

Our reference: Preventivo 2024210-R0

Customer: LABOSTERA
Chemija st. 13
LT-51327 Kaunas (0) -Lithuania-

Resana, TV, Italy, 27/03/2024

OBJECT: "Offer for UD012+ST015F with Accessories".

General technical information:

- Electric supply: 400V 50Hz (3P+N+E),
- Maximum power at full load at sinusoidal setting. 24kVA (included the below options: axial and torsional actuators)
- The machine includes the calibration certificate for (Compression and tension loads, torque, displacement)

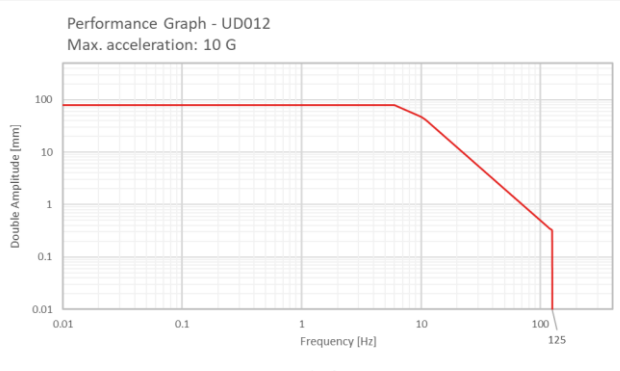
Commented [VA1]: 1.1.11. Maksimali galia esant pilnai apkrovai esant sinusoidiniam nustatymui. 24kVA (įtrauktos toliau pateiktos parinktys: ašinės ir sukimo pavaros)

Commented [VA2]: 1.14 | mašiną pridedamas kalibravimo sertifikatas (suspaudimo ir tempimo apkrovos, sukimo momentas, poslinkis)



(Pictures is for representative purposes.it may have some optional accessories than offered, like Table)
Final configuration may differ thanks to our continuous improvement's philosophy. *Final geometry will be shared with the customer*)

Supply Description:

ID	Description
1	Code: UD012-ACT UD012 Linear motor actuator Electrodynamic testing actuator with high reliability (designed with high mechanical safety factors). It requires low maintenance, and has high energy efficiency. Performances and characteristics: - Max. static force (in compression direction): 8.5 kN - Max. dynamic force (force in compression direction during sinusoidal fatigue): 13.5 kN - Max. static force (against tensile direction): 7.3 kN - Max. dynamic force (force against tensile direction during sinusoidal fatigue): 12 kN - Max. dynamic force (full reverse force during sinusoidal fatigue): ± 11 kN ■ Other performances and characteristics: - Max. speed unload: 1.5 m/s - Max. speed at the static force: 1.5 m/s - Max. speed at the dynamic force: 1.5 m/s - Max. acceleration: 10 g - Stroke: 80 mm - Max load at any position of crosshead - Built-in anti-rotation feature - Capability to sustains side loads: yes, thanks to low friction bushing which guides the actuator rod. - Maximum noise level: within 65 dBA - Linear resolution: 0.05 μm (50 nm) (fully digital and high-resolution encoder) - Safety brake, activated by mechanical spring, deactivated by pressure – required 6.0 (+2.0/-0.0) bar - Max. frequency: 125 Hz - Cooling: Air Performance graph: 

Commented [VA3]: 1.3.1. Aukšto patikimumo elektrodinaminio testavimo pavara (sukurta su aukštais mechaninės saugos koeficientais). Jis reikalauja mažai priežiūros ir pasižymi dideliu energijos vartojimo efektyvumu.

Commented [VA4]: 1.1.2. Maks. statinė jėga (suspaudimo kryptimi)

Commented [VA5]: 1.1.1. Maks. dinaminė jėga (jėga gniuždymo kryptimi sinusinio nuovargio metu): 13,5 kN

Commented [VA6]: 1.1.5. Eiga: 80 mm

Commented [VA7]: 1.3.3. Maksimali apkrova bet kurioje pavaros padėtyje

Commented [VA8]: 1.1.10. Maksimalus triukšmo lygis: 65 dBA ribose

Commented [VA9]: 1.1.7. Linijinė skiriamoji geba: 0,05 μm (50 nm) (visiškai skaitmeninis ir didelės raiškos kodavimo įrenginys)

