

NANOVEA T50

**THE COMPACT
FREE WEIGHT
TRIBOMETER**



NANOVEA.COM



ES France - Département Bio-tests & Industries
127 rue de Buzenval BP 26 - 92380 Garches



Tél. 01 47 95 99 90
Fax. 01 47 01 16 22



e-mail : bio@es-france.com
Site Web : www.es-france.com

ULTIMATE TESTING

*Designed with free weight loading technology,
the **NANOVEA T50** provides controlled vertical loading up to 60 N.*

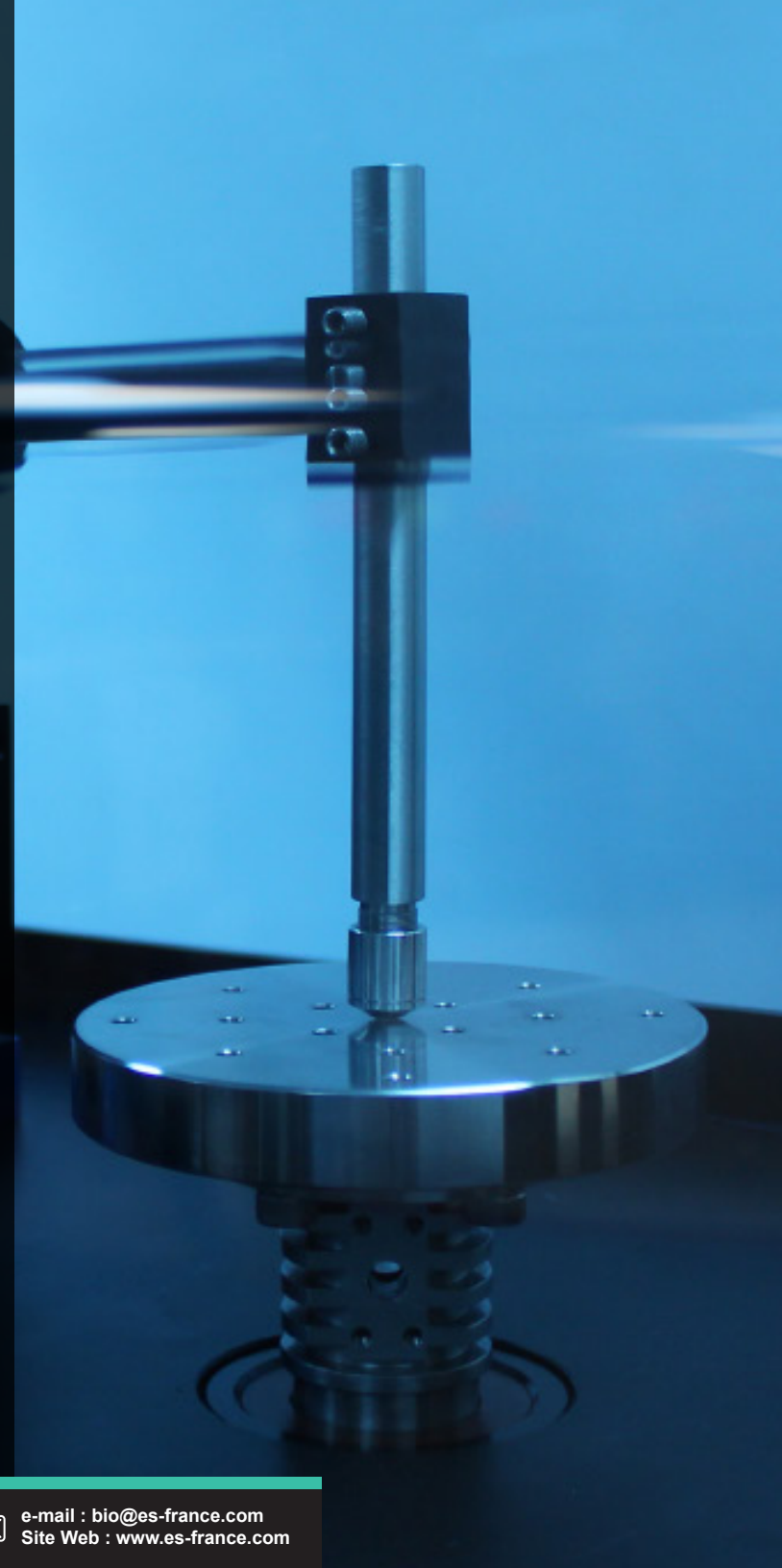
For highly accurate and repeatable wear and friction testing.

