IRB 6790
Expert for washing and cleaning in harsh environments
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Overview
- Differentiated value proposition
- Target industries and applications
- Key benefits Foundry Prime 3

Background
- Applications fields
- Application and environmental needs
- History and expertise

Advantages and Features
- Key Differentiators
- Selected IRB 6790 features

Technical Data
- Working Range

Summary
**Overview**

Differentiated Value Proposition

- The IRB 6790 robot targets washing and cleaning applications in harshest industrial environments with 100% humidity.
- Designed for high reliability and uptime, the IRB 6790 minimizes the total cost of ownership and reduces maintenance costs by up to 60%.
- The IRB 6790’s high flexibility allows cleaning of different part geometries in the same cell and provides increased speed and on average 5% shorter cycle time while reducing energy consumption by 15%.

Available in two variants:
- 205 kg, 2.80 m
- 235 kg, 2.65 m
## Overview

Target industries and applications

<table>
<thead>
<tr>
<th>IRB 6790 – Foundry Prime 3</th>
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</table>

### Target Industries
- Automotive OEM
- Auto Tier
- Metals
- General Industry

### Target Applications
- High pressure cleaning
- High pressure deburring
- Immersion Cleaning
- Water jet cleaning
- Washing
Leveraging more than 13 years of industry experience, ABB developed its third-generation Foundry Prime robot to increase reliability and system uptime, while reducing maintenance and offering the following benefits:

- High protection against liquids and solids with IP 69.
- Ensuring high corrosion protection with stainless steel and plated surfaces.
- Higher thermal and chemical resistance with durable Viton® seals.
- High performance by having all movable sealing joints in stainless steel.
- All electrical encapsulations, wrist and balancing unit are pressurized and supervised.
- Cable glands are especially made for harsh and wet environments.
- Reduce 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.
Background

- Applications fields
- Application and environmental needs
- History and Expertise
The toughest robot applications on the market

**Washing and cleaning of casted and machined parts**

- **High pressure cleaning/deburring**
  - Goal of the treatment is to remove and flush away stubborn contamination from the part surface (e.g. metal deposits, oils etc).
  - The pressures employed are highly dependent on the specific type of contamination. In addition High Pressure Water Deburring (HPWD) is used to deburr machined metal parts without removing parent materials.

- **Immersion cleaning**
  - Goal is to dislodge and flush away loosely adhering burrs from critical areas. Parts of complex geometry, e.g., blind holes, undercuts, etc., are commonly cleaned by immersion. Unlike high pressure cleaning which is carried out predominantly with aqueous media, immersion cleaning is also performed using solvents.
  - As the part is immersed in the cleaning bath, foreign matter adhering to its surface is removed mainly by the chemical cleaning action of the fluid.
Application characteristics

- Intermediate- and final cleaning of automotive parts (engines, crank shafts, cam shafts, steering parts)
- Surrounding high pressure water 135-700 bar/2,000-10,000 psi (application dependent)
- High humidity & fluids splashing on the robot handling the workpiece
  - Contaminant of oil, solids, metal chips in water and mist surrounding the robot
  - Heated water and cleaning chemicals/detergents
- Designated deburring nozzles are used in both processes high pressure and immersion cleaning
- Blow off knife or complete drying in the same chamber
- High up-time, availability and reliability is required in harsh environments

Environmental conditions

- Humidity: 100% (gaseous only)
- Environmental temperature: + 5°C to + 50°C
- Cleaning bath temperature up to 60°C (140°F)
- Washing detergent
  - Neutral/alkaline cleaners with pH ~6.0-10.0
  - Typical detergent Properties
  - Medium cleaning performance
  - Good temporary corrosion protection
  - No residues (salt free versions)
Background
History and Expertise

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
<td>First delivery of Foundry Prime</td>
</tr>
<tr>
<td>2009</td>
<td>Durable new paint system</td>
</tr>
<tr>
<td>2018</td>
<td>Stainless steel and nickel plated surfaces</td>
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</tbody>
</table>

13+ years of domain expertise in harsh environments for washing and cleaning
Advantages and Features

- Key Differentiators
- Selected IRB 6790 features
Advantages and Features

Key Differentiators

- Unmatched reliability
- Improved uptime
- Lowest total cost of ownership
- Optimized maintenance for convenient serviceability
- Reduced maintenance costs by up to 60%
- 15% percent lower energy consumption
- On average 5% shorter cycle times
- Up to 30% more payload than competitors in its size
- Trusted and proven design within automotive industry
- Eliminates needs for protective covers
Advantages and Features

Selected IRB 6790 features

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

– Working Range
Technical Data

Working Range IRB 6790-205/2.80
Technical Data

Working Range IRB 6790-235/2.65
**Summary**

Designed for high reliability in harsh environments and reduces cost of maintenance by up to 60%

**IRB 6790**

- 3rd generation Foundry Prime protection designed for washing and cleaning
- IP 69 rated for protection from water and dust ingress
- All external surfaces with increased corrosion protection
- Higher thermal and chemical resistance
- Compatible with pH levels of up to 10
- Up to 30% more payload than competitors in its size

Two variants:
- 205 kg, 2.80 m
- 235 kg, 2.65 m

- Shortens cycle times
- Reduces energy consumption
- Reduces cost of maintenance
- Increases uptime