



MARSHALL AND WILLIAMS PLASTICS
PARKINSON TECHNOLOGIES INC

Machine Direction Orientation Systems

Uniaxial In-Line or Off-Line Longitudinal Stretching



Marshall and Williams Plastics is a recognized global leader and innovator in plastics orientation. Marshall and Williams designed and built the first Machine Direction Orienter in 1961; and now with over 50 years of MDO experience, the brand remains one of the most trusted and experienced in the plastics orientation equipment industry. Machine direction orientation of plastic film and sheet is accomplished by heating the web and stretching it in the machine direction over a series of rollers. The device is commonly called a Machine Direction Orienter (MDO).

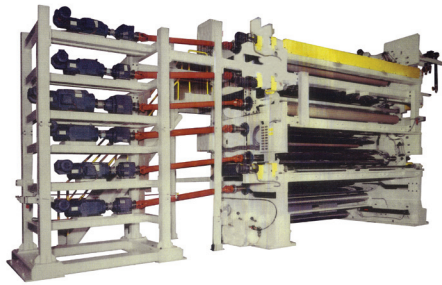


**Plastics
Orientation**

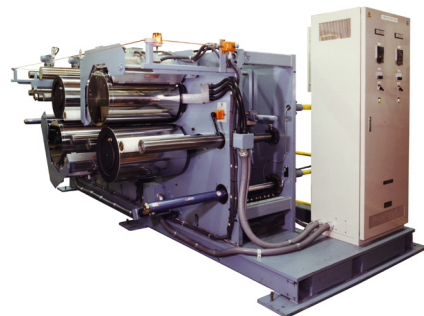


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Vertical Configuration for Narrow Floor Space



Cantilevered Configuration for Narrow Web Applications

Marshall and Williams Plastics Advantages

- 50 years of MDO experience
- Expertise with a broad variety of materials
- Single or multi-stage draw sections
- Horizontal or vertical configurations
- Compression roll drawing
- Full-scale lab facility for material testing
- Flexibility to meet customer specific requirements
- Engineered solutions based on proven performance
- Innovative designs for technology advancement

For each application, Parkinson's exclusive Marshall and Williams heat transfer simulation program is used to predict the behavior of the material as it passes through the process. Combined with extensive processing knowledge, this information can be used to select the appropriate style machine and the correct number and size of rollers needed to provide the best solution for each customer's application.

Features	Benefits
Custom engineered solutions	<ul style="list-style-type: none"> • Vertical, horizontal, cantilevered, and sliding module designs • Single or multi stage draw capability
Off-line or in-line configurations available	<ul style="list-style-type: none"> • Off-line systems compliment existing processing platform • In-line systems save floor space and manpower
Combined roll speed and temperature control	More economical solution for less demanding applications
Independent roll speed and temperature control	Most precise process control and the highest quality films
Custom roll surface coatings	Anti-stick, anti-scratch, improved traction, etc.

MDO Systems Specifications



Heating Mediums	Oil, Water, Electrical, IR, Other
Stretch Ratios	Up to 20:1
Production Rates	Up to 5 tons/hour
Line Speeds	Up to 1500 fpm (450 mpm)
Web Widths	4"-160" (0.1 - 4 m)
Operating Temperatures	Up to 750° F (400° C)

All MDO systems are custom engineered and are not limited to the specifications or models shown. Please contact a Parkinson Technologies Regional Sales Manager to discuss your application.



PARKINSON TECHNOLOGIES INC

DUSENBERY® CONVERTING SYSTEMS
 MARSHALL AND WILLIAMS PLASTICS
 PARKINSON WINDERS
 KEY FILTERS

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