**VERSATILE MODULAR INSTRUMENT CUSTOMIZED FOR
ANY APPLICATION REQUIREMENT**

**SIMPLE, RELIABLE & ROBUST DESIGN FOR A
STABLE TESTING ENVIRONMENT**

**DIRECT FRICTION MEASUREMENT FROM AN
INDEPENDENT LOAD CELL SENSOR**

**TRADITIONAL FREE WEIGHT SYSTEM REDESIGNED
FOR MODERN-DAY MATERIALS RESEARCH**



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SUPERIOR MOTOR TECHNOLOGY

- ▀ ***WIDEST SPEED RANGE***
- ▀ ***UNMATCHED SPEED CONTROL***
w/ 20 bit internal speed encoder
- ▀ ***ULTIMATE POSITIONING PRECISION***
w/ 16 bit external position

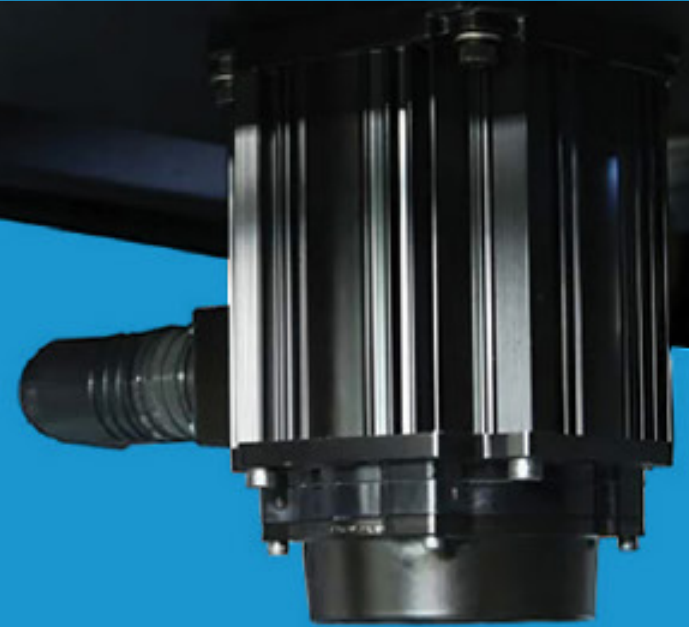
>0.006°

- ▀ ***STUDY OF QUASI STATIC COF***

0.01 to 0.1 rpm

- ▀ ***INSTANTANEOUS SPEED CHANGE***

0 to 1000 rpm in 0.23 s



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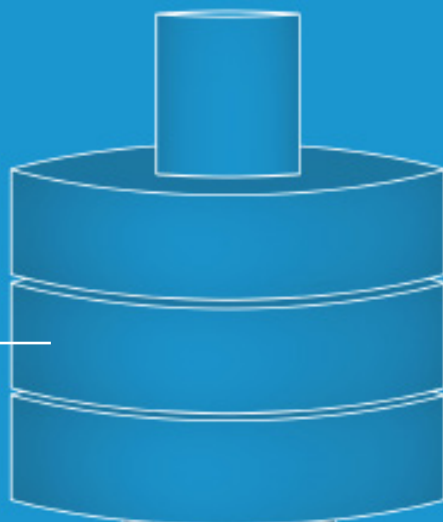
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FREE WEIGHT LOADING TECHNOLOGY