Commented [VA10]: 1.1.9. Aušinimas oru

2 Code: ST015 FXXX XXXXXX XXXX

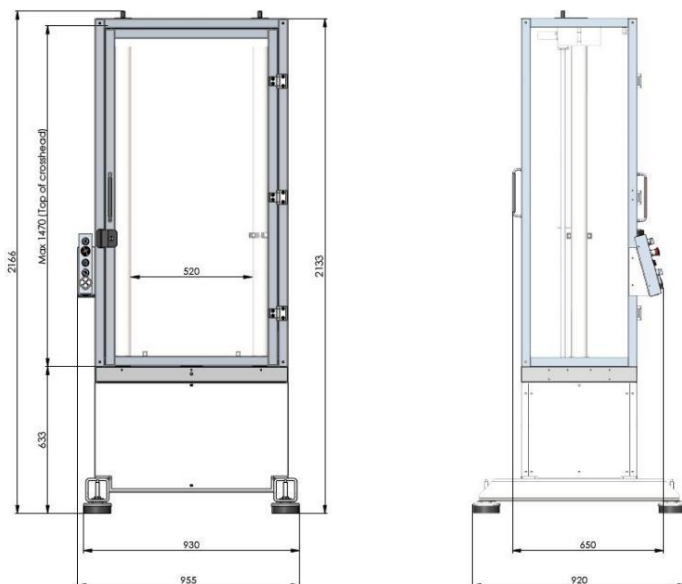
Optional for ST015 Structure: upgrade to floor mounted structure

- **High stiffness two column structure and space between 2 columns 520 mm.**
- Adjustable aluminium upper plate position (with Electrical movement see point below)

- **Steel base t-slotted plate for mounting accessories and specimen holders**

This option includes a welded steel structure to raise the base plate of the machine, providing:

- Compatibility with temperature chamber (places the structure at the perfect height to be used with our temperature chambers)
- Possibility to fix the structure to the floor, thus providing higher stability (recommended for UD actuators)
- More comfortable working position



Images may show item with optional accessories.
Dimensions may change due to continuous product improvements. Final geometry will be shared with the customer.

Commented [VA11]: 1.2.3. Didelio standumo dviejų kolonų konstrukcija ir tarpas tarp 2 kolonų 520 mm.

Commented [VA12]: 1.2.1. Plieninio pagrindo t formos plokštelė priedams ir mėginių laikikliams tvirtinti

3	Code: ST015 XEXX XXXXXX XXXX Optional for ST015 Structure: electric crosshead adjustment The two ball screws for the adjustment of the crosshead position will be driven by an electric motor, controlled via software. • The screws are synchronized with a belt transmission so that only one screw needs to be turned in order to move the crosshead • An electric motor is used to adjust the crosshead position (UP and DOWN buttons on the HMI software)
4	Code: ST015 XXXY XXXXXX XXXX ADDITIONAL SENSORS for the automatic movements of the upper crosshead Crosshead driven by electric motors, managed by the testing software Test Center. With this option the crosshead closure is manual and there are sensors on the crosshead's fixture. <i>Poka yoke system (E.g., Test may not perform if cross head is not locked): There is an automatic hardware/software control that permits the crosshead movement only if the crosshead isn't fixed, and permits the system movement only if the crosshead is fixed.</i>
5	Code: ST015 XXXX XXXXXX YXXX Optional for ST015 Structure: Safety guard Safety guard complying with EC Regulations, with RFID switch to monitor status of the door (open/close), aluminium frame and transparent plastic panels. When this option is selected, the testing system will be sold as "machinery" (Machinery Directive, 2006/42/EC)

Commented [VA13]: 1.2.2. Du rutuliniai sraigtai, skirti reguliuoti kryžminės galvutės padėtį, bus varomi elektros variklio, valdomu programine įranga.

Commented [VA14]: 1.2.4.ir 1.2.5. Kryžminė galvutė varoma elektros varikliais, valdoma testavimo programinės įrangos Test Center. Pasirinkus šią parinktį, kryžminės galvutės fiksavimas yra rankinis, o ant kryžminės galvutės laikiklio yra jutikliai.

6 Code: BV080
BV080 Torsional actuator to perform tension/torsion tests. Designed with high mechanical safety factors specifically for fatigue tests. It requires low maintenance and has high energy efficiency.

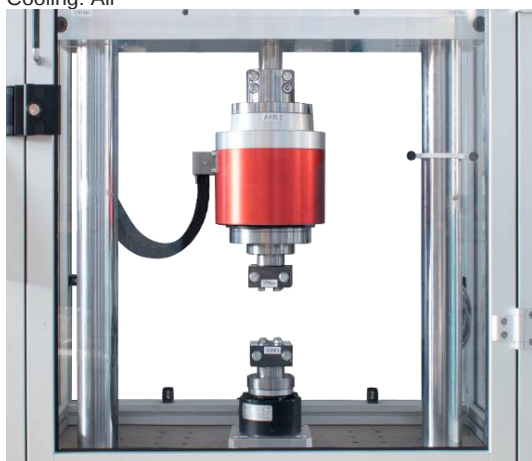
Main characteristics:

- Max. static torque: 80 Nm (including additional static torque system)
- Max. dynamic torque (sinusoidal fatigue): 80 Nm
- Max. speed: 150 rpm
- Max. number of revolutions: Unlimited
- Integrated absolute rotational encoder
- Rotational resolution: 0.007° (fully digital and high-resolution encoder)

