

**GORBEL**  
A CLASS ABOVE

Intelligence

Precision

Speed

Strength

THE SMARTER WAY TO LIFT





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A CLASS ABOVE

*Since 1977, Gorbel has specialized in overhead material handling solutions, providing the highest quality and the highest performance.*

*We are the leading supplier of Work Station Crane systems, offering near perfect on-time delivery, a focus on customer service, and the industry's best warranty.*

*Now you'll find that same level of quality in our G-Force™ BXi and BX Intelligent Lifting Devices. These innovative units enable operators to lift and maneuver naturally, as if the devices were an extension of their arms.*

*The G-Force™ will help improve productivity, reduce the cost of product damage, and minimize work-related injuries.*



## ***What is Intelligent Ergonomic Lifting?***

Gorbel's G-Force™ is part of an exciting new family of material handling equipment known as Intelligent Assist Devices (IAD's). The G-Force™ uses exclusive patented technology and an industrial processor-controlled servo drive system to deliver unmatched lifting precision and speed. Its fusion of advanced technology and basic human guidance maximizes productivity while minimizing the risk of injury to the operator.

## ***Man Meets Machine***

IAD's like the G-Force™ fill the void between completely manual solutions and completely automated robotic solutions. IAD's use the human's intelligence and adaptability for guidance but the work is done by the device.

## **MIMICS HUMAN MOTION**

***No switches.  
No push buttons.  
No throttles.  
No valves.  
Just Grab and Go.***





## **G-Force™:** **The Smarter Way to Lift**

### **Pinpoint Precision**

The G-Force™ delivers unparalleled precision at speeds from less than 1 fpm (0.3 mpm) up to 275 fpm (83 mpm), giving the operator the control necessary to finesse expensive or fragile parts.

### **Blazing Speed**

With speeds reaching 275 fpm (83 mpm), the G-Force™ travels up to 4 times faster than traditional high-end lifting devices currently on the market, making it the fastest, most precise lifting device on the planet.

### **Infinite Speed Control**

#### **Moves With the Operator**

The G-Force™ moves as fast or slow as the operator chooses to move. It is ideal for applications that require high speed at some points in the cycle and slow, precise movements at other points.

### **G-Force™: The Safe Alternative**

Operators want to use the G-Force™ because it's easy to learn and easy to use. The G-Force™ is safer than manual lifting and dramatically reduces worker injury cost.

### **G-Force™: The Smart Investment**

- The G-Force™ makes your work force more productive by increasing their efficiency and enabling them to perform complex tasks.
- The G-Force™ is more cost effective than completely robotic solutions. It doesn't require the costly custom programming that robots need to perform even the simplest tasks.

### **G-Force™: The Perfect Solution**

The G-Force™ Intelligent Lifting Device gives you the best of both worlds: the responsiveness and flexibility of a human operator plus the power of a machine. And, it incorporates a range of speeds so it is perfect for quick, repetitive motions and slow, precise placements.



## **G-FORCE™ IN ACTION**

***"I needed a system that could precisely lift and balance 110 lbs. and then 55 lbs. The G-Force™ quickly handles either load with no obvious difference to the operator."*** — Plant Manager

**Business:**

**Casting Manufacturer**

**Application:**

**The customer produces castings used by a major air conditioner manufacturer. The operators take the 55-lb. castings out of a box and load them two at a time into a CNC machine. They are then taken out one at a time and placed on a conveyor 15 times per hour. This process occurs in three work stations in a 40' x 100' area.**

**Why G-Force™:**

**A side-by-side comparison of G-Force™ with other lift devices showed the superior speed and precision of the G-Force™.**



The BXi and BX Series can be integrated with Gorbel's G-Force™ Intelligent Crane Device.

Used together, this ergonomic system provides a safe and efficient way to move loads quickly and with precise placement over the X, Y and Z axes.

## G-FORCE™ IN ACTION

*"Before the G-Force™, nothing we tried had enough speed and precision to keep up with our line rate of 3 parts per minute.*

*The G-Force™ moves with your hand—the faster you move, the faster it moves. We've now successfully added the G-Force™ to three of our highest volume lines."*

— Manufacturing Engineer, TRW



### **BXi and BX Features**

#### **Inertia Management System**

##### **Smooth, Controlled Motion**

The G-Force™ gives you smooth, controlled motion. Its patented software and highly responsive drive system manage the inertial force associated with starting, stopping and reversing the direction of moving loads, eliminating the stress on the operator's body.

#### **Float Mode with Full Range of Motion (option)**

Both the BXi and BX series offer our versatile Float Mode as an option. With a mere 1/2 lb. (227 g) of force on the load itself, operators can precisely orient loads throughout the full stroke range by manipulating them with their hands.

