leading provider of design/build industrial compression applications.

The TESCORN service facility continually receives Fuller & RoFlo compressors into our shop to repair damages caused by improper installation of incorrect parts, bad service, and poor operating procedures. Most of the errors we witness are a result of a lack of knowledge or lack of attention to detail in their maintenance or operation. All too often, the customer accepts poor performance or excessive maintenance costs and down time and attributes this to the compressor manufacturer instead of improper assembly, improper operation, and the use of substandard parts. We want to help.

The following TESCORN “Bad Maintenance Practices” information is to help inform you of these issues so you can better operate and maintain these compressors:

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Incorrect tolerances for bottom clearance, rotor stand-off, and rotor float:

It's understandable - even a good machinist is not aware of slippage. Volumetric efficiency and polytropic compression all impact the efficiency and the longevity of the compressor.

There is a reason why there are published tolerances that are required for assembly and reassembly. The engineering of these compressors requires these close tolerances in order to meet the required capacity and temperatures. As a compressor wears, these tolerances change with that wear. When a compressor fails, all of these tolerances have to be re-established in the rebuild. TESCORN guarantees that all compressor maintenance and remanufactured compressors are completed to the original manufacturer's tolerances in order to meet design performance specifications.

Incorrect bearings:

To most, the right size bearing is that which fits the shaft. This is not true in Rotary Vane compressors. There are specific bearing tolerances and clearances to compensate for the operating temperatures and inherent harmonics of the compressor while in operation. At operating temperatures, and the dynamic forces inherent in the compression cycle, the bearings must maintain the proper bottom clearance and rotor float. This specification is nonstandard and requires the bearing manufacturers to further machine their bearings beyond that of their standards.

Inferior quality vanes:

The TESCORN "PLATINUM" Series carbon composite blade has much greater blade stress capabilities - allowing for smaller thicknesses and less weight, which results in fewer forces due to centrifugal force. They are also less abrasive, requiring less lubrication, and possess better thermal capabilities to withstand the high temperatures of compression. The TESCORN Platinum series carbon-fiber blade is superior to the previous and existing blades in performance and endurance and is a proven enhancement to the rotary vane compressors.

Dowel pins:

There is a reason for the compressor dowel pin's size and their hollow design: they were engineered to break at specific stress levels in order to protect the heads or causing the rotor to bend. Solid billets are supplied by most repair shops and add to the cost of repair or cause total destruction of the compressor instead of eliminating it per their design.

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Gaskets:

The compressor gasket is not just a seal between the cylinder and the head. It is the way that the fixed-end clearance is established and the rotor float adjusted. The gaskets utilized are a composite of various gaskets, each with a specific thickness. In establishing the proper clearances during rebuild, the gaskets must be selected from this kit and applied. Any variance to this procedure results in improper clearances, excessive wear, and quite often catastrophic failure.

Machining of the cylinder and heads to nonstandard tolerances:

There are specific deviations from the standard that are allowable before that part is no longer acceptable. This is due to the exacting tolerances to the final construction for proper performance and longevity. All too often, a compressor's failure in service is a result of ignoring these specifications. Proper dimensional integrity and responsible compliance to the factory standards are mandatory in order to repair the compressor correctly.

Cylinder repair:

The cylinder wall is designed to work in conjunction with the forces exerted while in compression and properly transfer the heat of both compression and friction to the internal water jacket. It is important that the water jackets are free of debris and the cooling water flow is sufficient in order to maintain proper heat transfer and dimensional tolerances. Uneven temperatures of the cylinder and rotor can cause differing thermal growth rates of expansion and therefore result in incorrect tolerances while in operation that will affect performance and quite possibility total compressor failure.

As a cylinder wears through operation, the diameter increases causing a change in clearances within the cylinder and between the rotor and the cylinder. Excessive clearance causes a decrease in volumetric efficiency and an increase in operating temperatures. Most of the rotary vane compressors have some acceptable tolerance allowed for boring a damaged cylinder. Yet, these are limited and must not be exceeded. When a cylinder has wear and has been re-bored, it is extremely important the bottom clearances are reestablished. All too often, we find excessive bottom-end clearances that cause the compressor to overheat and fail in short order.

**WE LOOK FORWARD TO HELPING YOU ADDRESS THESE ISSUES AND
SAVE MONEY AND TIME IN THE LONG RUN.**

**SINCERELY,
THE STAFF OF TESCOP**