



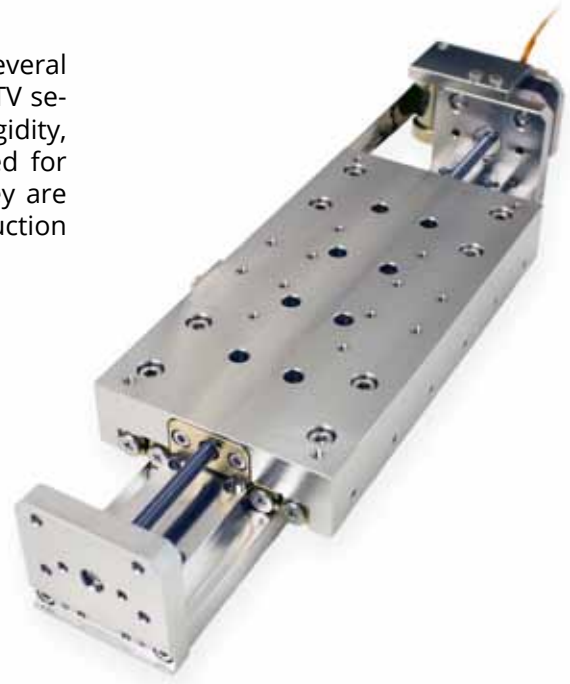
ARUN MICROELECTRONICS LTD

# LTX Translation Stage

UHV Linear Sample Transporter (rigid)

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These mechanisms provide translation for loads of up to several tens of kilograms. They are generally similar to the AML LTV series, but use crossed-roller guides. They have very high rigidity, which is necessary where several transporters are stacked for compound motion or where offset loads are present. They are manufactured with UHV compatible material and construction methods and utilize AML UHV stepper motors.



## FEATURES

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- Travel ranges 25 to 85mm
- Resolution to 1 $\mu$ m per step
- Negligible backlash
- Low profile rigid construction
- Load capacity to 50kg
- Directly stackable for XYZ
- Suitable for use below 1 x 10<sup>-10</sup> mBar
- Bakeable to 200°C
- Cross-roller bearing motion
- Diamond corrected leadscrew and matched nut
- Gamma radiation hard to 1 x 10<sup>6</sup> Gy versions available
- May be customised

## SPECIFICATIONS

Specification	Unit	LTXL	LTXH
Travel	mm	25 / 55 / 85	25 / 55 / 85
Resolution in full step	μm	5	1
Max. Speed	mm/s	15	4
Recommended loaded speed in UHV	mm/s	2	0.8
Repeatability	μm	1	0.2
Load Capacity (Horizontal)	kg	50	50
Load moment	Nm	<20	<20
Axial load force @ 500Hz I <sub>q</sub> = 1A	kg	3	10
Backlash	μm	Negligible	Negligible
Roll, Pitch & Yaw (Unloaded)	μrad	<25	<25
Roll Compliance	μrad/Nm	5	5
Pitch & Yaw Compliance	μrad/Nm	2	2
Straightness of Travel	μm	<1.3μm / 100mm	<1.3μm / 100mm
Stepper Motor		D35.1	D35.1
Vacuum	mBar	1 x 10 <sup>-10</sup>	1 x 10 <sup>-10</sup>
Max. Temperature	°C	200	200
MTBF (5kg load and 30% duty cycle)	hrs	15,000	10,000

## NOTES

**BACKLASH.** Backlash in the gearbox of LTXH is controlled by special gearing and is negligible. Backlash between the nut and leadscrew and axial float in the bearings is controlled by a constant-force spring and is much less than the resolution. If the transporter is used for motion with a significant vertical component (>30°), the load provided by the carriage weight is sufficient to eliminate backlash and the spring can be removed. In these cases mount with the motor at the top. Since speeds are low, acceleration forces are negligible.

**ROLL COMPLIANCE.** Multiple-axis mechanisms can produce varying roll moments about the bottom transporter. The LTX carriage will deflect about the roll axis at 5μradian per Nm. To achieve this performance the transporter must be fixed to an extremely rigid, flat baseplate, using all of the base fixings.