#### **Instant Response to Load Fluctuations**

The G-Force™ senses and responds instantaneously to load changes. This unique feature is crucial in the following situations:

- Loads that stick together (e.g. sheets in a stack)
- Gradual load change (e.g. pouring and dumping)
- Sudden load change (e.g. tooling releases suspended part)
- Load added during assembly operations

#### **Versatile Ergonomic Handle**

The G-Force™ handle offers flexibility in terms of remote mounting and integration with tooling.

#### **Easy Tooling Integration**

The G-Force™ is easily integrated with a wide range of end effectors, including fixtured/mechanical tooling, vacuum tooling and actuated tooling (electric, pneumatic, or magnetic). Your local Gorbel distributor will help you solve your tooling requirements.

#### **Capacities**

The BXi and BX Series come in standard capacities of 150 and 300 lbs. (70 and 140 kg). Higher capacities are available.



## Standard Safety Features

### Anti-Recoil

Unlike systems with centrifugal brakes (i.e., air balancers), the G-Force™ does not move or recoil when there is a sudden change of load, which prevents potentially serious injuries to operators.

### Capacity Overload Protection

The G-Force™ knows its load limitations. If a load is lifted that exceeds the unit's capacity, a light is illuminated and the unit will only allow the load to be lowered and removed. Normal function will resume once the load has been removed.

### Power Loss Protection

A fail-safe electro-mechanical load braking system locks the unit in place in the event of a power loss, preventing the device from moving until power is restored.

### Operator Present Switch

This switch acts as a safety interlock that doesn't allow the G-Force™ to move unless the operator initiates movement. If the operator lets go of the handle, the unit will stop moving. The intelligence of the G-Force™ will not allow this critical safety feature to be overridden. If no movement is sensed for a brief period of time, the unit disables itself until the switch is engaged again.

### E-Stop Button

The easily accessible E-stop button (on the handle) allows the operator to instantly shut down the system in an emergency situation.

### Operator Indicator Lights

The G-Force™ features a full display of indicator lights that signal when the unit is ready for operation, if a capacity overload has occurred, and to help diagnose, inspect, and maintain the unit. Depending on the series, the lights are either on the handle or on the actuator.



## G-FORCE™ IN ACTION

***"We looked at every lifting device on the market. The G-Force™ by far was the best."***

*—Process Specialist, Heidelberg Digital L.L.C.*

- Business:** Industrial Printer Manufacturer
- Application:** This unit is used in a coating cell. Rollers weighing 30 lbs., used in high-end industrial printers, are marked, primed, heated, coated and then placed on a gel rack. The G-Force™ helps the operators lift and balance the rollers and move them from work station to work station with ease and precision.
- Why G-Force™:** The G-Force™ provided a combination of speed and control that other lifting devices just could not offer.

## BXi VS. BX: WHAT'S THE DIFFERENCE?

**The G-Force™ Intelligent Lifting Device comes in two series to better match your application and budget.**



### **G-Force™ BXi Series**

*Our highest performance G-Force™, the BXi model, comes loaded with standard intelligence features and programmability to customize it to your application. For in-depth specifics on the technical features and intelligence capabilities, visit [www.gorbel.com/gforce](http://www.gorbel.com/gforce).*



### **G-Force™ BX Series**

*Our streamlined G-Force™ BX model has virtually identical performance characteristics to the BXi model in terms of speed, pinpoint precision, and intuitive control. It is a lower cost alternative for those applications that require the speed and precision of the BXi, but not the added intelligence capabilities.*

### **BXi Added Intelligence Capabilities**

#### **Teachable Virtual Limits and Speed Reduction Points**

##### **Controlled Positioning Every Time**

The BXi model can easily be taught to stop or reduce speed when it reaches specific points in its lifting range. For example, the speed reduction point can be set a few inches above a desired position when handling a fragile load. When the operator reaches that point, the unit automatically shifts to a slower programmed speed and then stops in the desired spot for controlled positioning every time.

#### **External Inputs/Outputs**

##### **Unlimited Customization Opportunities**

Endless possible uses exist for the Inputs/Outputs on the G-Force™ BXi model. External I/O can be customized to fit your needs. They can be used independently or can be integrated with end tooling to make dumb tooling smart. You can prohibit a tool from releasing a load while the load is suspended—just one example of the countless uses for these Inputs/Outputs. Contact the factory for customized programming to maximize your BXi flexibility.

#### **E-Stop Output**

The E-stop can trigger or stop an external system that it is tied to (e.g., conveyor, CNC machine).