Included in the package:

- The additional data acquisition channel for the second Wheatstone bridge of the biaxial load cell
- All the necessary mechanical connections to mount the BV actuator equipment (connectors, sockets, etc.) Actuator bearings are resistant to eccentric loads.
- Software add-on for biaxial acquisition and control loop

Cooling: Air



Commented [VA15]: 1.1.4. Maks. statinis sukimo momentas: 80 Nm (įskaitant papildomą statinio sukimo momento sistemą)

Commented [VA16]: 1.1.3. Maks. dinaminis sukimo momentas (sinusinis nuovargis): 80 Nm

Commented [VA17]: 1.1.6. Maks. apsisukimų skaičius: Neribotas

Commented [VA18]: 1.1.8. Sukimosi skiriamoji geba: 0,007° (visiškai skaitmeninis ir didelės raiškos kodavimo įrenginys)

Commented [VA19]: 1.3.2. Pavaros guoliai yra atsparūs ekscentrinėms apkrovoms

7 Code: LC-BA-PC-I-16-220
Biaxial load cell (tension/torsion), 16-220 kN-Nm,

Very high-quality load cell, made by the 1st class brand Interface.

This sensor represent the higher level available in the market to measure axial/torsion loads.

Safe overload: +/-200% FS

Code: LC-BA-PC-I-16-220
Biaxial load cell (tension/torsion), 11.1-14.1 kN-Nm,

Very high-quality load cell, made by the 1st class brand Interface.

This sensor represent the higher level available in the market to measure axial/torsion loads

Commented [VA20]: 1.4.2. Dviašis apkrovos elementas (įtempimas / sukimas), 16-220 kN-Nm,

Labai aukštos kokybės apkrovos elementas, pagamintas 1 klasės prekės ženklo Interface.

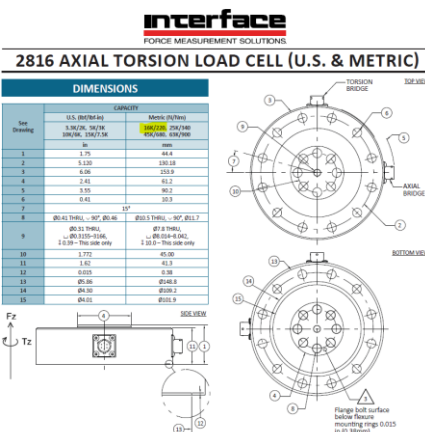
Šis jutiklis yra rinkoje esantis aukštesnis lygis ašinėms / sukimo apkrovoms matuoti.

Saugi perkrova: +/-200% FS

Commented [VA21]: 1.4.2. Kodas: LC-BA-PC-I-16-220
Dviašis apkrovos elementas (įtempimas / sukimas), 11,1–14,1 kN-Nm,

Labai aukštos kokybės apkrovos elementas, pagamintas 1 klasės prekės ženklo Interface.

Šis jutiklis yra rinkoje esantis aukštesnis lygis ašinėms / sukimo apkrovoms matuoti



- OPTIONS**
- Connector protection
 - Standardized output
 - Transducer Electronic Data Sheet (TEDS)
 - Custom calibration
 - Special temperature range

- ACCESSORIES**
- Mating connector
 - Instrumentation

8	Code: HW-TM Test Manager Controller based on real time platform The controller enables the acquisition and the closed loop control of: • Motor position: 1 channel for each actuator • Strain signals: 2 channels: The first channel is used for the axial channel of the load cell; the second is used for the torsional channel of the load cell. • Resolution of incoming data Typical resolution of the input analog channels (e.g.: load cell): 24 bit. • Data transfer rate from the controller to the computer: Gigabit connection (widely above 30 MB/s). • Included AUTOMATIC identification and calibration of transducers. • Controller protection - 4 per connected converter with a detection time 1ms As optional (with optional hardware) it is available the possibility to acquire more signals and devices, e.g.: • Thermocouple • IR pyrometer • Other analog channel in voltage or current (16 or 24 bit) • Other Wheatstone bridge transducer (24 bit) On the controller there are the main controller buttons, for manual movements and the emergency stop button, as per EC regulation.
9	Code: HW-HMI HMI Station Includes one computer with the following characteristics: • Powerful hardware, chosen based on Test Center testing software requirements • Computer type: Desktop PC: • RAM: 8 GB • Storage: 512 GB • OS based on Windows 11 • Microsoft Office license • Input devices: mouse and keyboard • Network connectivity: - qty 1: 2.4 GHz WIFI connection - qty 1: LAN port - RJ-45 Ethernet port, available to the customer to connect the PC to the local network - qty 1: LAN Port - RJ-45 Ethernet port, used by the STEP Lab system to connect the PC to the Controller Test Manager • Display: Full HD 22" or larger size

Commented [VA22]: 1.5.3. Įeinančių duomenų skiriamoji geba Tipinė įvesties analoginių kanalų skiriamoji geba (pvz.: apkrovos elementas): 24 bitai.

