



Ergonomic Handling Systems
Engineered for Interaction of Man and Machine

Global Solution Centers

Providing turnkey, customized solutions that improve our customers' productivity and efficiency:

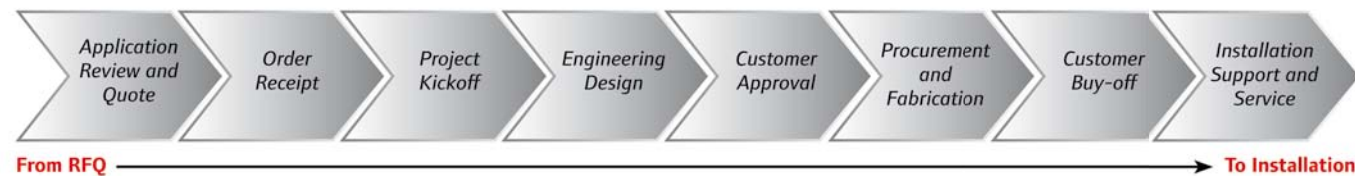
Custom Ergonomic Handling Systems



Custom Multi-Spindle Fastening Systems



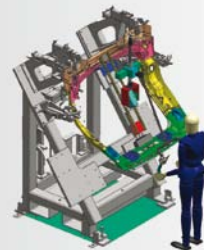
Custom Solution Process



Offering full-service capabilities tailored to our customers' needs:

Engineering

- ▶ Feasibility study
- ▶ Concept design
- ▶ Simulation
- ▶ System design
- ▶ 2D and 3D CAD



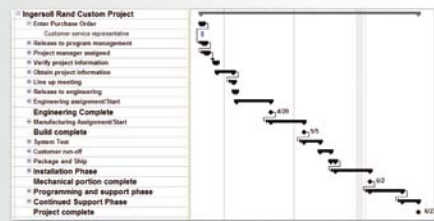
Service

- ▶ Installation and start-up support
- ▶ Training
- ▶ Preventive maintenance
- ▶ Calibration and repair service
- ▶ Technical support



Project management

- ▶ Dedicated project manager
- ▶ Project planning
- ▶ Coordination
- ▶ Execution



Served industries include:

- ▶ Aerospace
- ▶ Appliance
- ▶ Automotive
- ▶ Defense / military
- ▶ Electronics
- ▶ Food and beverage
- ▶ Furniture
- ▶ Heavy equipment
- ▶ Marine
- ▶ Medical

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ergo·nom·ics (ûr'guh-nôm'îks)n.

1. The applied science of equipment design, as for the workplace, intended to maximize productivity by reducing operator fatigue and discomfort.
2. Design factors, as for the workplace, intended to maximize productivity by minimizing operator fatigue and discomfort.

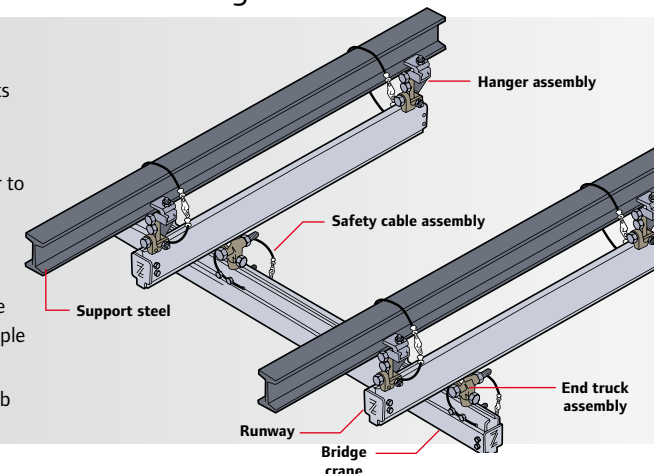
See also: Ingersoll Rand

Since 1959, Ingersoll Rand has been at the forefront of developing ergonomic solutions for lifting, manipulating, and transferring loads by offering a complete line of products designed to maximize productivity while simultaneously minimizing operator fatigue and discomfort. No matter what your requirement, Ingersoll Rand offers the products for you to do your job effectively, efficiently, and above all, safely. By choosing Ingersoll Rand, you are receiving 50 years of innovation and product expertise that is unrivalled anywhere else.

Rail Systems

Ceiling-supported workstation bridge cranes:

- ▶ Ideal for high-volume production environments with limited floor space
- ▶ Capable of mounting parallel or perpendicular to overhead support steel
- ▶ Provide rectangular coverage for a single workstation, or an entire assembly line with multiple bridge cranes
- ▶ Capacities up to 3,000 lb



Monorails:

- ▶ Provide simple single-axis transfer
- ▶ Curved sections available for navigating obstructions

ZRA1		ZRS2	
36°	15°	60°	10°
36°	30°	60°	15°
36°	45°	60°	30°
36°	60°	60°	45°
36°	90°	60°	60°
		60°	90°



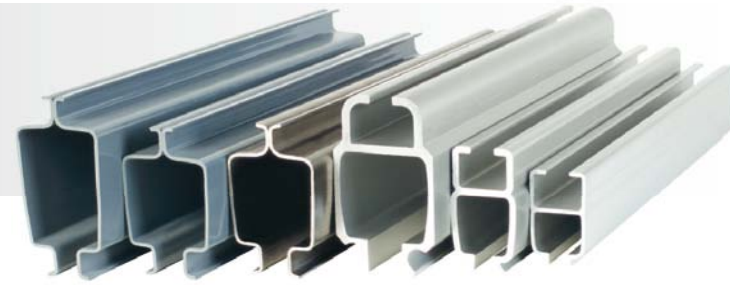
Rail Systems

Profiles:



Quality steel, aluminium, and stainless steel rail systems

Ingersoll Rand rails are available in three different materials and five different sizes to meet your specific material handling needs. The enclosed rail systems design reduces the accumulation of dirt and grime on the internal rolling surfaces, thus reducing rolling effort.



