NSAU – NANO STEPPING ACTUATOR UHV



Features

- UHV compatible (sealed by laser welding)
- Nanometer resolution
- Absolute position feedback (no homing needed)
- All stainless-steel construction
- Vacuum compatible mating connector available
- Push-pull load capacity
- Self-locking (set-and-forget)
- Suited for harsh environments (dust)
- Contamination free (no particle generation)

Description / Applications

The NSAU is a completely sealed linear actuator developed for highly accurate positioning in Ultra High Vacuum (UHV) or Ultra Clean Environments. A stepper motor combined with a high-quality reduction and ball screw offers backlash free nanometer positioning resolution and high load capacity. Electrical limit switches and motor temperature sensing are integrated, and the encoder offers high resolution position feedback and absolute position information, even after a power-off/on cycle. All electrical signals are available via a single circular connector.

Specifications

General info	
Type of motion	Linear
Dimensions	See drawings below
Operational environmental conditions	280K to 325 K, ambient to UHV
Weight	1,0 kg
Maximum bake-out temperature	100 °C
Stepping motion	
Travel range	10 mm
Velocity	0,2 mm/s
Resolution @ full motor step	50 nm
Resolution @ 20x micro step	2,5 nm
Repeatability @ full motor step	100 nm
Accuracy full stroke	6 µm (IT5)
Backlash	none
Forces and load capacity	
Driving force	± 300 N
Radial load	5% of axial load
Axial stiffness	2e7 N/m
Materials	
Construction	Stainless steel 316L
Connector	Stainless steel pins and shell, glass ceramic insulator
Model specific information	
-UHV	Level of vacuum compatibility, see the glossary on the homepage for details
Outgassing (RGA, sampled after 10 hrs)	
H2O	2,19e-7 mbar*l/s
CxHy 45-100	1,25e-9 mbar*l/s
CxHy 100-200	1,13e-10 mbar*l/s
Electronics (see user manual for details)	
Motor	Stepper motor
Position feedback	Absolute encoder, SSI interface, effectively 2,44 nm/count
Safety end switches	Normally open, switch to common
Safety temperature sensor	PT1000, 4-wire
Controller	CAB2 with NCM1