Commented [VA23]: 1.5.4. Duomenų perdavimo sparta iš valdiklio į kompiuterį: Gigabit ryšys (plačiai virš 30 MB/s).

Commented [VA24]: 1.5.7. Įtrauktas AUTOMATINIS keitiklių identifikavimas ir kalibravimas.

Commented [VA25]: 1.5.8. Valdiklio apsauga - 4 vienam prijungtam keitikliui su aptikimo laiku 1ms

Commented [VA26]: 1.2.6. ir 1.2.7. Valdiklyje yra pagrindiniai valdiklio mygtukai rankiniam valdymui ir avarinio sustabdymo mygtukas, kaip numatyta EC reglamente.

Commented [VA27]: 1.7.1. Kodas: HW-HMI HMI stotis

Apima vieną kompiuterį su šiomis charakteristikomis:

- Galinga aparatinė įranga, parinkta pagal testavimo centro testavimo programinės įrangos reikalavimus
- Kompiuterio tipas: stalinis kompiuteris:
- RAM: 8 GB

• Saugykla: 512 GB

• OS pagrįsta „Windows 11“.

• Microsoft Office licencija

• Įvesties įrenginiai: pelė ir klaviatūra

10	Code: HW-TC Test Center Software Software Test Center for the testing management The software enables the complete management of the testing parameters, for the following test: • Tensile/Compression and Quasi Static test; • Dynamic test (fatigue), which includes the “multi-session” mode, to execute in sequence session of test with different parameters (load, frequency, etc) with sinusoidal waveform. Note: to perform fatigue tests with other waveforms (<i>i.e.: triangular wave, square wave, saw, included the optional software module MULTIACTION. (see below option)</i> And Double saw, Trapezoidal, Random are included the optional software module Point by Point. (see below option) Waveform generation range 0.001 to 500 Hz. Test Center could be interfaced with a lot of accessories. It could manage also a climatic chamber, and adjust the test temperature during the tests. It is possible to measure and register other input signals (thermocouple, current and tension signal, etc.). The software includes the “Viewer Standard”, for a first result’s analysis. The output files could be opened with other spreadsheet software (i.e.: Microsoft Excel). This guarantees the maximum freedom on the result’s elaboration. Other characteristics: • A lot of advanced features, for example, the function HOLD F = 0, to maintain unloaded the specimen during the grip’s closing; • Real time viewer of the input signals (“oscilloscope” mode); • Real time visualization of the signals on custom graphs (i.e.: Signal VS Time; Load VS Displacement; etc); • Transducer calibration on maximum 10 calibration points; • When there is even one uncalibrated transducer, the program will not allow the test to start. - o BASIC = worker with minimum knowledge on the Test Center (i.e.: for the production’s quality control); - o STANDARD = technicians with good knowledge on the Test Center - o ADVANCE = engineer or technicians with high knowledge on Test Center. • Viewer of the actual alarm state and of the alarm state history; • Automatic saving of the testing acquisition (poka-yoke system to avoid the forgetting to start the acquisition data saving). • Help function included. NOTE: other testing mode and advanced viewer is available as optional (see below).
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Commented [VA28]: 1.6.1. Programinės įrangos testavimo centras, skirtas testavimo valdymui
Programinė įranga leidžia visiškai valdyti testavimo parametrus, kad būtų galima atlikti šiuos testus:
• Tempimo/suspaudimo ir kvazistatinis bandymas;
• Dinaminis testas (nuovargis), apimantis „kelių seansų“ režimą, siekiant atlikti bandymo seansą su skirtingais parametrais (apkrova, dažnis ir tt) su sinusine bangos forma.

Commented [VA29]: 1.5.5. ir 1.5.6. Dinaminis testas (nuovargis), apimantis „kelių seansų“ režimą, siekiant atlikti bandymo seansą su skirtingais parametrais (apkrova, dažnis ir tt) su sinusine bangos forma.

Pastaba: atlikti nuovargio bandymus su kitomis bangų formomis (t. y.: trikampe banga, kvadratine banga, pjūklų, komplekte yra pasirenkamas programinės įrangos modulis MULTIACTION. (žr. toliau pateiktą parinktį)

Ir
Dvigubas pjūklas, trapezinis, atsitiktinis yra įtrauktas į pasirenkamą programinės įrangos modulį Taškas po taško. (žr. toliau pateiktą parinktį)
Bangos formų generavimo diapazonas nuo 0,001 iki 500 Hz.