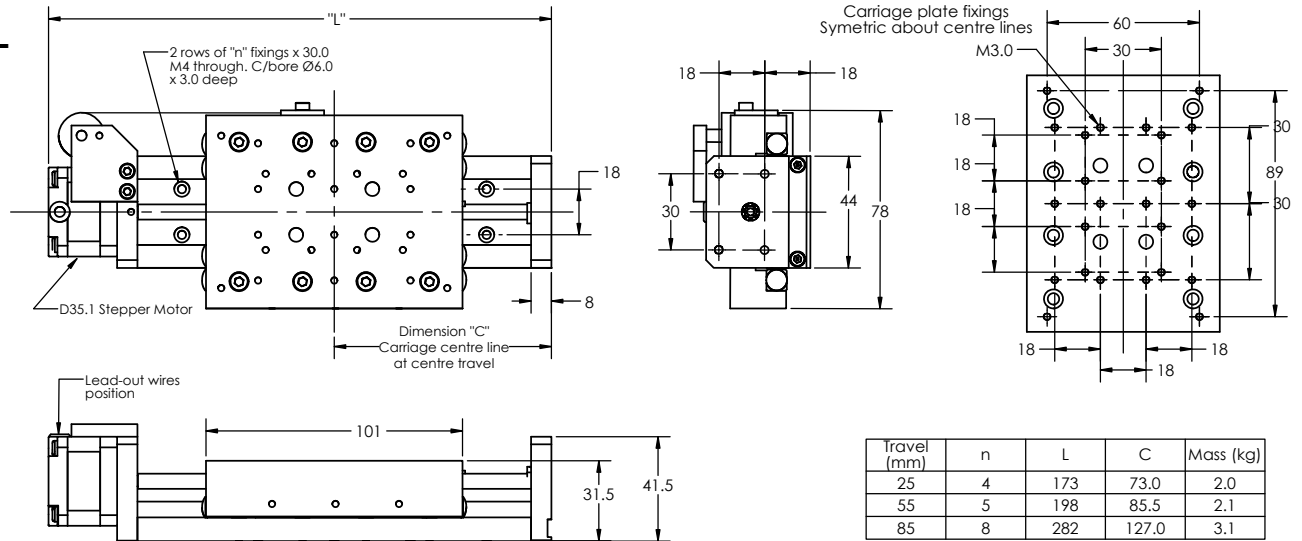
**LUBRICATION.** Running surfaces are dissimilar materials or dry lubricated with molybdenum disulfide. Lead-screws are lubricated with Nyetorr® 6300 UHV grease. Dry lubrication can be specified.

**VERNIER STOP.** These transporters may be driven to the vernier stops at the limits of their travel and stalled without damage.

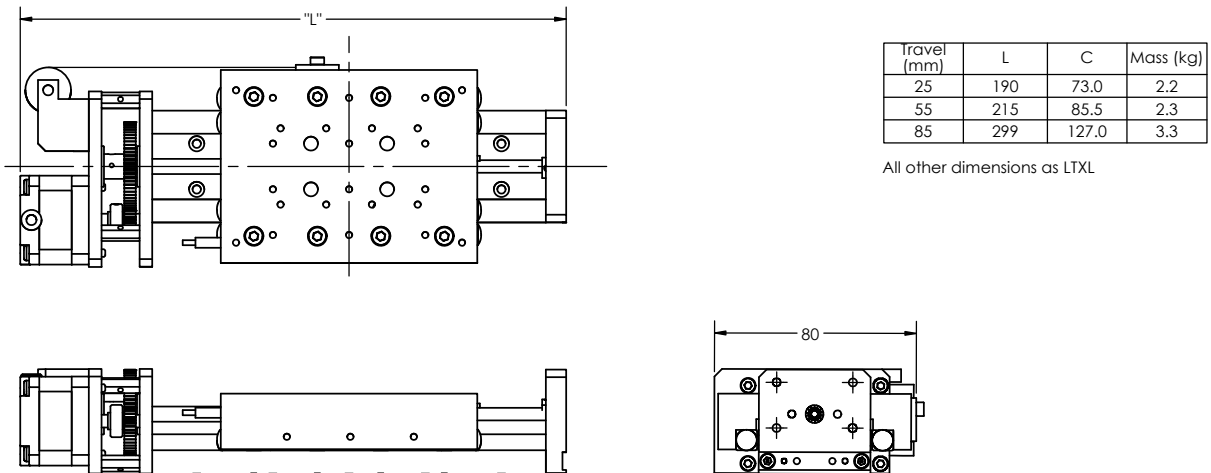
**STACKED MECHANISMS.** For 3-axis motion mount the stage moving the load vertically on top of the others to avoid adding their weight to its load.

## DIMENSIONS

### LTXL



### LTXH



## ORDERING INFORMATION

Order Code	
LTXLxxx	Translation stage, 5µm (xxx = travel in mm)
LTXHxxx	Translation stage, 1µm (xxx = travel in mm)
Add suffix G for Nytorr® lubrication (at > 1 x 10 <sup>-9</sup> mbar)	
Related products	
SMD210	Stepper motor drive
MLF18F	18-way electrical feedthrough
MLF18NBL	3-metre lead, SMD210 to MLF18F



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AML pursues a policy of continuous improvement and reserves the right to make detail changes to specifications without consultation. E and OE.