***ADJUSTABLE
FREE WEIGHTS***



WEAR TRACK
TOP VIEW



LINEAR



ROTATIONAL

***ROTATIVE/LINEAR
STAGE***



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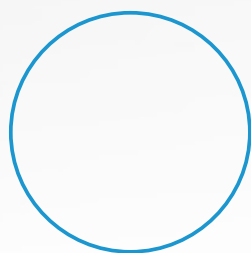


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TESTING MODULES



ROTATIONAL



LINEAR



BLOCK-ON-RING

ROTATIONAL

MAX ROTATIONAL SPEED 5000 | 10000 rpm
MIN ROTATIONAL SPEED 0.01 | 0.05 rpm
SPEED ACCELERATION (0 to 1000 rpm) 0.23 | 0.45 s
MOUNTING AREA (Disk Size) 100 mm Dia.
OPTIONAL MODE Reciprocating Arc, Spiral

LINEAR

MAX STROKE RANGE 25 mm
MAX FREQUENCY (up to 5 mm stroke) 60 Hz
MOUNTING AREA 62 x 76 mm



ROTATIONAL MODULE



PROPERTIES ANALYZED

Coefficient of Friction *Static & Dynamic*
Wear Analysis
Stribeck Curve
Lubricity
Reciprocating Arc
Spiral Test
Friction vs Load / Speed / Time *& more*