Commented [VA30]: 1.5.9. Kai yra nors vienas nekalibruotas keitiklis, programa neįsileis pradėti testo.

Commented [VA31]: 1.6.2. Įtraukta pagalbos funkcija.

11 Code: HW-TC-MLTX1
Extension module for Test Center: MULTI-AXIS.
Synchronization for 2 axis (Includes MULTI-ACTION package).

Extension module for Test Center: MULTI-AXIS
MULTI-AXIS module enables you to execute synchronized operations for different axis.
Operations can be for example:

- Preload a certain value of force on AXIS 1
- Move AXIS 2 to a certain position
- Start a cyclic test by synchronize AXIS 1 and AXIS 2, with a defined value of phase between the two (or more) axis
-

See dedicated Youtube videos for some example:

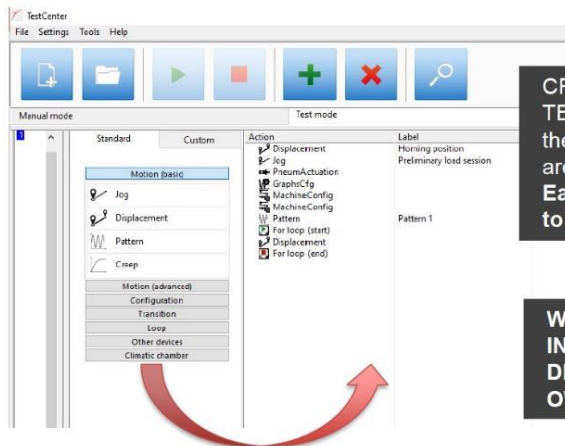
<https://www.youtube.com/watch?v=O2EDfR5I9fY&list=PLb5PBKxfVNQv1njgsB2QJ4T2nQNqdHuxn&index=2>

It includes MULTI-ACTION module:

MULTIACTION module enables you to execute sequential operations, for example:

- Jog to position X
- Start a creep test at the ambient temperature
- Set the temperature chamber at temperature Y
- Start a fatigue test
- Start an output data transmission (like a Voltage signal)
- Monitoring thermocouple
- Modify the temperature setpoint on temperature chamber
- Start a new fatigue test
-

These features able to create other waveform like *.(triangular wave, square, saw)*



CREATE YOUR OWN
TEST, just drag and drop
the action in the work
area.
Easy to use and quickly
to set up!

WE CAN VERY EASY
INTEGRATE ACTIONS
DEDICATED TO YOUR
OWN NEEDS

Example of possible options available:

Actions 1: Motion (basic) Motion (basic) Jog Displacement Pattern Creep Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition Data processing Measurement Logic Notification	Action 2: Motion (advanced) Motion (basic) Motion (advanced) GasTest Warmup ProfileTracking ExternalCmd PSD Configuration Parameters Task Other devices Graphics and acquisition Data processing Measurement Logic Notification	Action 3: Configuration Motion (basic) Motion (advanced) Configuration ResetPosition MachineConfig Limits ResetChannel Parameters Task Other devices Graphics and acquisition Data processing Measurement Logic Notification	Action 4: Parameters Motion (basic) Motion (advanced) Configuration Parameters SetVariable ChangeParameters Recipe ProcessVariables VariablesInterface Task Other devices Graphics and acquisition Data processing Measurement Logic Notification
Action 5: Task Motion (basic) Motion (advanced) Configuration Parameters Task Wait SignalGeneration-AO DigitalOutput ActuatorCmd RunExe AOCoupling DDCoupling Other devices Graphics and acquisition Data processing Measurement Logic Notification	Action 6: Other devices Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Temperature Grips Doors CrossbeamMove BarCode MotorDC Stepper RFID External current Graphics and acquisition Data processing Measurement Logic Notification	Action 7: Graphic/acquisition Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition GraphsCfg ChangeTDMS SavingTrigger SaveVariables Data processing Measurement Logic Notification	Action 8: Data processing Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition Data processing Report ExportResults LoadTDMS SaveDatabase Measurement Logic Notification
Action 9: Measurement Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition Data processing Measurement Measurement start Measurement stop Measurement save Logic Notification	Action 10: Logic Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition Data processing Measurement Logic If Else End if For loop (start) For loop (end) GoTo ExitRoutine Folder Notification	Action 11: Notification Motion (basic) Motion (advanced) Configuration Parameters Task Other devices Graphics and acquisition Data processing Measurement Logic Notification Message Email	

12 Code: HW-TC-ADV Extension module for Test Center: ADVANCED DATA VIEWER

Advanced Data Viewer and Automatic EXCEL/PDF report generation

The Advanced Data Viewer allows an higher level of customization of the post-processing activities (customized charts and graphs).