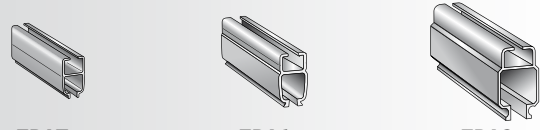
The Ingersoll Rand Rail Systems **ADVANTAGE**

- ▶ **Lightweight and ergonomic** — Less than 1 percent rolling resistance
- ▶ **Precision running surface** — Aluminium, steel, and stainless steel available
- ▶ **Modular and flexible** — Bolted together; no welding required
- ▶ **Clean, maintenance-free operation** — No lubrication required
- ▶ **Safety** — Designed to meet or exceed all national and international standards
- ▶ **Now MMA Certified** — Certified by the Monorail Manufacturers Association to meet or exceed ANSI MH27.2 monorails and underhung cranes



Lightweight aluminium profiles

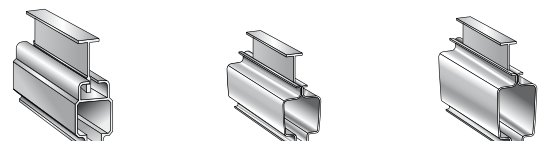
- ▶ Lightweight and available for long spans
- ▶ Extruded from aluminium alloy 6063-T6
- ▶ Clear anodized for a smooth, clean, corrosive-free surface



Part No.		31000	30200	30000	30500	30550
Weight per Foot	lb	2.15	4.10	7.60	8.00	8.90
	kg	0.97	1.86	3.45	3.60	4.00
Vertical Height	in	3.83	4.90	7.00	5.91	7.13
	mm	97	124	177	150	181
Maximum Length	ft	24	30	30	24	24
	m	7	9	9	7	7

Rugged steel profiles

- ▶ Roll formed from 9 gauge, A569 hot-rolled steel
- ▶ Spot welded with automated welder for maximum strength Powder-coat painted for durability and smoothness



Strongback profiles

- ▶ Reinforced profiles for added strength
- ▶ Uses the same hardware as standard profiles
- ▶ Increases span capacity

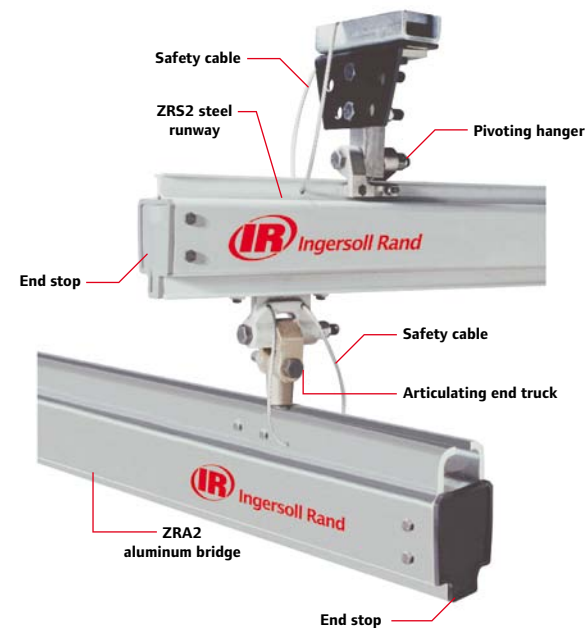
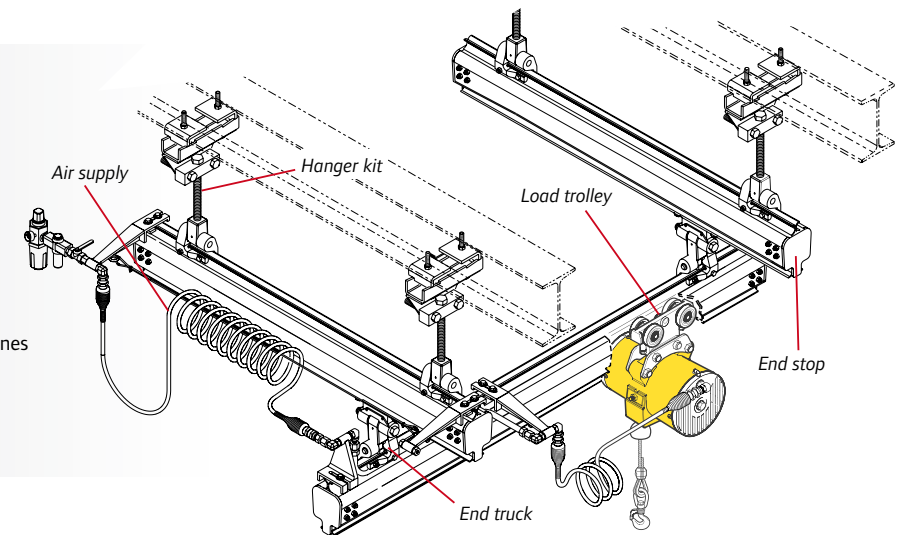
Part No.		30000T	30500T	30550T
Weight per Foot	lb	14.96	11.62	12.52
	kg	6.78	5.27	5.68
Vertical Height	in	13.0	7.83	9.20
	mm	330.0	198.8	233.6
Maximum Length	ft	30	24	24
	m	9	7	7

Components:

Safety first

The primary and vital concern of Ingersoll Rand is safety.

- ▶ **Deflection** — Ingersoll Rand rail is designed to not exceed 1/450 of span, in accordance with ANSI B30.11 monorail and underhung cranes
- ▶ **Safety cables** — We require the use of safety cables at all moving (hanger and end-truck) suspension points
- ▶ **Redundant end stops** — Available for extra safety
- ▶ **Load ratings** — Clearly marked on both sides of bridge cranes
- ▶ **Safety factor** — All hardware components are rated at a 5 to 1 safety factor based on meticulous tests performed at independent testing laboratories



Hangers

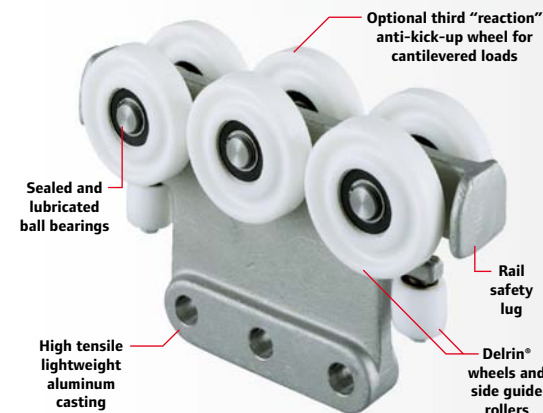
The primary and vital concern of Ingersoll Rand is safety.

- ▶ Attach to I-beam, angle iron, C-channel, and other overhead steel shapes
- ▶ Close and rigid style hangers available for low headroom
- ▶ Adjustable-height hangers provide easy leveling
- ▶ Sway bracing for hanger drops >24" for added safety and stability



Articulating end trucks

- ▶ Maximize the ability of the operator to precisely position the load
- ▶ Reduce fatigue by allowing the operator to move only the portion of the bridge crane near the load
- ▶ Dramatic improvements over typical rigid end-truck systems, which require the user to move the entire mass of the bridge crane for each operation



Advanced trolley design

Ingersoll Rand trolleys are designed to work in conjunction with the enclosed track rail to reduce the rolling effort required to move a load. In fact, only a force equal to 1 percent of the total rolling weight is needed when moving loads.