ENVIRONMENTAL MODULES

High Temp
up to 1000°C



Low Temp
down to -150°C



Lubrication
up to 150°C



Humidity
10 - 90%/Td



Gas
inert

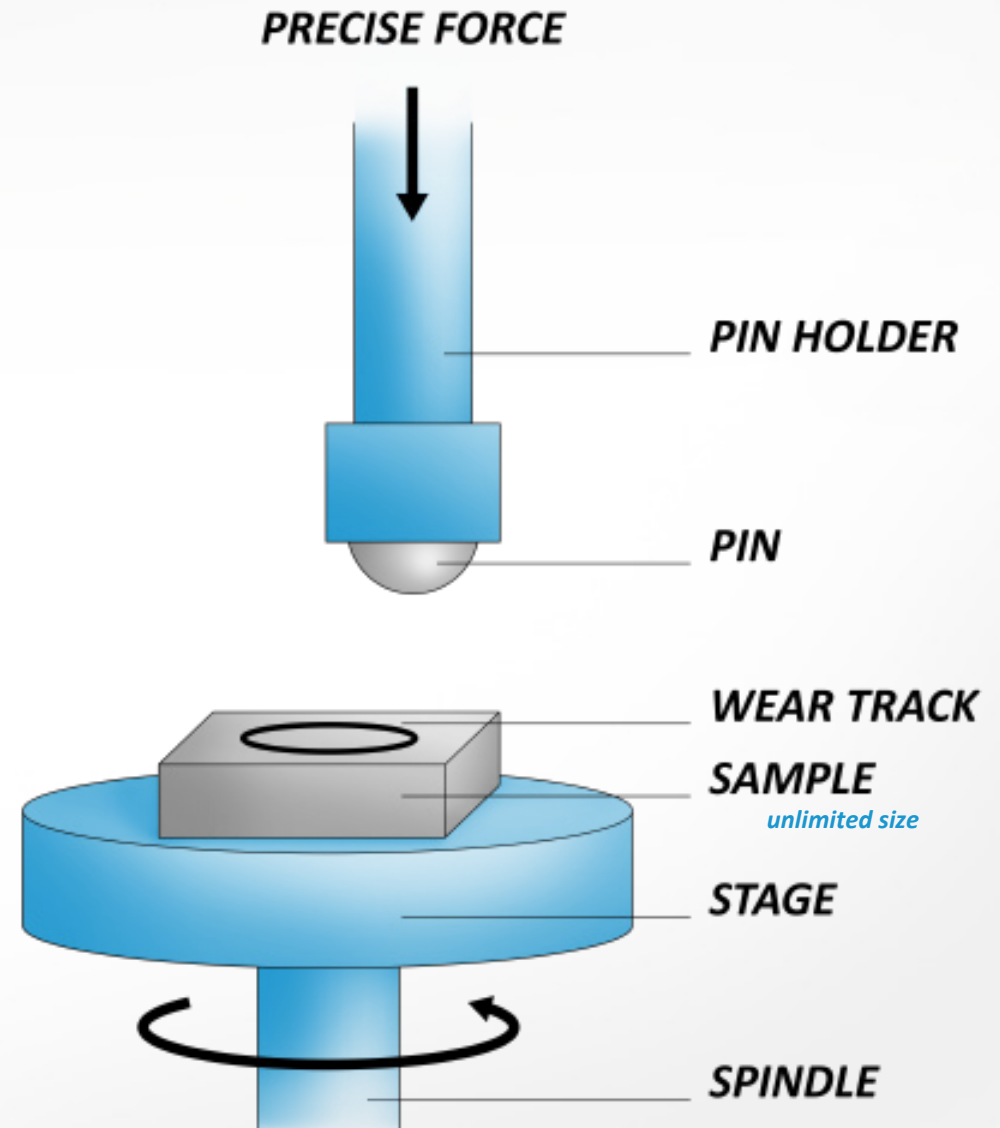


Vacuum
custom



STANDARDS

ASTM G99 ♦ ASTM G132
DIN 50324



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LINEAR MODULE

PROPERTIES ANALYZED

Coefficient of Friction **Dynamic**
Wear Analysis
Lubricity
Friction vs Load / Speed / Time & more

ENVIRONMENTAL MODULES

High Temp
up to 900°C

Low Temp
down to -150°C

Lubrication
up to 150°C

Corrosion
up to 40 N

Humidity
10 - 90%/Td

Gas
inert

STANDARDS

ASTM G132 ♦ ASTM G133
ASTM F732

PRECISE FORCE



PIN HOLDER

PIN

WEAR TRACK

SAMPLE

unlimited size

STAGE



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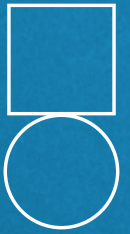


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BLOCK-ON-RING MODULE



PROPERTIES ANALYZED

Coefficient of Friction **Dynamic**
Wear Analysis
Lubricity
Friction vs Load / Speed / Time & more

ENVIRONMENTAL MODULES

Lubrication
up to 150°C



Humidity
10 - 90%/Td



Gas
inert



Vacuum
custom



PRECISE FORCE



BLOCK HOLDER

BLOCK



RING

RING HOLDER

STANDARDS

ASTM G77



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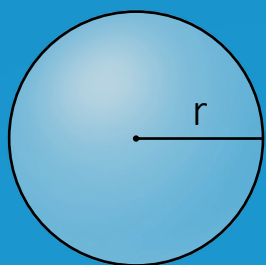


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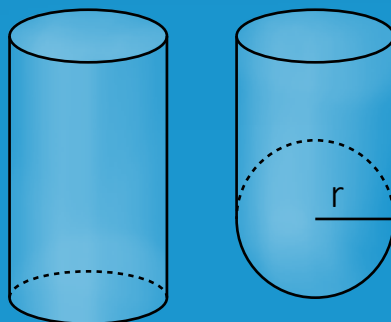
AVAILABLE PIN GEOMETRIES



BALL

3 mm, 6 mm, 10 mm, 25 mm

** any material + custom sizes upon request*



CYLINDER

3 mm, 6 mm, 10 mm, 25 mm

** any material + custom sizes upon request*



BLOCK

for Block-on-Ring



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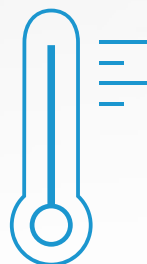


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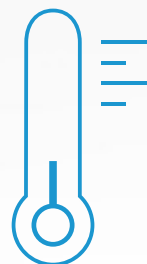
ENVIRONMENTAL MODULES



