

# Robotics

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# Comau Robotics

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Comau Robotics is a leading supplier of industrial robots, robotized processes and integrated robotic solutions.

Comau offers a wide range of innovative articulated and scara robots, covering a large number of models that are perfect for handling, spot welding, arc welding, press-shop automation, palletizing, assembling, sealing, machine tending and many other applications.

Technologically advanced, reliable, flexible, and specifically tailored to our customers' needs, Comau Robotics guarantees optimal performance across the entire robot range, robotized cells and process-integrated solutions.

We also ensure prompt and flexible after-sales services. Our highly qualified and skilled team guides and assists customers for training, immediate intervention or scheduled maintenance.

**Meet the Comau robot team**



# Our Ro

**The Robot team available  
for our clients is wide,  
well known and appreciated**

We provide scara and articulated industrial robots suitable for any application and special robots for spot and arc welding, palletizing or press to press automation.



# bot Family



All our robots are characterized by high performance in terms of speed, repeatability, accuracy and flexibility.

Product range extends from small payload robots to the massive capacity of 650 kg.

Each robot model is designed with a reduced footprint, large work envelope, highly precise movements and positioning, great reliability and low maintenance costs.

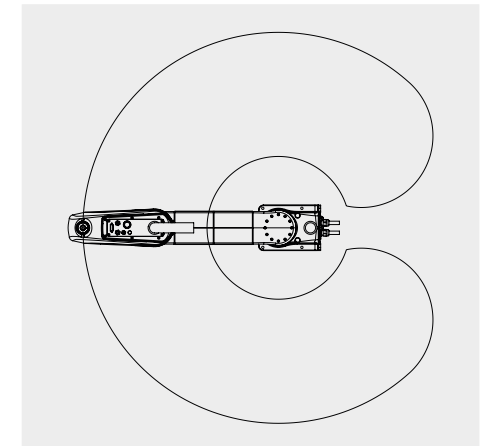
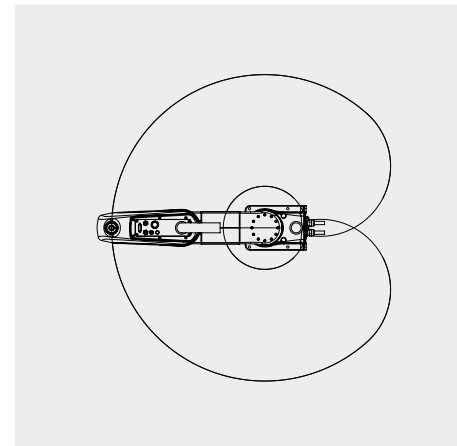
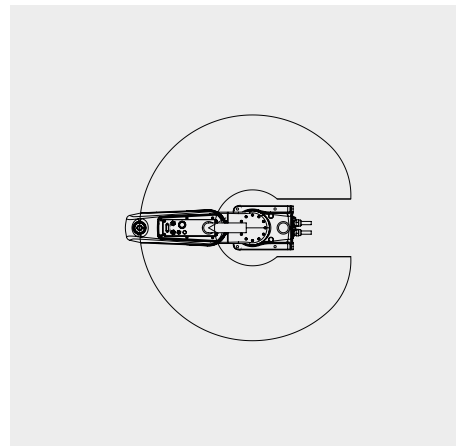


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REBEL-S SCARA FAMILY



MODEL	Rebel-S6-0.45	Rebel-S6-0.60	Rebel-S6-0.75
AXES	4	4	4
LOAD (kg)	6	6	6
REPEATABILITY (mm)	0.02	0.02	0.03
REACH (mm)	450	600	750
WEIGHT (kg)	20	20	20
MOUNTING POSITION	Base / Wall	Base / Wall	Base / Wall
PROTECTION DEGREE	IP10 (IP54 Option)	IP10 (IP54 Option)	IP10 (IP54 Option)



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**Rebel-S6-0.60c**

4

6

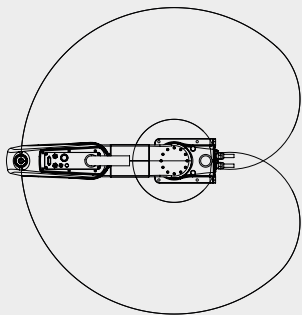
0.02

600

20

Ceiling / Wall

IP10 (IP54 Option)



**Rebel-S6-0.75c**

4

6

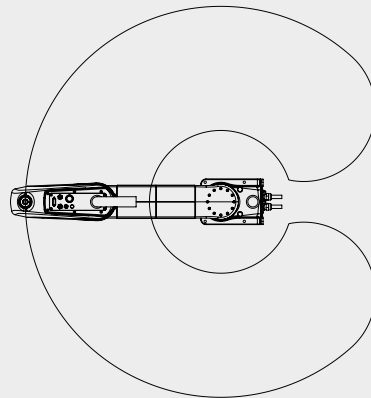
0.03

750

20

Ceiling / Wall

IP10 (IP54 Option)



RACER ROBOT FAMILY

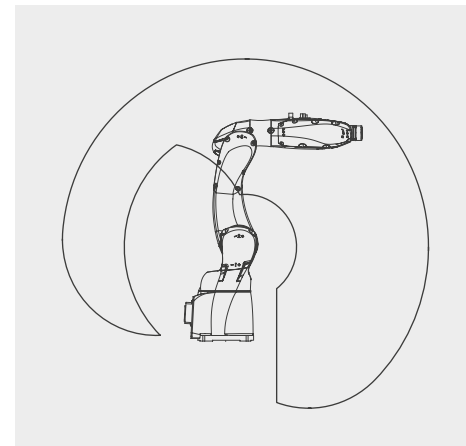
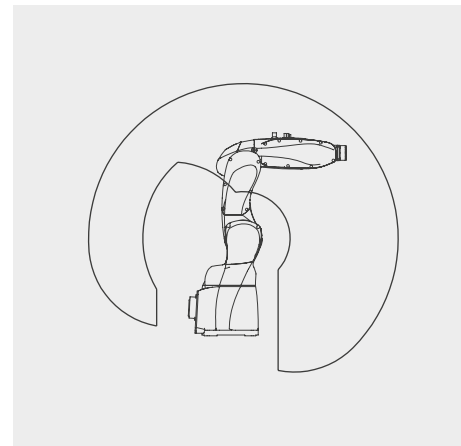
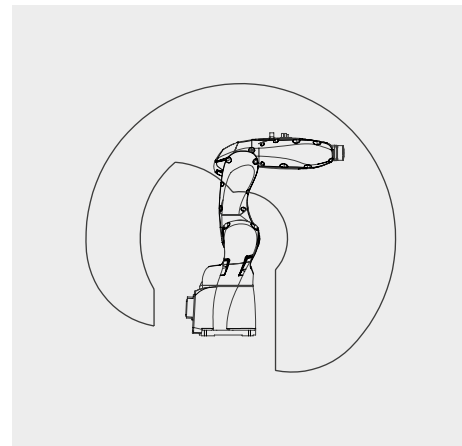


**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

**Racer3**  
 6  
 3  
 0.02  
 630  
 30  
 Floor / Ceiling / Wall  
 IP54

**Racer5-0.63**  
 6  
 5\*  
 0.03  
 630  
 30  
 Floor / Ceiling / Wall\*\*  
 IP54 (IP65 Option)

**Racer5-0.80**  
 6  
 5\*  
 0.03  
 809  
 32  
 Floor / Ceiling / Wall\*\*  
 IP54 (IP65 Option)



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\*For Pick&Place 6 kg with a limited stroke of the 5<sup>th</sup> axis

\*\* Allowable with payload limitations



**Racer7-0.99**

6

7

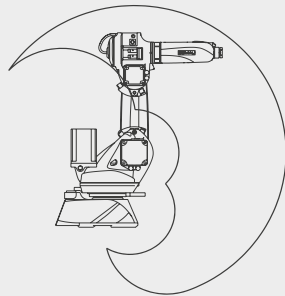
0.05

999

173

Floor / Ceiling / Sloping / Wall

IP65



**Racer7-1.40**

6

7

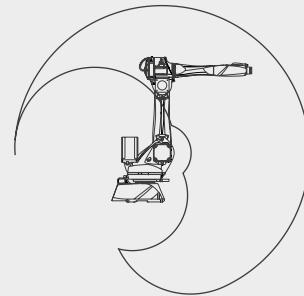
0.05

1436

180

Floor / Ceiling / Sloping / Wall

IP65



STANDARD ROBOTS

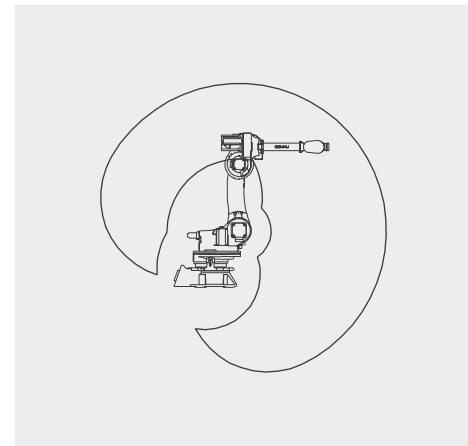
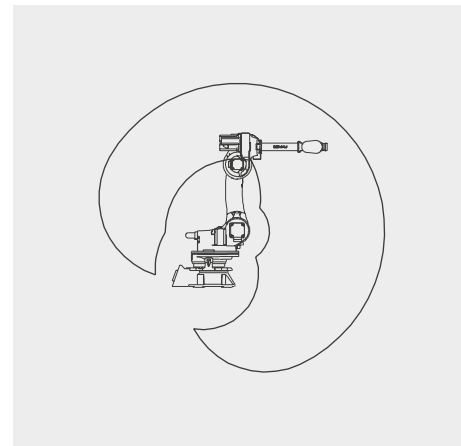
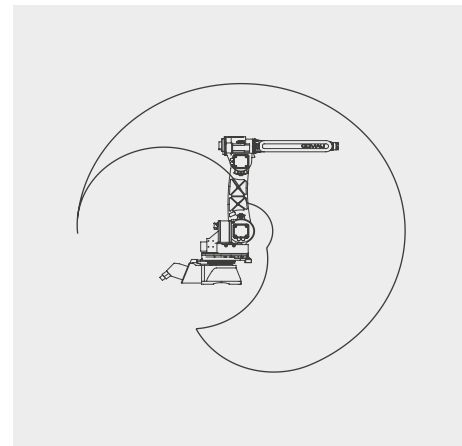


**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

**SIX**  
 6  
 6  
 0.05  
 1400  
 160  
 Floor / Ceiling / Sloping (max 45°)  
 IP65

**NS 12 - 1.85**  
 6  
 12  
 0.05  
 1850  
 335  
 Floor / Ceiling / Sloping (max 45°)  
 IP65 / IP67 Foundry Version

**NS 16 - 1.65**  
 6  
 16  
 0.05  
 1650  
 335  
 Floor / Ceiling / Sloping (max 45°)  
 IP65 / IP67 Foundry Version



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**NJ 16 - 3.1**

6

16

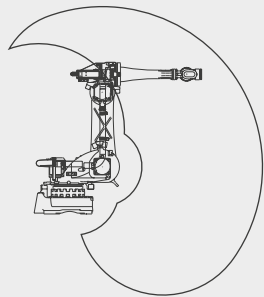
0.10

3108

680

Floor / Ceiling / Sloping (max 45°)

IP65 / IP67 Foundry Version



**NJ 40 - 2.5**

6

40

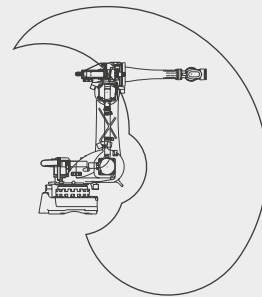
0.06

2503

655

Floor / Ceiling / Sloping (max 45°)

IP65 / IP67 Foundry Version



**NJ 60 - 2.2**

6

60

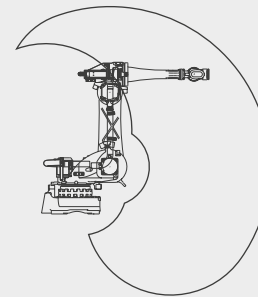
0.06

2258

645

Floor / Ceiling / Sloping (max 45°)

IP65 / IP67 Foundry Version



STANDARD ROBOTS



**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

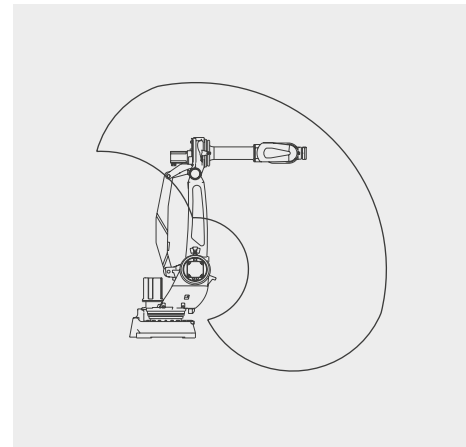
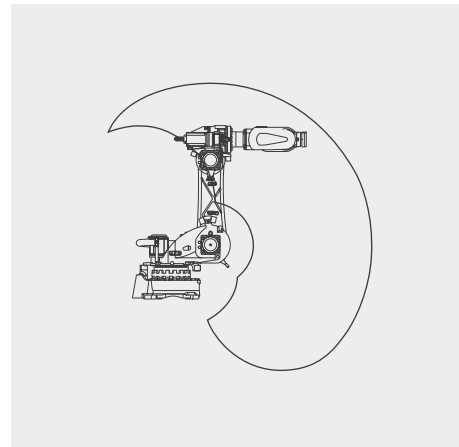
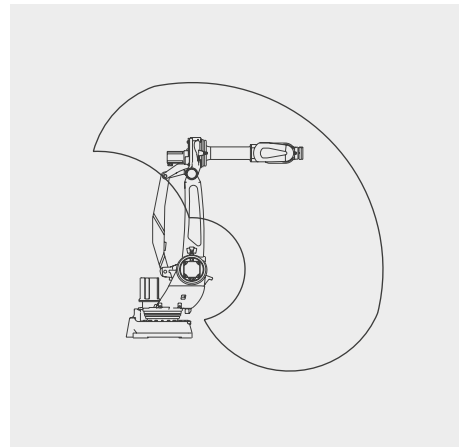
**NJ 110 - 3.0**  
 6  
 110  
 0.07  
 2980  
 1070  
 Floor / Ceiling  
 IP65 / IP67 Foundry Version

**NJ 130 - 2.0**  
 6  
 130  
 0.07  
 2050  
 740  
 Floor / Ceiling  
 IP65 / IP67 Foundry Version

**NJ 130 - 2.6**  
 6  
 130  
 0.07  
 2616  
 1050  
 Floor / Ceiling  
 IP65 / IP67 Foundry Version



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**NJ 165 - 3.0**

6

165

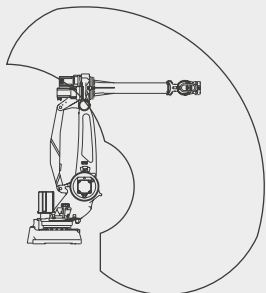
0.09

3000

1240

Floor / Ceiling

IP65 / IP67 Foundry Version



**NJ 220 - 2.7**

6

220

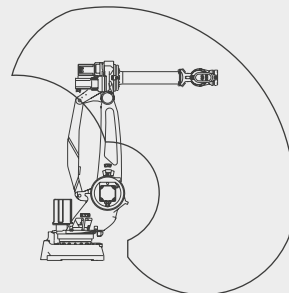
0.08

2701

1220

Floor / Ceiling

IP65 / IP67 Foundry Version



**NJ 290 - 3.0**

6

290

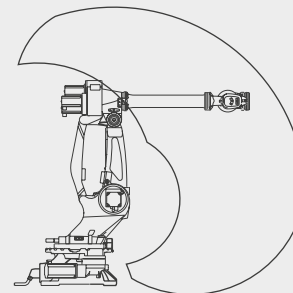
0.15

2997

2150

Floor

IP65 / IP67 Foundry Version



STANDARD ROBOTS



**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

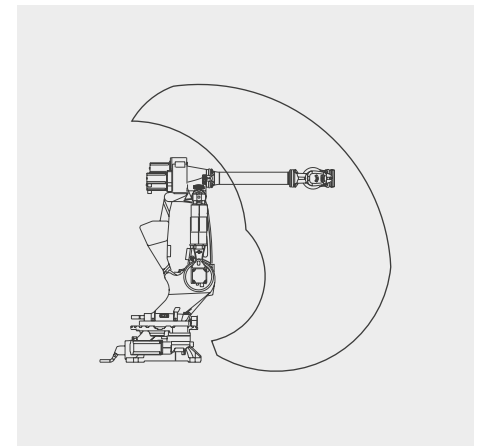
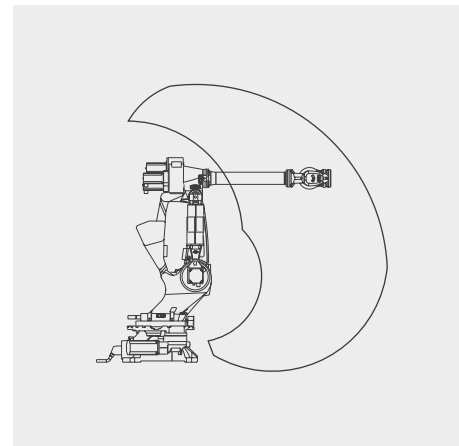
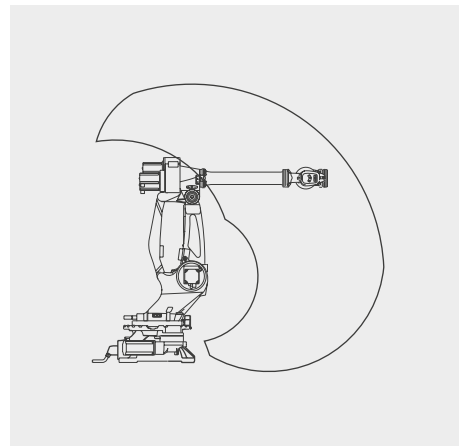
NJ 370 - 2.7	
AXES	6
LOAD (kg)	370
REPEATABILITY (mm)	0.15
REACH (mm)	2703
WEIGHT (kg)	2100
MOUNTING POSITION	Floor
PROTECTION DEGREE	IP65 / IP67 Foundry Version

NJ 370 - 3.0	
AXES	6
LOAD (kg)	370
REPEATABILITY (mm)	0.15
REACH (mm)	2997
WEIGHT (kg)	2450
MOUNTING POSITION	Floor
PROTECTION DEGREE	IP65 / IP67 Foundry Version

NJ 420 - 3.0	
AXES	6
LOAD (kg)	420
REPEATABILITY (mm)	0.15
REACH (mm)	2997
WEIGHT (kg)	2450
MOUNTING POSITION	Floor
PROTECTION DEGREE	IP65 / IP67 Foundry Version



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**NJ 450 - 2.7**

6

450

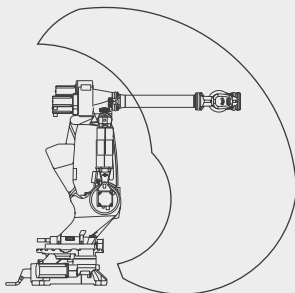
0.15

2703

2400

Floor

IP65 / IP67 Foundry Version



**NJ 500 - 2.7**

6

500

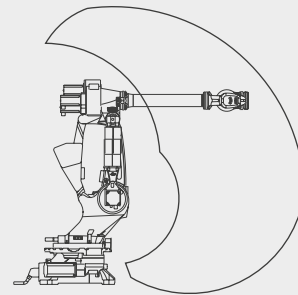
0.15

2703

2400

Floor

IP65 / IP67 Foundry Version



**NJ 650 - 2.7**

6

650

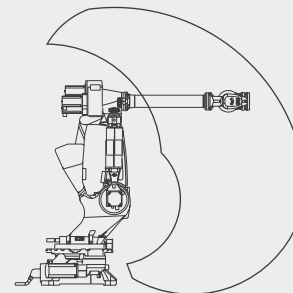
0.15

2703

2450

Floor

IP44 / IP65 Wrist



SPECIAL ROBOTS



**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

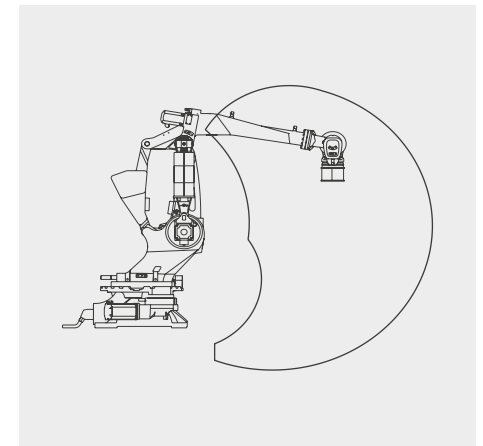
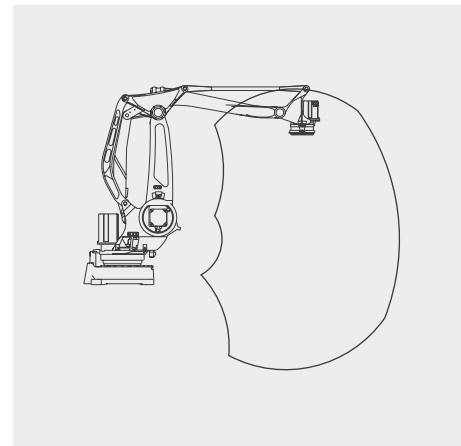
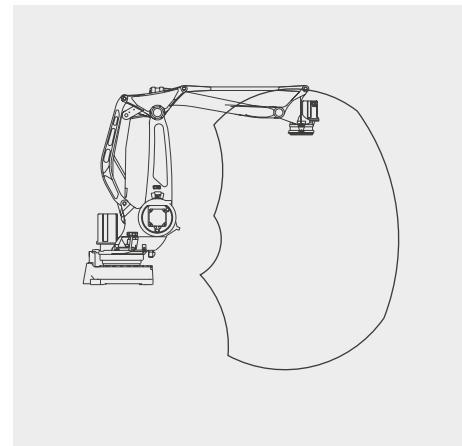
**PAL 180 - 3.1**  
 4  
 180  
 0.10  
 3100  
 1250  
 Floor  
 IP65

