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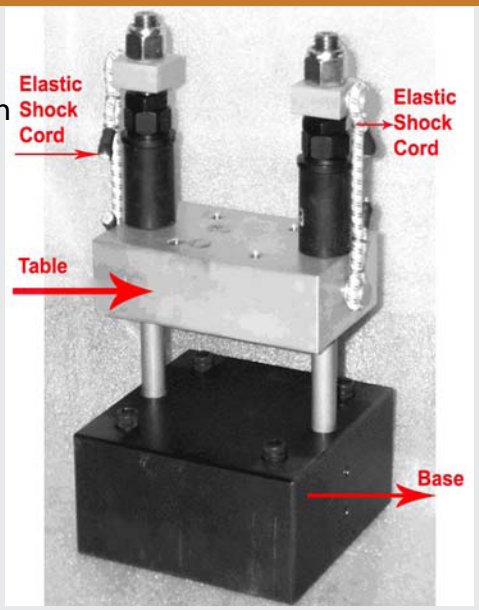
# MECHANICAL SHOCK TESTING

## Introduction

Mass Shock Amplifiers (MSA) are used for testing relatively small speciments with very short duration, high acceleration pulses on shock machines which would not be capable of generating these pulses. There are two models:
MSA-89x89
MSA 305x305
Bothe models can be used for generating the most test conditions specified in Mil-STD, ISTA, ASTM, ISO and other internationally and industry recognized standards.
Depending on the shock systems, the MSA 89x89 can generate accelerations as high as 100,000g ; and the MSA 305x305 can generate accelerations up to 10,000g at pulse duration as short as 0.2ms.




## Specifications

| | MSA-89x89 | MSA-305x305 |
|---|---|---|
| Specimen mounting surface | 3.5" x 3.5" (89 x 89 mm) | 12" x 12" (305 x 305 mm) |
| Maximum specimen weight | 5 lbs (2 kg) | 25 lbs (11 kg) |
| Maximum acceleration | 54,600 g | 10,000 g |
| Maximum pulse duration | 1.0 ms | 1.0 ms |
| Minimum pulse duration | .05 ms | .2 ms |
| Velocity amplification | 10% minimum<br>30% maximum | 10% minimum<br>30% maximum |
| Table weight | 1.6 kg | 21 kg |
| Base weight | 15 kg | 227 kg |
| Base dimensions | 152 mm x 152 mm | 305 mm x 457 mm |

## System Operation

The amplifiers consist of precisely guided secondary shock table and a massive base which is bolted to the top of the table of the primary shock machine. The specimen is mounted on top of the secondary shock table

The secondary table is held up against high damping elastomer bumbers by elastic shock cords.

A high density felt programmer is placed between the secondary table and its base. The thickness of the felt controls the duration of the pulse experienced by the secondary table and the specimen.
Any type of resilient programmer which will produce a pulse duration of about 6 ms or less is used between the primary table of the machine and its base. When the primary shock table is falling, the secondary table is held approximately 64 mm above its base by the elastic shock cords. When the primary shock table impacts and rebounds from the programmer on the base of the machine, the secondary table continues downward stretching the shock cords. While the primary shock table is moving upward after rebound, the secondary table impacts on the felt programmer and then rebounds against the soft elastomer bumpers and is held against the bumbers by the shock cords. When used on a shock machine with rebound brakes, no secondary impact on the felt programmers occurs because of the high dampening properties of the bumbers and the upward pull of the shock cords.

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