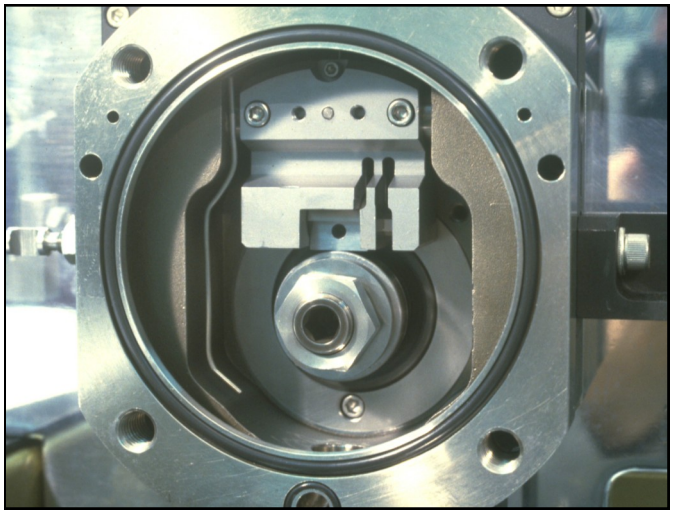
Block-on-Ring Test Machine

The Falex Block-on-Ring Test Machine combines test versatility with operational simplicity. Capable of simulating a variety of field conditions, the Falex Block-on-Ring Test Machine evaluates the friction and wear characteristics of materials and lubricants in research, quality control, and technical service applications.



Suitable for Testing

- Fluid Lubricants
- Greases
- Additive Packages and Base Stocks
- Dry Film Bonded Coatings
- Materials
- Hardface Coatings
- Refrigerant Lubricants
- Sliding Wear

Used in Standard Test Methods

ASTM D2714 - Calibration and Operation of the Falex Block-on-Ring Friction and Wear Testing Machine

ASTM D2981 - Wear Life of Solid Film Lubricants in Oscillation Motion

ASTM D3704 - Wear Preventive Properties of Lubricating Greases Using the Falex Block-on-Ring Test Machine in Oscillating Motion

ASTM D2509 - Extreme Pressure Properties of Lubricating Greases

ASTM D2782 - Extreme Pressure Properties of Lubricating Fluids

ASTM G77 - Ranking Resistance of Materials to Sliding Wear Using Block-on-Ring Wear Test

Proposed STM - Ranking Resistance of Polymeric Materials to Sliding Wear Using Block-on-Ring Wear Test

Proposed STM - Measuring Wear Properties of Dry Film Solid Lubricants Using a Block-on-Ring Machine in Unidirectional Motion

SPECIFICATIONS AND FEATURES

SPEED AND VELOCITY:

Speed and Velocity control is managed by the operator selection of test shaft RPM and test specimen configuration. The Computer Control System enables programmable control of RPM set points, ramp rates, test parameter cycles, and test start sequences.

LOAD:

Load control is managed by the operator selection of test load and test specimen configuration. Computer Controlled Systems enable programmable control of Load set points, ramp rates, test parameter cycles, and test start sequences using a Dual Range, Low 10 to 100 lbs. and High: 50 to 1300 lbs., Pneumatic Load System.

TEMPERATURE CONTROL:

Temperature control is managed through the operator selection of chamber and heater configuration, regulating environment or test specimen temperature. Computer Controlled Systems enable programmable control of Temperature set points, ramp rates, test parameter cycles, and test start sequences. Ambient to 250°C. External cooling options allow for sub-ambient testing environment temperatures.

ENVIRONMENTS:

The Falex Block-on-Ring Test Machine is available with a Standard Enclosed Test Chamber, suitable for testing fluid lubricants, greases, coatings, or dry environment testing. An optional chamber seal kit allows for containment of atmospheres, purged or light vacuum environments, and pressurization to 150 psig max. Optional fluid lubricant recirculating systems and a grease feeder system are available.

TEST DURATION:

Test Duration is controlled by elapsed time , number of test cycles, or through high-limit cutoff, set by Operator programmable control.

FRICTION FORCE:

Friction Force is measured using an electronic load cell. The standard measuring system range is 0 to 250 lbs. An optional 0 to 25 lb. measuring system is available for lower range friction forces.

WEAR:

Continuous display of test specimen dimensional change indicating the rate of wear and/or total wear.

SPECIFICATIONS AND FEATURES

TEST GEOMTERIES:

Contact Geometry	Test Adapter
Line	Block-on-Ring, Falex Block-on-Ring, Timken Canted Cylinder Chip on Ring
Area	Conforming Block-on-Ring, Falex Conforming Block-on-Ring, Timken
Point	Ball-on-Ring

MOTION:

The Falex Block-on-Ring is supplied with a standard unidirectional drive system.

Computer Controlled Systems enable programmable control of an optional reversible drive system. Operator selection of oscillation range (5° to 720°) and test cycle patterns provide complete control of test motions.