**PAL 260 - 3.1**  
 4  
 260  
 0.10  
 3100  
 1250  
 Floor  
 IP65

**PAL 470 - 3.1**  
 5  
 470  
 0.15  
 3100  
 2250  
 Floor  
 IP65



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**NJ 100 - 3.2 PRESS**

6

100

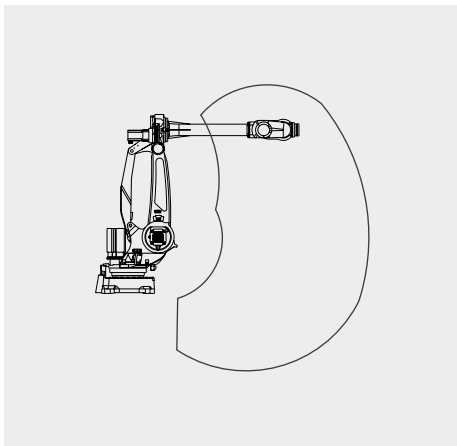
0.17

3209

1250

Floor

IP44 / IP65 Wrist



**NJ 130 - 3.7 SH PRESS**

6

130

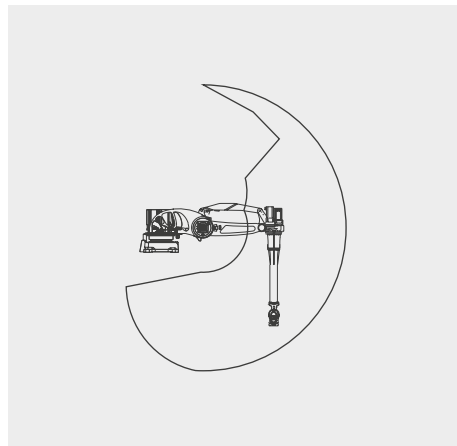
0.20

3700

1515

Shelf

IP44 / IP65 Wrist



**NJ 165 - 3.4 SH**

6

165

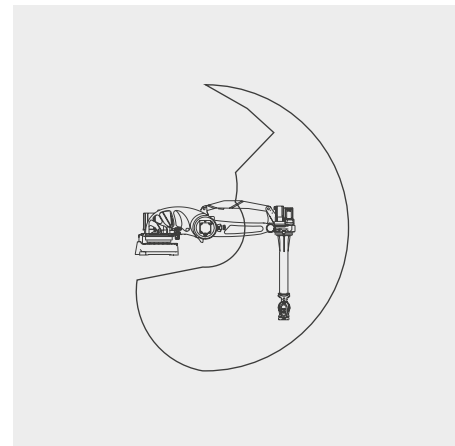
0.10

3450

1430

Shelf

IP65 / IP67 Foundry Version



**NJ 210 - 3.1 SH**

6

210

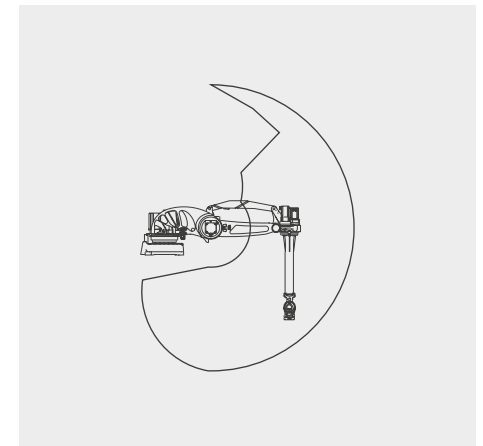
0.10

3188

1470

Shelf

IP65 / IP67 Foundry Version



HOLLOW WRIST

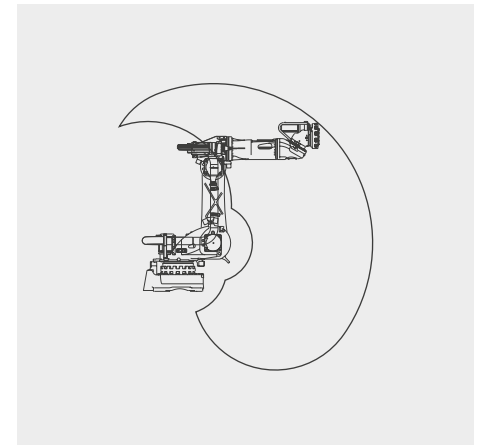
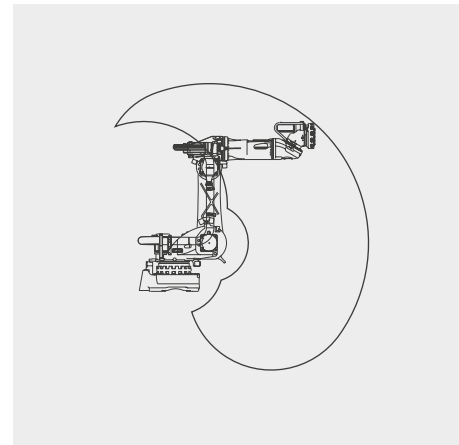
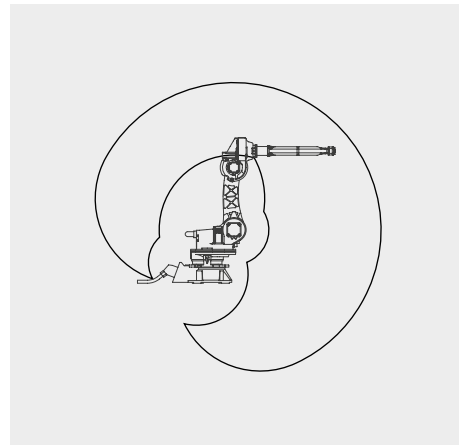


**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

**Arc 4**  
 6  
 5  
 0.05  
 1951  
 375  
 Floor / Ceiling / Sloping (max 45°)  
 IP65

**NJ4 90 - 2.2**  
 6  
 90  
 0.07  
 2210  
 685  
 Floor / Ceiling  
 IP65

**NJ4 110 - 2.2**  
 6  
 110  
 0.07  
 2210  
 685  
 Floor / Ceiling  
 IP65



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**NJ4 170 - 2.5**

6

170

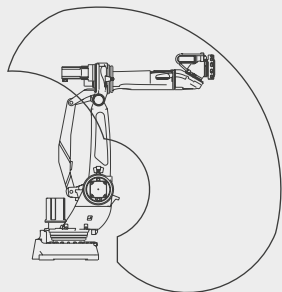
0.10

2500

1100

Floor / Ceiling

IP65



**NJ4 170 - 2.9**

6

170

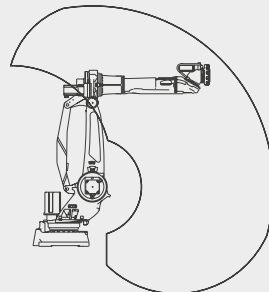
0.10

2918

1240

Floor / Ceiling

IP65



**NJ4 175 - 2.2**

6

175

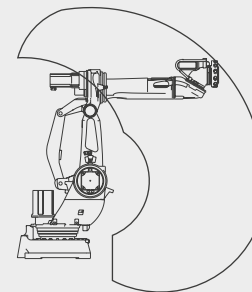
0.10

2204

1080

Floor / Ceiling

IP65



**NJ4 220 - 2.4**

6

220

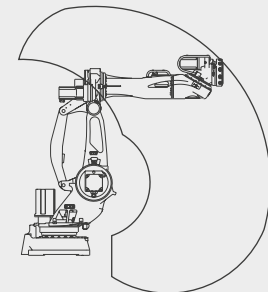
0.15

2417

1260

Floor / Ceiling

IP65



HOLLOW WRIST



**MODEL**  
**AXES**  
**LOAD (kg)**  
**REPEATABILITY (mm)**  
**REACH (mm)**  
**WEIGHT (kg)**  
**MOUNTING POSITION**  
**PROTECTION DEGREE**

**NJ4 220 - 2.7**

6

220

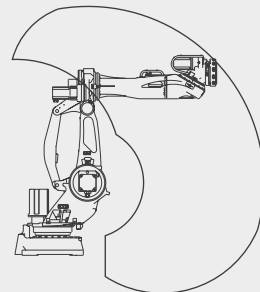
0.15

2738

1290

Floor / Ceiling

IP65



**NJ4 220 - 3.0**

6

220

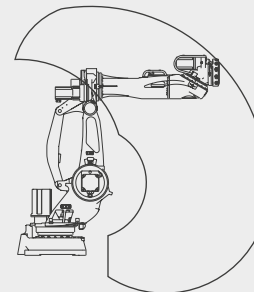
0.15

3002

2005

Floor

IP65



**NJ4 270 - 2.7**

6

270

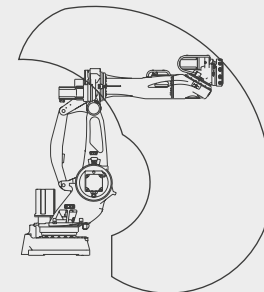
0.15

2703

1975

Floor

IP65



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**NJ4 165 - 3.4 SH**

6

165

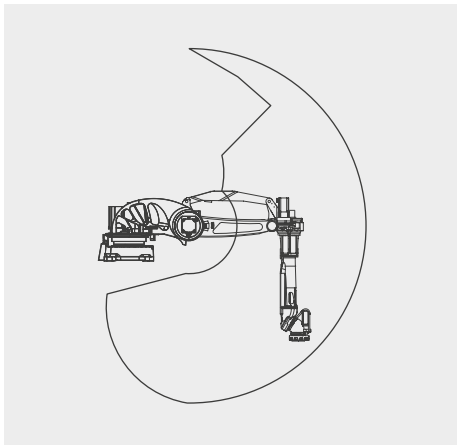
0.10

3450

1430

Shelf

IP65



**NJ4 210 - 3.1 SH**

6

210

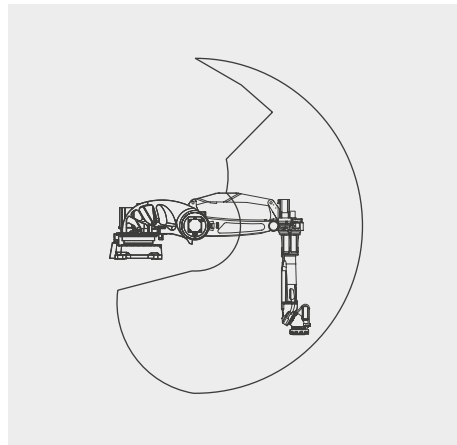
0.10

3151

1415

Shelf

IP65



# Rebel S

**Innovative modular  
& scalable SCARA**

***Rebel-S6-0.45***

***Rebel-S6-0.60***

***Rebel-S6-0.75***



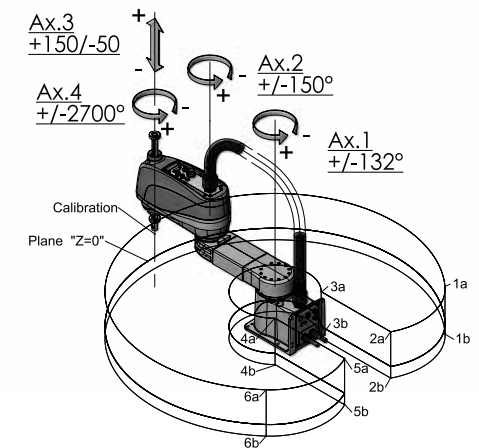


TECHNICAL SPECIFICATIONS

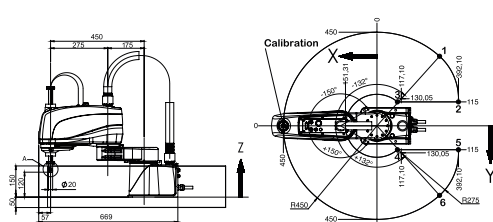
Model	Rebel-S6-0.45	Rebel-S6-0.60	Rebel-S6-0.75
<b>Robot Type</b>	SCARA	SCARA	SCARA
<b>Payload</b>	6 kg	6 kg	6 kg
<b>Horizontal Reach (Radius)</b>	450 mm	600 mm	750 mm
<b>Vertical Reach (Z-Stroke)</b>	200 mm	200 mm	200 mm
<b>Repeatability (X-Y)</b>	0.02 mm	0.02 mm	0.03 mm
<b>Mounting Position</b>	Base / Wall	Base / Wall	Base / Wall
<b>Internal User Wiring / Tumbing</b>	<b>Electrical</b>	25 pin-to-pin	25 pin-to-pin
	<b>Pneumatical</b>	1 x 4 mm & 2 x 6 mm	1 x 4 mm & 2 x 6 mm
<b>Available Protection Classes</b>	<b>IP Class</b>	IP10 (IP54 Option)	IP10 (IP54 Option)
	<b>ISO Class</b>	ISO	ISO
<b>Outer Diameter of Ball-Screw-Spline</b>	20 mm	20 mm	20 mm
<b>Inner Diameter of Ball-Screw-Spline</b>	14 mm	14 mm	14 mm
<b>Z Axis Down Force (long-time)</b>	160 N	160 N	160 N
<b>Robot Weight</b>	20 Kg	20 Kg	20 Kg
<b>Environmental Conditions</b>	<b>Temperature</b>	+5° - +45° C	+5° - +45° C
	<b>Relative humidity</b>	5 - 95%*	5 - 95%*
<b>Applicable Controller</b>	R1C-4	R1C-4	R1C-4

Suggested applications

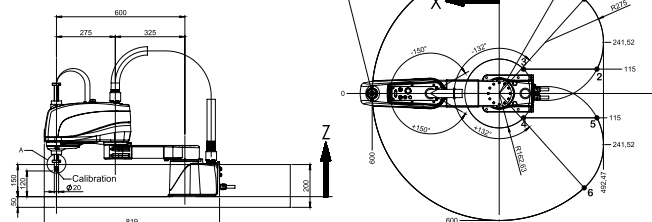
- Assembly
- Handling
- Machine Tending



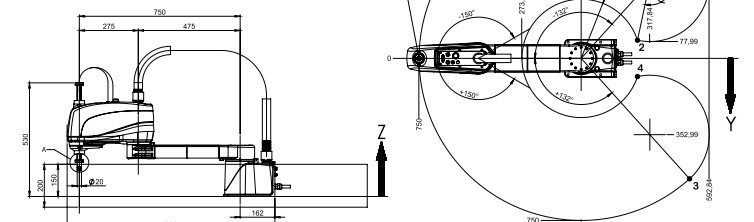
Rebel-S6-0.45



Rebel-S6-0.60



Rebel-S6-0.75



\*without condensation

# Rebel<sup>S</sup>

**Innovative modular  
& scalable SCARA**

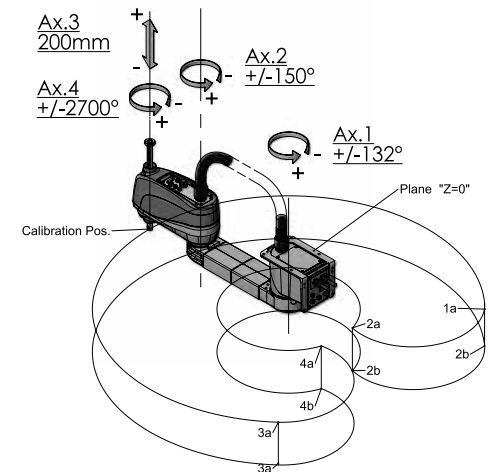
***Rebel-S6-0.60c***  
***Rebel-S6-0.75c***



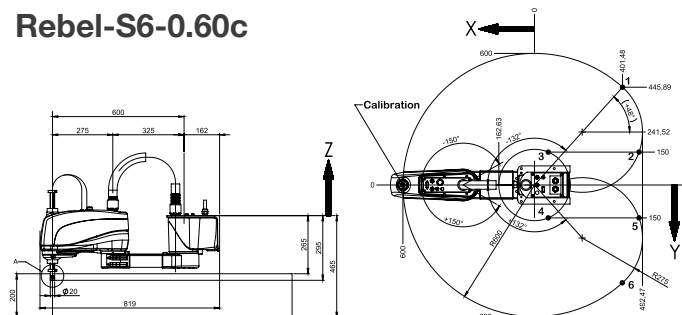
TECHNICAL SPECIFICATIONS

Model	Rebel-S6-0.60c	Rebel-S6-0.75c	Suggested applications	
Robot Type	SCARA	SCARA	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling</li> <li>• Machine Tending</li> </ul>	
Payload	6 kg	6 kg		
Horizontal Reach (Radius)	600 mm	750 mm		
Vertical Reach (Z-Stroke)	200 mm	200 mm		
Repeatability (X-Y)	0.02 mm	0.03 mm		
Mounting Position	Ceiling / Wall	Ceiling / Wall		
Internal User Wiring / Tumbing	<b>Electrical</b>	25 pin-to-pin		25 pin-to-pin
	<b>Pneumatical</b>	1 x 4 mm & 2 x 6 mm		1 x 4 mm & 2 x 6 mm
	<b>IP Class</b>	IP10 (IP54 Option)		IP10 (IP54 Option)
Available Protection Classes	<b>ISO Class</b>	ISO		ISO
	<b>Outer Diameter of Ball-Screw-Spline</b>	20 mm		20 mm
<b>Inner Diameter of Ball-Screw-Spline</b>	14 mm	14 mm		
<b>Z Axis Down Force (long-time)</b>	160 N	160 N		
<b>Robot Weight</b>	20 Kg	20 Kg		
Environmental Conditions	<b>Temperature</b>	+5° - +45° C	+5° - +45° C	
	<b>Relative humidity</b>	5 - 95%*	5 - 95%*	
Applicable Controller	R1C-4	R1C-4		

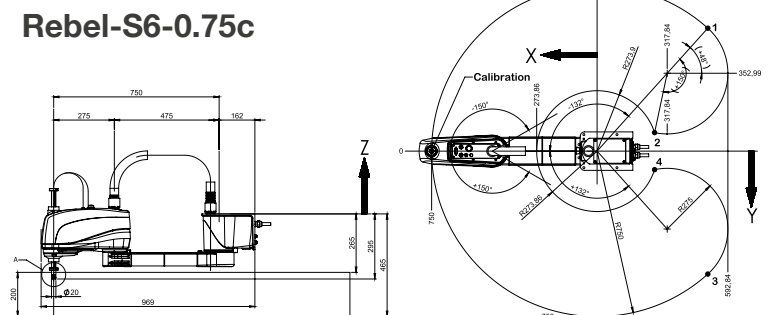
\*without condensation



Rebel-S6-0.60c



Rebel-S6-0.75c



# Racer

**Precision and speed  
meet beauty and passion**

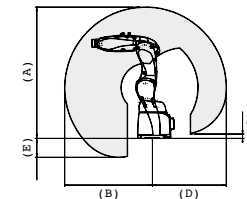
***Racer3***  
***Racer5-0.63***  
***Racer5-0.80***



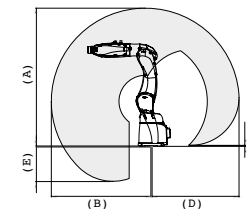
## TECHNICAL SPECIFICATIONS

Model	Racer3	Racer5-0.63	Racer5-0.80	Suggested applications	
Number of axes	6	6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Polishing / Deburring</li> </ul>	
Maximum wrist payload	3 kg	5 kg*	5 kg		
Additional load on forearm	-	-	-		
Maximum horizontal reach	630 mm	630 mm	809 mm		
Torque on axis 4	7.36 Nm	8.83 Nm	8.83 Nm		
Torque on axis 5	7.36 Nm	8.83 Nm	8.83 Nm		
Torque on axis 6	4.41 Nm	4.91 Nm	4.91 Nm		
Stroke (Speed)	<b>Axis 1</b>	+/- 170° (430 °/s)	+/- 170° (400°/s)		+/- 170° (360°/s)
	<b>Axis 2</b>	-95°/ +135° (450 °/s)	-95°/ +135° (360°/s)		-95°/ +135° (300°/s)
	<b>Axis 3</b>	-155° / +90° (500 °/s)	-155° / +90° (400°/s)	-155° / +90° (330°/s)	
	<b>Axis 4</b>	+/- 200° (600 °/s)	+/- 200° (500°/s)	+/- 210° (500°/s)	
	<b>Axis 5</b>	+/- 125° (600 °/s)	+/- 125° (500°/s)	+/- 125° (500°/s)	
	<b>Axis 6</b>	+/- 2700° (900 °/s)	+/- 2700° (800°/s)	+/- 2700° (800°/s)	
Repeatability	0.02 mm	0.03 mm	0.03 mm		
Tool coupling flange	ISO 9409 - 1 - A 25	ISO 9409 - 1 - A 25	ISO 9409 - 1 - A 25		
Robot weight	30 kg	30 kg	32 kg		
Protection class	IP54	IP54 (IP65 Option)	IP54 (IP65 Option)		
Mounting position	Floor / Ceiling / Wall	Floor / Ceiling / Wall**	Floor / Ceiling / Wall**		
Operating Areas	<b>A</b>	1081 mm	1081 mm	1124 mm	
	<b>B</b>	630 mm	630 mm	809 mm	
	<b>C</b>	37 mm	37 mm	8 mm	
	<b>D</b>	530 mm	530 mm	708 mm	
	<b>E</b>	136 mm	136 mm	286 mm	

**Racer3**  
**Racer5-0.63**



**Racer5-0.80**



\*For Pick&Place 6 kg with a limited stroke of the 5<sup>th</sup> axis

\*\* Allowable with payload limitations

# Racer

**Precision and speed  
meet beauty and passion**

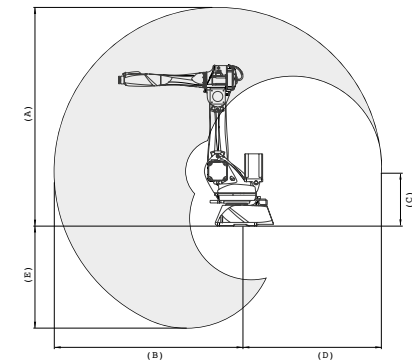
***Racer7-0.99***  
***Racer7-1.40***



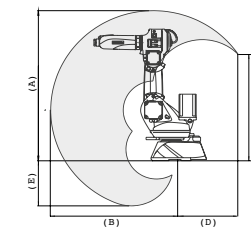
## TECHNICAL SPECIFICATIONS

Model		Racer7-0.99	Racer7-1.40	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Polishing / Deburring</li> </ul>
Maximum wrist payload		7 kg*	7 kg	
Additional load on forearm		10 kg	10 kg	
Maximum horizontal reach		999 mm	1436 mm	
Torque on axis 4		13 Nm	13 Nm	
Torque on axis 5		13 Nm	13 Nm	
Torque on axis 6		7.5 Nm	7.5 Nm	
Stroke (Speed)	Axis 1	+/- 165° (250°/s)	+/- 165° (220°/s)	
	Axis 2	-65° / +150° (250°/s)	-85° / +155° (250°/s)	
	Axis 3	-165° / -37° (300°/s)	0° / -168° (300°/s)	
	Axis 4	+/- 210° (550°/s)	+/- 210° (550°/s)	
	Axis 5	+/- 137° (550°/s)	+/- 135° (550°/s)	
	Axis 6	+/- 2700° (600°/s)	+/- 2700° (600°/s)	
Repeatability		0.05 mm	0.05 mm	
Tool coupling flange		ISO 9409 - 1 - A 40	ISO 9409 - 1 - A 40	
Robot weight		173 kg	180 kg	
Protection class		IP65	IP65	
Mounting position		Floor / Ceiling / Sloping / Wall	Floor / Ceiling / Sloping (45° max)	
Operating Areas	A	1279 mm	1716 mm	
	B	999 mm	1436 mm	
	C	904 mm	412 mm	
	D	554 mm	1130 mm	
	E	385 mm	801 mm	