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Ordering Information

Available Models

NSAU-UHV	Nano Stepping Actuator UHV

Available Options

None	Default delivery condition is Ultra High Vacuum compatible

Accessories

None

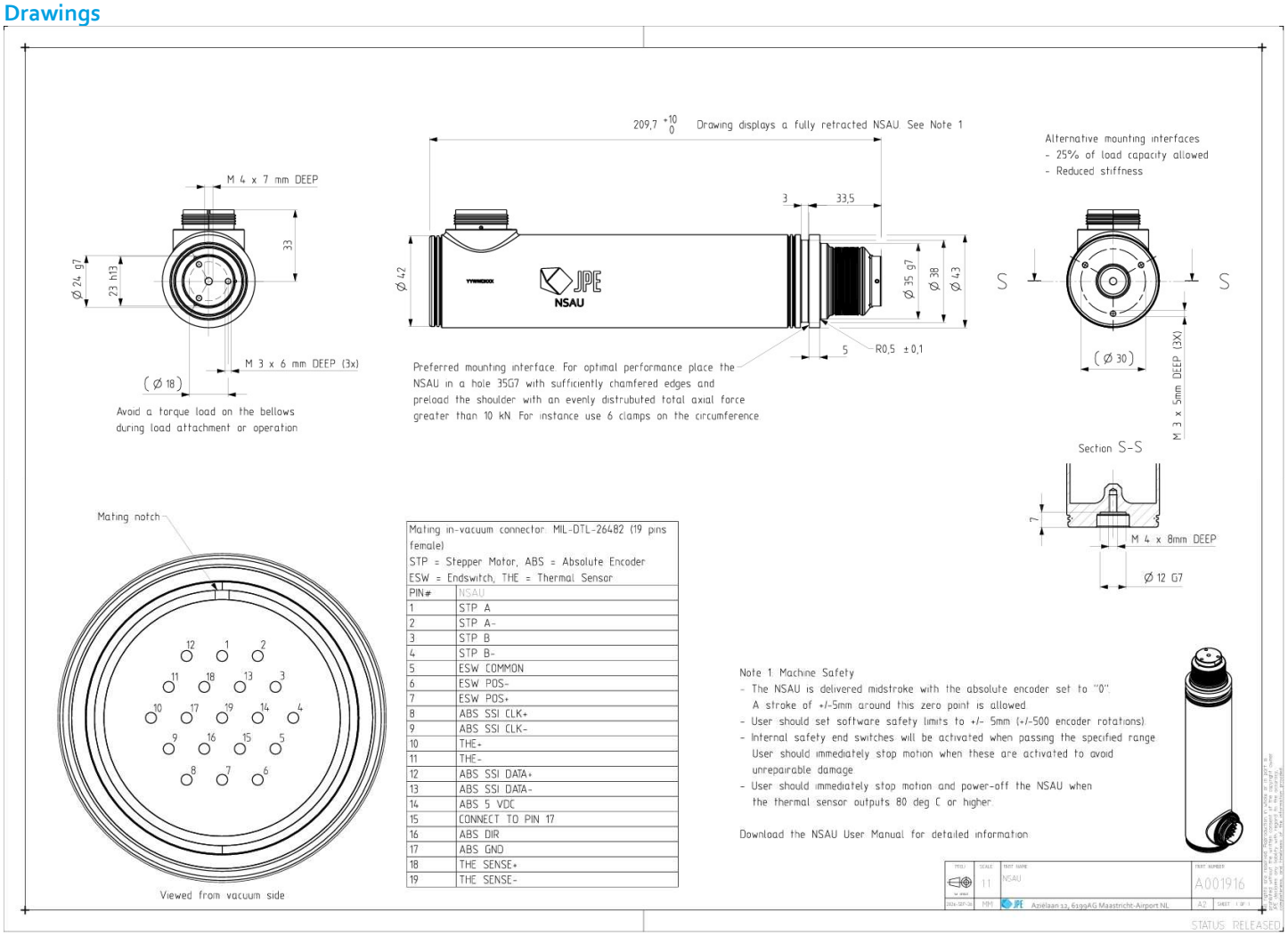
Mechanical and electrical information

Download 3D step files and manuals from:
https://www.jpe-innovations.com/cryo-uhv-products-intro/

Contact

For quotations, specials, or engineering services, please contact us at:
https://www.jpe-innovations.com/contact/

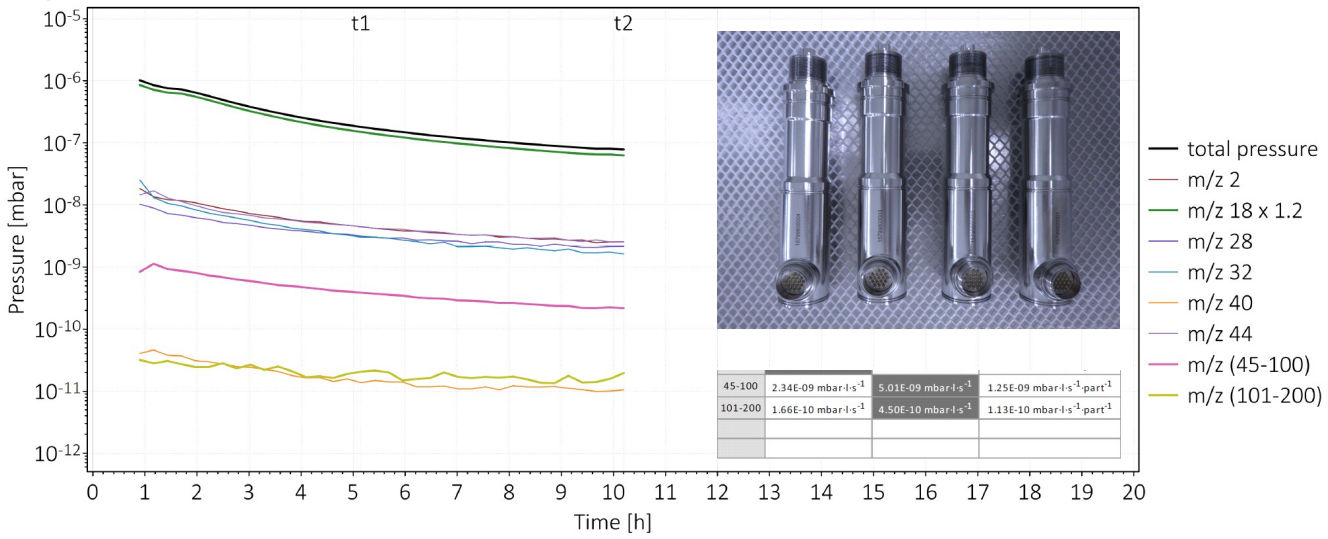
Drawings



PIN#	NSAU
1	STP A
2	STP A-
3	STP B
4	STP B-
5	ESW COMMON
6	ESW POS-
7	ESW POS+
8	ABS SSI CLK+
9	ABS SSI CLK-
10	THE+
11	THE-
12	ABS SSI DATA+
13	ABS SSI DATA-
14	ABS 5 VDC
15	CONNECT TO PIN 17
16	ABS DIR
17	ABS GND
18	THE SENSE+
19	THE SENSE-

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Residual Gas Analysis (RGA) results



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