CORROSION



HIGH TEMP



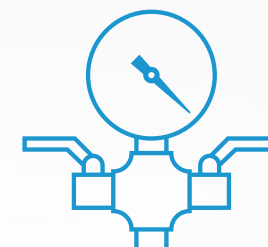
LOW TEMP



LIQUID



HUMIDITY & GAS



VACUUM

HIGH TEMPERATURE

MOUNTING AREA	78 mm ²
BALL & SAMPLE MAX TEMP for rotational	1000°C
BALL & SAMPLE MAX TEMP* for linear	900°C

LOW TEMPERATURE

AIR COOLING MODULE TEMP	-10°C to RT
CRYOGENIC MODULE TEMP with liquid nitrogen	-150°C

LIQUID

LINEAR MOUNTING AREA	80 x 45 x 25 mm
ROTATIONAL MOUNTING AREA DIA.	78 x 25 / 100 x 30 mm
LIQUID HEATING	RT to 150°C
HUMIDITY CONTROL	10 - 90%/Td
DROP BY DROP	Available



CORROSION

COMPATIBLE TESTING MODULES:

LINEAR (MAX OF 40 N)

PROPERTIES ANALYZED

Corrosion Resistance - Tribocorrosion Behavior - Wear at Open Circuit Potential - Potentiodynamic Polarization
Wear at Anodic/Cathodic Potential - Electrochemical Impedance Spectroscopy Analysis



HIGH TEMP

COMPATIBLE TESTING MODULES:

ROTATIONAL - LINEAR

PROPERTIES ANALYZED

Temperature Wear & Friction Data



LOW TEMP

COMPATIBLE TESTING MODULES:

ROTATIONAL - LINEAR

PROPERTIES ANALYZED

Temperature Wear & Friction Data



LIQUID

COMPATIBLE TESTING MODULES:

ROTATIONAL - LINEAR

PROPERTIES ANALYZED

Wear Rates - Friction vs Speed - Stribeck Curve



HUMIDITY & GASES

COMPATIBLE TESTING MODULES:

ROTATIONAL - LINEAR - BLOCK-ON-RING (CUSTOM)

