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Find the *Newport GTS150* at our website: ***Click HERE***

High Precision Linear Stages

GTS SERIES



The GTS high-precision linear stages provide high sensitivity and outstanding trajectory accuracy in a compact, robust and cost efficient package. They are an excellent, high-performance solution for applications such as surface scanning, test and calibration, optical component alignment and attachment, and high-precision optical delays lines.

GTS stages are machined from stress-relieved 7075 aluminum for long-term strength and stability. All critical stage surfaces undergo multiple machining processes and precision grinding under strict temperature and quality control. The GTS's advanced asymmetric body design with defined flexible preload provides consistent results over varying temperatures and is most insensitive to non-ideal mounting surfaces. The extra thin and compliant carriage has been optimized for different load conditions including XY configurations, and for providing a high vertical load capacity.

To ensure the most accurate trajectory control, GTS stages feature matched pairs of best-in-class anti-creep crossed roller bearings. The lack of any re-circulating elements in these bearings leads to outstanding ripple-free motion adequate for the most demanding scanning and inspection systems. Moreover, their geared retainers prevent from bearing cage migration, which can occur with other linear bearings.

- Ultra-quiet, anti-creep crossed roller bearings for outstanding straightness and flatness without cage migration
- Integrated encoder with exceptional 100 nm MIM, which ensures highly repeatable and accurate motion
- Low friction ball screw drive minimizes stick and slip effects
- Long-term strength and stability
- Plug and Play - ESP compatible

DESIGN DETAILS

Base Material	High-strength 7075 Aluminum
Bearings	Anti-creep crossed roller bearings
Drive Mechanism	8 mm diameter, backlash-free, ground ball screw
Drive Screw Pitch	2 mm
Feedback	Linear steel scale, 20 µm signal period, 0.05 µm resolution, RS422 differential output
Limit Switches	Optical
Origin	Optical, at center of travel, including mechanical zero signal
Drive	Type DC Servo
Cable Length	3 m (included)

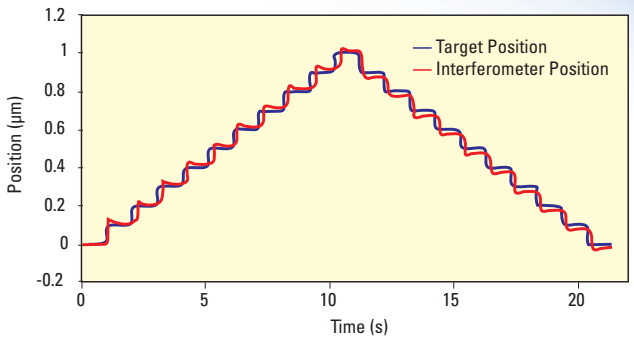
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GTS SERIES

A high-torque DC motor with a precision ground and preloaded, low friction ball screw eliminates stick-slip effects and delivers ultra-smooth motion with 100 nm sensitivity. Because GTS stages have been designed to meet all stage performance without a tachometer feedback loop, they are compatible with a wide array of motion controllers including our popular ESP301, SMC100CC and XPS. And compared to alternative direct-drive technologies, GTS stages can be used in vertical applications with loads up to 30 N without complex counter-balance. Manual adjustments can be accomplished by a knob at the end of the motor.

Precision position feedback is provided by an optical scale with 50 nm resolution that is mounted in the center of the stage to eliminate all drive-train induced motion errors. The space-saving, fixed reading-head design avoids any moving cables inside the stage and underlines the robustness and long lasting value of the GTS stages with an MTBF of 20,000 hours.



GTS stages deliver 100 nm motion sensitivity with high reliability and stability.

GTS stages are mechanically compatible with our XM series ultra-precision linear stages, URS and RGV rotation stages, VP-25X precision compact linear stages, VP-5ZA and GTS30V vertical lift stages.

For applications requiring a vertical mounting bracket, please call Newport.

