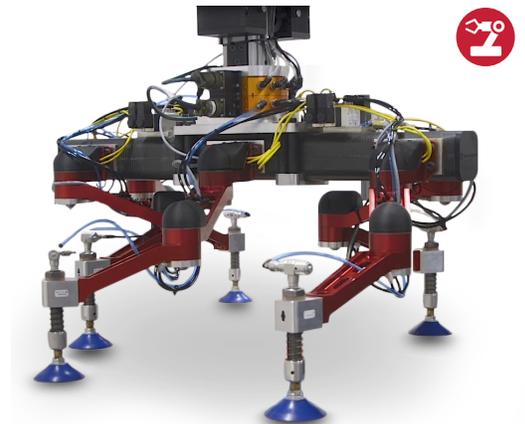


Adaptive Transforming Tooling: Destacker

Conventional Tooling vs. Norgren's Transforming Tooling

- > Eliminate hundreds of thousands of dollars in recurring tooling costs
- > Free up hundreds of square meters of floor space
- > Eliminate manual tool change and optimize safety



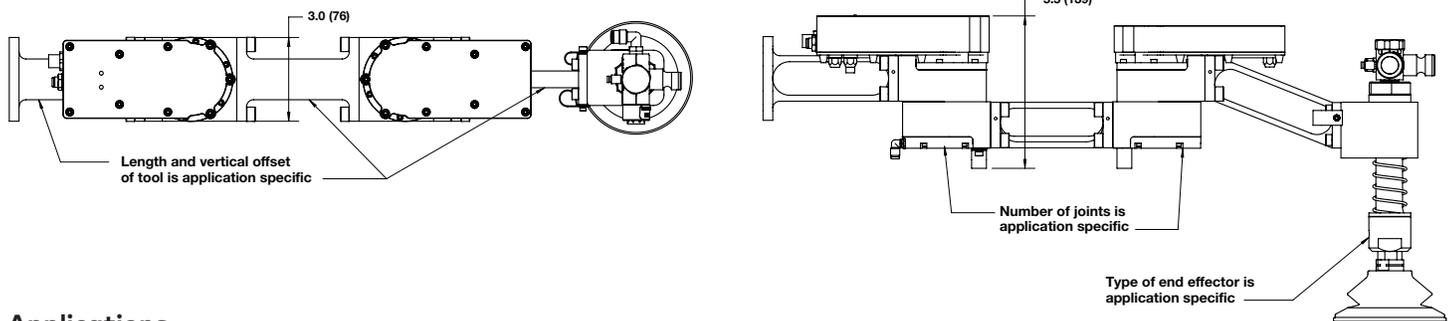
4-arm Transforming Tooling (Shown)

Product Highlights

Arm Weight (1 arm, 2 joints)	Application Specific, 6.8 kg (15 lbs) as shown
System Weight	Application Specific, 60 kg (130 lbs) as shown
Number Arms	Application Specific, 3-16 typical as shown
Joints	Application Specific, 1-3 joints per arm typical as shown
Dynamic Arm rating (locked)	200 Nm (150 ft lb)
Dynamic Arm rating (unlocked)	30 Nm (20 ft lb)
Maximum Arm Reach	Variable to application needs (limited by dynamic rating)
Safety	Clutch slips at 30 Nm (20 ft lb) when un-locked
Position sensing	Application Specific, absolute positioning technology joint to joint as shown
Life Span	15 years, 50,000 Changes
Cell/Automation Communication to TT, power	Ethernet IP, 24V <10 amp Typ
HMI	Industrial Tablet, Pendant, PLC, PC

*All highlight metrics can be customized and are based on the standard 4-arm application. Contact NASInsideSales@imi-precision.com or your Key Account Manager to discuss customization options.

