2. Oilseals

Pioneer Weston's Technical support is key to our growth and differentiation from our competitors. As part of the technical support is our ability to test the seals. Our test capabilities are based upon being able to re-create the variables of the application that are critical to the seal.

Rotary Seal Test Capabilities

We possess some of the most advanced capabilities available for testing the performance of Rotary Seals.

We run test programs to SAE standard specification, our own demanding internal validation standard, customer specific requirements and special test programs for development projects or competitor benchmarking.

We currently have 3 standard test rigs, each housing 2 test spindles that can be individually configured for different seal types, sizes, speeds and test conditions.

For long term testing we also have a Durability Test Rig that is capable of driving 4 spindles, each spindle being capable of testing 6 seals, allowing us to test up to 24 seals simultaneously.

Summary of standard test capability

Maximum Seal OD	:	400mm
Speed	:	Max 7,000 RPM
Rotation	:	Clockwise/Anti-clockwise
Orientation	:	Shaft or Housing Rotation
Pressure	:	0-10 bar (Water. Oil & Air)
Temperature	:	80 – 200 deg C
Shaft Eccentricity	:	Adjustable up to 1mm
Housing Offset	:	Adjustable up to 2mm
Torque Measurement	:	Max 20 Nm
Data Logging	:	Speed, Temperatures & Pressures
Environmental	:	Slurry, Dust, Water

2. Oilseals

Key Facts regarding standard test rigs
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Seal Capacity
The biggest seal size that we can accommodate on our test rigs is 400 mm.

Drive Configuration
Drive is provided by individual electric motors driving a spindle through a pulley and V belt drive. Speed is controlled by a local PLC, with up to 4 running speed conditions being programmable on any rig, and with 2 test spindles having no restrictions on number of speed conditions that can be programmed.
The maximum Speed/ Torque range for each spindle is determined by selection of pulley ratios.
The rigs can be configured to either rotate the spindle (the most common orientation) or to rotate the housing (primary required by axle seals).
All spindles can be rotated in a clockwise and anti-clockwise direction.

Shafts and Housing
Our test rigs allow us to adjust the housing offset by up to 2mm, and our shaft are designed to be adjustable so that we can also adjust the shaft eccentricity by up to 1 mm. The reason for building in this level of adjustment is to allow us to replicate real world conditions and find out at what extremes in which seal failure will occur. As most of our testing is for OEM applications with non standard seal dimensions it is usual that we will machine new test shafts and housings for each test.

Rotational Speed
The Test rig spindles are capable of running up to 20.000 RPM when fitted with ceramic bearings. The spindles can be run in both clockwise and anti-clockwise directions, and can be automatically reversed as part of the programmed test cycle.

Pressure
We have some test spindles fitted with housings that allow us to dynamically test seals at pressures of up to 10 bar. These spindles and associate housings and fittings are made from stainless steel and are specifically designed to be used with water (but are equally suitable for air & oil) and allow us to dynamically test pump seals in real world conditions.

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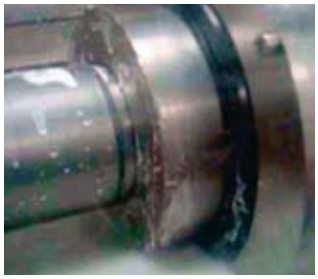
Temperature
All test spindles can be connected to an oil heater and we can control bulk oil temperature between 80°C and 200°C.

Torque Measurement
Our test spindles are equipped with torque transducers capable of measuring start up and rotational torques of up to 20 Nm.

Data Acquisition
All our test rigs are set up for data logging and can record speed and multiple pressures and temperatures.


Environmental test set-up


Abrasive testing using sharp sand


Side view: Slurry Testing using Abra dust slurry


Top view: Slurry Testing using Abra dust slurry

2. Oilseals

Key Facts regarding standard test rigs
The Durability Test Rig is contained within its own room and is specifically designed for running long term tests.

Durability Test Rig

The Test Rig consists of two x 3kW motors each individually controllable through local PLC. Each motor can drive 2 x Spindles. Spindles and housing can be made to run up to 6 seals simultaneously and we can run different size seals on the same spindle.

This test rig is also used to test seals in customer components such as pumps and we have capability to simulate pressure and vacuum to simulate real world load cycles

The facility is equipped with data logging so that speeds, temperatures and pressures can be continually recorded.