SPECIFICATIONS

	GTS70	GTS150
Travel Range (mm)	70	150
Minimum Incremental Motion (µm)	0.1	0.1
Uni-directional Repeatability, Typical (Guaranteed) (µm)	0.2	0.2
Bi-directional Repeatability, Typical (Guaranteed) [1] (µm)	±0.06 (±0.10)	±0.08 (±0.10)
Accuracy, Typical (Guaranteed) [1] (µm)	±0.30 (±1.0)	±0.50 (±1.0)
Maximum Speed (mm/s)	50	50
Straightness, Typical (Guaranteed) [1] [2] (µm)	±0.25 (±0.50)	±0.50 (±1.0)
Flatness, Typical (Guaranteed) [1] [2] (µm)	±0.25 (±0.50)	±0.50 (±1.0)
Pitch, Typical (Guaranteed) [1] [2] (µrad) [3]	±15 (±30)	±30 (±40)
Yaw, Typical (Guaranteed) [1] [2] (µrad) [3]	±15 (±30)	±25 (±40)
MTBF (h)	20,000	20,000

[1] Shown are peak to peak, guaranteed specifications or ±half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.

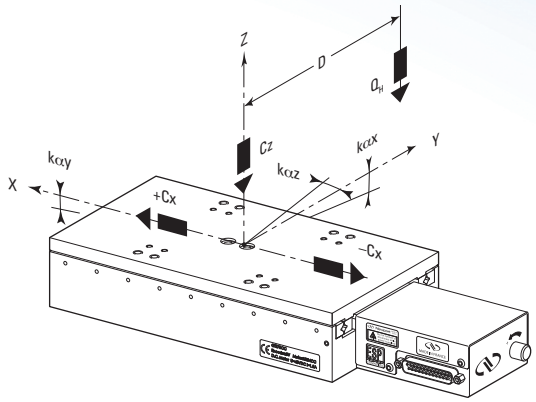
[2] Middle 80% of travel.

[3] To obtain arcsec units, divide µrad value by 4.8.

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LOAD CHARACTERISTICS AND STIFFNESS

	GTS70	GTS150
Cz, Normal centered load capacity (N)	100	100
-Cx, +Cx, Axial load capacity (N)	25	20
Kαx, Compliance in roll (µrad/Nm)	10	5
Kαy, Compliance in pitch (µrad/Nm)	10	5
Kαz, Compliance in yaw (µrad/Nm)	10	5
Q, Off-center load (N) Where D = Cantilever distance (mm)	Q ≤Cz ÷ (1 + D/100)	





A typical assembly with a GTS150, a GTS70 linear stage and a URS100 rotation stage.

RECOMMENDED CONTROLLERS/DRIVERS

Model	Description
XPS-D	1- to 8-axis universal high-performance motion controller/driver
XPS-DRV11	Universal digital driver card for stepper, DC, brushless and direct motors
XPS-RL	1- to 4-axis universal high-performance motion controller/driver
XPS-DRV01	PWM drive module for DC brush and stepper motors, 3 A/48 V max.
ESP301	1- to 3-axis motion controller/driver
SMC100CC	Single-axis DC motor controller/driver

For Need Accuracy to 1 µm

For critical positioning applications, contact Newport to learn about our micropositioning calibration services. Upon request, we will create, implement and verify an electronic compensation process to improve the absolute position accuracy of GTS70 stages to 1 µm and GTS150 stages to 1.5 µm when used with our XPS advanced motion control system. A certificate of calibration along with measured error maps is included.