- ▶ **Lightweight** — Trolleys are made from high-strength, lightweight aluminium castings
- ▶ **Injection moulded wheels** — Provide for clean, wear-free operation that resists flattening
- ▶ **Sealed precision bearings** — In wheels and side guide rollers, they provide long life and reduced maintenance
- ▶ **Rail safety lug** — Prevents the body of the trolley from being pulled through the enclosed track rail
- ▶ **Versatile** — Ingersoll Rand-built trolleys are available for use in virtually every manufacturer's enclosed track rail system

Arm Systems

The Ingersoll Rand Arm Systems **ADVANTAGE**

- ▶ **Ergonomic reach** — Prevents the need for operator to bend and reach into tight areas causing injury
- ▶ **Precise, strain-free positioning** — Float leaves both hands free to raise, lower, or shift the load with virtually no resistance
- ▶ **Versatility** — Three styles available to fit a diverse set of applications in nearly any industry
- ▶ **Rugged reliability** — Continuous duty with minimal maintenance
- ▶ **Integrated air supply** — Prevents tangling of air lines running to below-the-hook handling devices

700 Series articulating arms:



700 Series arms combine the benefits of an air balancer with the flexibility and reach of an articulating arm.

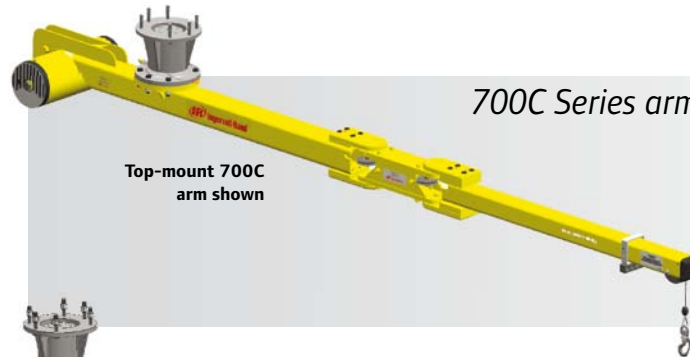
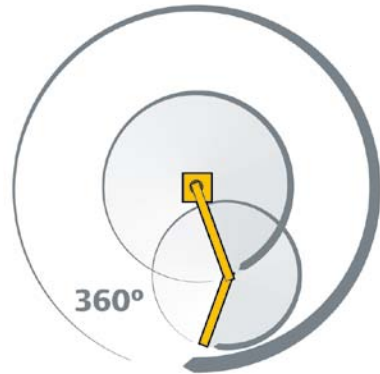
Features:

- ▶ Column, ceiling, or carriage mount
- ▶ Up to 10 ft horizontal reach and 500 lb capacity
- ▶ Includes integrated air balancer available in rear-mount, mid-mount, and front-mount configurations.



Column-mounted 700 arm

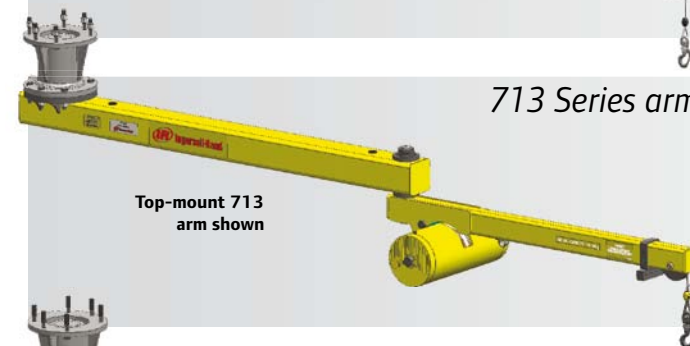
Overhead carriage-mounted 700 arm



700C Series arm

Features:

- ▶ Rear-mount balancer offers lowest rotational inertia of all models
- ▶ Short stack-up for low headroom applications
- ▶ Two-point pivot providing 270° articulation
- ▶ Carriage or column mount
- ▶ Arm lengths of 6, 7, 8, 9, and 10 ft available
- ▶ Integrated 150, 200, 350, or 500 lb balancer



713 Series arm

Features:

- ▶ Mid-mount balancer
- ▶ Over-under boom design with single pivot point for 360° articulation
- ▶ Carriage or column mount
- ▶ Arm lengths of 6, 7, 8, 9, and 10 ft available
- ▶ Integrated 150, 200, 350, or 500 lb balancer



720 Series arm

Features:

- ▶ End-mount balancer
- ▶ Over-under boom design with single pivot point for 360° articulation
- ▶ Carriage or column mount
- ▶ Arm lengths of 6, 7, 8, 9, and 10 ft available
- ▶ Available only in 150 lb capacity

Parallel link arms:

Parallel link arms utilize an air cylinder with a parallel link structure for lifting / lowering, making them ideal for reach-in applications.

Features:

- ▶ Capable of handling offset loads
- ▶ Column or carriage mount
- ▶ Upto 5 ft vertical travel and 800 lb capacity
- ▶ Optional brakes and limit switches available



Note: Parallel link-style arms are designed to specific customer requirements. Contact factory for more information.

600 Series arms:

600 Series arms utilize a rigid mast to guide the lifting / lowering, which is done by an integrated air balancer.

Features:

- ▶ Capable of handling offset loads
- ▶ Carriage mount compatible with most rail systems
- ▶ Upto 8 ft vertical travel and 1,000 lb capacity
- ▶ Includes integrated air balancer



Example: 70015SATT0ZP06A

700 Series Articulating Arm model driver

Style 700	Capacity 15	Balancer Type SA	Mounting Option TT	Carriage Options O	Controls ZP	Arm Length O6	Mounting Access. A
700	15 = 150 lb (68.2 kg)	SA = Standard balancer	TT = Top mount - Ceiling	O = No carriage	ZP = ZA pendant control	O6 = 6 feet (1.83 m)	O = No mounting column
713	20 = 200 lb (91 kg)	IA = IntelLIFT balancer (consult factory)	BB = Bottom mount - Column	H = High-profile	ZQ = ZA quad-coil control	O7 = 7 feet (2.13 m)	A = 13 in (0.33 m) ceiling mount
720 (150-lb capacity only)	35 = 350 lb (159.1 kg) 50 = 500 lb (227.3 kg)		NT = Carriage - no trolley TR = Carriage - T-rail / I-beam A2 = Carriage - ZRA2 (reaction trolley) S2 = Carriage - ZRS2 / ZRS3 A1 = Carriage - ZRA1 E8 = Carriage - ETA8 (reaction trolley) K2 = Carriage - KBK2	L = Low-profile	ZT = ZA tri-coil control BA = Single balance control BZ = Z-servo balance control EP = EA control 2ps pressure EV = EA control 2ps vacuum	O8 = 8 feet (2.44 m) O9 = 9 feet (2.74 m) O10 = 10 feet (3.05 m)	B = 8 ft (2.44 m) column C = 8.5 ft (2.59 m) column D = 9 ft (2.74 m) column E = 10 ft (3.05 m) column F = 11 ft (3.35 m) column G = 12 ft (3.66 m) column

