

Vacuum Compatible Versions of Elliot/Martock Micropositioning Stages

Most of the miniature positioners in the MDE255, MDE261 and MDE265 series can be supplied in vacuum compatible versions^[1]. The following notes and comments are intended as a guide to the use of these stages in vacuum.

The adjusters on MDE255 series stages (255, 258 and 259) are fitted as standard with two nitrile “control rings” (o-rings, shown right) to provide better grip. We recommend that these control rings are removed^[2] before the stages are used in vacuum. On request, we can supply the stages without the control rings fitted. MDE261 series stages (261, 262, 263) and MDE265 series stages (265, 266, 267, 268 and 269) do not have control rings.



Vacuum compatibility is provided as follows:

- The working ends of manufacturing tools (and their handles) are degreased before use.
- All metal parts, including fasteners, are degreased (o-rings, where used, are not degreased).
- All parts are cleaned in an ultrasonic bath using a non-water based solvent (Mykal MYS 1000PPW) at 50°C for 10 minutes.
- Parts are rinsed in DI water and wiped dry using disposable paper wipes.
- Parts are dried on a hot plate at 80°C ensuring no water is trapped in holes, undercuts, etc.
- Lubrication is Fomblin Y-VAC 3 grease; no oil is used.
- After the parts have been cleaned, workers wear finger cots for assembly and the completed stages are sealed in polythene bags.

Pressure range:

Atmospheric to high vacuum (10^{-5} to 10^{-1} Pa); not to be used in miniature chambers.

Bakeout:

The stages have an absolute temperature limit of 120°C for bakeout or any other operating conditions due to the material used for the internal springs. Nitrile control rings will withstand this temperature but we nevertheless recommend removal^[2] of the control rings prior to bakeout and/or during vacuum use.

^[1] Excludes any version that uses micrometer adjusters.

^[2] Once removed, the control rings may be impossible to re-fit without special tools.