ORDERING INFORMATION

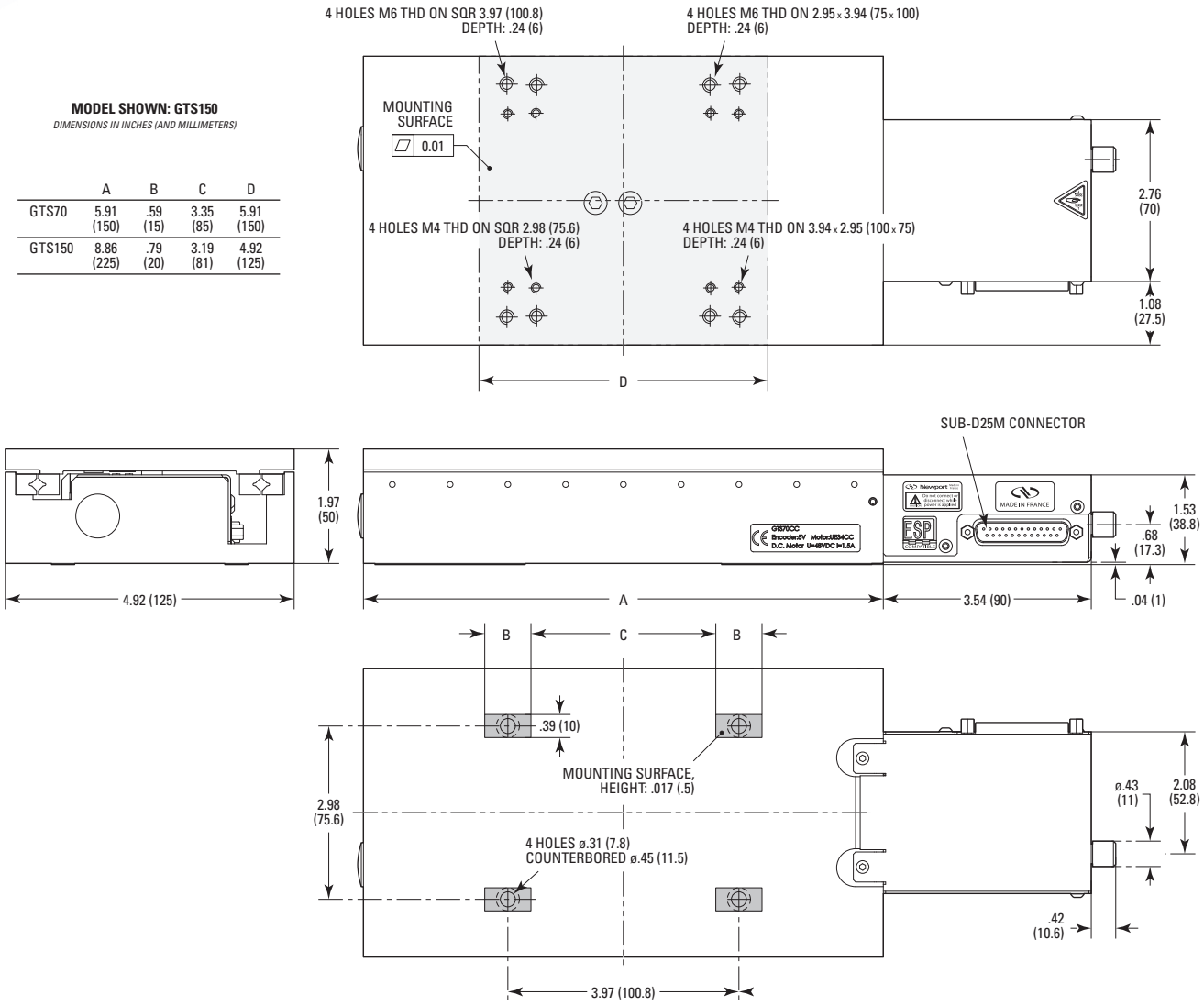
Model	Description
GTS70	High Precision Linear Stage, 70 mm Travel
GTS150	High Precision Linear Stage, 150 mm Travel

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DIMENSIONS

MODEL SHOWN: GTS150
DIMENSIONS IN INCHES (AND MILLIMETERS)

	A	B	C	D
GTS70	5.91 (150)	.59 (15)	3.35 (85)	5.91 (150)
GTS150	8.86 (225)	.79 (20)	3.19 (81)	4.92 (125)



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