Most important functions:

- Elaborations of the signals by applying a lot of filters and math operators;
- Comparison between the data, by overlap of the curves;
- Custom graphs, with the possibility to create graphs like “channel A vs. channel B” (for example: Pressure vs. Displacement; Force vs. Velocity, etc);
- Export of the data, elaborated and original acquired, too;
- Automatic PDF report generation.

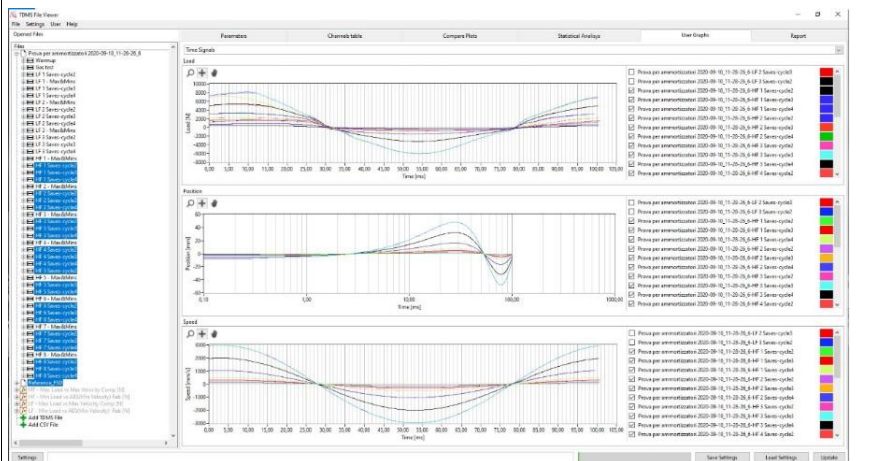
With the option “Automatic EXCEL/PDF report generation” Customer will be able to obtain automatic test report in PDF and EXCEL format.

The first template of automatic report will be generated with the support of STEP Lab, then the customer will be able to create his own template.

The report can include also:

- Information about the product (model, serial numbers, etc...)
- Information about the test (speed, frequency, amplitude, etc...)
- Main numeric results (i.e.: max. damping force, gas force, etc...)
- Charts of the acquisitions
- Curves of the acquisitions, with also comparison between the tests

Example of data Comparison



13 Code: HW-TC-DT-TH+PBP
Extension module for Test Center: **FOLLOWING IMPORTED PROFILE-RANDOM PROFILE / PROFILE POINT-BY-POINT**

The profile could be imported from an acquisition (time history), like the video above. This allows to reproduce real track data on your testing machine.

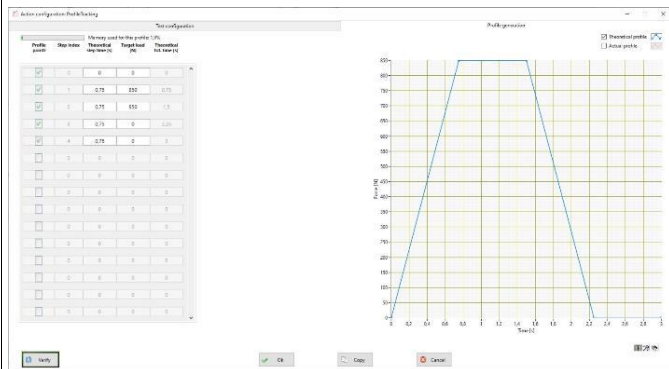
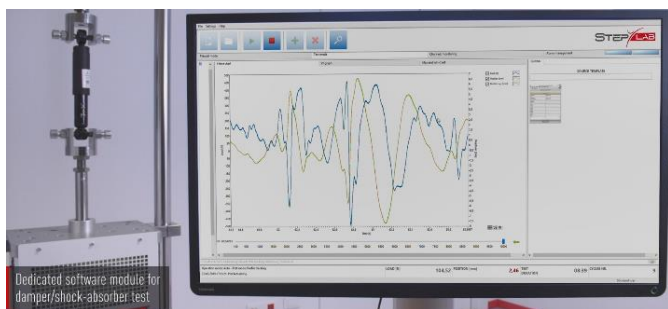
It is also possible to reproduce a point-by-point profile set up on the Test Center:

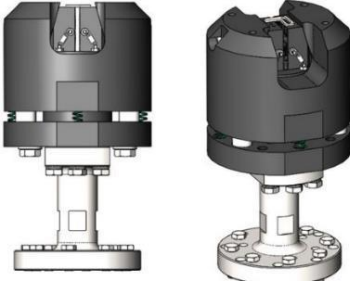
These features able to create waveform like. (Double saw, Trapezoidal, Random)

- t= 0, position 0 mm
- t= 1, position 0.1 mm
- t= 2, position 0.1 mm
- t= 3, position 0 mm

....

It is possible to reproduce this profile on infinite loop.
The input profile could be in position and in load.