Example: 60015SA1A2ZPG

600 Series Arm model driver

Style 600	Capacity - Vertical Travel 15	Balancer Type SA	Single or Dual Mast 1	Carriage Option A2	Controls Z	Brake Options P	Mast Length G
600	15 = 150 lb (68.2 g)- 80 in (2032 mm) 20 = 200 lb (90.9 kg)- 120 in (3048 mm) 35 = 350 lb (159.1 kg)- 80 in (2032 mm) 50 = 500 lb (227.3 kg)- 80 in (2032 mm) 7R = 700 lb (318.2 kg)- 40 in (1016 mm) 7T = 700 lb (318.2 kg)- 80 in (2032 mm) 1R = 1000 lb (454.5 kg)- 40 in (1016 mm) 1T = 1000 lb (454.5 kg)- 80 in (2032 mm)	SA = Standard balancer IA = IntelLIFT balancer (consult factory)	1 = single mast 2 = dual mast	A1 = Carriage - ZRA1 A2 = Carriage - ZRA2 (reaction trolley) S2 = Carriage - ZRS2 S3 = Carriage - ZRS3 TR = T-Rail / I-Beam E8 = Carriage - ETA8 (reaction trolley) K2 = Carriage - KBK22	Z = ZA pendant control (includes dummy handle)	O = No brake P = Pin-lock brake (hard stops every 45 degrees) B = Bumper friction brake (soft stop at any point on 360 degree rotation) C = Caliper brake	A = 4 ft (1.22 m) B = 4 ft 6 in (1.37 m) C = 5 ft (1.52 m) D = 5 ft 6 in (1.68 m) E = 6 ft (1.83 m) F = 6 ft 6 in (1.98 m) G = 7 ft (2.13 m) H = 7 ft 6 in (2.29 m) J = 8 ft (2.44 m) K = 8 ft 6 in (2.59 m) M = 9 ft (2.59 m) N = 9 ft 6 in (2.90 m) P = 10 ft (3.05 m) Q = 10 ft 6 in (3.20 m) R = 11 ft (3.35 m) S = 11 ft 6 in (3.51 m) T = 12 ft (3.66 m)

Air Balancers

The Ingersoll Rand Pneumatic Balancers **ADVANTAGE**

- ▶ **Precise, strain-free positioning** — Float leaves both hands free to raise, lower, or shift the load with virtually no resistance; no more “hoist control” hit-and-miss spotting
- ▶ **Simple adjustment** — Clear access to air-flow calibration controls allows quick, easy adjustment of the float
- ▶ **Rugged reliability** — For continuous duty with minimal maintenance

PLUS:

Low air consumption — Approximately 1/8 cfm required per cycle (one fiftieth of that of an air hoist) means very low energy costs

Clean, oil-free operation — Pre-lubricated design eliminates air line lubrication and oil mist exhaust; ideal for food processing and clean manufacturing environments

Safety is standard

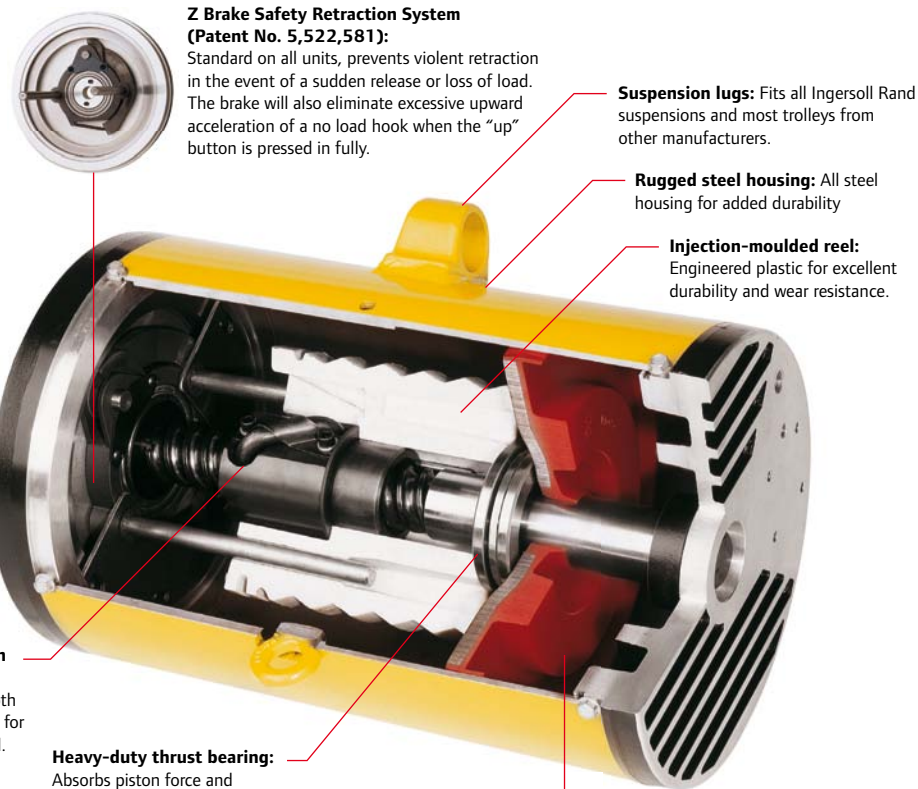
- ▶ **Built-in overload protection** — The lifted load can never exceed the unit’s maximum rated capacity
- ▶ **Minimal cable recoil due to loss of load** — If the load is accidentally lost, a centrifugal brake (Z brake) automatically stops rapid upward cable travel

Versatile configuration

- ▶ **Wide range of capacities** upto 2,000 lbs (907 kg)
- ▶ **Added protection** — The optional Z Stop offers protection against the drifting of loads in the event the main air supply is lost
- ▶ **Cable travel** — 40 to 120 inches (1016 to 3048 mm) depending on the model
- ▶ **Controls** — ZA (pendant) controls let you handle varying loads; a BA (single) balance control is ideal for a constant load, and an EA for 2 loads
- ▶ **Mounting** — Suspension kits for Ingersoll Rand and other enclosed track manufacturers as well as I-beam, patented track, and hook mount
- ▶ **CE certification** — Meets the requirements for the European community



Z Stop: The optional Z Stop is a patented device that will eliminate the down-drift of suspended loads or tools during shut down or at night when the air supply is shut off. The Z Stop will stop drift within 6 inches (152.4 mm) and put the Balance Air into a mechanically locked position preventing damage to tools or objects below the suspended load. Available for use on all 10 inch (254 mm) diameter units.



Z Brake Safety Retraction System (Patent No. 5,522,581):

Standard on all units, prevents violent retraction in the event of a sudden release or loss of load. The brake will also eliminate excessive upward acceleration of a no load hook when the “up” button is pressed in fully.

Suspension lugs: Fits all Ingersoll Rand suspensions and most trolleys from other manufacturers.

Rugged steel housing: All steel housing for added durability

Injection-moulded reel: Engineered plastic for excellent durability and wear resistance.

Anti-friction ball screw: Creates smooth rotation path for the cable reel.

Heavy-duty thrust bearing: Absorbs piston force and transfers smooth reel rotation over the ball screw.