Racer7-1.40

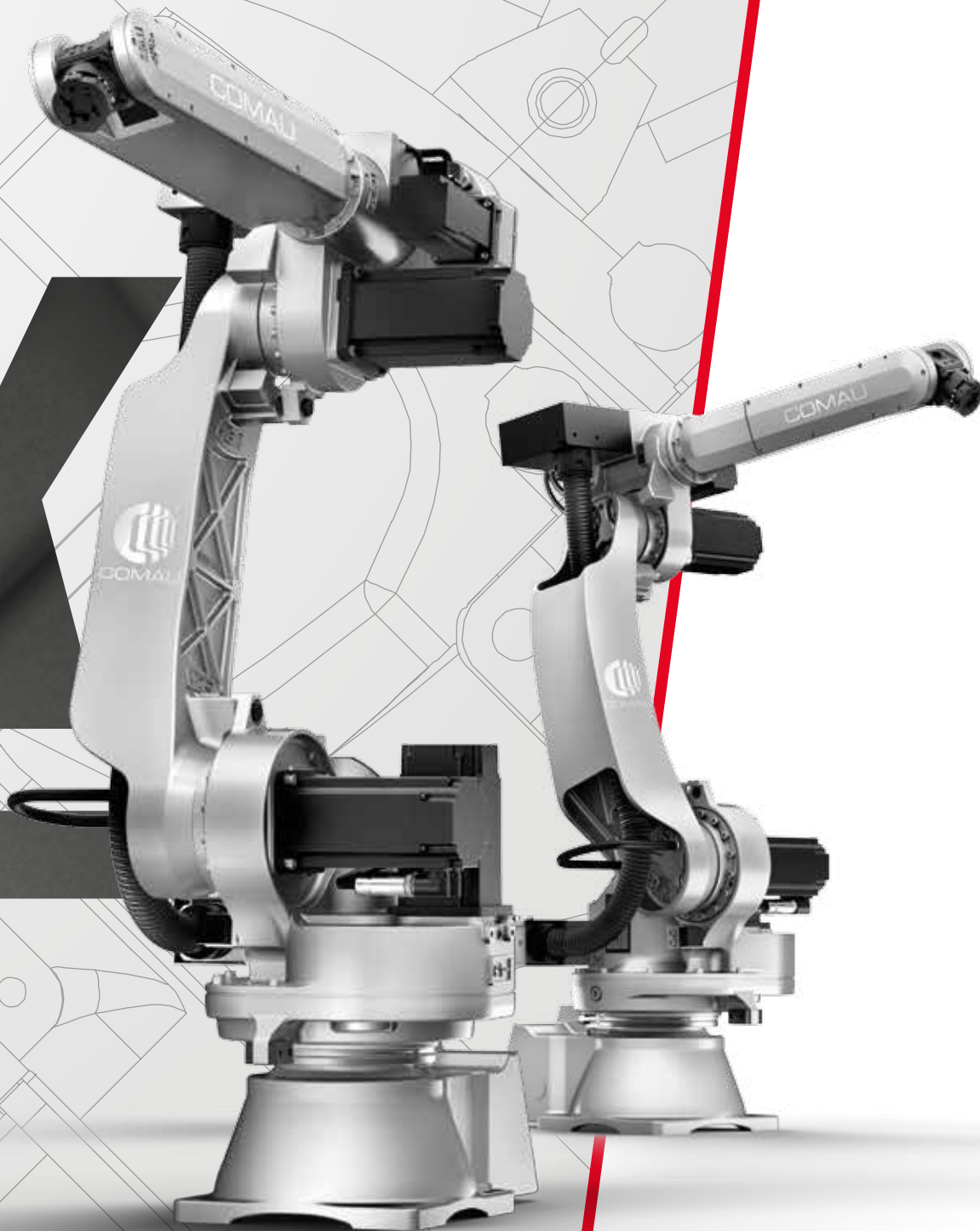


Racer7-0.99

\*For Pick&Place 10 kg with a limited stroke of the 5<sup>th</sup> axis

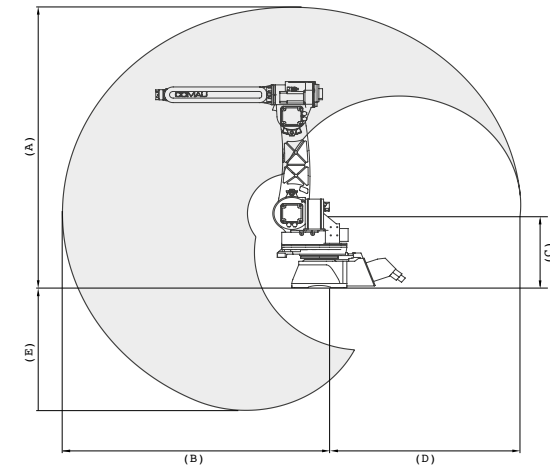
# SIX

**Precision and reliability**





Model	SIX 6 - 1.4		Suggested applications
Number of axes	6		<ul style="list-style-type: none"> <li>• Arc Welding</li> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Polishing / Deburring</li> </ul>
Maximum wrist payload	6 kg		
Additional load on forearm	10 kg		
Maximum horizontal reach	1400 mm		
Torque on axis 4	11.7 Nm		
Torque on axis 5	11.7 Nm		
Torque on axis 6	5.8 Nm		
Stroke (Speed)	Axis 1	+/- 170° (140°/s)	
	Axis 2	+155° / -85° (160°/s)	
	Axis 3	0° / -170° (170°/s)	
	Axis 4	+/- 210° (450°/s)	
	Axis 5	+/- 130° (375°/s)	
	Axis 6	+/- 2700° (550°/s)	
Repeatability	0.05 mm		
Tool coupling flange	ISO 9409 - 1 - 40 - 4 - M6		
Robot weight	160 kg		
Protection class	IP65		
Mounting position	Floor / Ceiling / Sloping (45° max)		
Operating Areas	A	1700 mm	
	B	1400 mm	
	C	428 mm	
	D	1095 mm	
	E	745 mm	

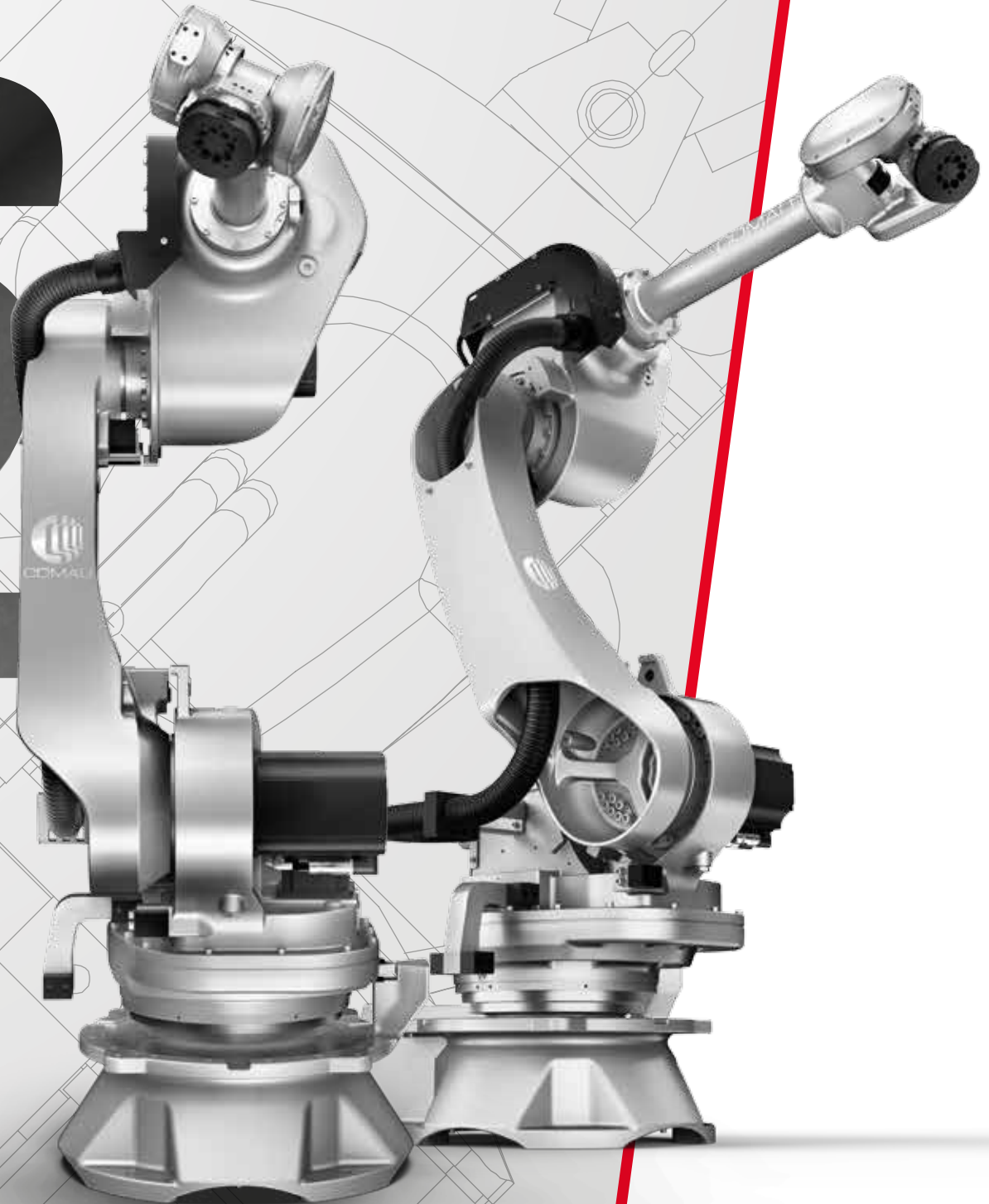


# M/S

**Robust and versatile  
small payload robots**

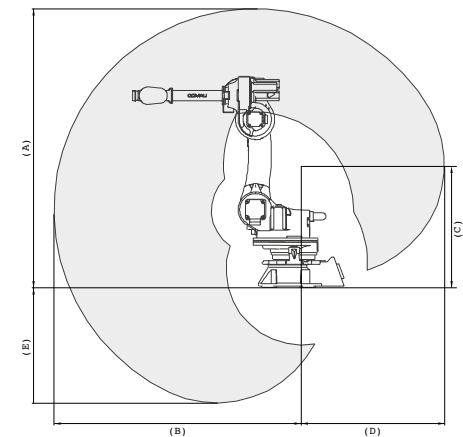
**NS 12 - 1.85**

**NS 16 - 1.65**



## TECHNICAL SPECIFICATIONS

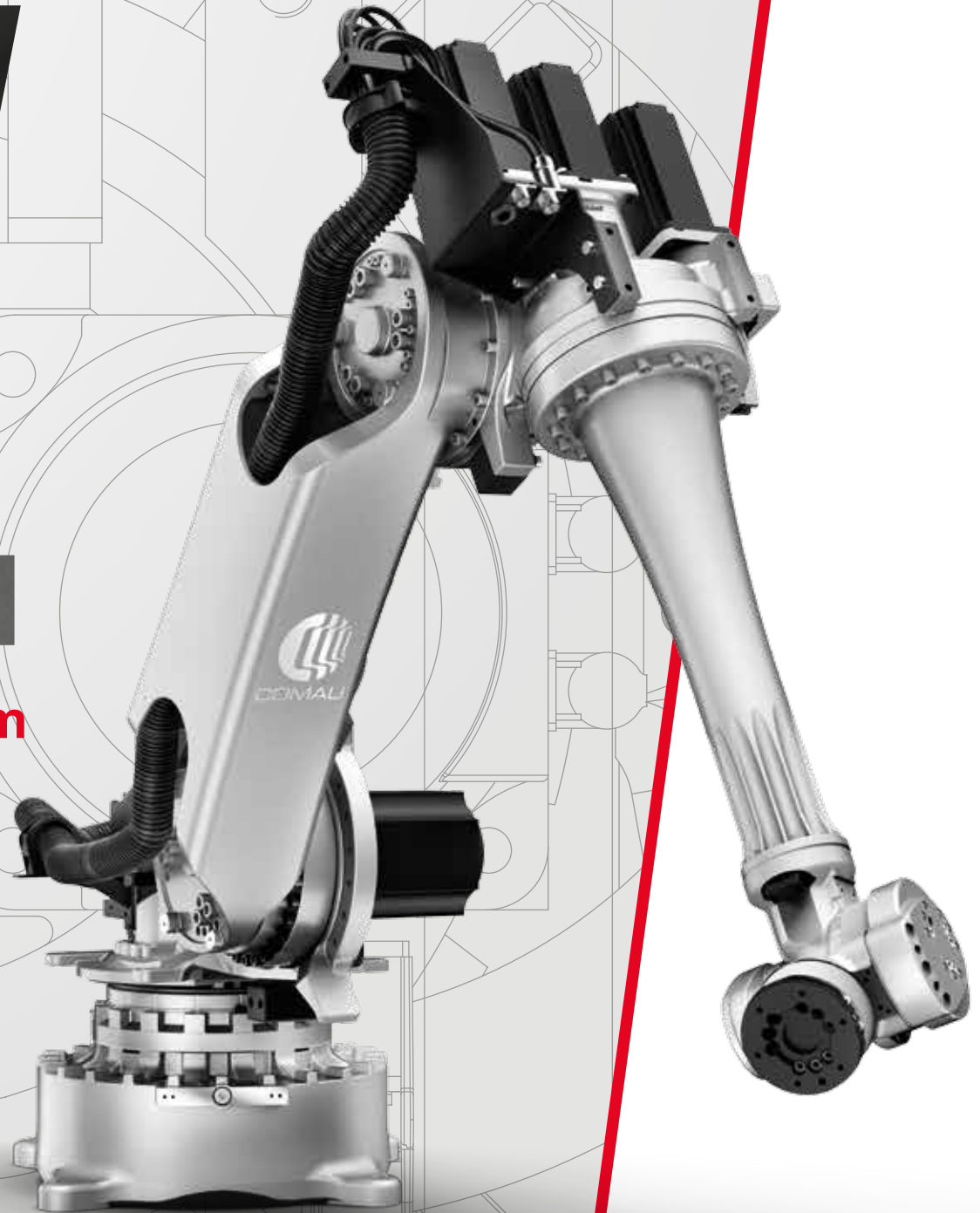
Model		NS 12 - 1.85	NS 16 - 1.65	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Arc Welding</li> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Foundry</li> <li>• Handling / Packaging</li> <li>• Laser Welding / Cutting</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Process Machining</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload		12 kg	16 kg	
Additional load on forearm		10 kg	10 kg	
Maximum horizontal reach		1850 mm	1650 mm	
Torque on axis 4		39 Nm	41 Nm	
Torque on axis 5		39 Nm	41 Nm	
Torque on axis 6		20 Nm	23 Nm	
Stroke (Speed)	Axis 1	+/- 180° (155°/s)	+/- 180° (155°/s)	
	Axis 2	-60° / +155° (155°/s)	-60° / +155° (155°/s)	
	Axis 3	-170° / + 110° (170°/s)	-170° / +110° (170°/s)	
	Axis 4	+/- 2700° (360°/s)	+/- 2700° (360°/s)	
	Axis 5	+/- 120° (350°/s)	+/- 120° (350°/s)	
	Axis 6	+/- 2700° (550°/s)	+/- 2700° (550°/s)	
Repeatability		0.05 mm	0.05 mm	
Tool coupling flange		ISO 9409 - 1 - A63	ISO 9409 - 1 - A63	
Robot weight		335 kg	335 kg	
Protection class		IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version	
Mounting position		Floor / Ceiling / Sloping (45° max)	Floor / Ceiling / Sloping (45° max)	
Operating Areas	A	2150 mm	1951 mm	
	B	1850 mm	1651 mm	
	C	950 mm	950 mm	
	D	1157 mm	957 mm	
	E	885 mm	685 mm	



# WJ

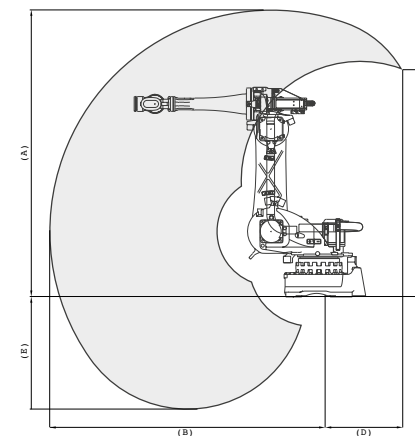
**A perfect solution for medium  
payload applications**

***NJ 16 - 3.1***  
***NJ 40 - 2.5***  
***NJ 60 - 2.2***



## TECHNICAL SPECIFICATIONS

Model	NJ 16 - 3.1		NJ 40 - 2.5		NJ 60 - 2.2		Suggested applications
Number of axes	6		6		6		<ul style="list-style-type: none"> <li>• Arc Welding</li> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Handling / Packaging</li> <li>• Laser Welding / Cutting</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Press to Press</li> <li>• Process Machining</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload	16 kg		40 kg		60 kg		
Additional load on forearm	12 kg		35 kg		20 kg		
Maximum horizontal reach	3108 mm		2503 mm		2258 mm		
Torque on axis 4	43 Nm		167 Nm		221 Nm		
Torque on axis 5	43 Nm		167 Nm		221 Nm		
Torque on axis 6	23 Nm		98 Nm		118 Nm		
Stroke (Speed)	Axis 1	+/- 180° (170°/s)	+/- 180° (170°/s)	+/- 180° (170°/s)	+/- 180° (170°/s)	+/- 180° (170°/s)	
	Axis 2	-60° / +125° (150°/s)	-60° / +125° (150°/s)	-60° / +125° (150°/s)	-60° / +125° (150°/s)	-60° / +125° (150°/s)	
	Axis 3	0° / -170° (165°/s)	0° / -165° (165°/s)	0° / -165° (165°/s)	0° / -165° (165°/s)	0° / -165° (165°/s)	
	Axis 4	+/- 2700° (265°/s)	+/- 2700° (265°/s)	+/- 2700° (265°/s)	+/- 2700° (265°/s)	+/- 2700° (265°/s)	
	Axis 5	+/- 120° (250°/s)	+/- 123° (250°/s)	+/- 123° (250°/s)	+/- 123° (250°/s)	+/- 123° (250°/s)	
	Axis 6	+/- 2700° (340°/s)	+/- 2700° (340°/s)	+/- 2700° (340°/s)	+/- 2700° (340°/s)	+/- 2700° (340°/s)	
Repeatability	0.10 mm		0.06 mm		0.06 mm		
Tool coupling flange	ISO 9409 - 1 - A63		ISO 9409 - 1 - A100		ISO 9409 - 1 - A100		
Robot weight	680 kg		655 kg		645 kg		
Protection class	IP65 / IP67 Foundry Version		IP65 / IP67 Foundry Version		IP65 / IP67 Foundry Version		
Mounting position	Floor / Ceiling / Sloping (max 45°)		Floor / Ceiling / Sloping (max 45°)		Floor / Ceiling / Sloping (max 45°)		
Operating Areas	A	3258 mm		2653 mm		2408 mm	
	B	3108 mm		2503 mm		2258 mm	
	C	2576 mm		2165 mm		1918 mm	
	D	1088 mm		720 mm		686 mm	
	E	1625 mm		1187 mm		941 mm	



# WJ

**A light kinematic structure  
for better performance**

***NJ 110 - 3.0***

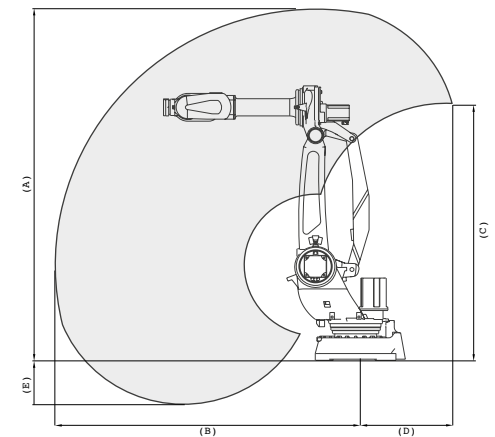
***NJ 130 - 2.0***

***NJ 130 - 2.6***



## TECHNICAL SPECIFICATIONS

Model		NJ 110 - 3.0	NJ 130 - 2.0	NJ 130 - 2.6	Suggested applications
Number of axes		6	6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Handling / Packaging</li> <li>• Laser Welding Cutting</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Press to Press</li> <li>• Process / Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload		110 kg	130 kg	130 kg	
Additional load on forearm		50 kg	50 kg	50 kg	
Maximum horizontal reach		2980 mm	2050 mm	2616 mm	
Torque on axis 4		638 Nm	638 Nm	638 Nm	
Torque on axis 5		638 Nm	638 Nm	638 Nm	
Torque on axis 6		314 Nm	314 Nm	314 Nm	
Stroke (Speed)	Axis 1	+/- 180° (110°/s)	+/- 180° (155°/s)	+/- 180° (110°/s)	
	Axis 2	+95° / -75° (110°/s)	-60° / +125° (105°/s)	-75° / +95° (110°/s)	
	Axis 3	-10° / -256° (110°/s)	0° / -165° (150°/s)	-10° / -256° (110°/s)	
	Axis 4	+/- 280° (190°/s)	+/- 280° (200°/s)	+/- 280° (190°/s)	
	Axis 5	+/- 120° (190°/s)	+/- 120° (190°/s)	+/- 120° (190°/s)	
	Axis 6	+/- 2700° (230°/s)	+/- 2700° (230°/s)	+/- 2700° (230°/s)	
Repeatability		0.07 mm	0.07 mm	0.07 mm	
Tool coupling flange		ISO 9409 - 1 - A 125	ISO 9409 - 1 - A 125	ISO 9409 - 1 - A 125	
Robot weight		1070 kg	740 kg	1050 kg	
Protection class		IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version	
Mounting position		Floor / Ceiling	Floor / Ceiling / Sloping	Floor / Ceiling	
Operating Areas	A	3460 mm	2200 mm	3097 mm	
	B	2980 mm	2050 mm	2616 mm	
	C	2642 mm	1690 mm	2261 mm	
	D	757 mm	720 mm	824 mm	
	E	783 mm	733 mm	404 mm	

