The Falex MultiSpecimen Test Machine is the most versatile commercial system for evaluating friction, wear, and abrasion characteristics of materials, coatings, and lubricants. Standard Test Methods and Application Specific Custom testing programs are possible due to user selected contact geometries, motions, velocities, temperatures, contact pressures, and test specimen materials. One test apparatus meets many test specifications and simulates a broad range of field applications. Applications include research and development, quality control, product qualification and the evaluation of physical and performance characteristics of materials, coatings, and lubricants.

The MultiSpecimen Test Machine is available in two versions: Semi-Automated with 310 SoftWEAR™ or Automated with 330 SoftWEAR™ Data Acquisition and Control.

Standard Test Methods
ASTM D2266-D3702-D4172-D5183 - G99

<table>
<thead>
<tr>
<th>MultiSpecimen Test Machine Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>Point, line, area</td>
</tr>
<tr>
<td>Motion</td>
<td>Sliding, rolling, roll/slide, oscillation</td>
</tr>
<tr>
<td>Speeds</td>
<td>60-3600 rpm, ½ - 10.800 rpm, 0.01-0.18 rpm (stick-slip)</td>
</tr>
<tr>
<td>Loads</td>
<td>½ to 807.5 Lb</td>
</tr>
<tr>
<td>Temperatures</td>
<td>Ambient to 150°C (2000°F)</td>
</tr>
<tr>
<td>Environments</td>
<td>Liquid, semi-liquid, dry, humidified, pressurized test chamber</td>
</tr>
</tbody>
</table>
Falex MultiSpecimen 50 machines in 1

- Thrust Washer
- Four Ball Wear
- Rolling Four Ball
- Pump Rotor Vane
- Stick/Slip
- Pin On Disk
- Ball On Flat
- Walking Cam
- Sliding Bottle
- Lip Seal
- O-Ring Wear
- Shear Stability
- Three Pad On Disk
- Ball Bearing
- Impact
- Sheet Abrasion
- Ball On Three Disk
- Gear/Cam contact
- Cyclic Stress
- Three Pin On Disk
- Three Balls On Flat
- Liquid Erosion
- Face Seal
- Three Ball Microfilm
- Oscillating Roll/Slide
- Hypoid Gear
- Timing Belt
- Viscous Drag Friction
- Plastic Powder
- Sheet Metal Forming ......

Typical Configurations

Thrust Washer

Line Contact

Area Contact

Rolling or Point

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Automated Falex MultiSpecimen with 330 SoftWEAR™ Data Acquisition and Control

Automated Test System Features

- **Test Load**
  - Automated test load control system eliminates the use of test weights
  - User defined parameters for test load ramping rates, soaking times and test cycle control
  - Dual range pneumatic system for applied test load ranges of 50 to 800 lbs and 10 to 60 lbs
  - Optional ultra low load ranges available on request

- **Temperature Control**
  - Automated test temperature system with computer control
  - User defined parameters for test temperature ramping rates, soaking times and test cycle control
  - Standard systems provide test table heaters (ambient to 150°C) for liquid and dry test environments
  - User programmable test alarms and abort levels
  - Optional Systems increase the temperature set point and regulation (-30°C to 200°C). Heater Cups and Heated and/or cooling recirculating systems increase the flexibility of temperature control and regulation for liquid and dry environments.

- **Wear Measurement**
  - Dynamic digital wear measurement system records and displays the real-time test system wear displacement
  - User programmable test alarms and abort levels

- **Programmable Variable Speed Motor**
  - 30 to 3600 rpm
  - Unidirectional, **optional** oscillating angle 0° to 720°
  - Rpm **optional** : 15 – 1800, 60-7200

- **Friction Measurement System**
  - Records and displays the test torque data and calculates a real-time coefficient of Friction.
  - Standard 100 lb load cell
  - Optional low load cell
330 SoftWEAR™ Features

- Test Program Creation and Control Software
- RPM Control and indicator
- Temperature Set Point Control (Chamber or Test Specimen)
- Load Set Point and Control
- Duration Control (Time and/or Cycles)
- Wear Indicator
- Programmable Parameter Loop Configuration
- Test Program Manual Override
- User Defined Fast Data Acquisition Trigger
- User Defined Real Time Data Graph and data storage

Semi-Automated MultiSpecimen with 310 SoftWEAR™ Data Acquisition and Control

Semi-Automated Test System Features

- Test Load
  - Manual test load system
  - Test load is applied using a dual range mechanical lever (2:1 or 10:1 ratio) and dead weights
  - Maximum bale weight is 80 lbs
  - 2:1 lever ratio applies loads from 1 lbs to 160 lbs
  - 10:1 lever ratio applies loads from 20 lbs to 800 lbs

- Temperature Control
  - User defined test temperature set point and ramp rate
  - Test table heaters (ambient to 150°C) for liquid and dry test environments
  - User programmable test alarms and abort levels
  - Optional Systems increase the temperature set point and regulation (-30°C to 200°C). Heater Cups and Heated and/or cooling recirculating systems increase the flexibility of temperature control and regulation for liquid and dry environments

- Wear Measurement
  - Includes a dial gage indicator for test system wear displacement
  - Optional dynamic wear measurement system available

- Programmable Variable Speed Motor
  - 30 to 3600 rpm
  - Unidirectional, optional oscillating angle 0° to 720°
  - Rpm optional: 15 – 1800, 60-7200

- Friction Measurement System
  - Records and displays the test torque data and calculates a real-time coefficient of Friction.
  - Standard 100 lb load cell
  - Optional low load cell
310 SoftWEAR™ Features

- Test Parameter Control Software
- RPM Control and Indicator
- Temperature Set Point Control (Chamber or Test Specimen)
- Load Set Point and Indicator *(optional)*
- Duration Control (Time and/or Cycles)
- Wear Indicator *(optional)*
- User Defined Real Time Data Graph and Data Storage

Additional Options

<table>
<thead>
<tr>
<th>310 Semi-Automated SoftWEAR™</th>
<th>330 Automated SoftWEAR™</th>
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</thead>
<tbody>
<tr>
<td>Digital Wear Sensor and Display System</td>
<td>Digital Meter and Load Cell Assembly for Test Load Calibration of Pneumatic Load System</td>
</tr>
<tr>
<td>Digital Load Sensor and Display System</td>
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<tr>
<td>Vibration Sensor and Display System</td>
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<tr>
<td>Humidity Sensor and Display System</td>
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<tr>
<td>System for oscillatory tests (720° max angle, max rpm dependent on angle of oscillation)</td>
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</tr>
<tr>
<td>Heated Test Cup for liquid and dry test (200°C max)</td>
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<tr>
<td>Digital Meter and Load Cell Assembly for Test Load Calibration of Pneumatic Load System</td>
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<tr>
<td>Convective Test Reservoir Assembly with increased surface area to improve air cooling</td>
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<tr>
<td>Low Temperature Chamber (dry ice)</td>
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<tr>
<td>Low Temperature Chamber (for use with cooler)</td>
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<tr>
<td>Low Temperature Recirculating Chiller (-30°C)</td>
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<tr>
<td>Low Range Load Cell for Torque Measurement System (0 to 10 Lbs)</td>
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<tr>
<td>Test Fluid Recirculation System (150°C max)</td>
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</tr>
<tr>
<td>Humidity Control System (30 to 60% RH)</td>
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