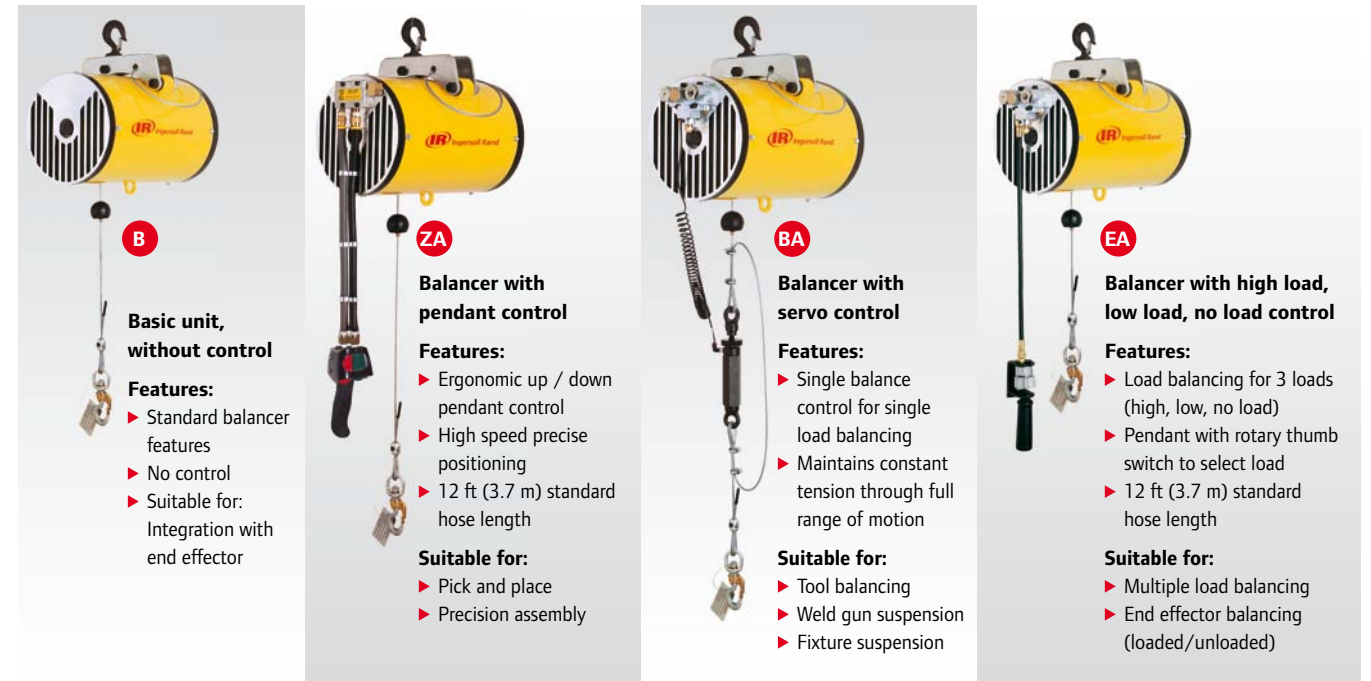
Low-friction cable guide (not shown): Ensures smooth cable feed on and off the reel.

Air chamber and piston:

Forms the heart of the unit. Air entering the chamber pushes the piston to rotate the spool, wind the cable, and lift the load. Exhausting air lowers the load. Regulating this flow balances the load, creating a zero gravity float.



EZ Grip Ergonomic Control Handle
Quality handle manufactured by Ingersoll Rand, the world leader in ergonomically sound material handling equipment.



Basic unit, without control

Features:

- ▶ Standard balancer features
- ▶ No control
- ▶ Suitable for: Integration with end effector

Balancer with pendant control

Features:

- ▶ Ergonomic up / down pendant control
- ▶ High speed precise positioning
- ▶ 12 ft (3.7 m) standard hose length

Suitable for:

- ▶ Pick and place
- ▶ Precision assembly

Balancer with servo control

Features:

- ▶ Single balance control for single load balancing
- ▶ Maintains constant tension through full range of motion

Suitable for:

- ▶ Tool balancing
- ▶ Weld gun suspension
- ▶ Fixture suspension

Balancer with high load, low load, no load control

Features:

- ▶ Load balancing for 3 loads (high, low, no load)
- ▶ Pendant with rotary thumb switch to select load
- ▶ 12 ft (3.7 m) standard hose length

Suitable for:

- ▶ Multiple load balancing
- ▶ End effector balancing (loaded/unloaded)

B	ZA	BA	EA	Capacity lb (kg)	Travel in (mm)	Net Weight lb (kg)
SINGLE WIRE ROPE						
BW015080 ¹	ZAW015080 ¹	BAW015080 ¹	EAW015080 ¹	150 (68)	80" (2032)	50 (23)
BW020120	ZAW020120	BAW020120	EAW020120	200 (90)	120" (3048)	62 (28)
BW020120S ²	ZAW020120S ²	BAW020120S ²	EAW020120S ²	200 (90)	120" (3048)	62 (28)
BW032080S ²	ZAW032080S ²	BAW032080S ²	EAW032080S ²	325 (147)	80" (2032)	62 (28)
BW035080 ¹	ZAW035080 ¹	BAW035080 ¹	EAW035080 ¹	350 (158)	80" (2032)	62 (28)
BW050080	ZAW050080	BAW050080	EAW050080	500 (227)	80" (2032)	110 (50)
BW050080S ²	ZAW050080S ²	BAW050080S ²	EAW050080S ²	500 (227)	80" (2032)	110 (50)
REEVED WIRE ROPE						
BW040060	ZAW040060	BAW040060	EAW040060	400 (181)	60" (1524)	67 (30)
BW040060S ²	ZAW040060S ²	BAW040060S ²	EAW040060S ²	400 (181)	60" (1524)	67 (30)
BW065040S ²	ZAW065040S ²	BAW065040S ²	EAW065040S ²	650 (294)	40" (1016)	67 (30)
BW070040 ¹	ZAW070040 ¹	BAW070040 ¹	EAW070040 ¹	700 (317)	40" (1016)	67 (30)
BW100040	ZAW100040	BAW100040	EAW100040	1,000 (453)	40" (1016)	115 (52)
BW100040S ²	ZAW100040S ²	BAW100040S ²	EAW100040S ²	1,000 (453)	40" (1016)	115 (52)
TANDEM WIRE ROPE						
BW040120	ZAW040120	BAW040120	EAW040120	400 (181)	120" (3048)	124 (56)
BW040120S ²	ZAW040120S ²	BAW040120S ²	EAW040120S ²	400 (181)	120" (3048)	124 (56)
BW065080S ²	ZAW065080S ²	BAW065080S ²	EAW065080S ²	650 (294)	80" (2032)	124 (56)
BW070080 ¹	ZAW070080 ¹	BAW070080 ¹	EAW070080 ¹	700 (317)	80" (2032)	124 (56)
BW100080	ZAW100080	BAW100080	EAW100080	1,000 (453)	80" (2032)	220 (100)
BW100080S ²	ZAW100080S ²	BAW100080S ²	EAW100080S ²	1,000 (453)	80" (2032)	220 (100)
TANDEM REEVED WIRE ROPE						
BW080060	ZAW080060	BAW080060	EAW080060	800 (360)	60" (1524)	129 (59)
BW080060S ²	ZAW080060S ²	BAW080060S ²	EAW080060S ²	800 (360)	60" (1524)	129 (59)
BW130040S ²	ZAW130040S ²	BAW130040S ²	EAW130040S ²	1,300 (589)	40" (1016)	129 (59)
BW140040 ¹	ZAW140040 ¹	BAW140040 ¹	EAW140040 ¹	1,400 (620)	40" (1016)	129 (59)
BW200040	ZAW200040	BAW200040	EAW200040	2,000 (900)	40" (1016)	225 (102)
BW200040S ²	ZAW200040S ²	BAW200040S ²	EAW200040S ²	2,000 (900)	40" (1016)	225 (102)