PROPERTIES ANALYZED



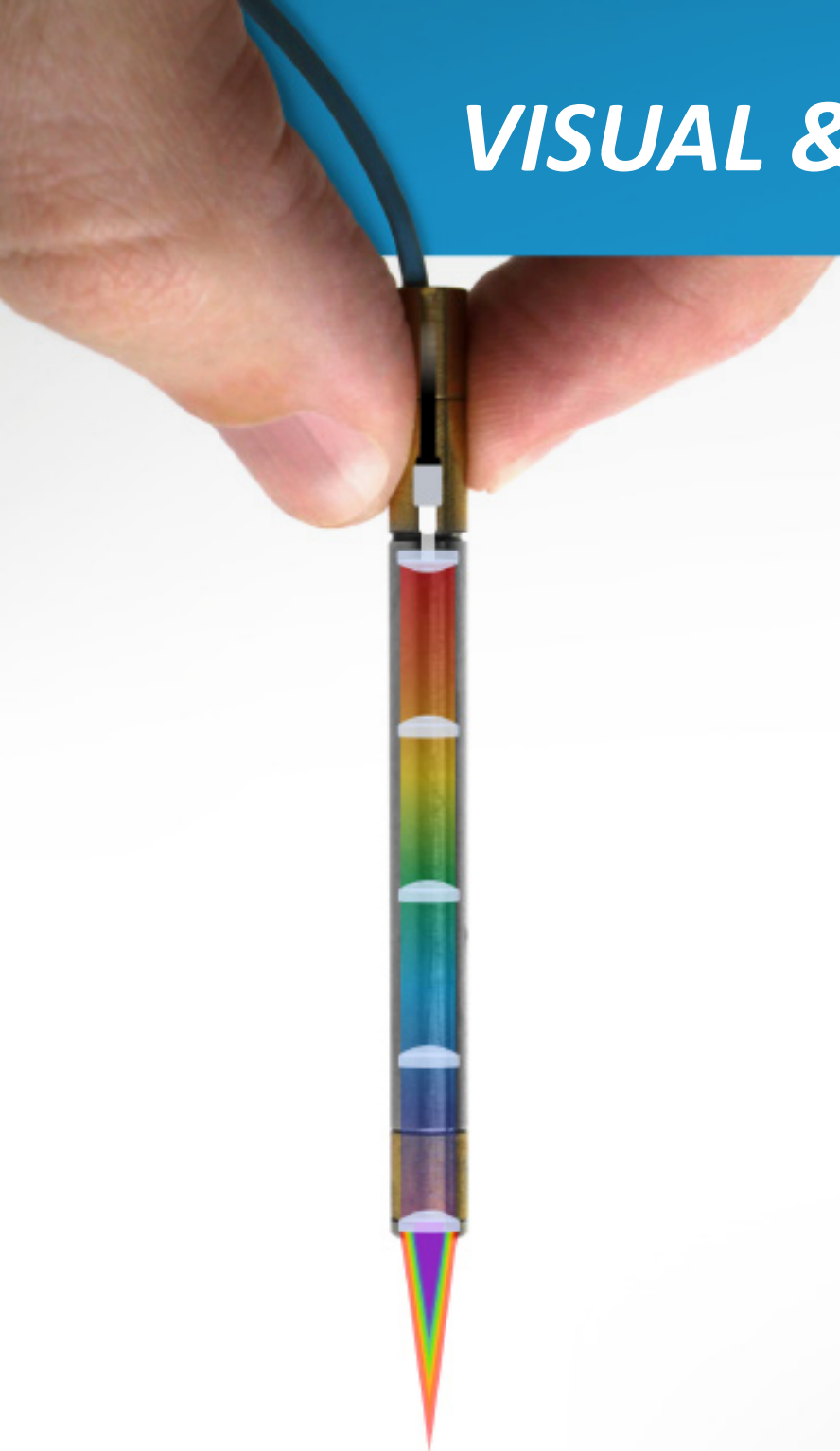
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VISUAL & MEASURING ADD-ONS

2D + 3D OPTICAL PROFILER

An endoscopic optical sensor can be installed to measure the depth of the wear track.

*The **Chromatic Light** technology used in our profilometer line is ideal for tribology applications because it works on any type of material and is the best optical technology for rough high angular surfaces. The profiler, which has a wide measurement capability, can also be used for roughness and many other surface topography studies.*

DIGITAL IMAGING

A visual analysis tool in the form of a digital 1.3 MP camera with up to 330x magnification can be installed on a flexible mounting arm or hand-held to capture the surface features created during wear & friction testing. It is also considered to be essential for imaging of scratch tests which allows a user to determine critical failures along the scratch.

DEPTH SENSOR

A high precision depth sensor tracks the height change on the surface during the test. This data can be used to calculate wear rates. It also gives information on rate of wear change during tribology mechanisms.





SPECIFICATIONS

of the T50 Tribometer

MAX TESTING LOADS	60 N
LOAD RESOLUTION	10 mN
FRICTIONAL FORCE MAX RESOLUTION	±20 N 2.4 µN
MAX TORQUE	4.4 Nm
20 bit SPEED & 16 bit POSITION ENCODERS	Included
X MOTORIZED TRAVEL	50 mm
DEPTH SENSOR RANGE RESOLUTION	2 mm 0.1 nm
INSTRUMENT DIMENSION	61 x 35 x 69 cm (Benchtop)
WEIGHT	67 kg