#### **Option to Interface with Data Systems via DeviceNet**

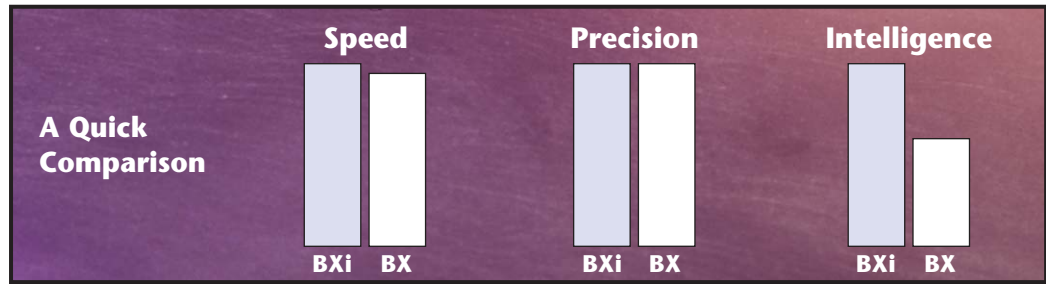
External systems that use DeviceNet protocol can read or control the data points and parameters of the G-Force™.

#### **Easily Accessible External Communications Port**

Any computer equipped with special G-Force™ software can be used to upgrade or monitor performance.



# G-FORCE™ SPECIFICATIONS



Model		BXi		BX	
<b>Technical Features</b>	Capacity	150# (70 kg)	300# (140 kg)	150# (70 kg)	300# (140 kg)
	Lift Speed at No Load (Feet per Minute—FPM) (Meters per Minute—MPM)	275 FPM 83 MPM	138 FPM 42 MPM	240 FPM 73 MPM	120 FPM 36.5 MPM
	Lift Speed at Full Load (Feet per Minute—FPM) (Meters per Minute—MPM)	200 FPM 61 MPM	100 FPM 30.5 MPM	200 FPM 61 MPM	100 FPM 30.5 MPM
	Maximum Stroke Range	8 feet (2.4 meters)		8 feet (2.4 meters)	
	Duty Cycle	H5-plus (Continuous)		H5 (Continuous)	
	Primary Voltage	220 (1 Phase)(Max Draw =5 amps)		220 (1 Phase)(Max Draw =5 amps)	
<b>Performance Characteristics</b>	Float Mode Capable	Optional		Optional	
	Float Mode Range	Full Lifting Range		Full Lifting Range	
	Inertia Management	■		■	
	Mimics Human Motion	■		■	
	Precision Capability	■		■	
	Speed Range Adjustment	■		■	
	Easy Tooling Integration	■		■	
	Operator Indicator Lights	■		■	
<b>Safety Features</b>	Instant Load Fluctuation Response System	■		■	
	Anti-Recoil	■		■	
	Capacity Overload Protection	■		■	
	Power Loss Protection	■		■	
	Operator Present Switch	■		■	
<b>Added Intelligence Capabilities</b>	E-Stop Button	■		■	
	Teachable Virtual Limits	■			
	Speed Reduction Points	■			
	E-Stop Relay Output	One			
	Digital Inputs/Outputs (24 VDC)	Four Each			
	DeviceNet Interface	Optional			
	External Communications Port	■			
Power Available for Tooling	24 VDC, 0.5 Amp				

For additional explanations, please refer to brochure text or go to [www.gorbel.com/gforce](http://www.gorbel.com/gforce)

Your authorized Gorbel dealer can give you more information on what makes Gorbel's Ergonomic Work Station Cranes and other Gorbel products "A Class Above."

Bridge Cranes

Jib Cranes

Specialty Products

Ergonomic Studies



Capabilities



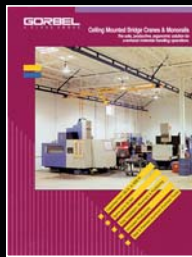
Easy Arm



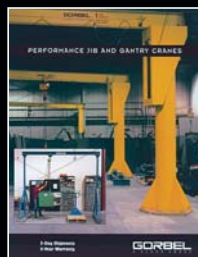
Automated



Free Standing



Ceiling Mounted



Jib and Gantry Cranes



Work Station



Articulating



Seismic Zone IV



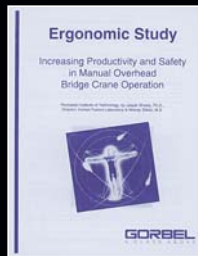
Telescoping



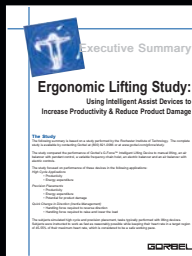
Tractor Drives



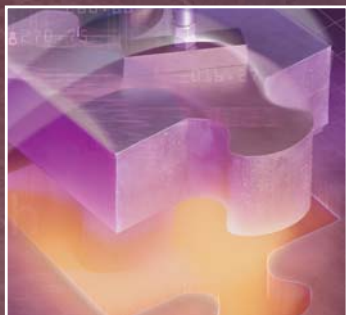
Interlock/Transfer



Productivity & Safety



G-Force™ Study



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