Selection Tips:

- ▶ Actual operating capacity is determined by available plant air pressure. Operating capacity decreases 1% for every 1 psi below 100 psi inlet air pressure. For example: at 50 psi, a 350 lb capacity balancer has a 175 lb operating capacity (350 X 50%)
- ▶ For lifting applications, working load should not exceed 80% of operating capacity
- ▶ Working load includes part weight and handling device weight

¹ Not available with Z-Stop safety device.
² Model delivered with Z-Stop as standard.

Example: BW020120SS2

Pneumatic Balancers model driver

Control B	Type W	Capacity 020	Travel 120	Z-Stop Option S	Suspension Option S2
B = Basic, no controls ZA = Pendant control BA = Servo control EA = High, low, no load control	W = Wire rope	020 = 200 lb (91 kg) For available capacities, refer to model number tables	120 = 120 inches (3048 mm) For available travel, refer to model number tables	S = Z-stop	S2 = ZRS2 steel rail For available suspension options, refer to suspension option table

Air Balancers

Also available:

BAW series tool balancer

This air unit offers an incredible 2 to 50 pound (0.9 to 22 kg) load capacity and our exclusive flotation feature.

Versatile configuration

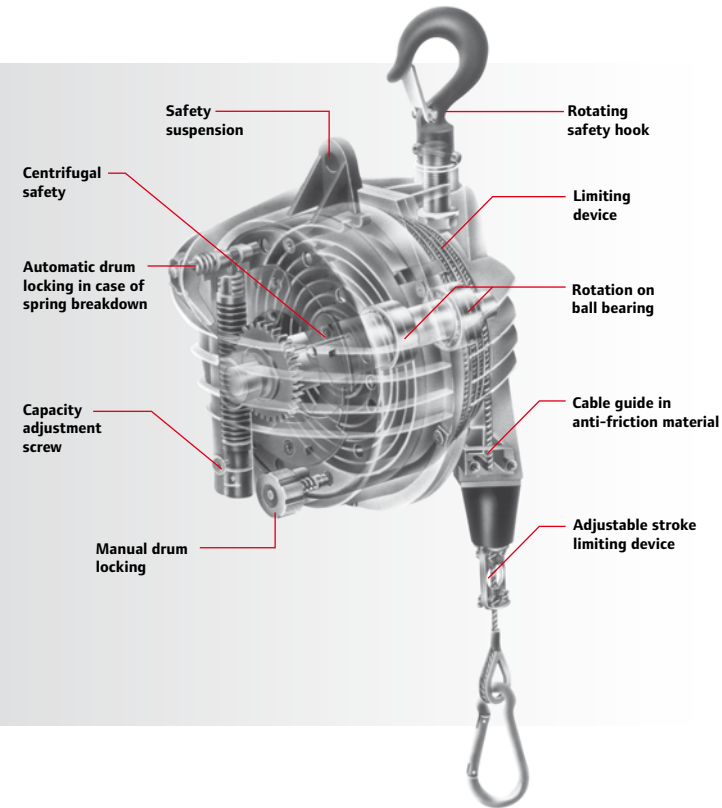
- ▶ **Performance** — Float action provides ease of vertical travel, eliminating tension on load, making positioning capability far superior
- ▶ **Versatility** — No need to change model when making tool change; one model (BAW005060) covers entire 50 lb (22 kg) range
- ▶ **Headroom** — Requires only 20 inches (508 mm) from bottom of rail to bottom of hook
- ▶ **Adjustment** — Simple adjustment in seconds by means of external regulator
- ▶ **Sequencing** — Can be sequenced via air signal to perform timed or “stepped” operation
- ▶ **Maintenance** — Virtually maintenance-free. Normal maintenance can be done in place on the rail



Spring Balancers

The Ingersoll Rand Spring Balancers **ADVANTAGE**

- ▶ 50 models to choose from
- ▶ Five different series to meet all balancing requirements
- ▶ Lifts ranging from five to nine feet
- ▶ Covers weight balancing needs from one to 363 pounds
- ▶ Made of rugged die cast aluminium
- ▶ Safety locking device on medium, heavy, and super-duty models prevents dropping of the tool should the spring fail
- ▶ Easy-to-use controls allow for accurate spring adjustment



Medium-duty balancers



Medium-duty locking balancers



Intermediate-duty balancers



Heavy-duty balancers



Super-duty balancers



IntelLIFT® Series Balancers

Intelligent Lifting Systems

What is IntelLIFT?

IntelLIFT is an intelligent assist device (IAD); it converts intuitive operator input into smooth, effortless up / down motion. The force-sensing control handle responds to operator input quickly and seamlessly for precise positioning of loads.

The Ingersoll Rand IntelLIFT® Balancers **ADVANTAGE**

- ▶ **Self-balancing** — Intuitive speed control for different weights
- ▶ **Hands-on maneuvering** — IntelLIFT senses force input of the user and translates that to assisted lifting / lowering of the load without the need for up / down buttons
- ▶ **Float mode** — Throughout entire range of motion
- ▶ **Robust design** — Electric over air design allows continuous duty with minimal maintenance
- ▶ **Part present** — Eliminates potential to accidentally drop part
- ▶ **3-Speed select** — Enables speed selection to match application and operator comfort level

Same green features as the Pneumatic Balancer

- ▶ Low air consumption
- ▶ Clean, oil-free operation



Control Options:



IntelLIFT basic unit, without control

- Features:**
- ▶ No controls
 - ▶ Standard IntelLIFT features

- Suitable for:**
- ▶ Integration with end effector



IntelLIFT with pendant control and pre-coil cable

- Features:**
- ▶ IntelLIFT ergonomic pendant control handle with up / down rocker switch
 - ▶ Precise, high-speed positioning
 - ▶ 12 ft (3.7 m) twin bonded pre-coil cable including pre-coil air hose for handling device integration