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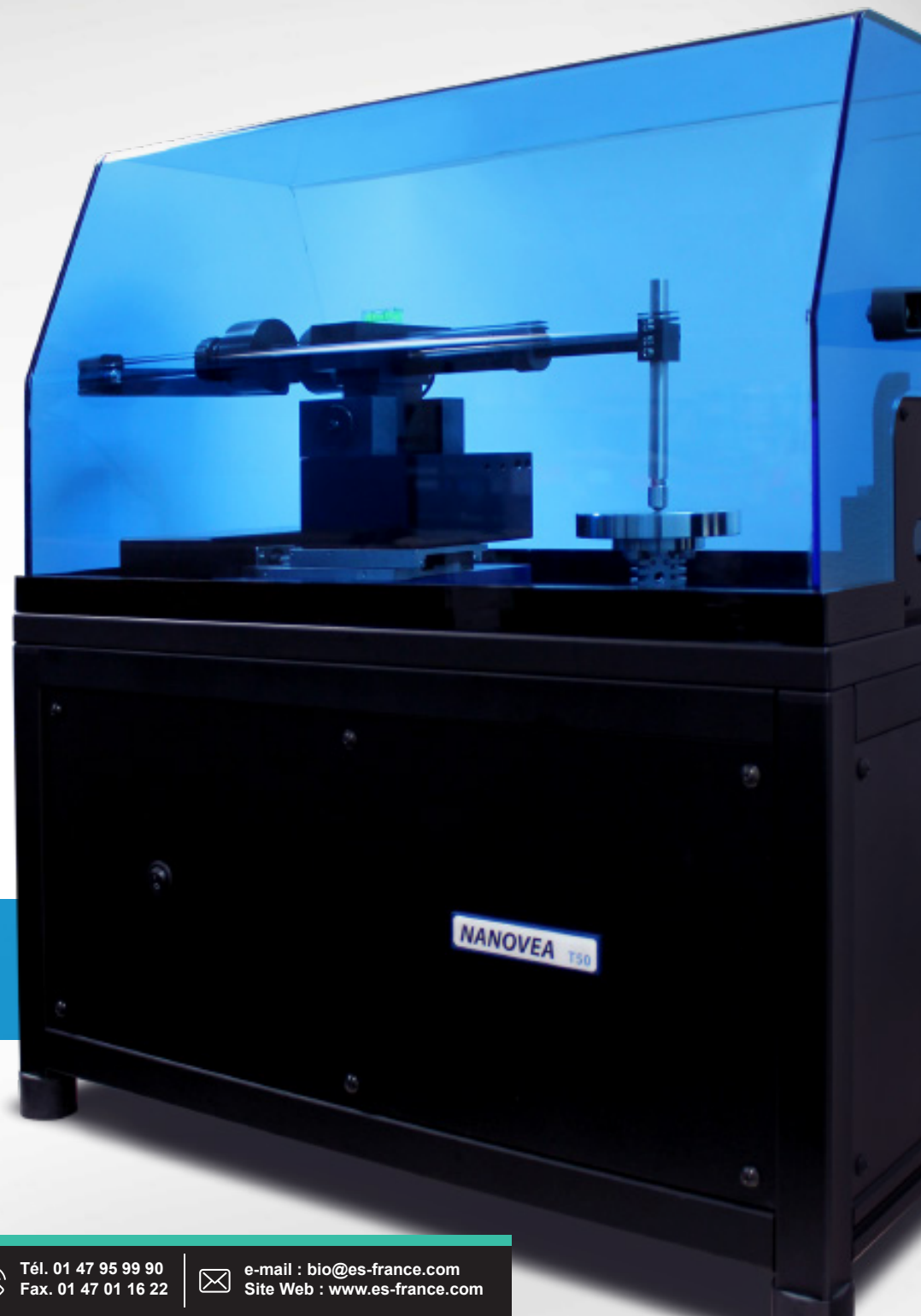
THE COMPACT FREE WEIGHT
TRIBOMETER

For pricing information, please contact
SALES@NANOVEA.COM



ALSO AVAILABLE:

NANOVEA T100
The Compact Pneumatic Tribometer



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