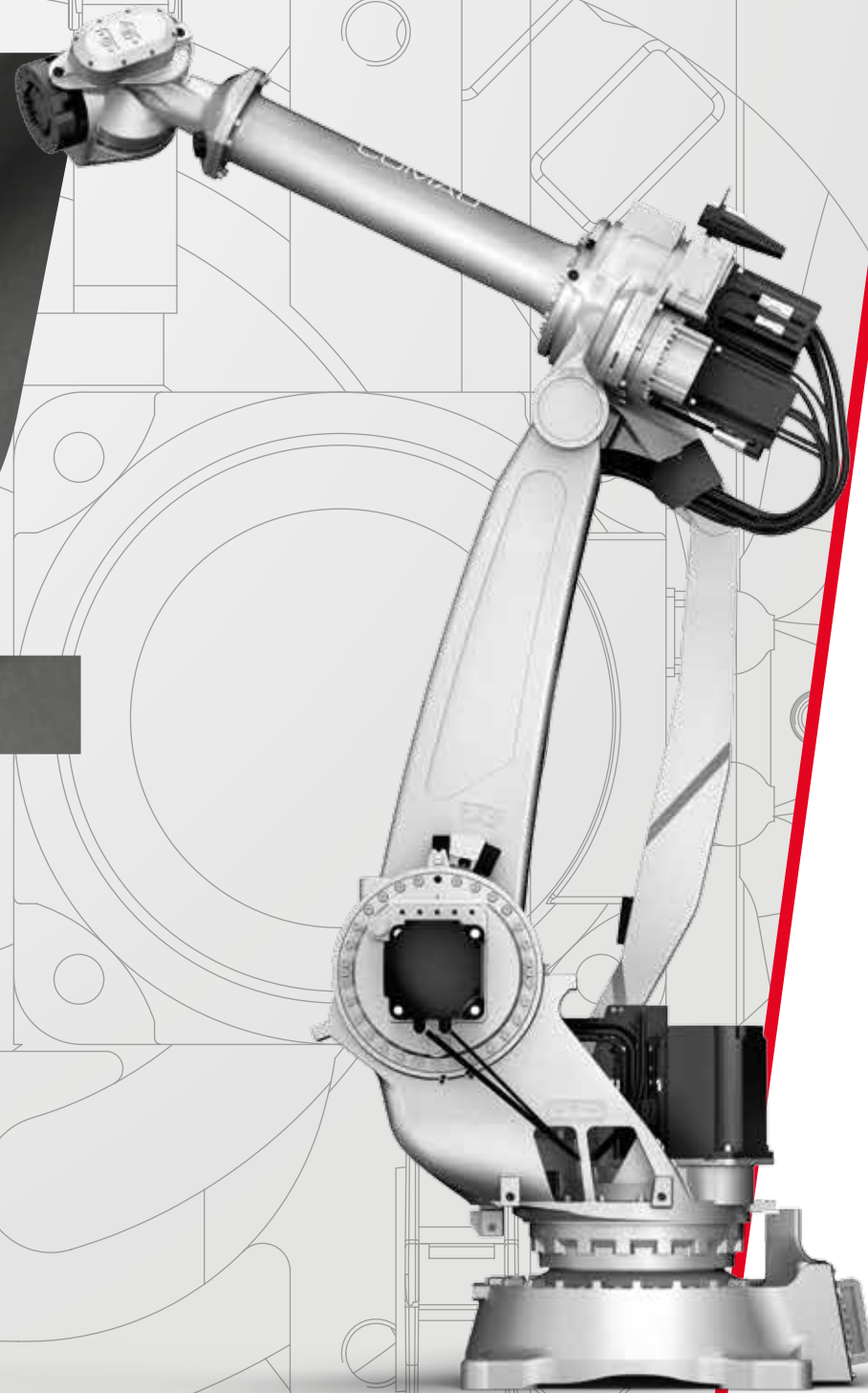


# WJ

**Compact design for a  
wide range of applications**

***NJ 165 - 3.0***

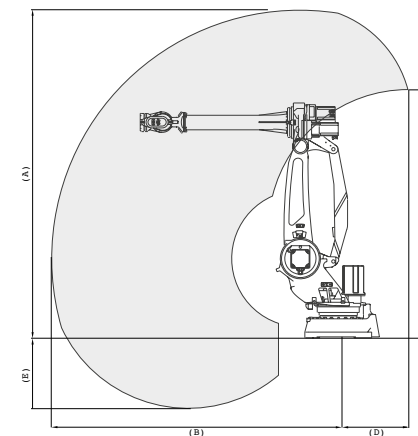
***NJ 220 - 2.7***





## TECHNICAL SPECIFICATIONS

Model		NJ 165 - 3.0	NJ 220 - 2.7	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Handling / Packaging</li> <li>• Laser Welding Cutting</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Press to Press</li> <li>• Process Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload		165 kg	220 kg	
Additional load on forearm		50 kg	50 kg	
Maximum horizontal reach		3000 mm	2701 mm	
Torque on axis 4		1230 Nm	1230 Nm	
Torque on axis 5		1230 Nm	1230 Nm	
Torque on axis 6		712 Nm	712 Nm	
Stroke (Speed)	Axis 1	+/- 180° (100°/s)	+/- 180° (100°/s)	
	Axis 2	-95° / +180° (90°/s)	-95° / +75° (90°/s)	
	Axis 3	-10° / -256° (110°/s)	-10° / -256° (110°/s)	
	Axis 4	+/- 2700° (130°/s)	+/- 2700° (130°/s)	
	Axis 5	+/- 125° (130°/s)	+/- 125° (130°/s)	
	Axis 6	+/- 2700° (195°/s)	+/- 2700° (195°/s)	
Repeatability		0.09 mm	0.08 mm	
Tool coupling flange		ISO 9409 - 1 - A 160	ISO 9409 - 1 - A 160	
Robot weight		1240 kg	1220 kg	
Protection class		IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version	
Mounting position		Floor / Ceiling	Floor / Ceiling	
Operating Areas	A	3430 mm	3131 mm	
	B	3000 mm	2701 mm	
	C	2600 mm	2286 mm	
	D	730 mm	786 mm	
	E	738 mm	425 mm	



# WJ

**Robust mechanics and the  
best-in-class payload / reach ratio**

***NJ 290 - 3.0***

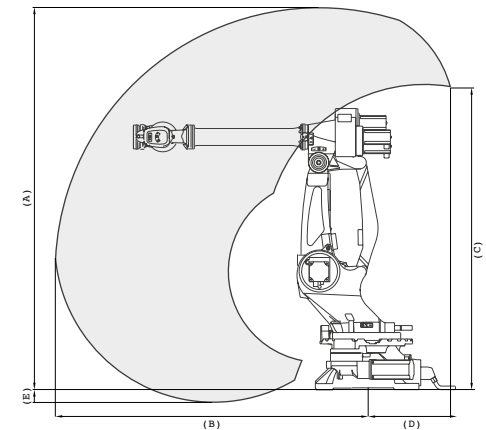
***NJ 370 - 2.7***

***NJ 370 - 3.0***



## TECHNICAL SPECIFICATIONS

Model	NJ 290 - 3.0		NJ 370 - 2.7		NJ 370 - 3.0		Suggested applications
Number of axes	6		6		6		<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Foundry</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Process Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload	290 kg		370 kg		370 kg		
Additional load on forearm	50 kg		50 kg		50 kg		
Maximum horizontal reach	2997 mm		2703 mm		2997 mm		
Torque on axis 4	1668 Nm		2109 Nm		2109 Nm		
Torque on axis 5	1668 Nm		2109 Nm		2109 Nm		
Torque on axis 6	1177 Nm		1177 Nm		1569 Nm		
Stroke (Speed)	Axis 1	+/- 180° (90°/s)	+/- 180° (85°/s)	+/- 180° (85°/s)	+/- 180° (85°/s)		
	Axis 2	+/- 75° (90°/s)	+75° / - 60° (85°/s)	+75° / - 60° (85°/s)	+75° / - 60° (85°/s)		
	Axis 3	0° / -220° (90°/s)	-10° / - 231° (85°/s)	-10° / - 231° (85°/s)	-10° / - 231° (85°/s)		
	Axis 4	+/- 2700° (105°/s)	+/- 2700° (90°/s)	+/- 2700° (90°/s)	+/- 2700° (90°/s)		
	Axis 5	+/- 125° (105°/s)	+/- 125° (90°/s)	+/- 125° (90°/s)	+/- 125° (90°/s)		
	Axis 6	+/- 2700° (160°/s)	+/- 2700° (120°/s)	+/- 2700° (120°/s)	+/- 2700° (120°/s)		
Repeatability	0.15 mm		0.15 mm		0.15 mm		
Tool coupling flange	ISO 9409 - 1 - 200 - 6 - M12		ISO 9409 - 1 - 200 - 6 - M12		ISO 9409 - 1 - 200 - 6 - M12		
Robot weight	2150 kg		2100 kg		2450 kg		
Protection class	IP65 / IP67 Foundry Version		IP65 / IP67 Foundry Version		IP65 / IP67 Foundry Version		
Mounting position	Floor		Floor		Floor		
Operating Areas	A	3680 mm		3680 mm		3680 mm	
	B	2997 mm		2997 mm		2997 mm	
	C	3195 mm		3195 mm		3195 mm	
	D	433 mm		433 mm		433 mm	
	E	-118 mm		-118 mm		-118 mm	



# WJ

**High payload models for the  
most demanding applications**

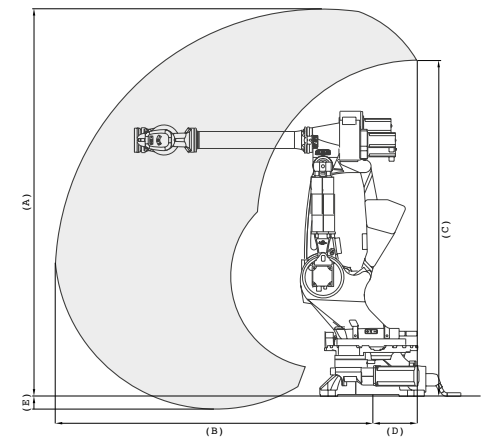
***NJ 420 - 3.0***

***NJ 450 - 2.7***



## TECHNICAL SPECIFICATIONS

Model	NJ 420 - 3.0	NJ 450 - 2.7	Suggested applications	
Number of axes	6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Foundry</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Process Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>	
Maximum wrist payload	420 kg	450 kg		
Additional load on forearm	50 kg	50 kg		
Maximum horizontal reach	2997 mm	2703 mm		
Torque on axis 4	2550 Nm	2550 Nm		
Torque on axis 5	2550 Nm	2550 Nm		
Torque on axis 6	1569 Nm	1569 Nm		
Stroke (Speed)	<b>Axis 1</b>	+/- 180° (85°/s)		+/- 180° (85°/s)
	<b>Axis 2</b>	+75° / -60° (85°/s)		+75° / -60° (85°/s)
	<b>Axis 3</b>	-10° / -231° (85°/s)		-10° / -231° (85°/s)
	<b>Axis 4</b>	+/- 2700° (90°/s)		+/- 2700° (90°/s)
	<b>Axis 5</b>	+/- 125° (90°/s)		+/- 125° (90°/s)
	<b>Axis 6</b>	+/- 2700° (120°/s)		+/- 2700° (120°/s)
Repeatability	0.15 mm	0.15 mm		
Tool coupling flange	ISO 9409 - 1 - 200 - 6 - M12	ISO 9409 - 1 - 200 - 6 - M12		
Robot weight	2450 kg	2400 kg		
Protection class	IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version		
Mounting position	Floor	Floor		
Operating Areas	<b>A</b>	3680 mm	3292 mm	
	<b>B</b>	2997 mm	2703 mm	
	<b>C</b>	3195 mm	2895 mm	
	<b>D</b>	433 mm	486 mm	
	<b>E</b>	-118 mm	181 mm	

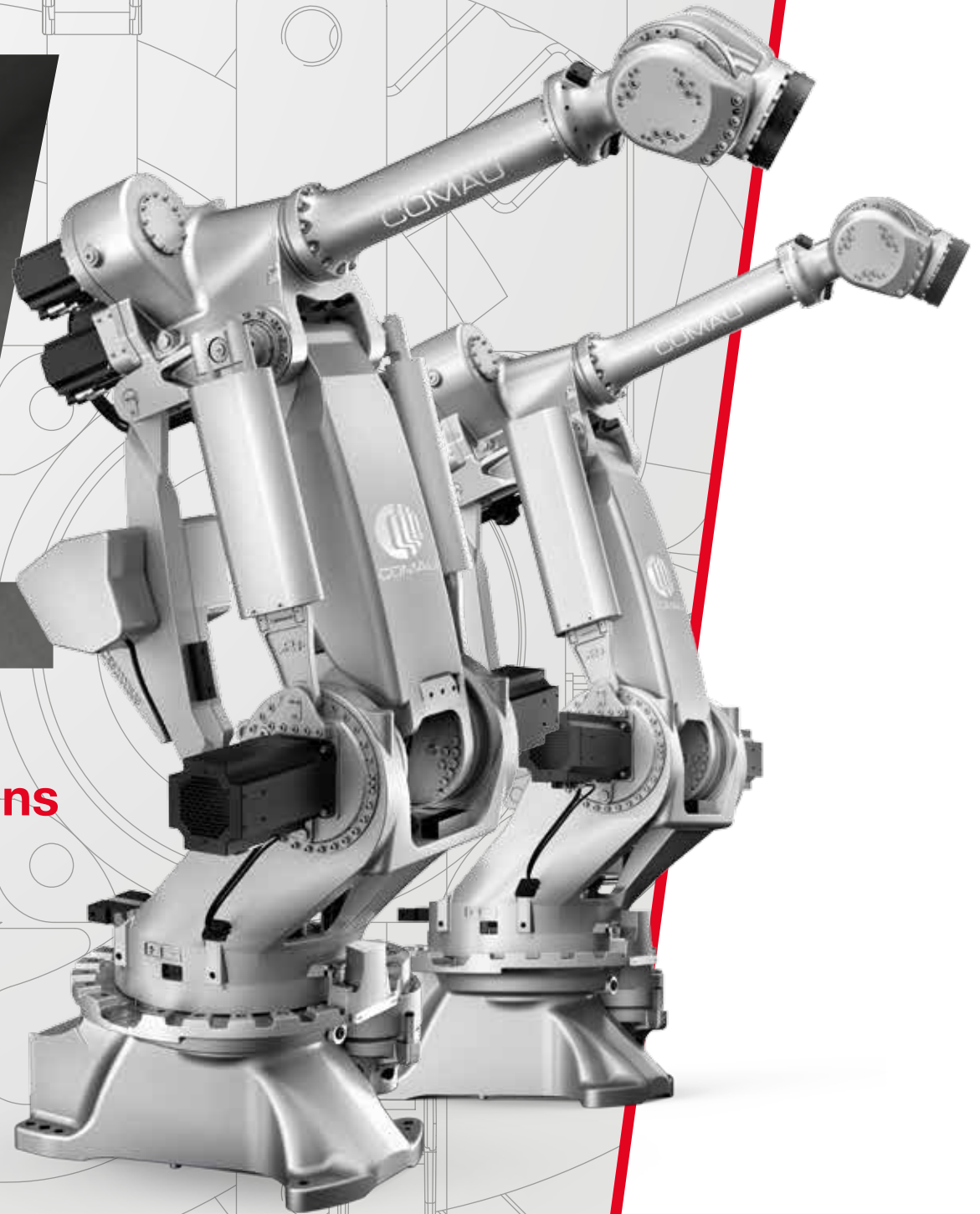


# WJ

**Strongest models for the  
most demanding applications**

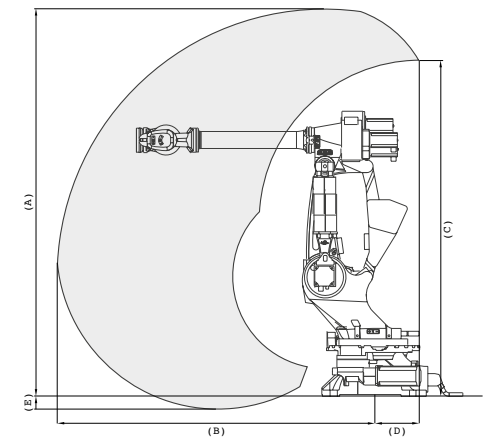
***NJ 500 - 2.7***

***NJ 650 - 2.7***



## TECHNICAL SPECIFICATIONS

Model		NJ 500 - 2.7	NJ 650 - 2.7	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Foundry</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Process Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload		500 kg	650 kg	
Additional load on forearm		50 kg	50 kg	
Maximum horizontal reach		2703 mm	2703 mm	
Torque on axis 4		2550 Nm	3060 Nm	
Torque on axis 5		2550 Nm	3060 Nm	
Torque on axis 6		1569 Nm	1766 Nm	
Stroke (Speed)	Axis 1	+/- 180° (85°/s)	+/- 180° (75°/s)	
	Axis 2	+75° / -60° (85°/s)	-60° / +75° (75°/s)	
	Axis 3	-10° / -231° (85°/s)	-231° / -10° (75°/s)	
	Axis 4	+/- 2700° (90°/s)	+/- 2700° (90°/s)	
	Axis 5	+/- 125° (90°/s)	+/- 125° (90°/s)	
	Axis 6	+/- 2700° (120°/s)	+/- 2700° (120°/s)	
Repeatability		0.15 mm	0.15 mm	
Tool coupling flange		ISO 9409 - 1 - 200 - 6 - M12	ISO 9409 - 1 - 200 - 6 - M12	
Robot weight		2400 kg	2450 kg	
Protection class		IP65 / IP67 Foundry Version	IP44 / IP65 Wrist	
Mounting position		Floor	Floor	
Operating Areas	A	3392 mm	3392 mm	
	B	2703 mm	2703 mm	
	C	2895 mm	2895 mm	
	D	486 mm	486 mm	
	E	181 mm	181 mm	



# PAL

**Fast and robust  
palletizing robots**

***PAL 180 - 3.1***

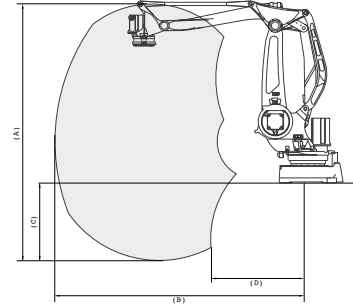
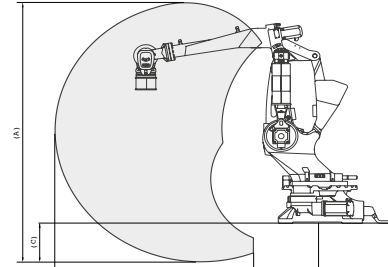
***PAL 260 - 3.1***

***PAL 470 - 3.1***





## TECHNICAL SPECIFICATIONS

Model	PAL 180 - 3.1		PAL 260 - 3.1		PAL 470 - 3.1		Suggested applications
Number of axes	4		4		5		<ul style="list-style-type: none"> <li>• Palletizing</li> <li>• Handling</li> </ul>
Maximum wrist payload	180 kg		260 kg		470 kg		
Additional load on forearm	25 kg		50 kg		25 kg		
Maximum horizontal reach	3100 mm		3100 mm		3100 mm		
Stroke (Speed)	Axis 1	+/- 180° (120°/s)	+/- 180° (120°/s)	+/- 180° (120°/s)	+/- 180° (85°/s)		 <p><b>PAL 180 / 260</b></p>
	Axis 2	-49° / + 95° (100°/s)	-49° / + 95° (90°/s)	-49° / + 95° (90°/s)	-60° / + 75° (85°/s)		
	Axis 3	-68° / - 208° (110°/s)	-68° / - 208° (110°/s)	-68° / - 208° (110°/s)	-45° / - 205° (85°/s)		
	Axis 5	-	-	-	Axis bound to balance		
	Axis 6	+/- 2700° (280°/s)	+/- 2700° (260°/s)	+/- 2700° (260°/s)	+/- 2700° (180°/s)		
Repeatability	0.10 mm		0.10 mm		0.15 mm		
Tool coupling flange	ISO 9409 - 2 - 200 - 6 - M12		ISO 9409 - 2 - 200 - 6 - M12		ISO 9409 - 1 - A 200		
Robot weight	1213 kg		1213 kg		2310 kg		
Protection class	IP65		IP65		IP65		
Mounting position	Floor / Shelf		Floor / Shelf		Floor / Shelf		
Operating Areas	A	3147 mm	3147 mm	3147 mm	3522 mm		 <p><b>PAL 470</b></p>
	B	3099 mm	3099 mm	3099 mm	3050 mm		
	C	952 mm	952 mm	952 mm	480 mm		
	D	1182 mm	1182 mm	1182 mm	793 mm		