- Suitable for:**
- ▶ Pick and place
 - ▶ Precision assembly



IntelLIFT with force-sensing control (without up / down buttons)

- Features:**
- ▶ IntelLIFT ergonomic force-sensing control handle
 - ▶ Intuitive up / down control
 - ▶ 12 ft (3.7 m) twin bonded pre-coil cable including pre-coil air hose for handling device integration

- Suitable for:**
- ▶ High-cycle pick and place
 - ▶ Precision assembly



IntelLIFT with pendant control and straight cable

- Features:**
- ▶ IntelLIFT ergonomic pendant control handle with up/down rocker switch
 - ▶ Precise, high-speed positioning
 - ▶ 12 ft (3.7 m) straight electric cable

- Suitable for:**
- ▶ Pick and place
 - ▶ Precision assembly

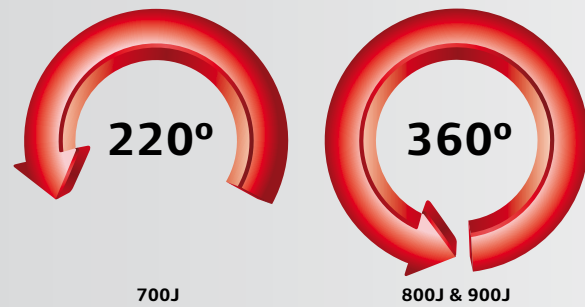
Jib Cranes

The Ingersoll Rand Jib Cranes **ADVANTAGE**

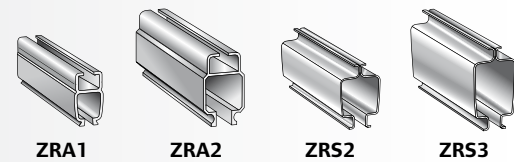
- ▶ **Ergonomic** — Unique single contact point, tapered roller bearing design provides easiest rotation in the industry on 360 degree jib cranes
- ▶ **Precision** — Made from precision Ingersoll Rand aluminium or steel rail, resulting in a lightweight, easy-to-move boom with low rolling resistance for smooth travel
- ▶ **Cost Effective** — Jib cranes are an inexpensive solution for short transfer applications
- ▶ **Rugged Reliability** — Light, Medium, and Heavy Duty configurations to meet every application

How to select

Rotation



Capacity



Jib Style	lb (kg)	lb (kg)	lb (kg)	lb (kg)
700J	900 (408.2)	2,000 (907.2)	2,000 (907.2)	2,000 (907.2)
800J*	820 (371.9)	820 (371.9)	820 (371.9)	
900J*		820 (371.9)		

Note : Jib styles marked with a * are available in floor-mount configuration only

Boom length

- ▶ Radius of coverage area
- ▶ Most ergonomic operation is closer to end of boom

Boom underclearance

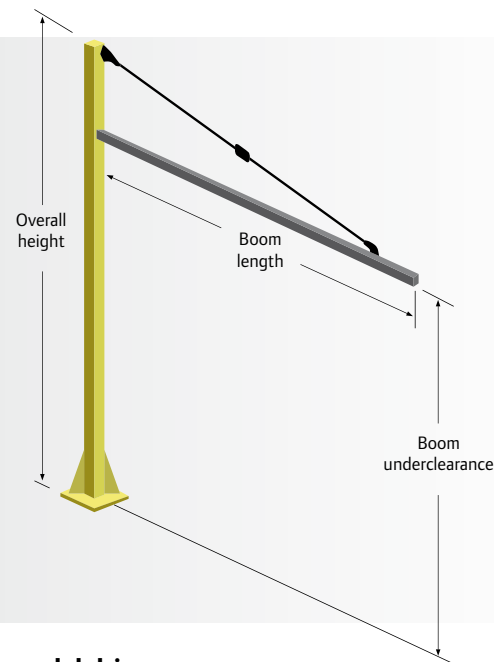
- ▶ Distance from floor to bottom of boom
- ▶ Available up to 14 ft (4.27 m) (12 ft [3.65 m] standard)

Overall height

- ▶ Distance from floor to top of jib crane
- ▶ 900J Series offers lowest overall height

Boom profile

- ▶ Clean, lightweight anodized aluminium (ZRA1 and ZRA2)
- ▶ Rugged powder-coated steel (ZRS2 and ZRS3)



NOTE: For proper installation of a floor-supported jib crane system a minimum of a 6" (15.2 cm) thick reinforced concrete floor is required. Consult a registered structural engineer before installing the jib crane. This is required to ensure local building codes, possible seismic loading considerations and variance in concrete slab and soil conditions are addressed.

Example: 7105JS2F08144

Jib Crane model driver

Style 7	Capacity 105	Jib J	Rail Type S2	Mount Type F	Boom Length 08	Underclearance 144
700J (220°) = 7 800J (360°) = 8 900J (360°) = 9	105 = 1050 lb (476 kg)	J = Jib	A1 = ZRA1 A2 = ZRA2 S2 = ZRS2 S3 = ZRS3 A2T = ZRA2T	F = Floor W = Wall	04 = 4 ft (1.22 m) 06 = 6 ft (1.83 m) 08 = 8 ft (2.44 m) 10 = 10 ft (3.05 m) 12 = 12 ft (3.66 m) 14 = 14 ft (4.27 m) 16 = 16 ft (4.88 m) 18 = 18 ft (5.49 m) 20 = 20 ft (6.10 m)	144 = 144 in (3657.6 mm) Note: Standard underclearance available up to 168 in.

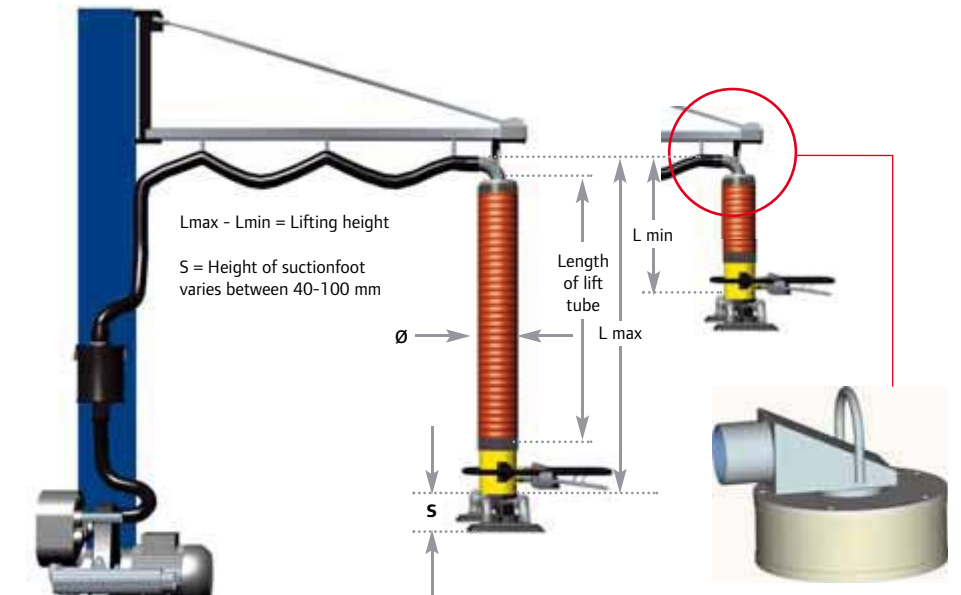
We also offer I-Beam Jib Cranes ideally suited for applications with low ceilings and/or overhead obstructions. These floor mounted jib cranes are offered in 125 kg, 160 kg, 250 kg and 500 kg capacities and each model is designed for up to 360° rotation. Please contact your Ingersoll Rand sales representative for more details.