14	Code: GR-MW-12-140 Mechanical Wedge Grips, 12 kN, 140 Nm Mechanical Wedge Grips for tension, compression and torsion Main features: • Maximum dynamic force: +/- 12 kN • Maximum dynamic torque: +/- 140 Nm • Compatible with climatic chamber: stainless steel construction with ionic nitriding treatment and final anti corrosion surface coating. • Wedge-action, self centering: jaws always close in the center • Special design: non-shift type. This permits to reduce at the minimum the tensile/compression effect on the sample while grip is opening/closing • Screw-operated • Interchangeable jaws for rectangular and cylindrical specimens of different dimensions • Excluded connections to the machine and jaws  Some details may change due to continuous product improvement.
15	Code: GR-MW-12-140-SJ-F8-16 Set of jaws for rectangular specimens, 8-16 mm Set of jaws for rectangular specimens: • Specimen thickness: 8-16 mm • Stainless steel construction with ionic nitriding treatment and final anti corrosion surface coating • Indicated for plastic and unhardened metal specimens • Not suitable for hardened metal specimens
16	Code: GR-CP-D100 Compression plate, D100 Compression plates, made of stainless steel (compatible with temperature chamber). Diameter: D100

Commented [VA32]: 1.8.1. ir 1.9.1. Mechaninės pleištinės rankenos, 12 kN, 140 Nm
Mechaninės pleištinės rankenos, skirtos įtempimui, suspaudimui ir sukimui

Commented [VA33]: 1.8.1. Mėginio storis: 8-16 mm

Commented [VA34]: 1.9.1. Suspaudimo plokštės, pagamintos iš nerūdijančio plieno (suderinama su temperatūros kamera). Skersmuo: D100

17	Code: GR-3/4-PT-BND Grips 3- and 4-point bending, fatigue rated at 3 kN. Geometries and specification according to ISO 9917 and ISO 6872, and ISO 4049 and ISO 20795. All the parts are in stainless steel or with special surface coating to be used in liquid bath. Main characteristics: • Maximum load (3-point bending): 3 kN • Maximum load (4-point bending): 3 kN • Specimen width: 0 – 30 mm • Upper and bottom anvils contact points: diameter 2 mm, with hardened surface as per ISO standards requirements. • Distance between two contact points (upper span in 4-point bending): 5-40 mm • Distance between two contact points (lower span) : 12 - 80 mm, to fully cover the requirements of the above ISO standards, including ISO 6872: ISO 6872:2015+A1:2018 7.3.1.1.2.1 Fixture for three-point bending. consisting of support rollers (1,5 mm to 5 mm $\pm$ 0,2 mm, in diameter) positioned with their centres 12,0 mm to 40,0 mm ($\pm$ 0,5 mm) apart. The load shall be applied at the midpoint between the supports by means of a third roller (1,5 mm to 5 mm $\pm$ 0,2 mm, in diameter). Rollers shall be made from hardened steel or other hard material having a hardness greater than 40 HRC (Rockwell C-scale) and have a smooth surface with a roughness less than 0,5 μm R_a. It is recommended that the actual spacing between the support roller centres (<i>L</i>) be measured to within 0,1 mm.
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Commented [VA35]: 1.10.1. 3 ir 4 taškų lenkimo rankenos, nuovargis įvertintas 3 kN.
Geometrijos ir specifikacijos pagal ISO 9917 ir ISO 6872 bei ISO 4049 ir ISO 20795.

Commented [VA36]: 1.10.1. Pagrindinės charakteristikos:
• Maksimali apkrova (3 taškų lenkimas): 3 kN
• Maksimali apkrova (4 taškų lenkimas): 3 kN
• Mėginio plotis: 0 – 30 mm

18 Code: GR-STD-ISO-14801-02

Equipment for test according ISO 14801 (with adjustable angle of the support)
Including adapters to mount on STEP Lab machine.

Excluded liquid bath (see option below).

Main characteristics:

- Made in anti-corrosion material, to be used in wet environment
- Adjustable angle of the support: from **0 to 90°**
- Upper pin (puncher) with spherical connection



Some details may change due to continuous product improvement.

Commented [VA37]: 1.11 Įranga bandymui pagal ISO 14801 (su reguliuojamu atramos kampu)
Įskaitant adapterius, skirtus montuoti ant STEP Lab mašinų.