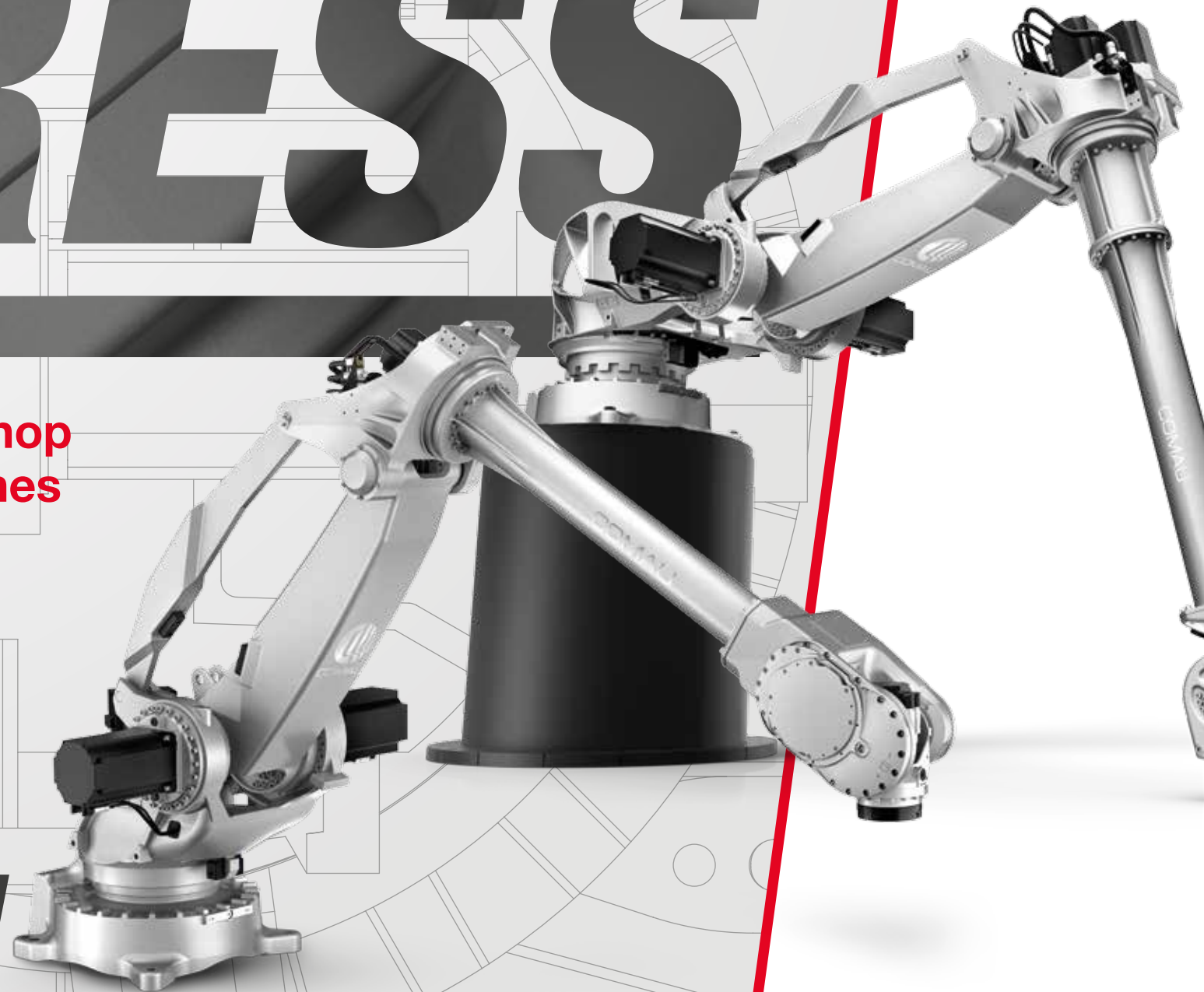


# **PRESSES**

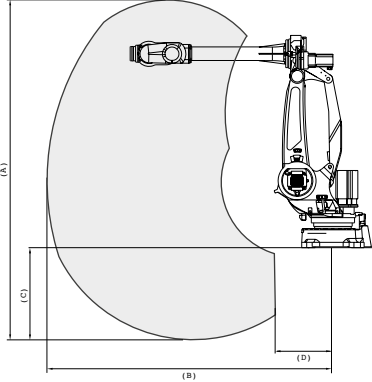
**Dedicated press-shop  
automation machines**

***NJ 100 - 3.2***

***NJ 130 - 3.7 SH***



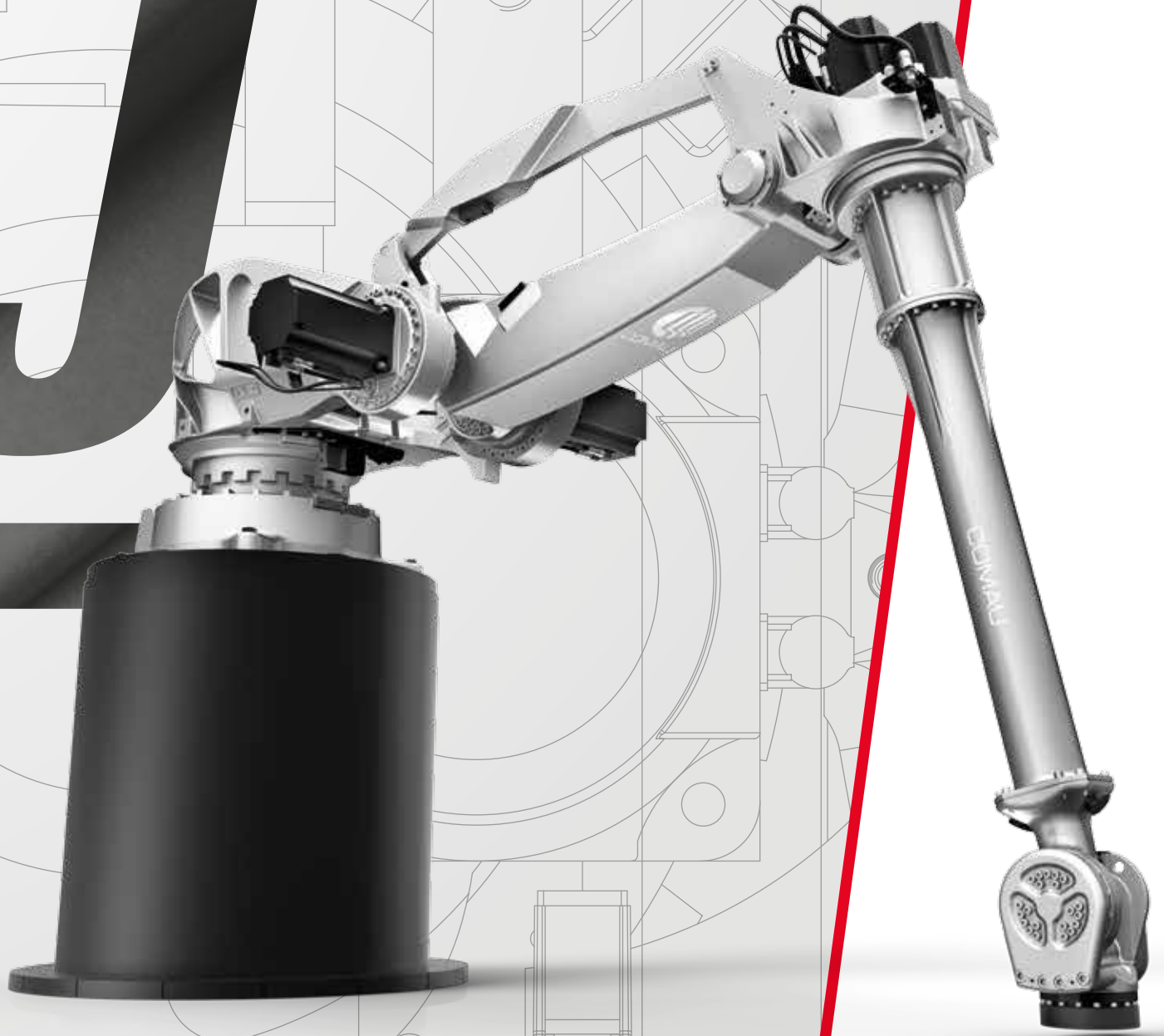
## TECHNICAL SPECIFICATIONS

Model		NJ 100 - 3.2 PRESS		NJ 130 - 3.7 SH PRESS		Suggested applications	
Number of axes		6		6		<ul style="list-style-type: none"> <li>• Handling / Packaging</li> <li>• Press to Press</li> </ul>	
Maximum wrist payload		100 kg		130 kg			
Additional load on forearm		50 kg		15 kg		<b>NJ 100 - 3.2</b> 	
Maximum horizontal reach		3209 mm		3741 mm			
Torque on axis 4		638 Nm		1225 Nm			
Torque on axis 5		638 Nm		1225 Nm			
Torque on axis 6		280 Nm		648 Nm			
Stroke (Speed)		<b>Axis 1</b>	+/- 180° (120°/s)	+/- 180° (120°/s)			
		<b>Axis 2</b>	-49° / +95° (108°/s)	-60° / +170° (95°/s)			
		<b>Axis 3</b>	-222° / -68° (120°/s)	-292° / -21° (112°/s)			
		<b>Axis 4</b>	+/- 200° (190°/s)	+/- 2700° (180°/s)			
		<b>Axis 5</b>	+/- 120° (190°/s)	+/- 125° (175°/s)			
		<b>Axis 6</b>	+/- 200° (250°/275°/s)	+/- 2700° (250°/s)			
Repeatability		0.17 mm		0.20 mm		<b>NJ 130 - 3.7 SH</b> 	
Tool coupling flange		ISO 9409 - 1 - A 125		ISO 9409 - 1 - A 160			
Robot weight		1250 kg		1520 kg			
Protection class		IP44 / IP65 Wrist		IP44 / IP65 Wrist			
Mounting position		Floor		Shelf			
Operating Areas		<b>A</b>	2780 mm	3391 mm			
		<b>B</b>	3209 mm	3741 mm			
		<b>C</b>	2376 mm	712 mm			
		<b>D</b>	962 mm	2386 mm			
		<b>E</b>	1035 mm	850 mm			

# WJ

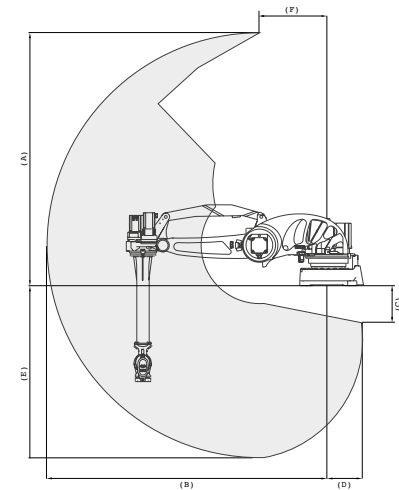
**Shelf robots  
for wider  
operation areas**

***NJ 165 - 3.4 SH***  
***NJ 210 - 3.1 SH***



## TECHNICAL SPECIFICATIONS

Model		NJ 165 - 3.4 SH	NJ 210 - 3.1 SH	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Cosmetic Sealing</li> <li>• Dispensing</li> <li>• Handling / Packaging</li> <li>• Laser Welding / Cutting</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Plasma Cutting / Water Jet</li> <li>• Polishing / Deburring</li> <li>• Press Brake Bending</li> <li>• Press to Press</li> <li>• Process Machining</li> <li>• Spot Welding</li> <li>• Wood / Glass Machining</li> </ul>
Maximum wrist payload		165 kg	210 kg	
Additional load on forearm		25 kg	25 kg	
Maximum horizontal reach		3450 mm	3151 mm	
Torque on axis 4		1089 Nm	1177 Nm	
Torque on axis 5		804 Nm	1177 Nm	
Torque on axis 6		411 Nm	677 Nm	
Stroke (Speed)	Axis 1	+/- 180° (85°/s)	+/- 180° (110°/s)	
	Axis 2	-50° / +170° (90°/s)	-50° / +170° (90°/s)	
	Axis 3	-18,8° / -288° (110°/s)	-21,3° / -288° (110°/s)	
	Axis 4	+/- 2700° (130°/s)	+/- 2700° (130°/s)	
	Axis 5	+/- 125° (130°/s)	+/- 125° (130°/s)	
	Axis 6	+/- 2700° (195°/s)	+/- 2700° (195°/s)	
Repeatability		0.10 mm	0.10 mm	
Tool coupling flange		ISO 9409 - 1 - A 160 / 200	ISO 9409 - 1 - A 160	
Robot weight		1430 kg	1415 kg	
Protection class		IP65 / IP67 Foundry Version	IP65 / IP67 Foundry Version	
Mounting position		Shelf	Shelf	
Operating Areas	A	3100 mm	2801 mm	
	B	3450 mm	3151 mm	
	C	449 mm	547 mm	
	D	397 mm	93 mm	
	E	2100 mm	1800 mm	
	F	850 mm	850 mm	

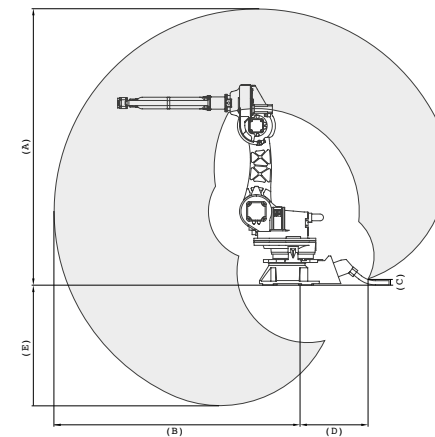


A detailed view of a robotic welding arm, the ARC4 model, featuring a hollow wrist design. The arm is silver and black, with a gold-colored section near the end effector. It is shown in a dynamic pose, with a red laser line indicating its reach. The background is a white technical drawing of a mechanical part. The text 'ARC4' is prominently displayed in large, bold, black letters across the center of the image.

# ARC4

**Hollow Wrist arc welding robot**

Model		Arc 4	Suggested applications
Number of axes		6	• Arc Welding
Maximum wrist payload		5 kg	
Additional load on forearm		10 kg	
Maximum horizontal reach		1951 mm	
Torque on axis 4		14 Nm	
Torque on axis 5		14 Nm	
Torque on axis 6		4.9 Nm	
Stroke (Speed)	Axis 1	+/- 180° (170°/s)	
	Axis 2	-60° / +155° (175°/s)	
	Axis 3	-170° / +110° (185°/s)	
	Axis 4	+/- 185° (360°/s)	
	Axis 5	+/- 123° (375°/s)	
	Axis 6	+/- 270° (550°/s)	
Repeatability		0.05 mm	
Tool coupling flange		ISO 9409 - 1 - 63 - 4 - M6	
Robot weight		375 kg	
Protection class		IP65	
Mounting position		Floor / Ceiling / Sloped (45° max)	
Operating Areas	A	2251 mm	
	B	1951 mm	
	C	49 mm	
	D	1257 mm	
	E	986 mm	



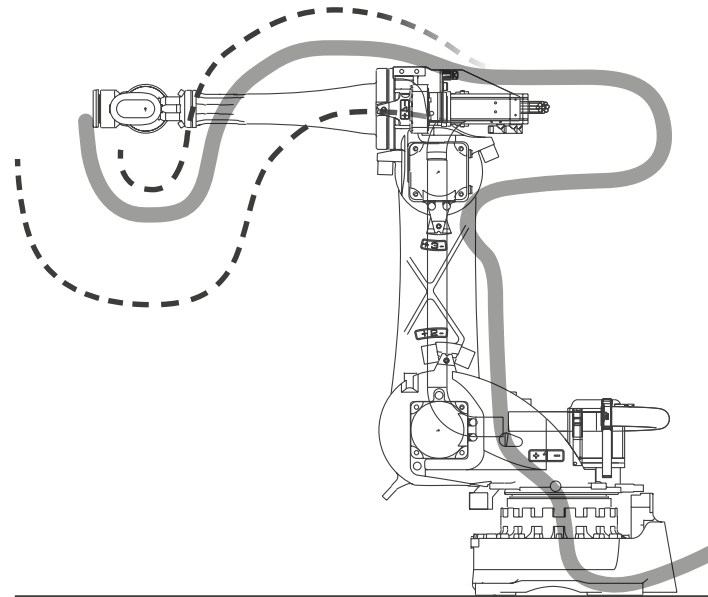
# WJ4

## Best Hollow Wrist in the market

- **100% INTEGRATED DRESSING**
- **COMPACT DIMENSIONS:** no need for external cables
- **LOW MAINTENANCE COSTS:** integrated dressing means the reduction of cable failures
- **HIGHER PERFORMANCE:** agile and light structure allows higher performance and efficiency







## TRADITIONAL SOLUTION WITH EXTERNAL DRESSING

### Unpredictable product life

- Unknown torsion, bending & stretching
- Friction, wear

## HIGH RISK OF PRODUCTION STOPS



## FULLY INTEGRATED DRESSING

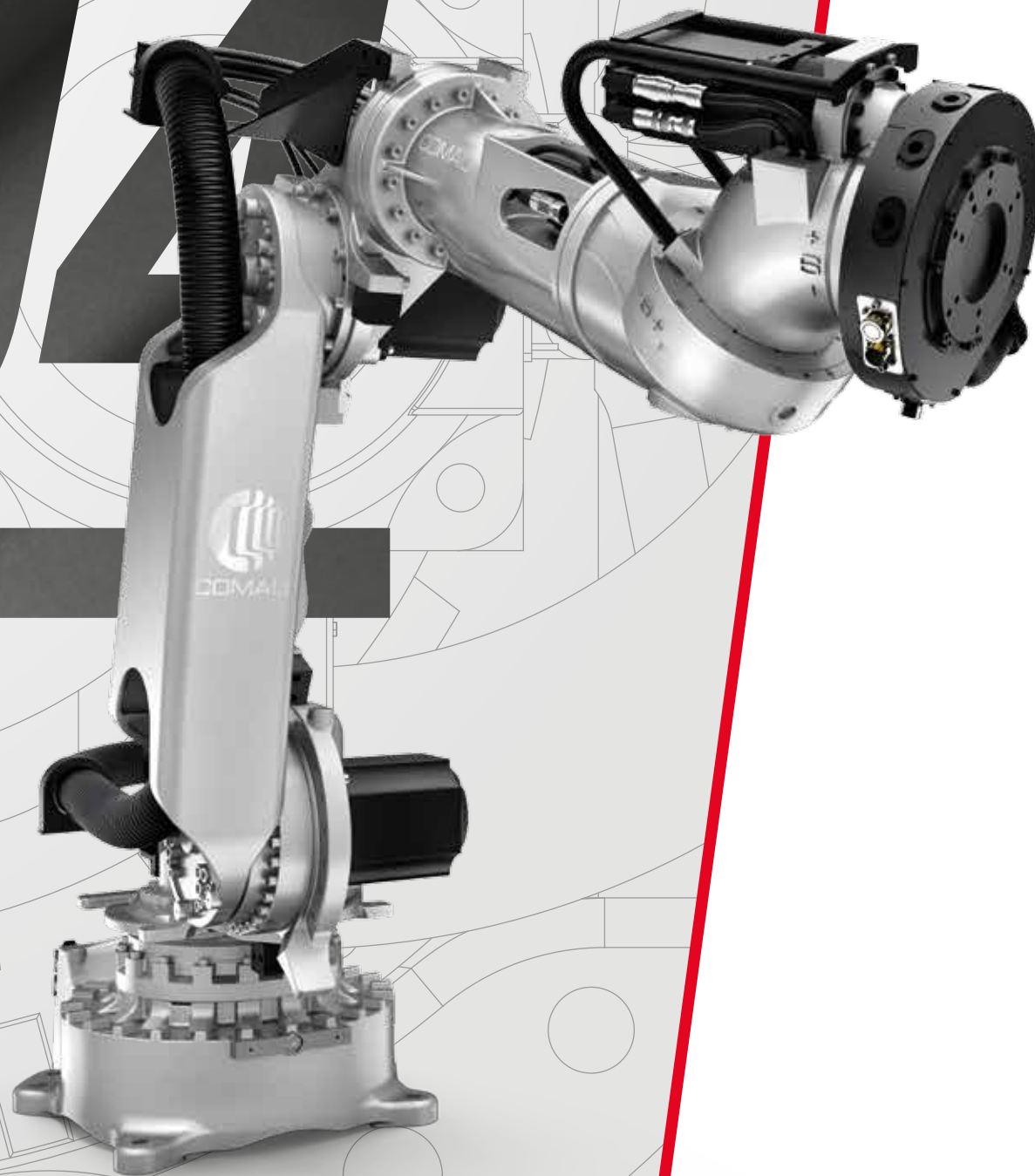
### Comau Hollow Wrist advantages:

- Lean and compact solution
- No offset flange - gun
- Easier access through tooling and framing gates
- No risk of snagging
- Simplified tooling design
- Best results from off-line programming
- Outstanding dressing-MTBF

# NJ4

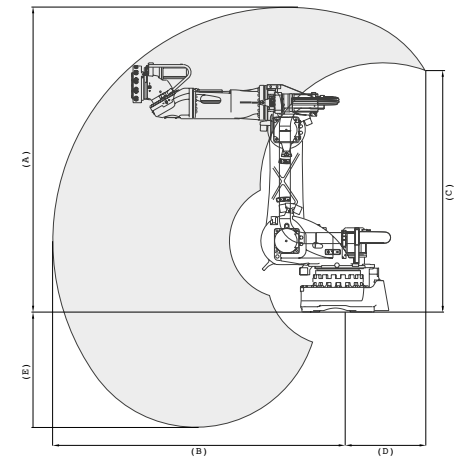
**The most compact  
Hollow Wrist robots**

**NJ4 90 - 2.2**  
**NJ4 110 - 2.2**



## TECHNICAL SPECIFICATIONS

Model		NJ4 90 - 2.2	NJ4 110 - 2.2	Suggested applications
<b>Number of axes</b>		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Spot Welding</li> </ul>
<b>Maximum wrist payload</b>		90 kg	110 kg	
<b>Additional load on forearm</b>		10 kg	10 kg	
<b>Maximum horizontal reach</b>		2210 mm	2210 mm	
<b>Torque on axis 4</b>		577 Nm	796 Nm	
<b>Torque on axis 5</b>		432 Nm	609 Nm	
<b>Torque on axis 6</b>		206 Nm	284 Nm	
<b>Stroke (Speed)</b>	<b>Axis 1</b>	+/- 180° (170°/s)	+/- 180° (170°/s)	
	<b>Axis 2</b>	-60° / +125° (125°/s)	-60°/+125° (125°/s)	
	<b>Axis 3</b>	0° / -165° (165°/s)	0° / -165° (165°/s)	
	<b>Axis 4</b>	+/- 200 (200°/s)	+/- 200° (200°/s)	
	<b>Axis 5</b>	+/- 200° (200°/s)	+/- 200° (165°/s)	
	<b>Axis 6</b>	+/- 200° (265°/s)	+/- 200° (265°/s)	
<b>Repeatability</b>		0.07 mm	0.07 mm	
<b>Tool coupling flange</b>		ISO 9409 - 1 - 125 - 6 - M10 ISO 9409 - 1 - 160 - 6 - M10	ISO 9409 - 1 - 125 - 6 - M10 ISO 9409 - 1 - 160 - 6 - M10	
<b>Robot weight</b>		685 kg	685 kg	
<b>Protection class</b>		IP65	IP65	
<b>Mounting position</b>		Floor / Ceiling	Floor / Ceiling	
<b>Operating Areas</b>	<b>A</b>	2360 mm	2360 mm	
	<b>B</b>	2210 mm	2210 mm	
	<b>C</b>	1856 mm	1856 mm	
	<b>D</b>	712 mm	712 mm	
	<b>E</b>	893 mm	893 mm	