VacuEasylift

VacuEasylift is a manual vacuum lifting device that handles almost any type of load. The extremely smooth and quick lifting operation is accomplished by using the same handle to lift, lower and release the load and by using the vacuum to hold and lift the load. VacuEasylift is a world-leading, original Swedish product, patented in most countries of use. Based on a unique concept, VacuEasylift has been developed into a versatile system for simpler, safer and more effective lifting.



Model	VM80	VM100/120/140		VM160/180		VM200/230		VM250	VM2160/2180		VM300
Lifting Capacity kg	20	30/40/50	30/40/50	60/80	60/80	100/120	100/120	180	120	160	270
Length of lifttube mm	2000	2500	4000	2500	4000	2500	4000	2500	2500	4000	2500
Ø mm	80	100/120/140	100/120/140	160/180	160/180	200/230	200/230	250	2 x 160	2 x 180	300
L max mm	2240	2670	4170	2690	4190	2690	4190	2690	2630	4130	2690
L min mm	740	870	1570	890	1590	990	1790	1190	830	1530	1190
Lifting height mm	1500	1800	2600	1800	2600	1700	2400	1500	1800	2600	1500
Extended, flexible handle	Not available	Flexed extensions upto 800+800 mm standard.		Flexed extensions up to 800+800 mm standard.		Flexed extensions up to 800+800 mm standard.		Not available	Available on request		Not available



Vacuum pumps

Our vacuum pumps are high-efficiency, long-life machines with low electric consumption. Technical description, see below:

Pump Unit	Power (kW)	Depression	Weight	Tube Model	Dimensions
	@50 Hz	mbars	kg		l x w x h (mm)
SA 200/2	1.1	720	49	VM 80	500 x 380 x 420
SA 320/2	2.2	550	34	VM 100-160	535 x 335 x 450
SA 350/2	3.0	630	41	VM 160-2180	630 x 335 x 450
SA 450/2	5.5	650	67	VM 160-2180	700 x 420 x 520



Custom Handling Devices

Custom devices

Ingersoll Rand is a world leader in the manufacturing of ergonomic, in-process, manual and powered custom material handling systems. We offer a complete range of handling solutions catering to simple lifting applications for general industry as well as the more complex lifting solutions for industries such as Automobiles, Aerospace, etc. We specialize in providing turnkey solutions utilizing our complete line of standard and custom products to create a combination that empowers individuals to work more comfortably and effectively.



Motor vehicle



Agricultural equipment



Furniture / household

Ingersoll Rand's Other Products Solutions

Tools

Service technicians and industry crew workers around the globe reach for the power and reliability of Ingersoll Rand tools. Advanced engineering and innovation make our tools the benchmark for productivity, durability, safety and award-winning design.



Services Tools

- Complete line of Impactools™, ratchets, drills/drivers and surface preparation tools to meet all needs
- Complete offering of professional-grade cordless tools and kits for use in a variety of applications including garages and the Vehicle Service industry



Industrial Tools

- Wide range of Impactools™, surface finishing and construction tools for product and maintenance applications
- Ergonomically designed for increased productivity and safety
- Most advanced tools of their type in the world for the size, weight and power output



Assembly Tools

- Air and electric screwdrivers, nut runners, drills and accessories for all types of assembly
- Products deliver the best torque accuracy in the industry, with award-winning ergonomic design
- Full range of torque verification and calibration equipment to ensure accurate performance



Precision Fastening

- Precision air and electric assembly equipment and fastening control systems for consistent and precise tool performance
- Superior user-oriented ergonomics and process control for reliability
- Custom configurations and engineering available to meet unique needs

ARO Fluid Products

Our fluid products provide the industry-leading ARO brand air operated diaphragm and piston pumps for a broad spectrum of fluid transfer applications. Also count on us for high quality pneumatic valves, cylinders, motion control components and FRLs. The focus is on reducing downtime and increasing return on investment by extending the life of your equipment and improving productivity.

ARO Diaphragm Pumps

- Patented “unstallable” air valve and “quick-dump” exhaust valves allow for ice-free operation and maximum operating efficiency
- Multiple materials of construction for chemical compatibility and flow rates ranging from 17.4-1,041 L/min (4.6-275 gpm)



ARO Piston Pumps & Packages

- Pumps for fluid viscosities ranging from 500-1,000,000 cPs including oils, paints, inks, sealants, caulking & more
- Multiple package seal options, including leather, UHMW-PE and PTFE for chemical compatibility
- Optional Ultra-Coating for tubes and plungers reduces abrasion and scoring



ARO Lubrication Equipment

- Piston and diaphragm pumps and packages specifically designed to handle all types of oil, grease, and specialty-type fluid applications
- Specialty pumps for antifreeze/water mixing, solvents transfer, calcium chloride tire fill and high-pressure wash
- Diaphragm pumps meet U.L. 79 specification code for fuel related applications



ARO Filters, Regulators & Lubricators (FRL's)

- Best-in-class air flow with flow rates from 0.9-50 m³/min (32-1,770 scfm)
- Modular design for 1000 – 3000 series facilitates easy installation and maintenance
- Positive thumb-locking switch on polycarbonate bowls for enhanced safety



ARO Pneumatic Valves & Cylinders

- Valves with flow rates up to 7.8 Cv (280 scfm) and cylinders with stroke lengths up to 250 mm (99")
- 2-, 3- and 4-way valves with electrical, manual, mechanical & pneumatic actuators and various body styles to fit all applications
- NFPA interchangeable, round repairable and disposable, square and round compact cylinders to accommodate different environments



CLAMP	HOOK / TRAP	VACUUM	PROBE
<p>Cheese — food processing</p>	<p>Gaming table</p>	<p>Box — general industry</p>	<p>teel roll</p>
<p>Box — general industry</p>	<p>Beverage handlingT</p>	<p>oilet tank</p>	<p>Ceramic steel funnel</p>
<p>Floor scrubber</p>	<p>Vehicle transmission</p>	<p>GlassH</p>	<p>VAC — copper coil</p>

Quality and performance on the toughest jobs.

ARO – Three letters. 80 years. One goal.



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