Commented [VA38]: 1.11 Pagrindinės charakteristikos:
• Pagaminta iš antikorozinės medžiagos, skirta naudoti drėgnoje aplinkoje
• Reguliuojamas atramos kampas: nuo 0 iki 90°
• Viršutinis kaištis (perforatorius) su sferine jungtimi

19 Code: GR-BATH-10

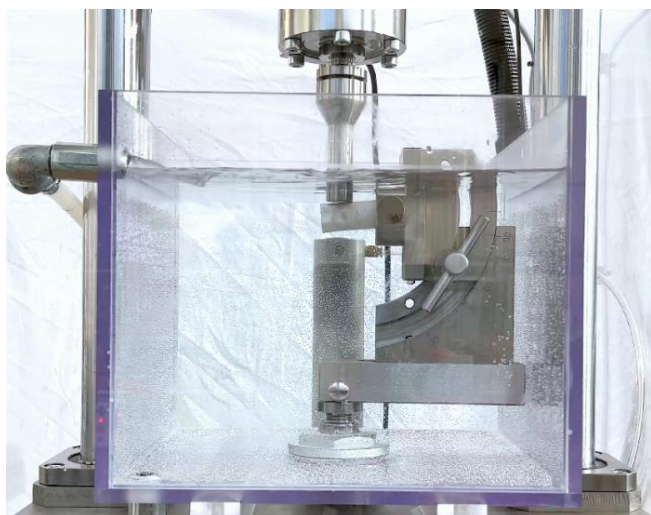
Liquid bath with heater

Main characteristics:

Temperature range: **+30°C / +45 °C** (note: the room temperature must be equal or lower to the liquid bath temperature during test under liquid temperature control)

This system includes bath for grips and sample, and heater for the liquid.

Compatible with testing device, dental implant testing and bending devices.



Some details may change due to continuous product improvement.
The sample support inside the bath is just for example purpose.

Commented [VA39]: 1.12. Skysta vonia su šildytuvu
Pagrindinės charakteristikos:
Temperatūros diapazonas: +30 °C / +45 °C (pastaba:
kambario temperatūra turi būti lygi arba žemesnė už skystio
vonios temperatūrą atliekant bandymą kontroliuojant
skystio temperatūrą)

20 Code: GR-STD-ISO/TS13498

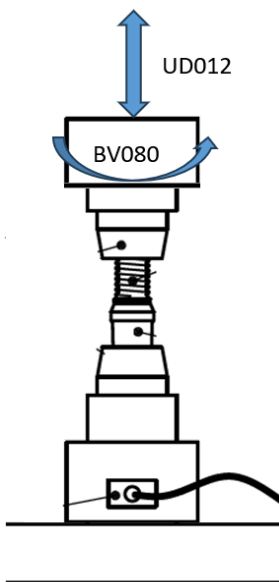
Equipment to test according ISO/TS 13498

Including adapters to mount on STEP Lab machine.

Main characteristics:

- Self centering system, with chuck or high precision collets.

Standard mounting: load cell on the fixed side to permit unlimited turn of the torque actuator. Under request: load cell mounted on the upper side (between the sample's grips and the torsional actuator)



Some details may change due to continuous product improvement.

Commented [VA40]: 1.13 Įranga, skirta išbandyti pagal ISO/TS 13498

Įskaitant adapterius, skirtus montuoti ant STEP Lab mašinų

Price List:

ID	Description	Q.ty	
1	UD012 Linear motor actuator	1	
2	Optional for ST015 Structure: upgrade to floor mounted structure	1	
3	Optional for ST015 Structure: electric crosshead adjustment	1	
4	Optional for ST015 Structure: Crosshead with locking sensors	1	
5	Optional for ST015 Structure: Safety guard according to EC regulation	1	
6	BV080 Torsion actuator, 80 Nm dynamic torque	1	
7	Biaxial load cell (tension/torsion), 16-220 kN-Nm,	1	
8	Test Manager Controller based on real time platform The controller enables the acquisition and the closed loop control of: • Motor position: 1 channel for each actuator • Strain, voltage, or other analog signals: 2 configurable channels	1	
9	HMI Station	1	
10	Test Center Software	1	
11	Extension module for Test Center: MULTI-AXIS. Synchronization for 2 axis (Includes MULTI-ACTION package).	1	
12	Extension module for Test Center: ADVANCED DATA VIEWER	1	
13	Extension module for Test Center: FOLLOWING IMPORTED PROFILE-RANDOM PROFILE / PROFILE POINT-BY-POINT	1	
14	Mechanical Wedge Grips, 12 kN, 140 Nm	1	
15	Set of jaws for rectangular specimens, 8-16 mm	1	
16	Compression plate, D100	1	
17	Grips for 3- and 4-point bending, 3 kN	1	
18	Equipment for test according ISO 14801 (with adjustable angle of the support)	1	
19	Liquid bath with heater	1	
20	Equipment to test according ISO/TS 13498	1	



Warranty:

12 months from the delivery date.

Delivery:

We are confident to deliver the machine in 7 months from the contract establishment

But considering public tender delivery time is 8.5 months after the contract establishment

Customer sign

Date

Step Engineering Srl

Quotation date

STEP ENGINEERING SRL

Cap. Soc. Eur. 10.000,00 I.V.

27/03/2024

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Kind regards

Step Engineering Srl



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