UTILITY REQUIREMENTS:

220 VAC, Single Phase, 60 Hz. Optional 220 VAC, Single Phase 50 Hz Systems available. 80 psig clean, dry air supply required for operation of pneumatic loading systems.

WEIGHTS AND DIMENSIONS:

Bench top - Complete System

Space (L x W x H): 72 x 24 x 30 in.
[1829 x 610 x 762 mm]

Estimated Weight: 600 lbs
[272 kg]

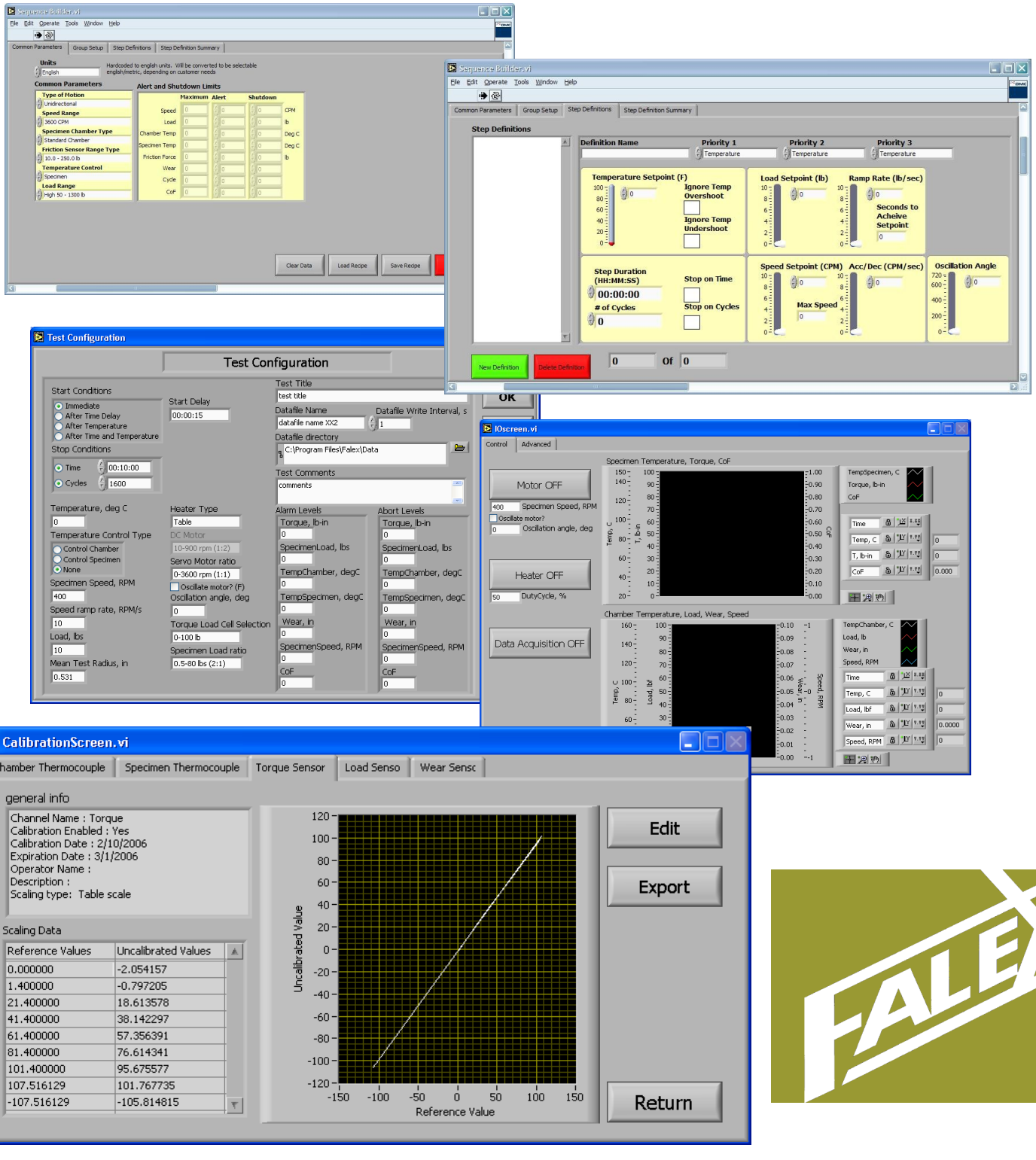
Shipping

Dimensions (L x W x H): 48 x 48 x 48 in ea
[1220 x 1220 x 1220 mm]

Estimated Weight: 600, 400, 300 lbs
[272, 182, 136 kg]

FALEX Block on Ring Test Machine softWEAR™

FALEX softWEAR™ for Test Program Creation, Parameter Control, Data Acquisition and Instrument Calibration



SYSTEM DESCRIPTIONS

001-001-331 FALEX BLOCK ON RING TEST MACHINE WITH SOFTWEAR™

FALEX 330 BLOCK ON RING INCLUDES:

Variable Speed Servo Drive System
Friction Measurement System (High Range)
Standard Chamber & Cover
FALEX Style Test Spindle
Fluid Chamber Temperature Sensor
Specimen Temperature Sensor
Friction Sensor Calibration Fixture
Test (Dynamic) Wear Indicator (Dial Gage)
Pneumatic Test Load System (50 to 1300 lbf)
Test Chamber Drain Pan
Test Ring Locknut and Washer
Test Block Holder

FALEX 330 SOFTWEAR INCLUDES:

Test Parameter Program Creation and Storage
Test RPM Display and Control
Test Temperature Display and Set Point Control (Chamber or Test Specimen)
Test Load Display and Control (Pneumatic Load System)
Test Duration/Status Display and Control (Time and/or Cycles)
Programmable Parameter Loop Sequence
Test Data Acquisition and Data Storage
Test (Dynamic) Wear Display and Sensor
Real Time Data Graph
Manual Parameter Override
Fast Triggered Data Acquisition
PC Kit

001-200-024 FALEX BLOCK ON RING REVERSIBLE DRIVE OPTION:

Falex SoftWEAR™ Control for Reversible Drive Servo Motor System

001-097-003 FALEX BLOCK ON RING CHAMBER SEAL KIT:

Seal Kit for Test Spindle and Loading Assembly for elevated or reduced atmosphere testing

F-1501-4 TIMKEN SIZE TEST ADAPTER ASSEMBLY OPTION:

Test Block Holder and Test Shaft for operation with Timken Size Test Rings and Blocks

F-1501-6 TIMKEN TEST OIL RECIRCULATION OPTION:

Oil Recirculation System for Testing per ASTM D2782

F-1501-8 LOW RANGE STRAIN GAGE OPTION:

Low Range Strain Gage (0 to 25 lbs) for improved Friction Force Measurement Sensitivity

F-1501-10A FALEX SIZE DUAL SPRAY NOZZLE OPTION:

Dual Spray Nozzle for use with fluid recirculating system. Sprays fluid from opposite sides of the contact area during reversible motion tests.

F-1501-14 FALEX HIGH SPEED PULLEY OPTIONS:

Pulley and Timing Belt Assembly for High Speed Operation (7200 rpm max)

F-1501-16B SEE THROUGH COVER FOR PRESSURE CHAMBER

F-1501-18 CANTED CYLINDER ON RING TEST ADAPTER

BLOCK ON RING ACCESSORIES

STANDARD TEST SPECIMENS and REFERENCE MATERIALS

001-500-025	Test Ring, Falex S-25 SAE 4620, Rc 58-63, 22-28 rms Conforms to ASTM D2981, D3704 and G77
001-500-010	Test Ring, Falex S-10 SAE 4620, Rc 58-63, 6-12 rms Conforms to ASTM D2714, D3704 and G77
001-501-030	Flat (HP) Test Block, Falex H-30 SAE 01 tool steel, Rc 27-33, 4-8 rms Conforms to ASTM D2714, D3704 and G77
001-501-060	Flat (HP) Test Block, Falex H-60 SAE 01 tool steel, Rc 58-63, 4-8 rms Conforms to ASTM D2981, D3704 and G77
F-1501-29	Calibration Fluid per ASTM D2714, 0.5 L

FALEX SCAR MEASUREMENT SYSTEMS

100-200-023 **HIGH PRECISION SCAR MEASUREMENT SYSTEM**

Includes binocular microscope with X-Y base and digital display of measurement accurate to 0.001 mm. System includes ball cup stand with single ball holder. Allows reading of ball scar without removal from ball cup.

100-200-024 **DIGITAL SCAR MEASUREMENT SYSTEM with CCD CAMERA**

Includes a CCD camera and digital display of ball scar and measurement resolution to 0.001 mm. System includes ball cup stand with single ball holder and CCD camera with USB port for recording scar diameters to Falex computerized data acquisition system or host computer. Allows for reading ball scar without removal from ball cup. Optional Stands for other specimens available.

For All of Your Lubricant and Materials Testing

Lubricants

- Pin and Vee Block
- Block-on-Ring
- Timken EP
- Tapping Torque
- Panel Coker
- High Temperature/High Speed Bearing
- Four Ball Wear
- Four Ball EP
- High Temperature Wheel Bearing
- Thermal Oxidation Stability (L60-1)
- Fretting Wear
- Hydrolytic Stability
- Grease Corrosion Test
- Isothermal Oxidation
- Hydraulic Fluid Pump Stand (Vickers and Conestoga)

Fuels and Solvents

- Ball on Three Disk Fuel Lubricity
- Thin Film Evaporator
- Fuel Deposit Simulator

Materials

- Journal Bearing
- Multi-Specimen
- Crossed Cylinders
- Low Velocity Friction Apparatus
- Pin on Disk
- Coefficient of Stoption
- Magnetic Media and Paper Wear
- Life Performance Face Clutch System
- Thin Coating Wear (Electrical Contacts)
- Dual Drive Rolling Contact Fatigue
- High Speed Bearing/Mechanical Clutch