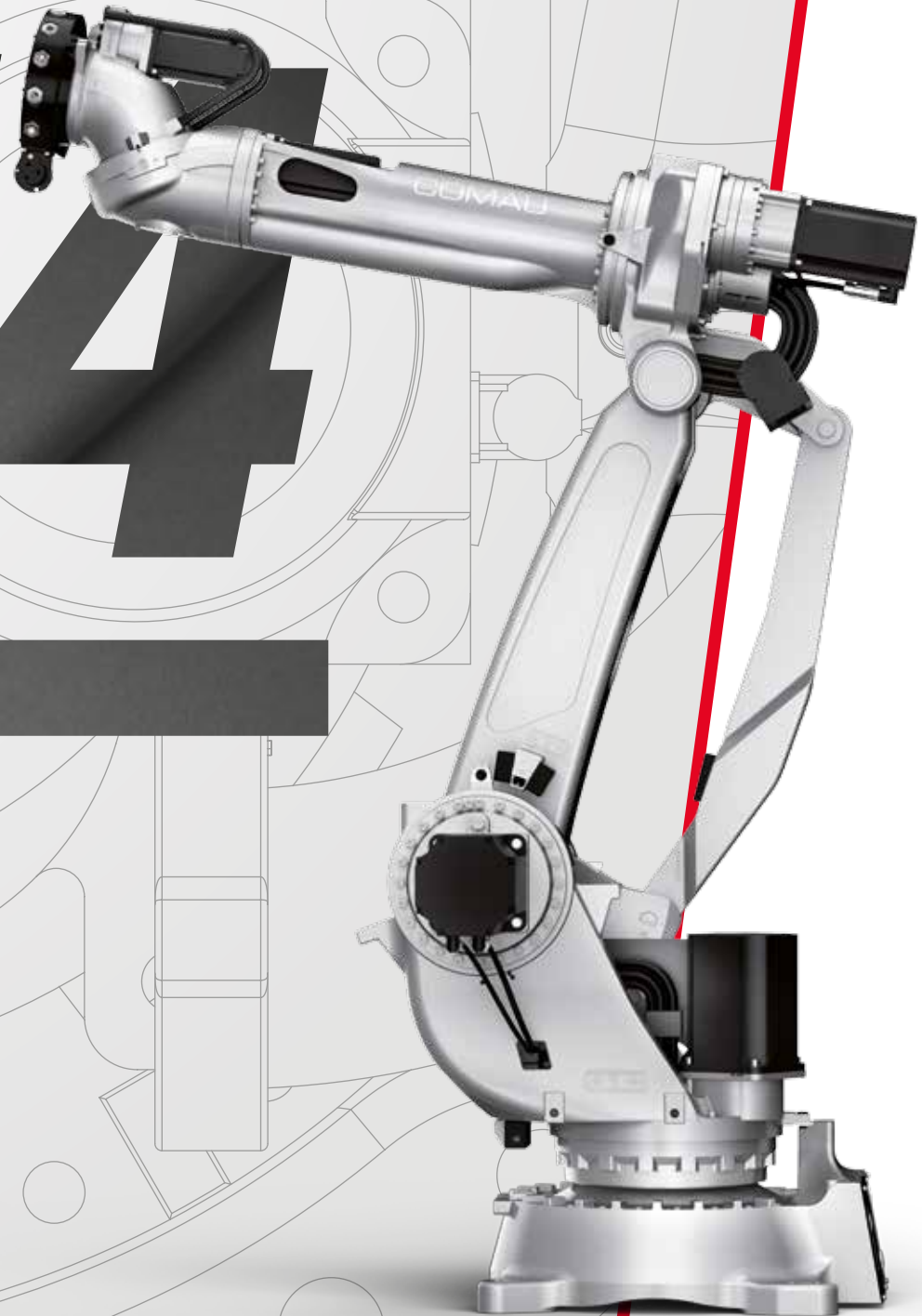
# NJ4

**Best-in-class Hollow Wrist  
for high payload applications**

**NJ4 170 - 2.5**

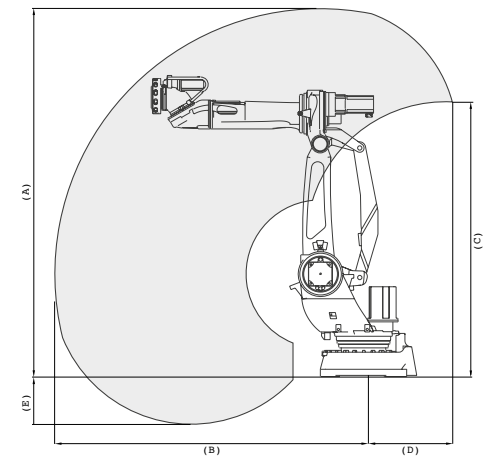
**NJ4 170 - 2.9**

**NJ4 175 - 2.2**



## TECHNICAL SPECIFICATIONS

Model		NJ4 170 - 2.5	NJ4 170 - 2.9	NJ4 175 - 2.2	Suggested applications
<b>Number of axes</b>		6	6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Spot Welding</li> </ul>
<b>Maximum wrist payload</b>		170 kg	170 kg	175 kg	
<b>Additional load on forearm</b>		50 kg	25 kg	50 kg	
<b>Maximum horizontal reach</b>		2500 mm	2918 mm	2204 mm	
<b>Torque on axis 4</b>		1010 Nm	1010 Nm	1010 Nm	
<b>Torque on axis 5</b>		804 Nm	804 Nm	804 Nm	
<b>Torque on axis 6</b>		412 Nm	412 Nm	412 Nm	
<b>Stroke (Speed)</b>	<b>Axis 1</b>	+/- 180° (110°/s)	+/- 180° (100°/s)	+/- 180° (110°/s)	
	<b>Axis 2</b>	-75° / +95° (110°/s)	-75° / +95° (90°/s)	-75° / +95° (110°/s)	
	<b>Axis 3</b>	-10° / -230° (110°/s)	-10° / -230° (110°/s)	-10° / -230° (110°/s)	
	<b>Axis 4</b>	+/- 200° (180°/s)	+/- 200° (130°/s)	+/- 200° (180°/s)	
	<b>Axis 5</b>	+/- 200° (140°/s)	+/- 200° (125°/s)	+/- 200° (140°/s)	
	<b>Axis 6</b>	+/- 200° (190°/s)	+/- 200° (170°/s)	+/- 200° (190°/s)	
<b>Repeatability</b>		0.10 mm	0.10 mm	0.10 mm	
<b>Tool coupling flange</b>		ISO 9409 - 1 - A 125	ISO 9409 - 1 - A 125	ISO 9409 - 1 - A 125	
		ISO 9409 - 1 - A 160	ISO 9409 - 1 - A 160	ISO 9409 - 1 - A 160	
<b>Robot weight</b>		1100 kg	1240 kg	1080 kg	
<b>Protection class</b>		IP65	IP65	IP65	
<b>Mounting position</b>		Floor / Ceiling	Floor / Ceiling	Floor / Ceiling	
<b>Operating Areas</b>	<b>A</b>	2981 mm	3357 mm	2685 mm	
	<b>B</b>	2501 mm	2927 mm	2204 mm	
	<b>C</b>	2226 mm	2524 mm	2080 mm	
	<b>D</b>	720 mm	744 mm	959 mm	
	<b>E</b>	387 mm	436 mm	360 mm	

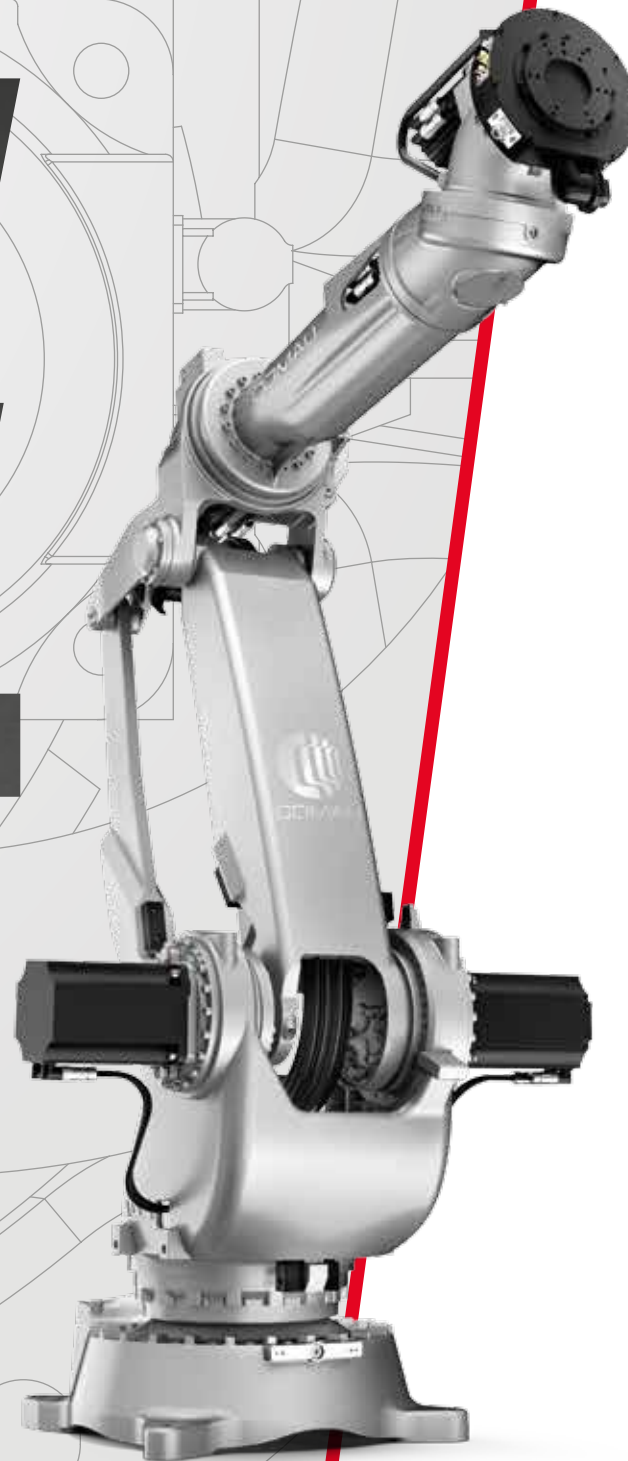


# NJ4

**A proven innovative solution  
for spot welding applications**

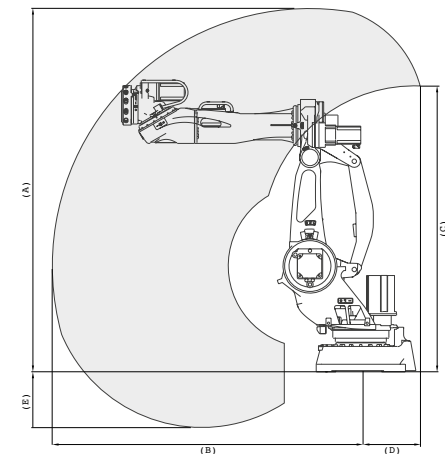
**NJ4 220 - 2.4**

**NJ4 220 - 2.7**



## TECHNICAL SPECIFICATIONS

Model		NJ4 220 - 2.4	NJ4 220 - 2.7	Suggested applications
<b>Number of axes</b>		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Spot Welding</li> </ul>
<b>Maximum wrist payload</b>		220 kg	220 kg	
<b>Additional load on forearm</b>		25 kg	25 kg	
<b>Maximum horizontal reach</b>		2417 mm	2738 mm	
<b>Torque on axis 4</b>		1320 Nm	1320 Nm	
<b>Torque on axis 5</b>		950 Nm	950 Nm	
<b>Torque on axis 6</b>		690 Nm	690 Nm	
<b>Stroke (Speed)</b>	<b>Axis 1</b>	+/- 180° (100°/s)	+/- 180° (100°/s)	
	<b>Axis 2</b>	-75° / +95° (90°/s)	-75° / +95° (90°/s)	
	<b>Axis 3</b>	-10° / -256° (110°/s)	-10° / -256° (110°/s)	
	<b>Axis 4</b>	+/- 200° (130°/s)	+/- 200° (130°/s)	
	<b>Axis 5</b>	+/- 200° (125°/s)	+/- 200° (125°/s)	
	<b>Axis 6</b>	+/- 200° (170°/s)	+/- 200° (170°/s)	
<b>Repeatability</b>		0.15 mm	0.15 mm	
<b>Tool coupling flange</b>		ISO 9409 - 1 - A 125 ISO 9409 - 1 - A 160	ISO 9409 - 1 - A 125 ISO 9409 - 1 - A 160	
<b>Robot weight</b>		1260 kg	1290 kg	
<b>Protection class</b>		IP65	IP65	
<b>Mounting position</b>		Floor / Ceiling	Floor / Ceiling	
<b>Operating Areas</b>	<b>A</b>	2847 mm	3168 mm	
	<b>B</b>	2417 mm	2738 mm	
	<b>C</b>	2241 mm	2324 mm	
	<b>D</b>	465 mm	779 mm	
	<b>E</b>	436 mm	464 mm	

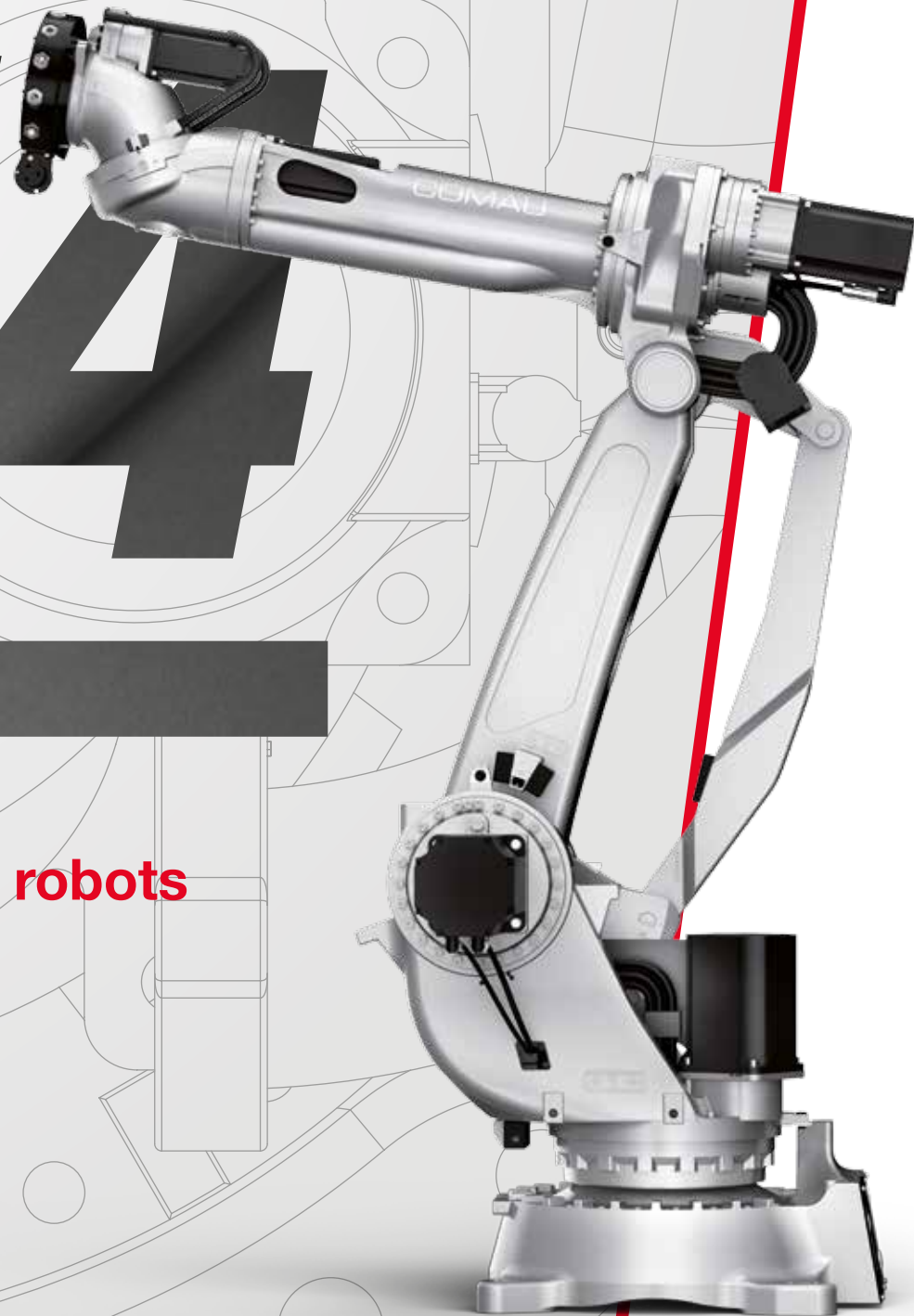


# NJ4

**Strong mechanical structure  
for Hollow Wrist high payload robots**

**NJ4 220 - 3.0**

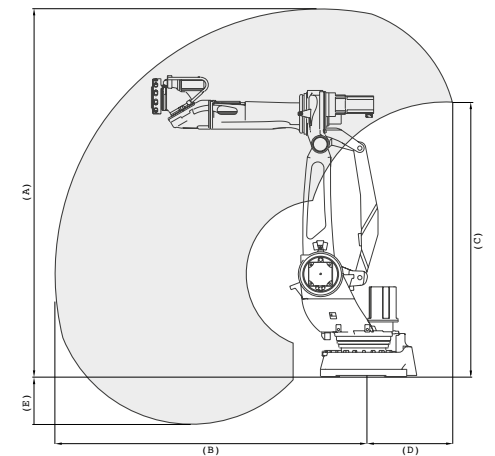
**NJ4 270 - 2.7**





## TECHNICAL SPECIFICATIONS

Model		NJ4 220 - 3.0	NJ4 270 - 2.7	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Spot Welding</li> </ul>
Maximum wrist payload		220 kg	270 kg	
Additional load on forearm		25 kg	25 kg	
Maximum horizontal reach		3002 mm	2703 mm	
Torque on axis 4		1320 Nm	1960 Nm	
Torque on axis 5		950 Nm	1457 Nm	
Torque on axis 6		690 Nm	834 Nm	
Stroke (Speed)	Axis 1	+/- 180° (90°/s)	+/- 180° (90°/s)	
	Axis 2	-75° / +75° (90°/s)	-75° / +75° (90°/s)	
	Axis 3	-231° / 0° (90°/s)	-231° / 0° (90°/s)	
	Axis 4	+/- 200° (115°/s)	+/- 200° (115°/s)	
	Axis 5	+/- 200° (125°/s)	+/- 200° (125°/s)	
	Axis 6	+/- 200° (170°/s)	+/- 200° (170°/s)	
Repeatability		0.15 mm	0.15 mm	
Tool coupling flange		ISO 9409 - 1 - A 160 ISO 9409 - 1 - A 200	ISO 9409 - 1 - A 160 ISO 9409 - 1 - A 200	
Robot weight		2005 kg	1975 kg	
Protection class		IP65	IP65	
Mounting position		Floor	Floor	
Operating Areas	A	3685 mm	3392 mm	
	B	3002 mm	2703 mm	
	C	2927 mm	2617 mm	
	D	804 mm	804 mm	
	E	123 mm	-181 mm <sup>(*)</sup>	

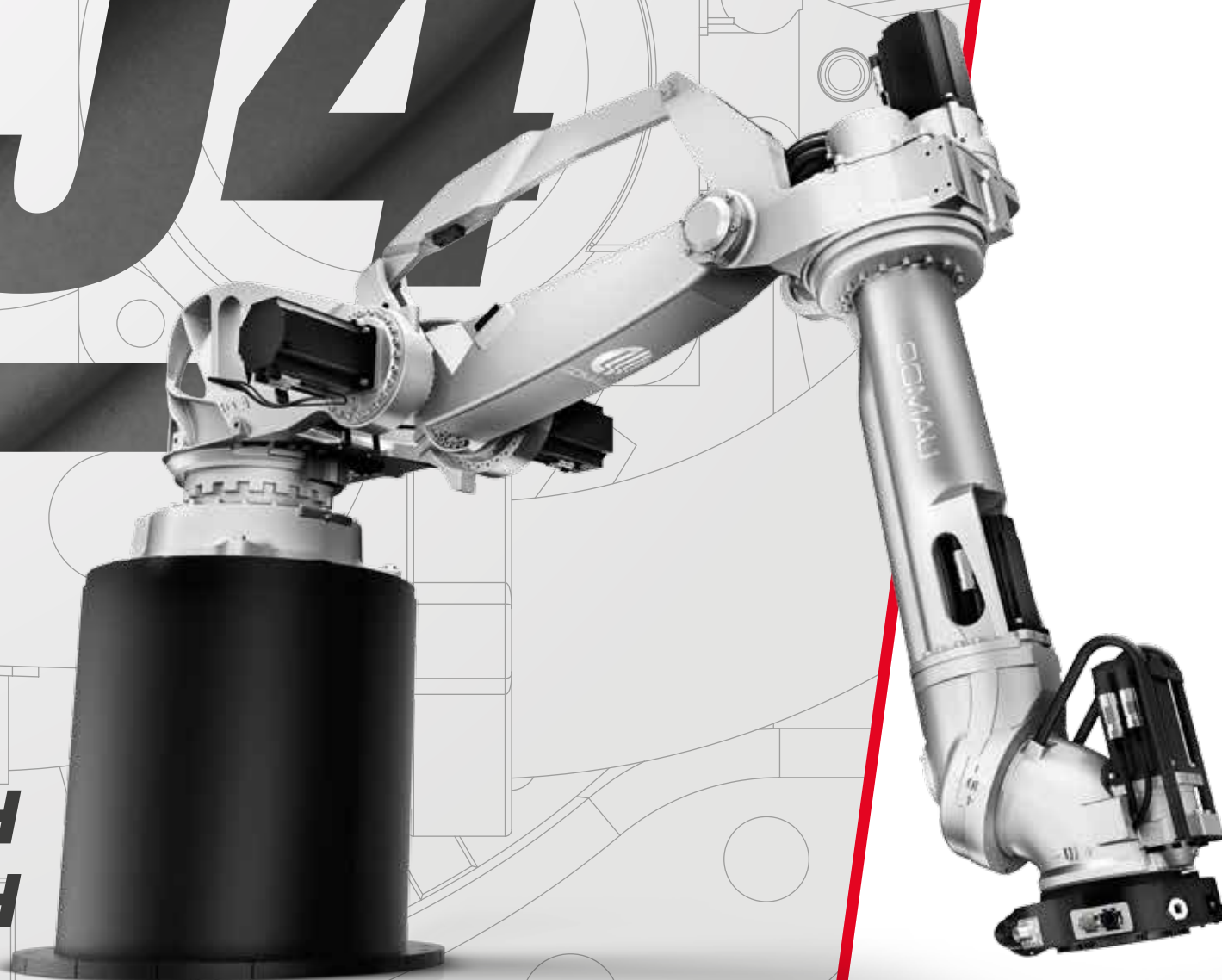


(\*) This dimension is negative because the wrist center can not reach positions below the floor level.

# NJ4

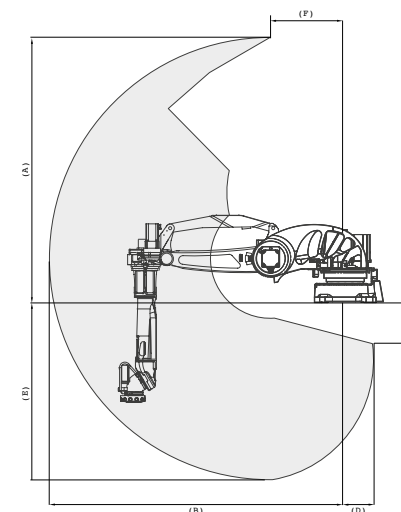
**The Hollow Wrist  
shelf version**

**NJ4 165 - 3.4 SH**  
**NJ4 210 - 3.1 SH**



## TECHNICAL SPECIFICATIONS

Model		NJ4 165 - 3.4 SH	NJ4 210 - 3.1 SH	Suggested applications
Number of axes		6	6	<ul style="list-style-type: none"> <li>• Assembly</li> <li>• Handling / Packaging</li> <li>• Machine Tending</li> <li>• Measuring / Testing</li> <li>• Spot Welding</li> </ul>
Maximum wrist payload		165 kg	210 kg	
Additional load on forearm		50 kg	25 kg	
Maximum horizontal reach		3377 mm	3188 mm	
Torque on axis 4		1089 Nm	1315 Nm	
Torque on axis 5		804 Nm	952 Nm	
Torque on axis 6		411 Nm	687 Nm	
Stroke (Speed)	Axis 1	+/- 180° (85°/s)	+/- 180° (85°/s)	
	Axis 2	-50° / +170° (90°/s)	+95° / -75° (110°/s)	
	Axis 3	-19,4° / -288° (110°/s)	-21° / -288° (110°/s)	
	Axis 4	+/- 200° (130°/s)	+/- 200° (130°/s)	
	Axis 5	+/- 200° (140°/s)	+/- 200° (125°/s)	
	Axis 6	+/- 200° (170°/s)	+/- 200° (190°/s)	
Repeatability		0.10 mm	0.10 mm	
Tool coupling flange		ISO 9409 - 1 - A 160 ISO 9409 - 1 - A 200	ISO 9409 - 1 - A 160 ISO 9409 - 1 - A 200	
Robot weight		1430 kg	1460 kg	
Protection class		IP65	IP65	
Mounting position		Shelf	Shelf	
Operating Areas	A	3027 mm	2837 mm	
	B	3377 mm	3187 mm	
	C	472 mm	535 mm	
	D	323 mm	131 mm	
	E	2027 mm	1837 mm	
	F	850 mm	850 mm	



# AUXILIARY EQUIPMENT

Enabling equipment for  
increased functionality





## Slides

Fast and precise slides, perfectly managed with the C5G controller, ensure maximum flexibility by widening the operating area of the robot



## External Axis

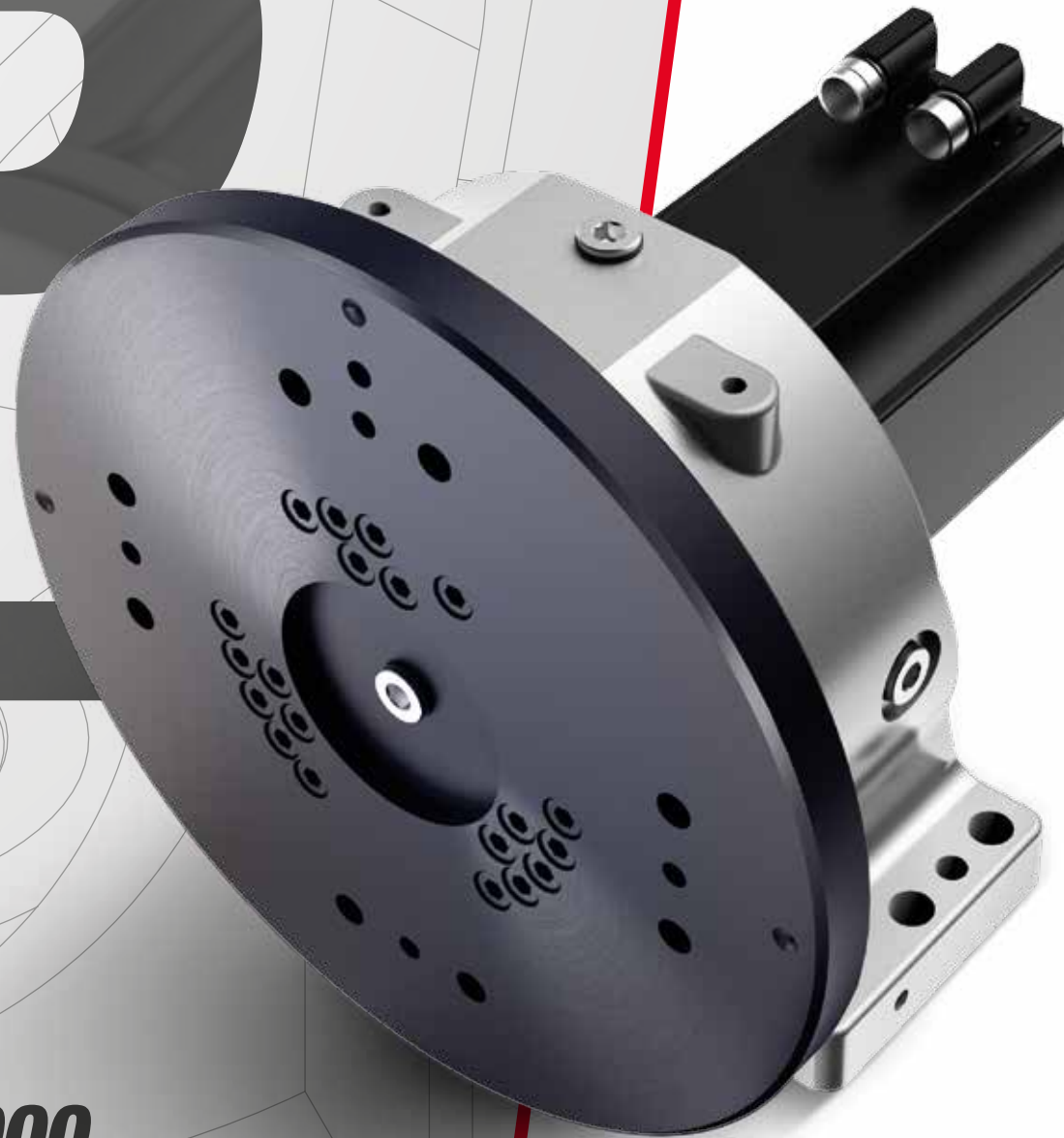
A wide range of external axes, with motors from 0.75 Nm to 33 Nm that are seamlessly integrated with the C5G controller, allowing you to fully manage your automation needs

# WMP

**Positioner modules**

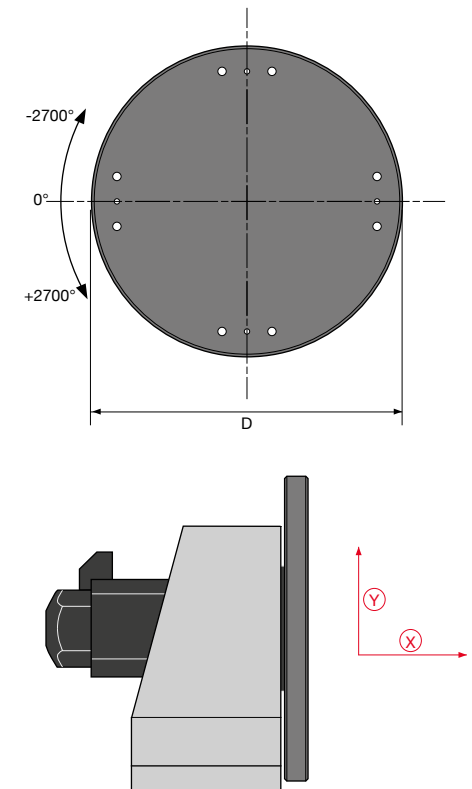
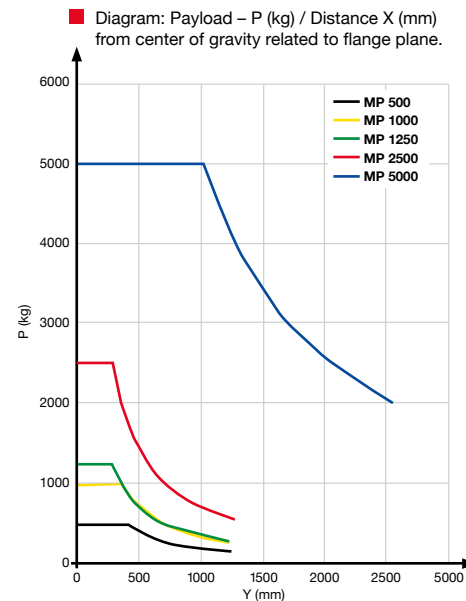
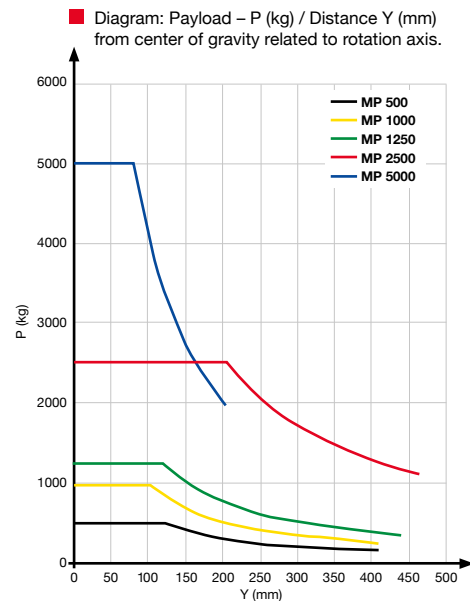
**MP 500 - MP 1000**

**MP 1250 - MP 2500 - MP 5000**



TECHNICAL SPECIFICATIONS

Model	MP 500	MP 1000	MP 1250	MP 2500	MP 5000	Suggested applications
<b>Payload</b>	500 kg	1000 kg	1250 kg	2500 kg	5000 kg	• Positioning
<b>Max inertia</b>	250 kgm <sup>2</sup>	400 kgm <sup>2</sup>	400 kgm <sup>2</sup>	1100 kgm <sup>2</sup>	2500 kgm <sup>2</sup>	
<b>Static torque on main axis</b>	600 Nm	1000 Nm	1500 Nm	5000 Nm	4000 Nm	
<b>Turnover moment (Max moment of flexure)</b>	2000 Nm	3500 Nm	3500 Nm	7000 Nm	50000 Nm	
<b>Max axial thrust</b>	1150 daN	1500 daN	1500 daN	2000 daN	3000 daN	
<b>Acceleration time</b>	0.60 s	0.75 s	0.80 s	0.70 s	0.50 s	
<b>Output rotation speed</b>	150 (°/s)	150 (°/s)	150 (°/s)	100 (°/s)	27 (°/s)	
<b>Repeatability at 500 mm</b>	0.05 mm	0.06 mm	0.06 mm	0.09 mm	0.10 mm	
<b>Motors</b>	AC brushless					
<b>Protection Class</b>	IP67					
<b>Weight</b>	53 kg	90 kg	90 kg	290 kg	2000 kg	
<b>Flange Diameter - D</b>	190 mm	370 mm	370 mm	600 mm	900 mm	



# PTDO

**Double action  
horizontal positioners**

**PTDO 500 - 1.2**



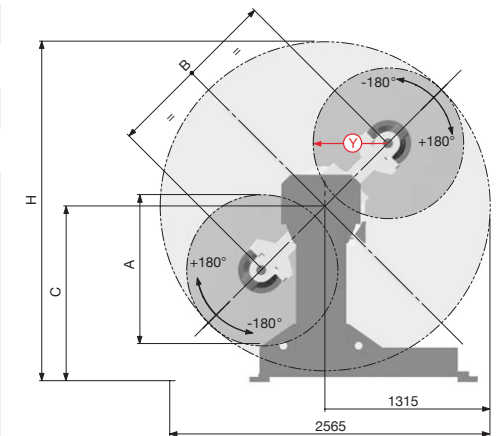


TECHNICAL SPECIFICATIONS

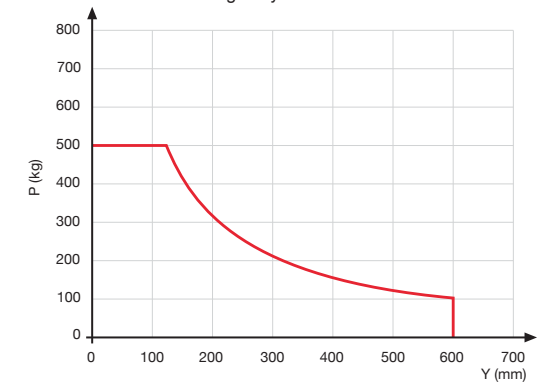
Model	PTDO 500 - 1.2				
	2.0	2.5	3.0	3.5	4.0
Payload	2x500 kg				
Static torque on main axis	600 Nm				
Approx. time for 180° changeover	3.9 s				
Max load difference between stations	140 kg				
Max inertia	150 kgm <sup>2</sup>				
Main axis rotation angle	from -90° to +90°				
Secondary axis rotation angle	from -180° to +180°				
Repeatability at 500 mm	0.15 mm				
A	1200 mm				
B	1430 mm				
C	1405 mm				
H	2720 mm				
L	2000 mm	2500 mm	3000 mm	3500 mm	4000 mm
L1	4086 mm	4586 mm	5086 mm	5586 mm	6086 mm

Suggested applications

• Positioning



■ Diagram: Payload - P (kg) / Distance Y (mm) from center of gravity related to rotation axis.



# PTDO

**Double action  
horizontal positioners**

***PTDO 750 - 1.2***

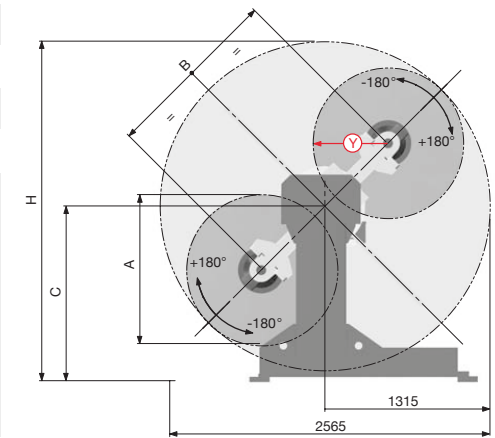


TECHNICAL SPECIFICATIONS

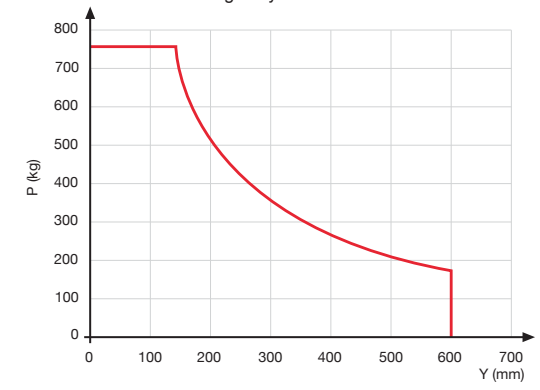
Model	PTDO 750 - 1.2						
	2.0	2.5	3.1	3.5	4.0	4.5	5.0
Payload	2x750 kg						
Static torque on main axis	1000 Nm						
Approx. time for 180° changeover	3.7 s						
Max load difference between stations	350 kg						
Max inertia	270 kgm <sup>2</sup>						
Main axis rotation angle	from -90° to +90°						
Secondary axis rotation angle	from -180° to +180°						
Repeatability at 500 mm	0.15 mm						
A	1200 mm						
B	1430 mm						
C	1405 mm						
H	2720 mm						
L	2000 mm	2500 mm	3100 mm	3500 mm	4000 mm	4500 mm	5000 mm
L1	4086 mm	4586 mm	5186 mm	5586 mm	6086 mm	6586 mm	7086 mm

Suggested applications

• Positioning



■ Diagram: Payload - P (kg) / Distance Y (mm) from center of gravity related to rotation axis.



# PTDV

**Double action vertical positioners**

**PTDV 250 - 500 - 750 - 850**

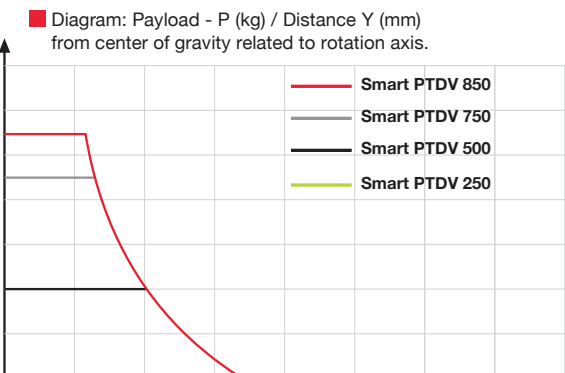
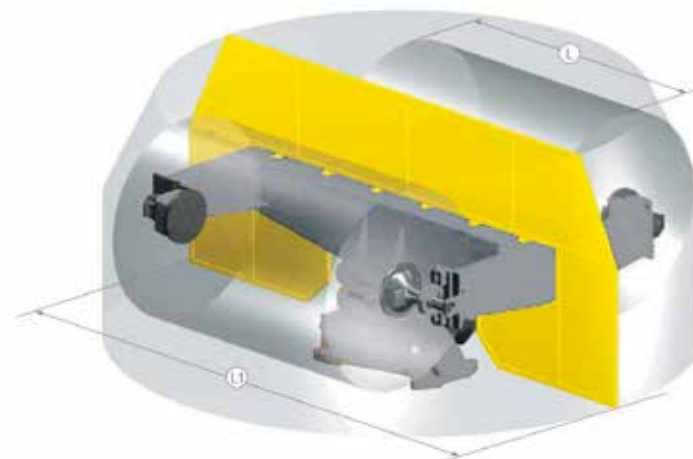
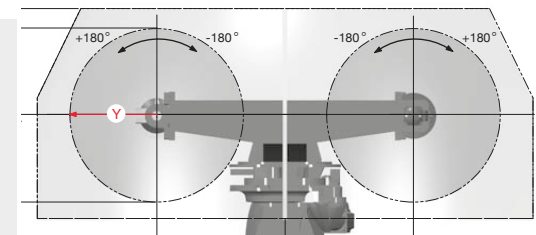


TECHNICAL SPECIFICATIONS

Model	PTDV 250	PTDV 500	PTDV 750	PTDV 850
	1.1 - 1.6	1.2 - 2.0	1.2 - 2.5	1.2 - 2.5
<b>Payload</b>	2x250 kg	2x500 kg	2x500 kg	2x800 kg
<b>Static torque on main axis</b>	600 Nm	1000 Nm	1000 Nm	1000 Nm
<b>Approx. time for 180° changeover</b>	5.3 s	4.9 s	5.3 s	4.8 s
<b>Max load difference between stations</b>	250 kg	500 kg	500 kg	850 kg
<b>Max inertia</b>	60 kgm <sup>2</sup>	200 kgm <sup>2</sup>	200 kgm <sup>2</sup>	350 kgm <sup>2</sup>
<b>Main axis rotation angle</b>	from -90° to +90°			
<b>Secondary axis rotation angle</b>	from -180° to +180°			
<b>Repeatability at 500 mm</b>	0.15 mm	0.16 mm	0.20 mm	0.16 mm
<b>A</b>	1100 mm	1200 mm	1200 mm	1200 mm
<b>B</b>	1700 mm	2150 mm	2150 mm	2150 mm
<b>C</b>	1100 mm	795/677 mm	795/677 mm	795/677 mm
<b>H</b>	1969 mm	2003 mm	2003 mm	2003 mm
<b>L</b>	1600 mm	2056 mm	2056 mm	2056 mm
<b>L1</b>	3300 mm	3956 mm	4400 mm	3956 mm

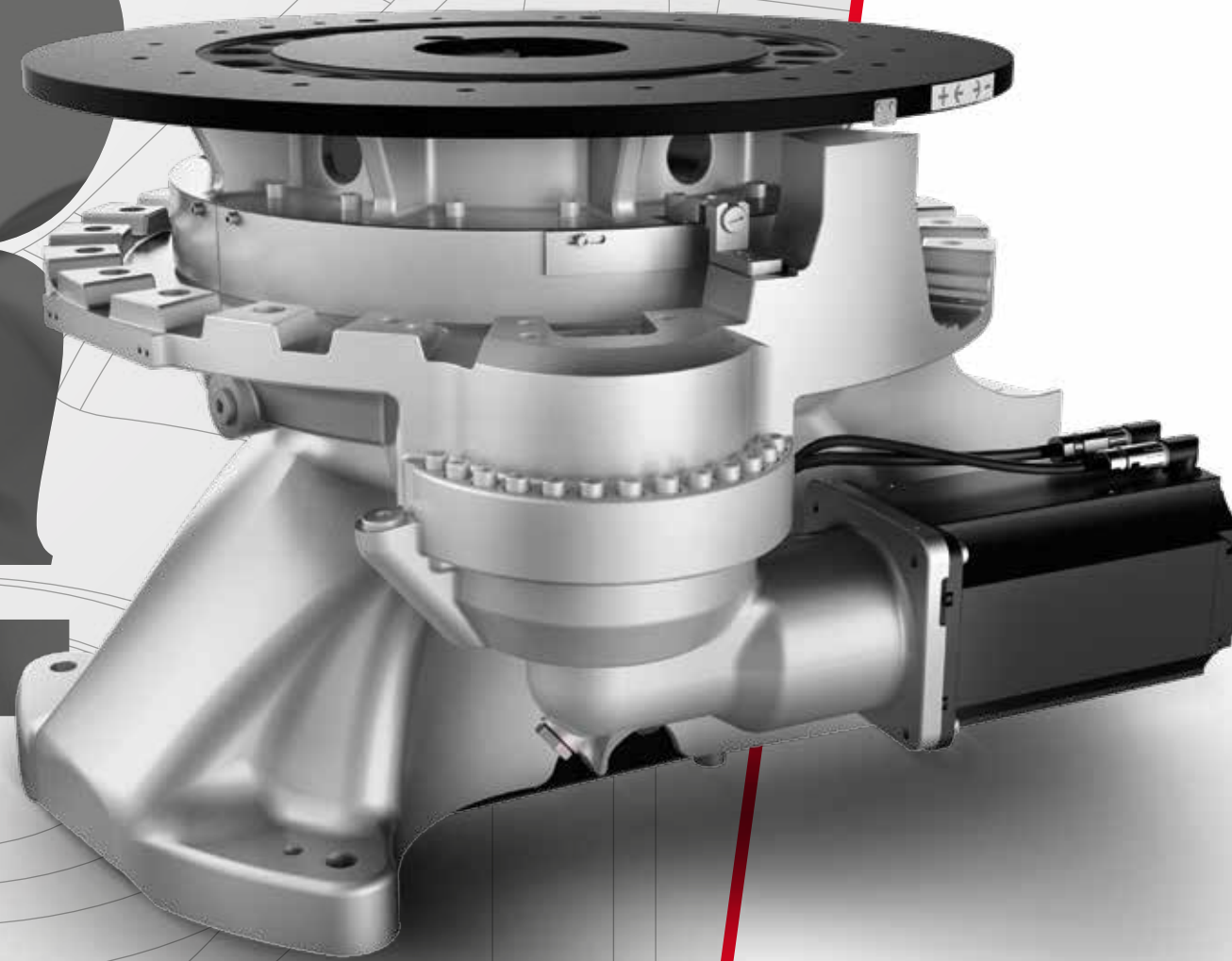
Suggested applications

• Positioning



# TR

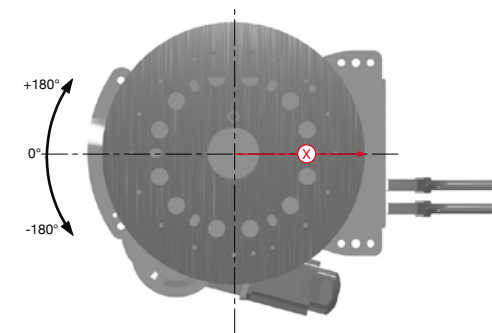
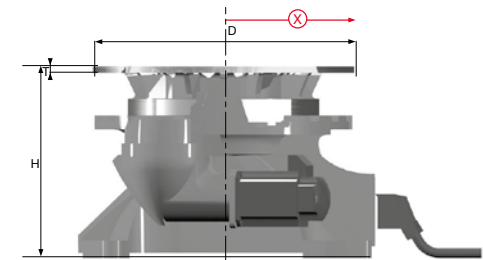
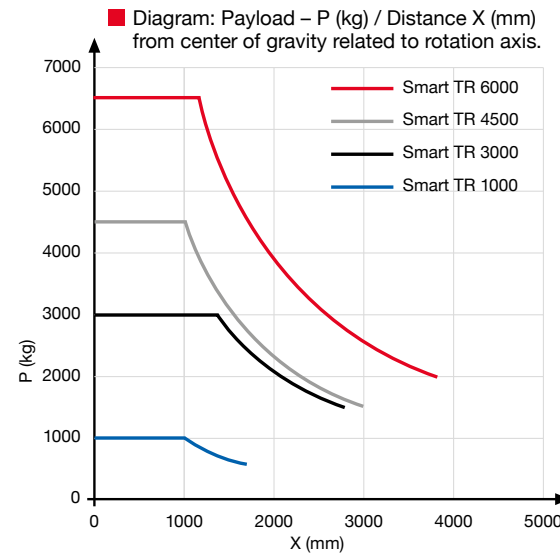
**Rotary tables**



**TR 1000 - TR 3000 - TR 4500 - TR 6000**

TECHNICAL SPECIFICATIONS

Model	TR 1000	TR 3000	TR 4500	TR 6000	Suggested applications
<b>Payload</b>	1000 kg	3000 kg	4500 kg	6000 kg	• <b>Positioning</b>
<b>Max inertia</b>	1400 kgm <sup>2</sup>	3500 kgm <sup>2</sup>	7000 kgm <sup>2</sup>	15000 kgm <sup>2</sup>	
<b>Static torque on main axis</b>	850 Nm	4200 Nm	4250 Nm	5800 Nm	
<b>Turnover moment (Max moment of flexure)</b>	10000 Nm	41000 Nm	45000 Nm	75000 Nm	
<b>Approx. time for 180° changeover</b>	3.5 s	3.8 s	4.3 s	5.9 s	
<b>Main axis rotation angle</b>	69 (°/s)	50 (°/s)	55 (°/s)	33 (°/s)	
<b>Repeatability at 500 mm</b>	0.10 mm	0.10 mm	0.15 mm	0.20 mm	
<b>Tilting angle up to 10°</b>	yes	yes	yes	no	
<b>Availability in Single-Turn/Multi-Turn</b>	ST	ST/MT	ST/MT	ST/MT	
<b>H</b>	780 mm	660 mm	660 mm	800 mm	
<b>T</b>	17 mm	23 mm	23 mm	23 mm	
<b>D</b>	750 mm	900 mm	900 mm	1500 mm	



# TP5



## As simple as a touch

Enhanced ergonomics, wrist fatigue reduction, ease of use, reduced overall weight, increased manageability. The power is in your hands.



## Style and design

- **Intensive design study and attention.** to detail to guarantee **enhanced ergonomics**
- Enabling keys on the back **reduce wrist fatigue** and ensure easier use of the central keyboard area
- It can be handled in **multiple** ways to reduce operator fatigue at work
- **Lightweight** and high manoeuvrability
- The practical upper handle enables the TP to be hung and used even when far from the controller
- The **ease of use** allows quick learning by the operator via a “natural evolution”



## Hardware and software architecture

- **Improved graphics** for more **intuitive use**
- **Faster USB port**

## Display and keyboard

- **7” touch screen** provides simplified and **faster** interaction
- **Optimized operations**, even when using only the keyboard, for enhanced use in hard production environments
- **Simplified keyboard** designed to locate keys more easily during the programming phase thanks to special tactile marks on the membrane
- Improved **keyboard feedback** when buttons are pressed

# CONTROL UNIT

**All your needs are under control**

Fast processing, modular system for drive units, I/O and fieldbus, free and ergonomic space for application functions integration, compact dimensions. All you need is under control.

**C5G - C5Compact - R1C**



## High processing power

The C5G uses the latest generation of industrial PC APC820 with Core2 Duo technology CPU which is capable of obtaining high performance with low energetic consumption

## Energy saving

- Lowest consumption in stand-by, low consumption during operations
- Cooling system is proportional to control unit's operations
- Energy network recover system with a high dynamic content program

## Flexibility and reliability

The new generation of field bus based on Hilscher technology and integrated by B&R in their remote I/O X20 family, guarantees a flexible and reliable interface in every customer application. Modular interfaces are available, such as digital I/O, analog I/O as well as the position transducer encoder, resolver, etc.

## RobotSAFE

Safe robot controller models allow a safety-rated management of the robot motion (joint or cartesian mode) and speed, offering advantages in terms of smaller layouts and absence of physical fences. Using sensors we provide the safety of your automatic cell without affecting your productivity

## Modular / expandable

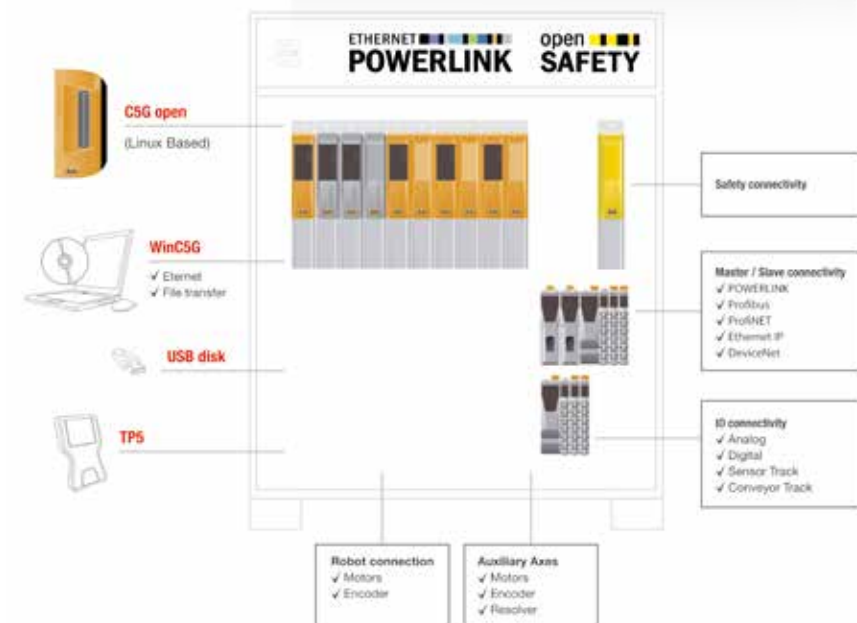
Modular system for drives up to 13 axes in the base cabinet(\*)

## Simultaneous management of several robots

Hardware architecture designed to manage up to 16 axes(\*) in "multi-arm" configuration with application box



## Functional diagram



\*Depending on the robot model

## 3D off-line programming

with Robosim Pro

## Multi applications management

Possibility to manage many applications at the same time

## C5G open controller: becomes the real driver of the robot's motion

It allows the development of customized motion algorithms and special applications with the use of sensors

# C5G

- Fast processing with dual core architecture
- Modular system for drives unit and i/o and fieldbus
- Free and ergonomic space for application functions integration
- Energy saving system
- Also available in safe version
- Also available in open controller version
- Runs up to 16 axes with application box

## Main technical data

- Dimensions: 800x500x1100 mm
- Weight: 125 kg
- Working temperature: 5 to 45°C (5 to 55°C with cooler)
- Humidity: 90% max, no condensation
- Extended line power range: 400 to 500V

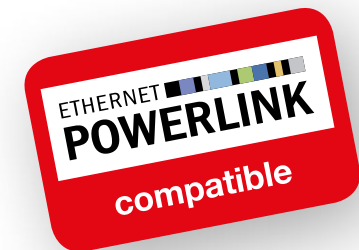


## C5 Compact

- 65% smaller than the standard version, lighter and easier to integrate
- Power saving, 50% less installed power than the standard version
- Runs up to 8 axes depending on the robot model
- Also available in safe version
- Also available in open controller version

### Main technical data

- Dimensions: 550x500x550 mm
- Weight: 100 kg
- Working temperature: 5 to 45°C
- Humidity: 90% max, no condensation
- Extended line power range: 400 to 500V



## R1C

- Controls up to 6 axes, equipped with brushless synchronous motors and high resolution Encoder
- Interfaces with the most common Field Bus and communication protocols
- Can become an Ethernet network node to facilitate remote updates and diagnostics
- Programmable via software and by Comau Teach Pendant

### Main technical data

- Dimensions: 266x427x498 mm
- Weight: 23 kg
- Working temperature: 5 to 45°C
- Humidity: 95% max, no condensation
- Extended line power range: 230V ±10%



# SOFTWARE



**Digital tools  
to enhance processes**



## Software functionalities

**Automatic Payload Identification:** Automatic identification of the payload optimizes the robot movements

**Collision Detection:** Emergency stop of the robot in case of a collision protects the mechanic and the equipment

**Cooperative and Synchronized Motion:** Coordinated and simultaneous management of multiple robots and auxiliary axes (linear track, servo gun, positioners and other application equipment)

**Conveyor and Sensor Tracking:** Track parts on linear and circular conveyors. Precise usage path tracking of different types of external sensors

**Joint Soft Servo Technology:** Enable individual robot joints to yield external forces as required by each specific application

**Interference Regions:** Limit the robot working space by dynamically defining regions of various shapes

**Robot Absolute Accuracy:** An algorithm that enables the adaptation of the actual kinematics to the theoretical model that has been programmed off-line

## Simulation software

**Robosim Pro:** 3D off-line programming

## Application software

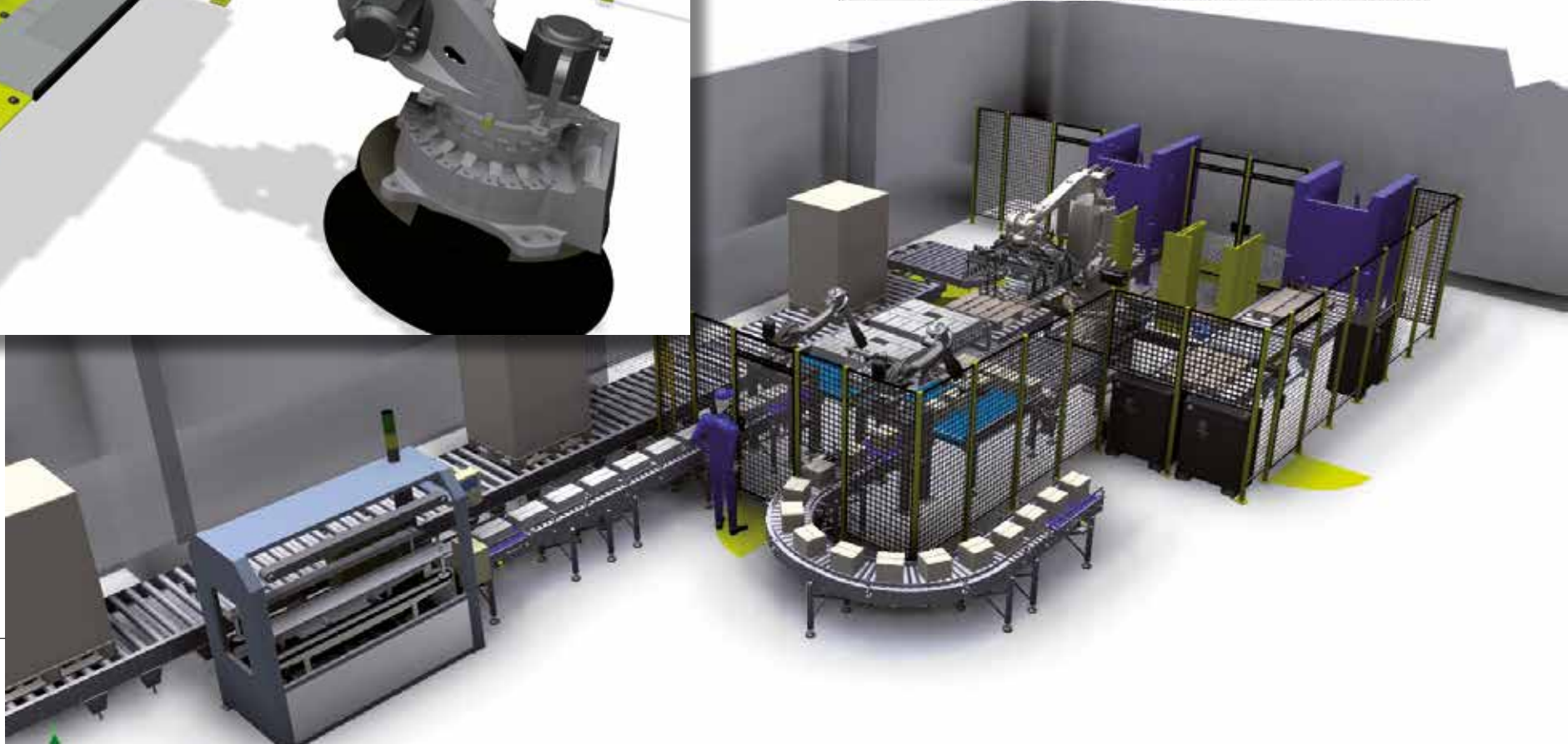
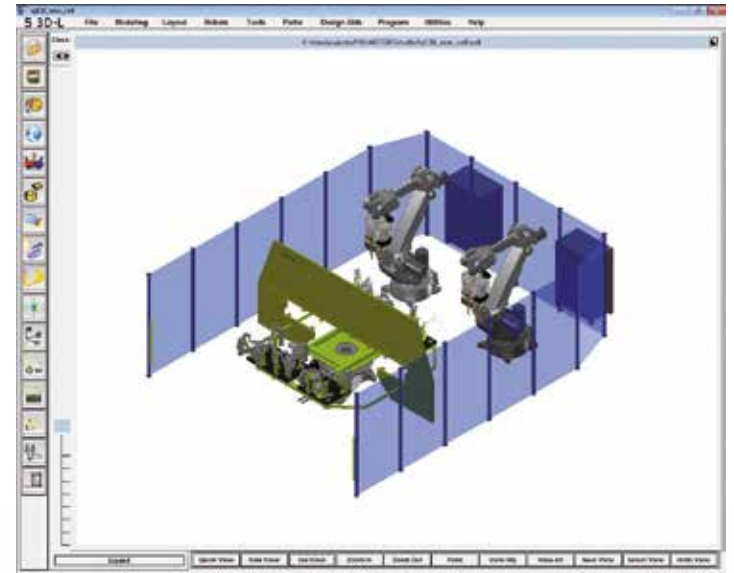
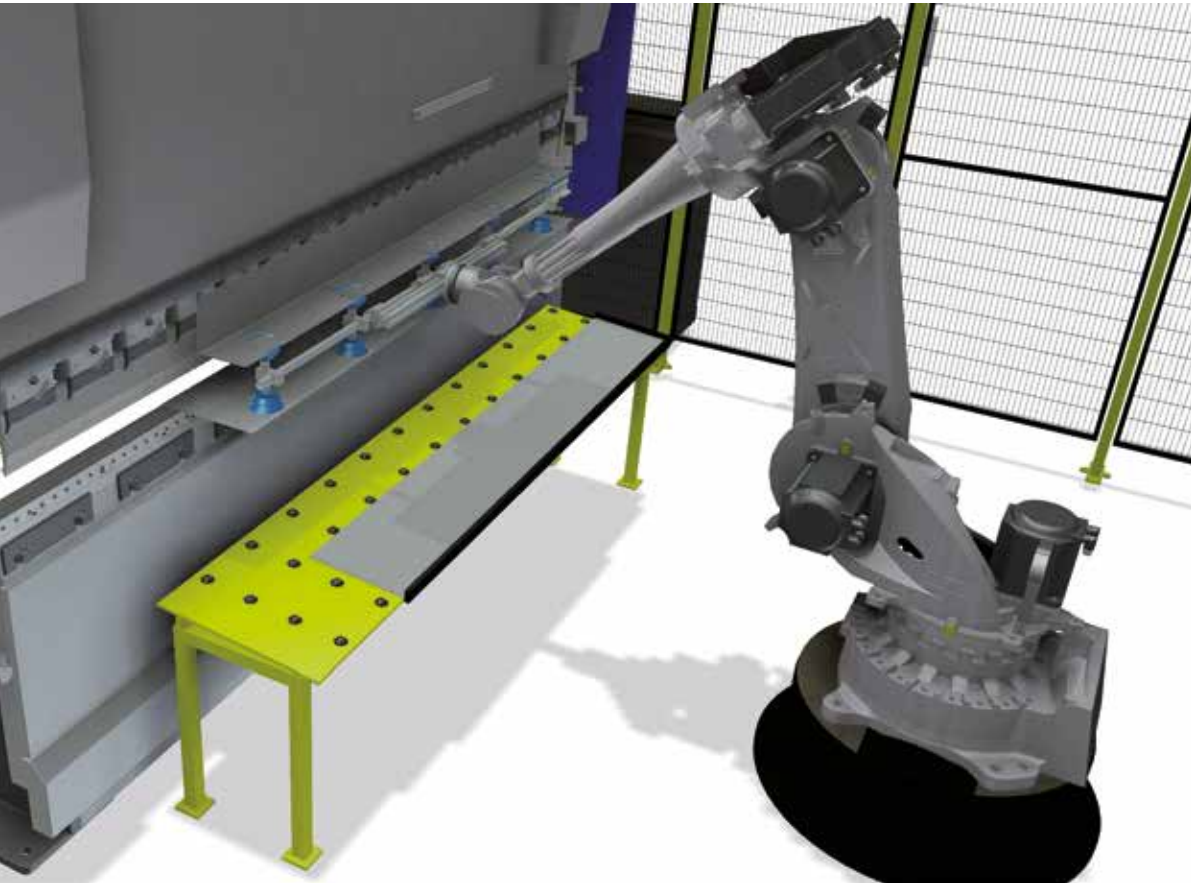
Our application software packages are able to manage the most commonly used technological processes and include an easy-to-use GUI for inputting process parameters, customizing process behaviors and monitoring statuses

**SmartRivet:** The SmartRivet software library supplies a set of ready-to-use technical instructions to manage your rivet system processes, with no need for process integration or code programming

**SmartIP Interpress:** SmartIP software handles the complete interpress process and in particular, features a smart, user-friendly interface for managing process cycles including:

- Interpress transfer cycles
- Line loading cycles from the centering table
- Line unloading cycles from table or mat
- Hand-over cycles with part overturning
- Cycles with part transfer onto intermediate table
- Double pick-up and double deposit cycles







## Application software

**SmartTool Change:** This software allows you to easily manage your Tool Change systems. