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## **LVDT Killer = Lab Quality Linear Measurement Capabilities + Superior Industrial Gauging Performance**

If you have ever looked to accomplish any sort of automatic or repetitive linear measurement, one of the most common gauging options would be to utilize linear variable differential transformer ( or LVDT) technology. Industrial Professionals have been successfully employing this technology for well over 50 years with a relatively high level of success. If your philosophy is "Why mess with a good thing?", the LVDT could still be for you. Minimal technological advancement has occurred in its lifetime such as miniaturization (pencil style) and IP protection (up to 69K, high pressure/temperature steam washdown).

On the other hand, you may find your application could benefit from additional attributes found in newer technology, as most measurement applications require added components & cost over and above what the traditional LVDTs can provide. Some of these attributes; better linear resolution, longer strokes, programmable motion, Soft-Land, speed control, industrial robustness, longer life and of course, price considerations.

For over 30 years, SMAC Moving Coil Actuators have been solving application challenges with their Voice Coil Linear Actuators in areas where traditional air cylinders, ballscrew, belt drive & stepper/servo solutions have fallen short in applications or just aren't the right fit. Originally in the 90's, SMAC's start came from development of high speed/accurate pick & place voice coil actuators to serve the phone assembly market. Since then, this technology has been adopted and expanded across all industrial, bio-medical and measurement markets; yet still remains to be one of the best kept secrets among the most innovative of companies. As more customers utilized our technology to build custom measurement systems and assembly solutions, we soon recognized the need for a comprehensive single axis solution better than the commoditized LVDT market.

Affectionately known among SMAC Engineers as the "LVDT Killer," the SMAC MSA & MLA series were born to compete directly against LVDT's and provide a complete measuring solution improving on the value seen with traditional LVDT solutions.

The result of our efforts is a new family of electric gauging actuators, creating consistent, fast and precise programming, control and feedback of the entire measuring process. These electric gage actuators are easy to install and eliminate challenges found in traditional LVDT commissioning. They also reduce maintenance time and cost.

The MLA is an electric gage actuator with programmable, precision measurement. It achieves consistent measurement replications and improves processes by reducing gage repeatability and reproducibility (R&R) variation. It has repeatability and linearity of force no matter where it is operating in the stroke, unlike LVDTs that utilize pneumatics



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or springs. It achieves smooth and consistent low friction over the entire stroke. The MLA has an internal precision linear guide as well as added side-loading support on the shaft. It can handle higher side-loads than most LVDTs. The MLA8 is the first model in the series and only 8mm in width.

The MSA gauge actuator is a simple solution that does not require additional module(s) externally, and allows users to go directly to their PLC / high speed counter card. It can handle higher side-loads and it is far more cost effective than traditional LVDTs. The MSA8 is the first model in the series. While is it not a pencil style, it is still compact measuring only 95mm x 28mm x 8mm for 10mm stroke.



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Summarized for your reference is a comparison of traditional LVDTs and the SMAC MLA and MSA solution features for your consideration.

## LVDT vs SMAC Gage Actuators

Solution	<b>Traditional LVDTs</b> 	<b>SMAC MSA8</b> 	<b>SMAC MLA8</b> 
Output Force/Soft-Land	Spring – Typically 1N Air – Variable with no <a href="#">Soft-Land</a> .	Same as LVDT spring option	Programmable Force down to the gram level enabling a <a href="#">Soft-Land</a> .
Stroke	1, 5, 12, 32 & 50mm	10 & 25mm	10, 25, & 50mm
Cost	\$1,300	\$450	\$1,150
Accuracy/Linearity/Resolution	.1um and 0.5um	1um and 0.5um	1um and 0.5um
Mechanical Adjustments	Occasional	None	None
Movement	Spring or Air Assist	Spring	24 VDC with Soft-Land and Linearity of Force over the entire stroke = better gage R&R
Periodic Maintenance/Life/Durability	Periodic maintenance & replacement. Cannot handle side loading or shock/impact.	Maintenance Free. Millions to billions of cycles	Maintenance Free. Millions to billions cycles
Sampling interval/Max Output Pulses	One every 4ms	3,000 every 1ms	10,000 every 1ms
Warranty/Rebuild	12-month manufacturing	12-month manufacturing +35% rebuild program	12-month manufacturing +35% rebuild program
IP Rating	IP67 (air tube on exhaust required)	IP65 (IP67 available in different form factor)	IP65 (IP67 available in different form factor)

For more information, please visit [www.smac-mca.com](http://www.smac-mca.com)