

The development of X-Y Stage for S-UTS

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- 1, Requirement of S-UTS
- 2, Performance of "Marketing Stage"
- 3, Potential of "Nikon-Stage"
- 4, Original Stage Specified for S-UTS

Requirement of S-UTS

- ◎ Speed Stability(X-Unit) 10mm/sec < 1%
- Stroke 120mm x 170mm
- Straightness 0.5 μ m (for 10mm)
- Reappearance 0.5 μ m (for 10mm)
- Maximum Speed > 20 mm/sec

Performance of “Marketing Stage”

Company	Straight line guide	Drive mechanism	Speed stability
THK	Linear guide	Ball screw & Pulse motor	5 % (RMS)
NTN	Linear guide	Ball screw & Pulse motor	5 % (RMS)
NSK	Linear guide	Linear motor	± 3 % (P-P)
NTN	Air slide	Ball screw & Servo motor	2 %
NSK	Air slide	Linear motor	± 0.1 %(P-P)

* Air slide & Linear motor — Very expensive !

Nikon	Linear guide	Ball screw & Pulse motor	1.5%(Max)
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Potential of “Nikon-Stage”

- Test-1 Speed stability

No-Good

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- Test-2 Removed driving gear and pulled by “Carbon-Fiber Belt”

△

- Test-3 Chang Connection Part

Al → Tefron

△

Potential of “Nikon-Stage”

- Test-1 Speed stability

No-Good

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- Test-2 Removed driving gear and pulled by “Carbon-Fiber Belt”

△

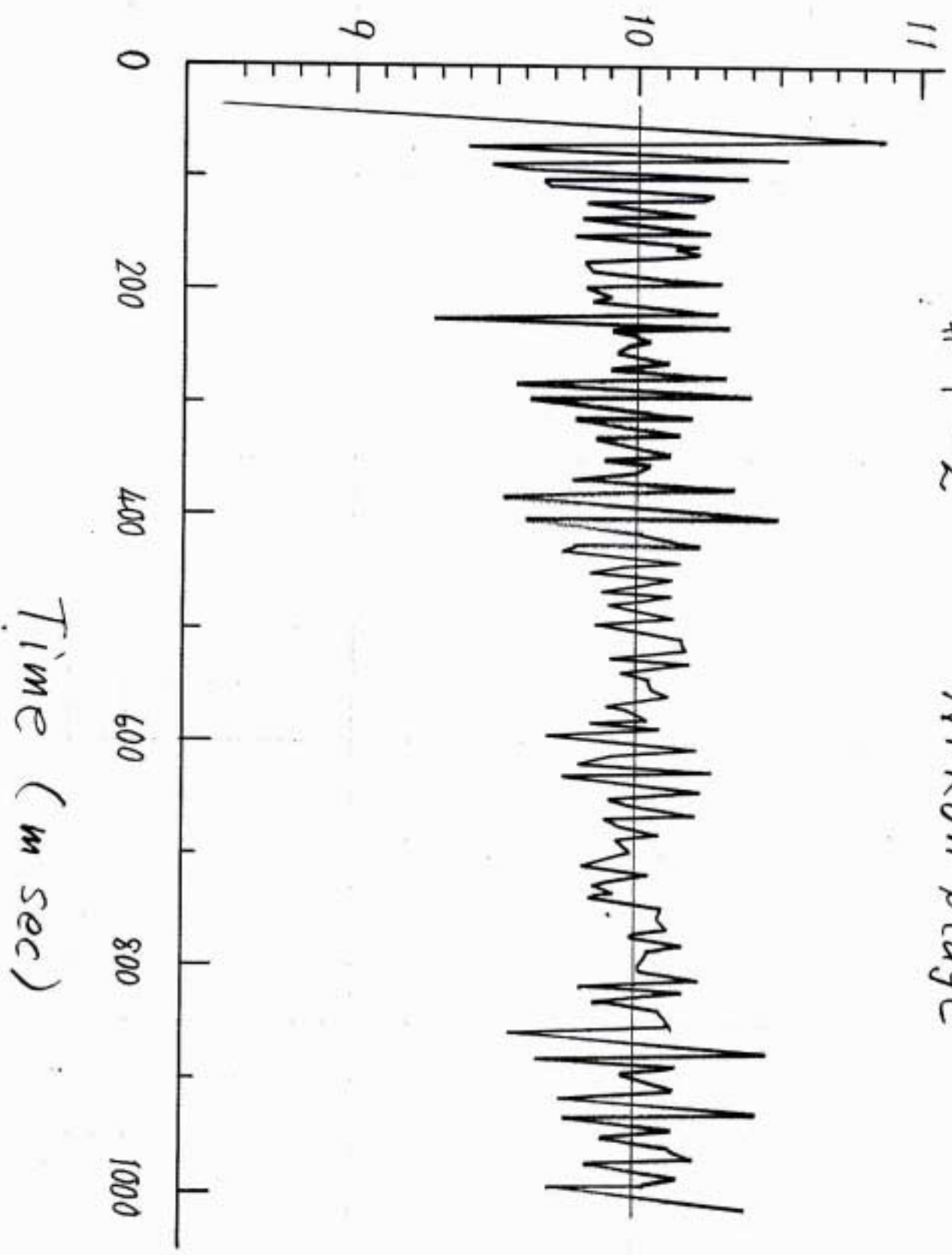
- Test-3 Chang Connection Part

Al → Tefron

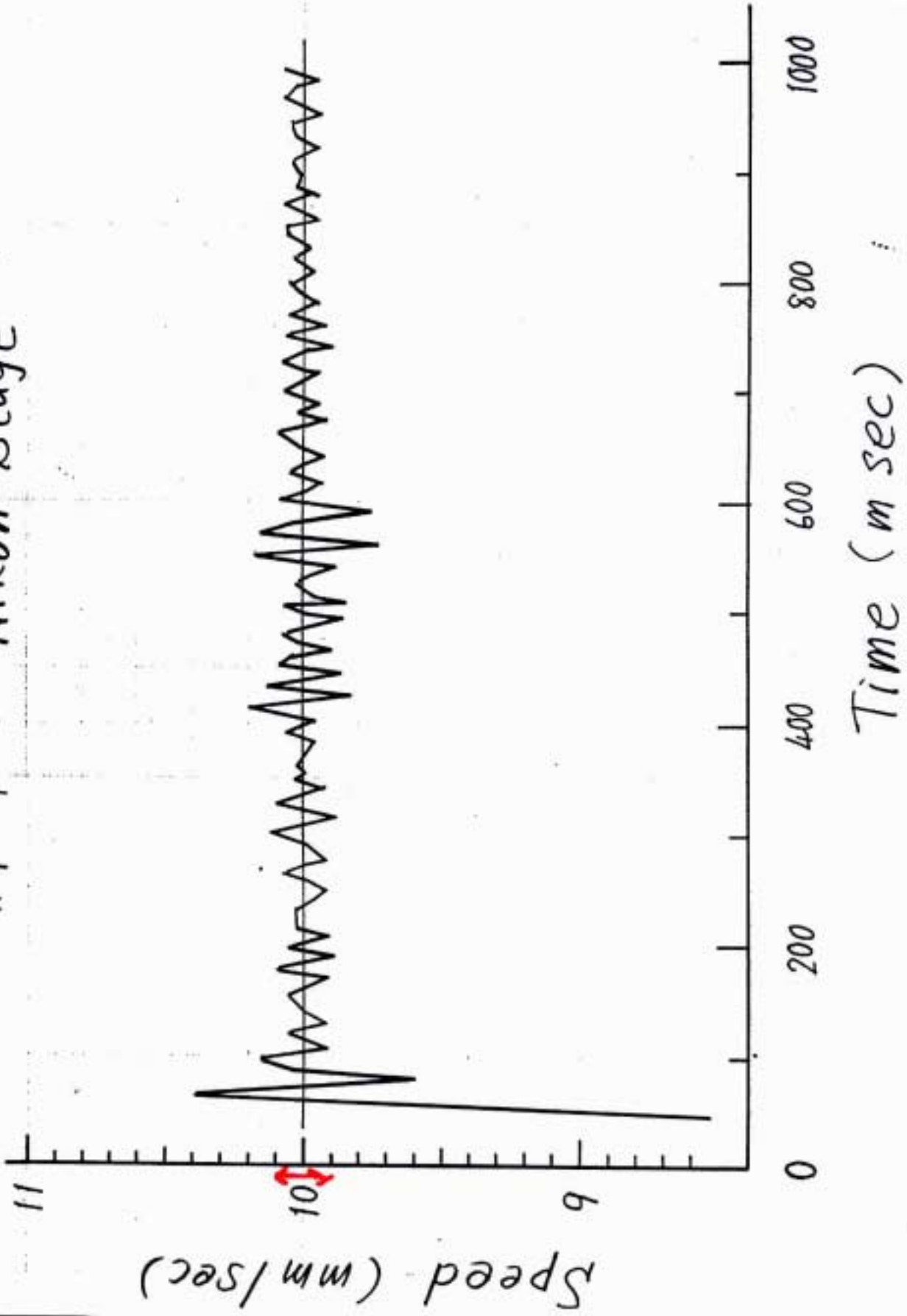
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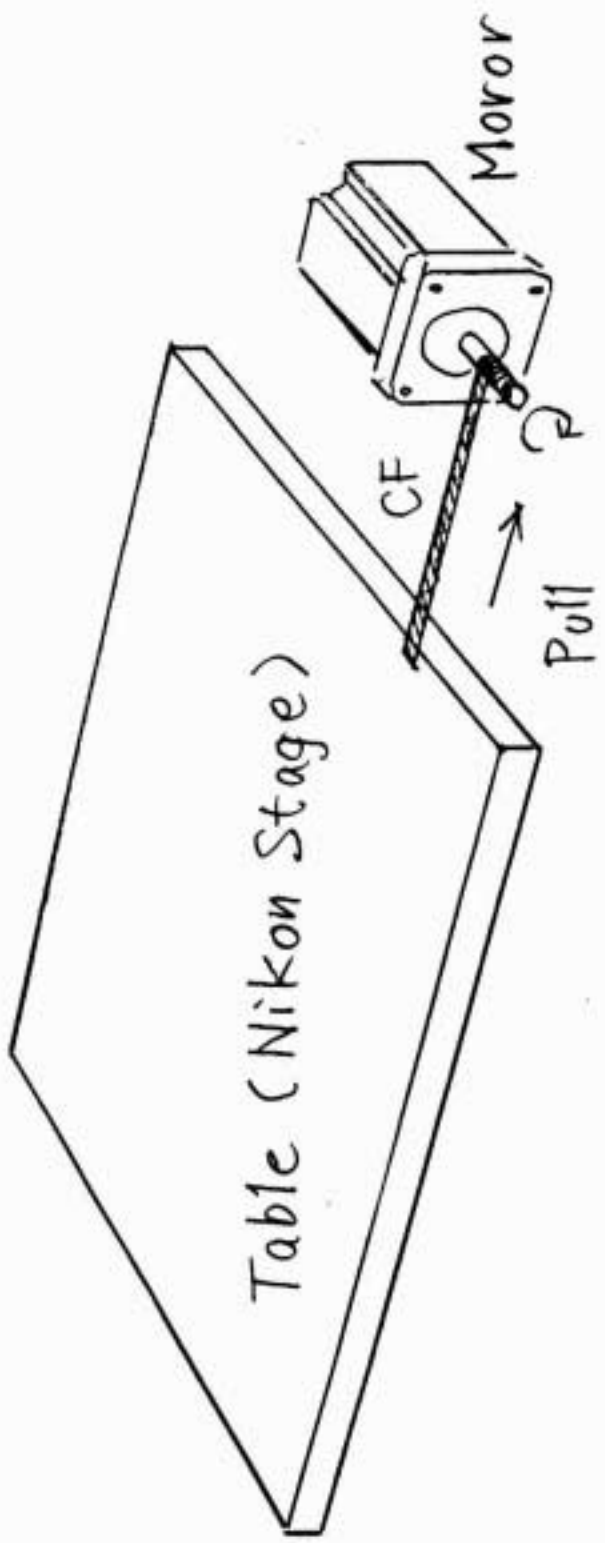
7 - 2

Nikon Stage

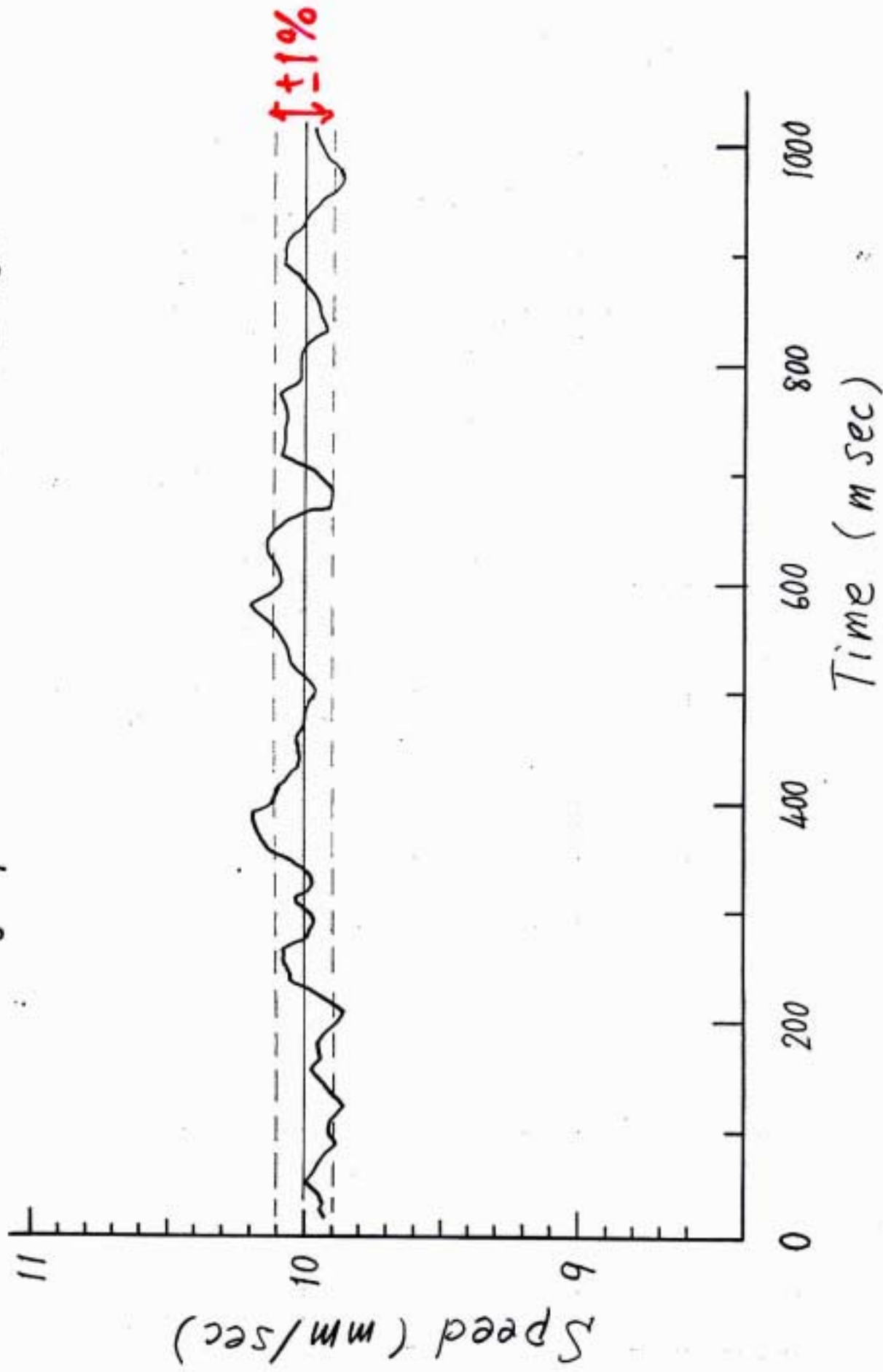


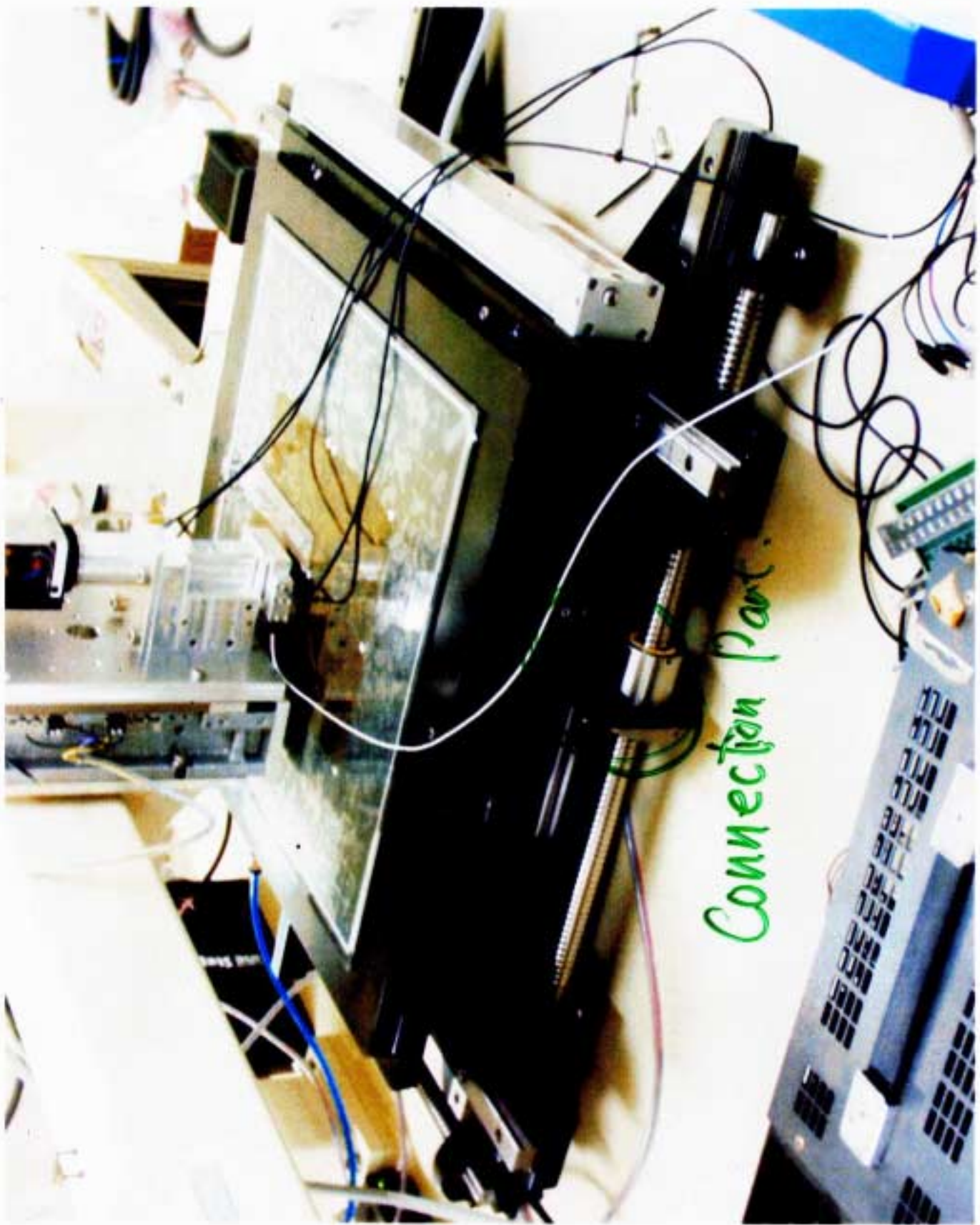
#7-1 Nikon Stage





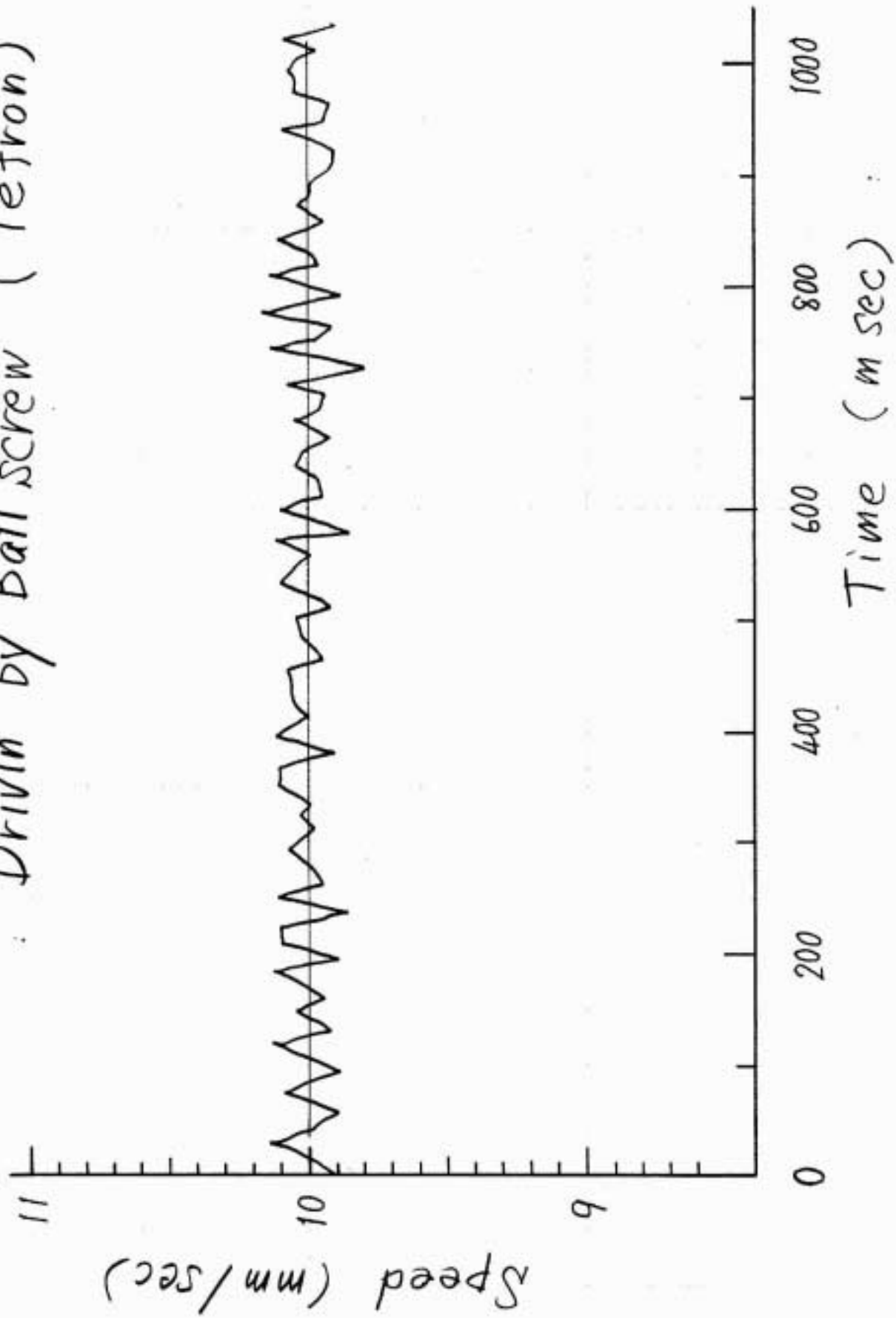
Pulling by CF belt with small shaft





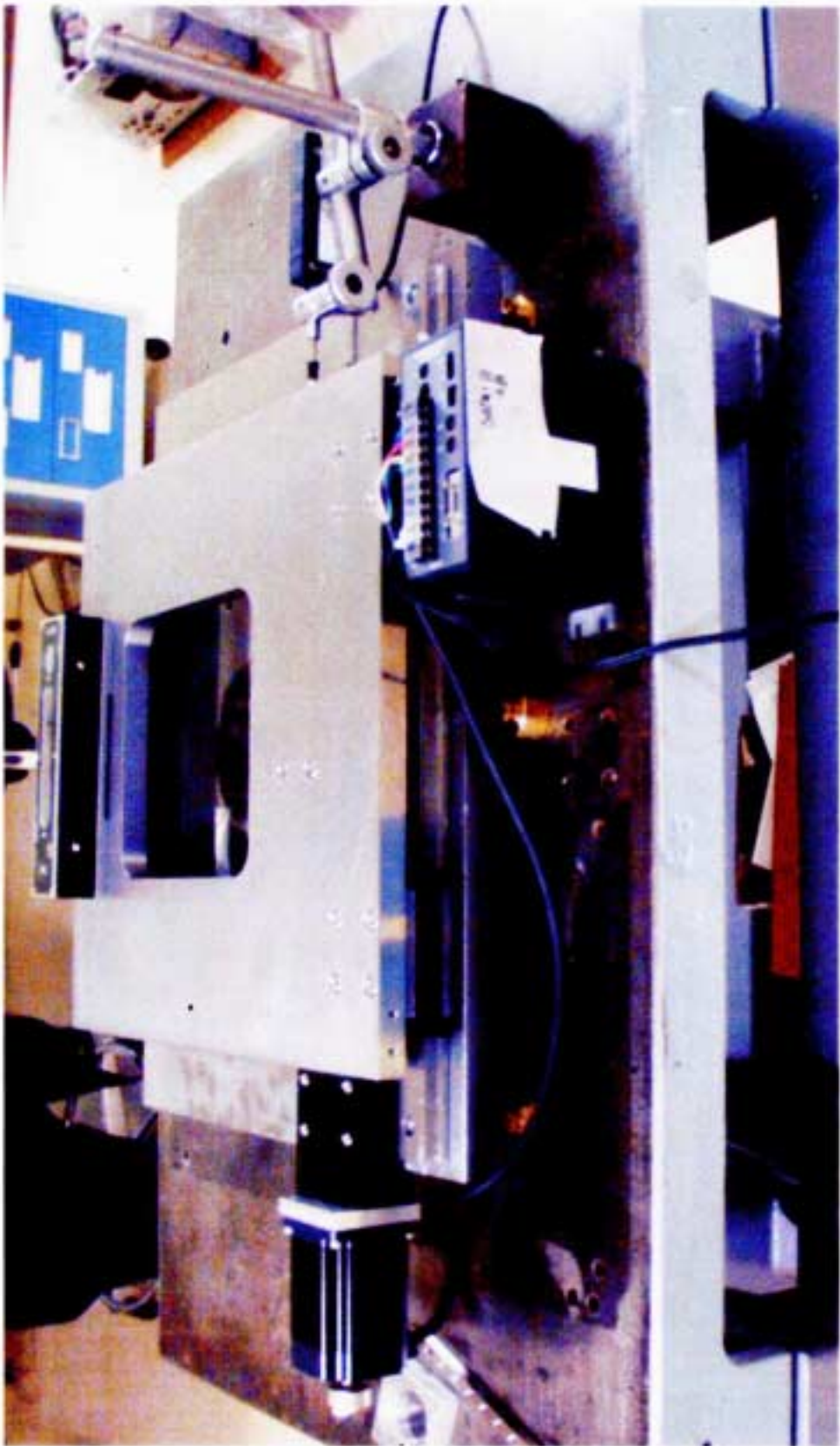
Connection Part.

Driven by Ball screw (Teflon)

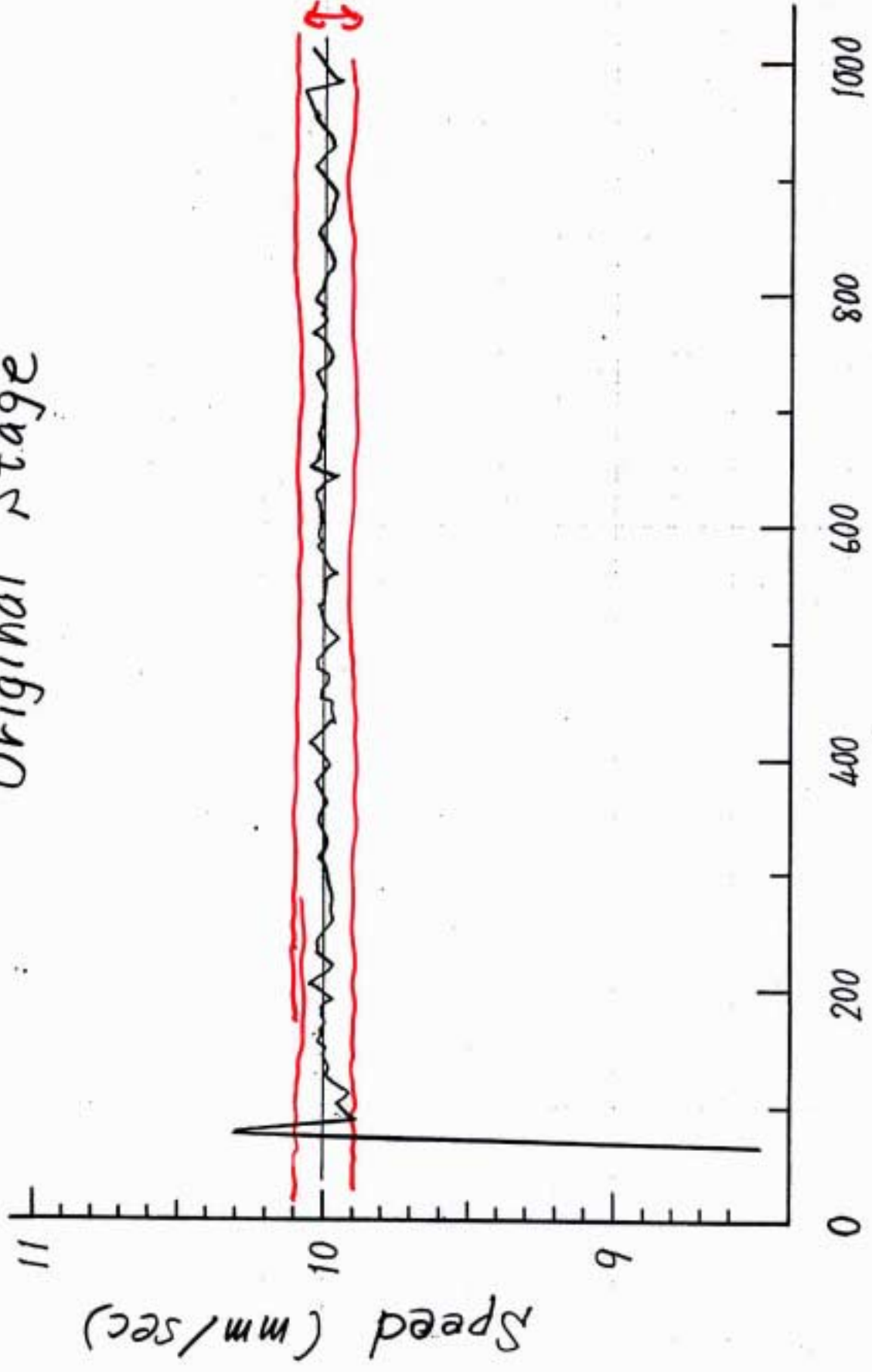


Original Stage Specified for S-UTS

- ◎ Basic policy is “Linear Guide” & “Ball Screw”
- ◎ Easy tuning and Easy maintenance
- Monochromatic material, only “Steel” is used
- # Stroke 135mm(X) 110mm(Y)
- @ Cost should be cheap



Original Stage

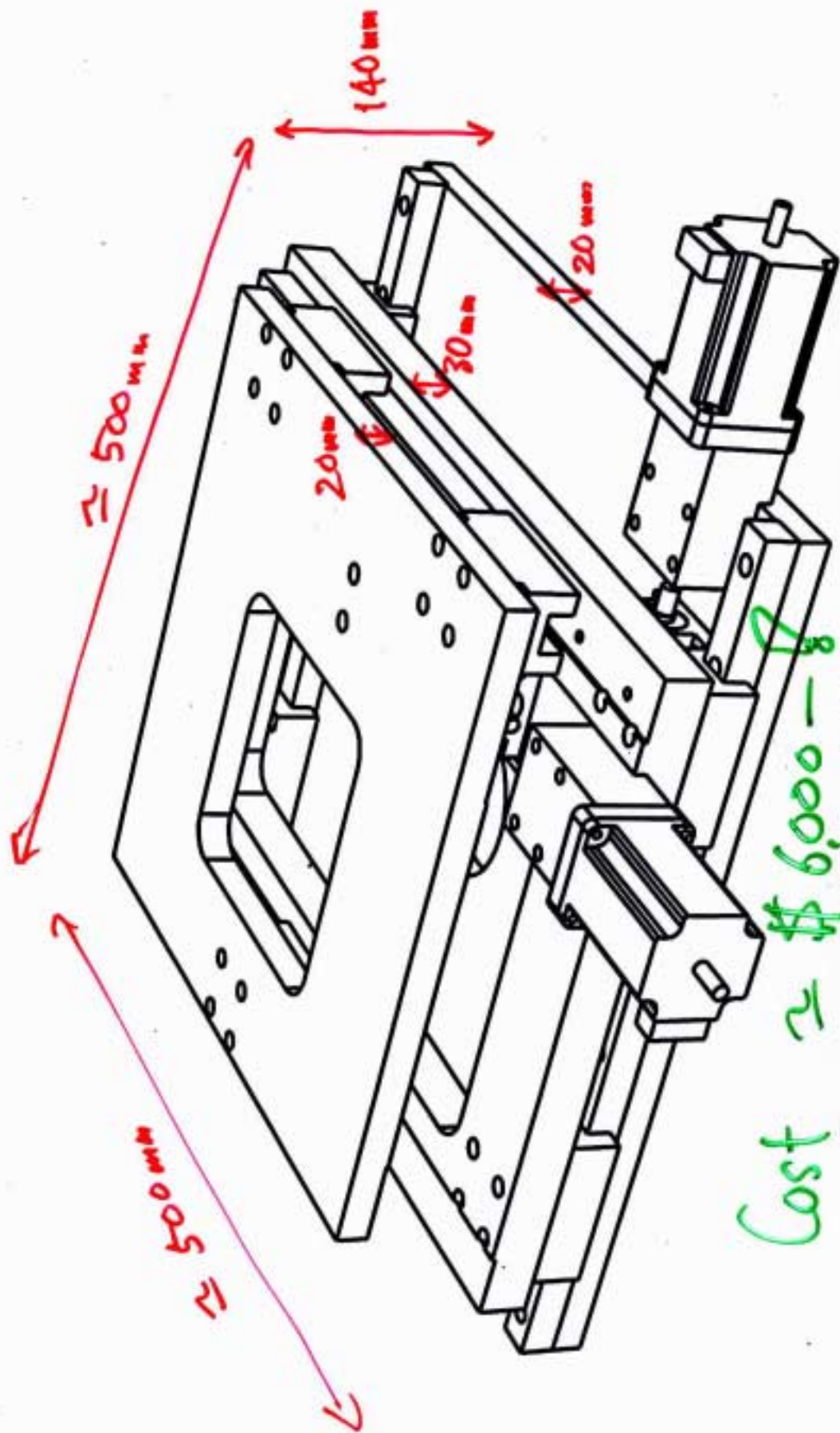


$\pm 1\%$

Time (msec)

Speed (mm/sec)





Cost \approx \$6,000 - 8
Linear scale and Motor
Removed.

