IRB 6700

New generation of robots with a lifetime of affordability and reliability
Agenda

Overview
Targeted applications
Key differentiators
IRB 6700INV
IRB 6790
Sustainable
Technical data
Foundry Plus
Summary
Seventh generation of robots

Overview

IRB 90  1982
IRB 6000  1990
IRB 6400  1994
IRB 6400R  1997
IRB 6600  2002
IRB 6640  2007
IRB 6700  2013
Differentiated value proposition

Overview

The highest performance robot with the lowest total cost of ownership.

The IRB 6700 family is the highest performance robot in the 150-300 kg segment.

It has 20 % lower TCO thanks to a more robust design, longer service intervals and simplified maintenance.
**Overview**

<table>
<thead>
<tr>
<th>Range</th>
<th>Weight</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Line 235 kg</strong></td>
<td>150 kg</td>
<td>3.20 m</td>
</tr>
<tr>
<td></td>
<td>175 kg</td>
<td>3.05 m</td>
</tr>
<tr>
<td></td>
<td>205 kg</td>
<td>2.80 m*</td>
</tr>
<tr>
<td></td>
<td>235 kg</td>
<td>2.65 m*</td>
</tr>
<tr>
<td><strong>Low Line 200 kg</strong></td>
<td>155 kg</td>
<td>2.85 m</td>
</tr>
<tr>
<td></td>
<td>200 kg</td>
<td>2.60 m</td>
</tr>
<tr>
<td><strong>Power Line 300 kg</strong></td>
<td>245 kg</td>
<td>3.00 m</td>
</tr>
<tr>
<td></td>
<td>300 kg</td>
<td>2.70 m</td>
</tr>
<tr>
<td><strong>Inverted 300 kg</strong></td>
<td>245 kg</td>
<td>2.90 m</td>
</tr>
<tr>
<td></td>
<td>300 kg</td>
<td>2.60 m</td>
</tr>
</tbody>
</table>

* This version is available with Foundry Prime 3 in the robot IRB 6790 family.
## Four ranges, ten variants with LeanID

### Overview

<table>
<thead>
<tr>
<th>High Line 235 kg</th>
<th>Low Line 200 kg</th>
<th>Power Line 300 kg</th>
<th>Inverted 300 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>145 kg 3.20 m</td>
<td>140 kg 2.85 m</td>
<td>220 kg 3.00 m</td>
<td>210 kg 2.90 m</td>
</tr>
<tr>
<td>155 kg 3.05 m</td>
<td>175 kg 2.60 m</td>
<td>270 kg 2.70 m</td>
<td>270 kg 2.60 m</td>
</tr>
<tr>
<td>200 kg 2.80 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>220 kg 2.65 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Spot welding

Targeted applications

In car body shops.
All variants needed to support spot welding needs from mass production to flexible premium car production.

Lowest TCO

- Design is focused on uptime, reliability and reduced maintenance
- LeanID for longer spot welding dress pack life time on all variants
- Robot family including inverted versions
- 150 kg at 3.2 m up to 300 kg at 2.7 m
Material handling

Targeted applications

Material handling in both automotive and general industries. An array of robot variants to cover different needs with just one family of robots.

Short cycle times

- Cycle times 4–5 % shorter than previous generation (IRB 6640)
Machine tending
Targeted applications

An array of robot variants to cover different needs in just one robot family.
Foundry Plus 2 protection increases reliability and life time expectancy of the robot in e.g. die cast Machine Tending.
Shorter cycle times
- An average 4 - 5 % shorter than IRB 6640
Key differentiators

Lowest TCO
LeanID on all variants
- Long and predictable life time of dress packs - Significantly reduced downtime because of less dress pack failures.

Outstanding reliability
- Design focused on uptime and fault free operation – Robot designed for MTBF* of 400000 h.

Stronger
- 150 kg payload at 3.2 m reach
- 300 kg payload at 2.7 m reach

Sustainable
- 15 % lower power consumption
Lower TCO: LeanID on all variants

Key differentiators

High performing dress packs on complete range of robots

- IRB 6700 available LeanID
  - 140 kg to 270 kg payload
  - 2.60 m to 3.20 m reach

Dynamic 3D models

- RobotStudio®, Delmia V5 Robotics, Process simulate, RobCAD

Static 3D models

- IGES, STEP, Parasolid, ACIS

All arm variants available in 4 versions

- Std
- MH3
- LeanID SW
- LeanID MH
**LeanID**

**Key differentiators**

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**Traditional dress pack**

- Short, unpredictable life time
- Bulky
- Difficult to simulate
- Smaller working range → More difficult to add new parts in line
- Adjustments needed for new parts

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**LeanID**

- Long and predictable life time
- Compact
- Accurate simulation
- Larger working range
- Easier to add new parts in line
- No adjustments needed
Outstanding reliability

Key differentiators

- Trusted design based on 30,000 units and 15 years production.
- Each IRB 6640 failure report analyzed so IRB 6700 would not repeat.
- TCO model driving force behind redesign and incorporation of new solutions.
- Robot testing most stringent ever
  - Operation
  - Components
The IRB 6700INV robot enables new and more flexible possibilities regarding reach and density in the factories.

- Possibility to reach large objects from above.
- High robot density – for example up to 18 robots around a car body.
- Flexible body shop solution allowing different car variants.
- Spare part coordination within IRB 6700 family.
- LeanID with improved production uptime and more accurate simulations.
IRB 6700INV vs. Powerline

Inverted is part of the IRB 6700 family, with few new parts

- Same base
- Same gears ax. 1-6
- Same motors ax. 2-6
- Same lower arm
- Same upper arm (arm housing, tube shaft, wrist etc.)
- Same cable harness
- Same dress pack (LeanID SW, LeanID MH, MH3)

Options
- New fork lift pockets
- New turning tool
- No AbsAcc
- No Baseplate
The IRB 6790 robot targets washing and cleaning applications in harshest industrial environments with 100% humidity.

- High protection against liquids and solids with IP 69.
- Reduced risk of washing detergent penetration by extending robot connectors outside washing cell.
- Increased tolerance in harsh environments by being compatible with pH levels of up to 10.
- Improved safety as all warning and instruction signs are etched to withstand the environment.
- All electrical encapsulations, wrist and balancing unit are pressurized and supervised.
- Eliminates needs for protective covers.
IRB 6790

Selected features

- Extended robot connectors and pressurized power and signal cables.
- Pressure relief valve and air flow sensor
- Protected bearings
- Durable sealings and gaskets
- Plated castings with non-corrosive material
- Plated gears with non-corrosive material, stainless steel shaft and plated motors.
- Sheet metals and screws in stainless steel
- Etched warning and instruction signs
- Lasered ABB logo
- Pressurized wrist
- IP 69
- Plated gear with non-corrosive material and stainless steel shaft
- Flange in non-corrosive material
- Pressurized motors, electronic compartments and balancing unit

Plated castings with non-corrosive material and stainless steel shaft
<table>
<thead>
<tr>
<th>Service Maintenance Event</th>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear box oil change interval axes 1-3, 6</td>
<td>After 20,000 hours</td>
<td>Quick connections on axes 1-3 to reduce time for draining/filling oil (previous generation IRB 6640 ref 6,000 hours + 24,000 hours)</td>
</tr>
<tr>
<td>Gear box oil change interval axes 4-5,</td>
<td>After 20,000 hours</td>
<td></td>
</tr>
<tr>
<td>after 20,000 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery change</td>
<td>After 4 years, 3 shifts</td>
<td>(previous generation IRB 6640 ref. at low alert after 2 years)</td>
</tr>
<tr>
<td>Counter balancing cylinder</td>
<td>Lubrication after 4 years,</td>
<td>(previous generation IRB 6640 ref 2.5 years)</td>
</tr>
<tr>
<td></td>
<td>3 shifts</td>
<td></td>
</tr>
<tr>
<td>Gear lifetime</td>
<td>After 8 years and 3 shifts</td>
<td>in normal BIW operation an inspection /overhaul is needed</td>
</tr>
<tr>
<td>Annual inspection</td>
<td>20 min.</td>
<td>Gear box oil levels, harnesses, labels, balancing device, mech. stops</td>
</tr>
</tbody>
</table>
15 % reduced energy consumption
Sustainable

IRB 6640
A front runner in low energy consumption

IRB 6700
15 % less energy consumption compared with IRB 6640
Built from non-hazardous materials

Sustainable

Fully complies with environmental directives RoHS 2002/95/EC and Reach No1907/2006 directives.
Working range IRB 6700-235/2.65

Technical data
Working range IRB 6700-175/3.05

Technical data
Working range IRB 6700-150/3.20

Technical data
Working range IRB 6700-205/2.80

Technical data
Working range IRB 6700-155/2.85

Technical data
Working range IRB 6700-200/2.60

Technical data
Working range IRB 6700-245/3.00

Technical data
Working range IRB 6700-300/2.70
Technical data
Working range IRB 6700INV-245/2.90

Technical data
Working range IRB 6700INV-300/2.60

Technical data
Reuse of proven protection

Foundry Plus

Paint
- Foundry paint

Screws
- Motor cover
- Armhouse cover
- Sync plates
- Lubrication holes
- Connection boxes
- UL-bracket

Protection plugs
- Customer holes
- Not used gears holes
- Screw heads at back of balancing cylinder

Rust preventive
- Gears
- “Hidden surfaces”
- Cable hole axis 1
- Tubular shaft side
- Tubular shaft flange

Flange sealing
- Motors (std on 6700, except ax. 5, 6)
- Tubular shaft cover on both sides

Sealant (Sikaflex)
- Cable hole axis 1
Additional protection of axis 1 and 4

Foundry Plus

**Improved sealing upper arm**
Gasket added under the protection cover.

Two inserts fitting the existing cover reduces the cabling passage and creates a flange for easy mounting of protection leather.

**Improved sealing upper arm**
Gasket added under the side cover. Std. cover replaced with a stainless cover.

**Improved protection axis 1**
Sheet metal covers protects the cabling in the axis 1 center hole from cuttings etc.
Improved wrist protection

Foundry Plus

**Axis 5 motor and cabling**
Flat sealing surface for complete cover (compare 6640 non-flat sealing surface).

**Axis 6 motor and axis 5 gear support side**
Rubber gasket between wrist housing and cover.

**Drainage**
Predefined holes for emptying of water if needed.
Additional protection with LeanID

Foundry Plus
Additional protection with LeanID: external valve package

Foundry Plus

**Principle I**
- Incoming cable from split point, bracket moved
- Outgoing valve cabling to ax4 house

**Principle II**
- Incoming cable from ax3 split point
- Outgoing valve cabling to ax4 house

* These are concept images and are not available as standard options.
Cable Guard
Available option combined with Foundry Plus

MH3

MH6/SW6
Cable Guard and LeanID MH

Foundry Plus
Summary
The numbers tell the story

- 20 % lower TCO
- Design focused on uptime and reliability
- Annual service time reduced 15 %
- 15 % less power consumption
- Unmatched reliability
  - 400,000 MTBF
- High performance
  - 4 - 5 % faster