Technical Dimensions



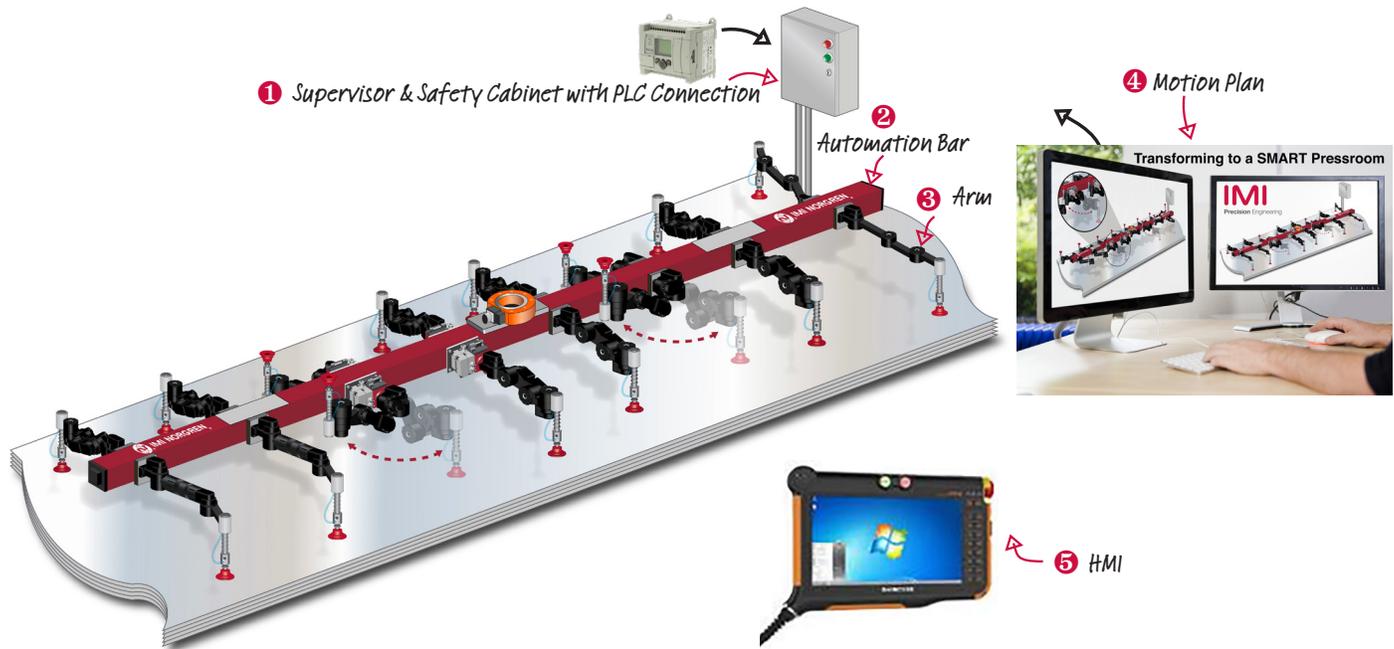
Applications

- > Stamping (automotive, white goods)
- > Glass Manufacturing
- > Ceramic Manufacturing
- > Assembly
- > Packaging
- > Destacking
- > Palletizing and Stacking

All dimensions (in/mm) are for reference only

Note: For links to join joints and form a Transforming Tooling system, please contact your Key Account Manager or NASInsideSales@imi-precision.com to configure a system ideal for your application.

Adaptive Transforming Tooling Communication

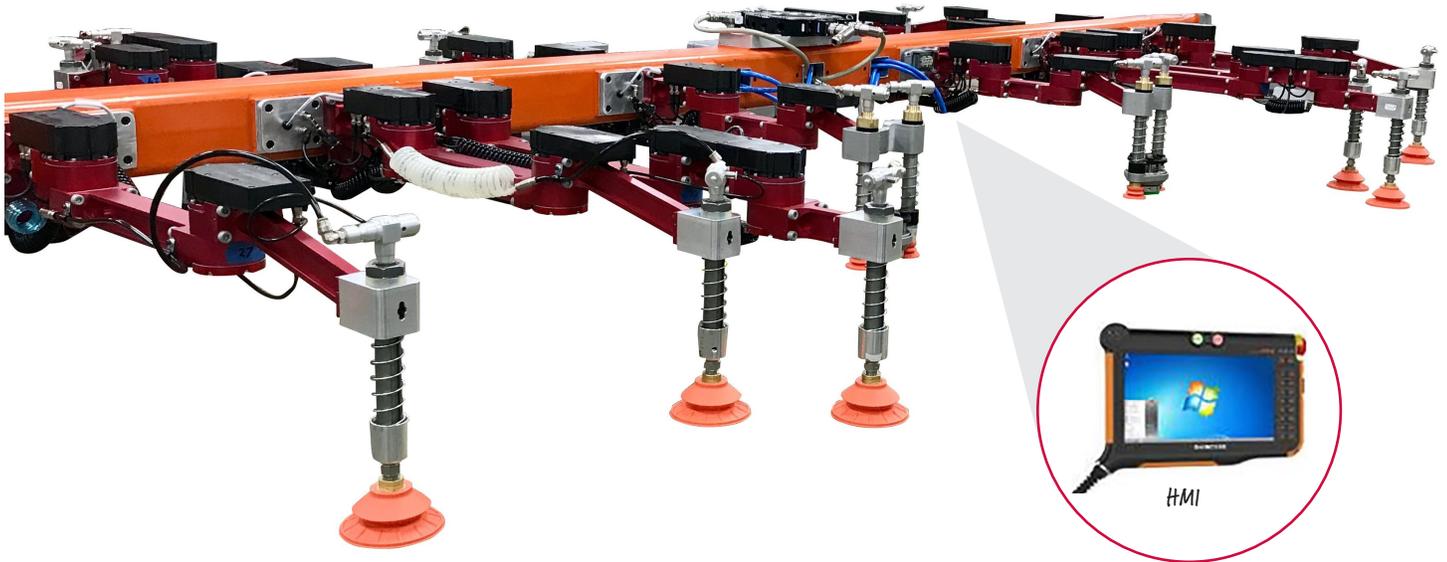


Communication Highlights

Cell/Automation PLC Communication to TT Supervisor	Ethernet IP – communicates what job, when to change, health of the TT
Supervisor	Stores the jobs with specific motion plans
Number of Jobs	1000's of motion plans – positions
Power	24V <10 amp Type
Arm Communication	Supervisor to Arm joints via can bus
Health Status	Arm position monitoring, Arm status, Vacuum status
Job Change Time	<1 minute
Motion Plan	Offline process which defines individual arm movement timing and position based on system needs. Stored in the Supervisor
HMI	User friendly intuitive control for Jobs, adjustment, trouble shooting. Wireless, PC, PLC
Operating Software	Java
Repair	Replaced components are recognized by the Supervisor and configure automatically – no need to home or calibrate replaced hard-ware

Adaptive Transforming Tooling

HMI



HMI Highlights

Hardware	Industrial Tablet (Wireless), Pendant, PLC, PC
Operating Software	Java
Status Screen	Provides status. Cell PLC provides the commands for what job, when to change
Adjustment	Provides the ability to adjust position of arms and ability to save
Health	Provides information on the health of the system. Supports Industry 4.0 – tracking, trends, predictive maintenance

Warning

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

Proposition 65: These products may contain chemicals known to the state of California to cause cancer, or birth defects, or other reproductive harm.

Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.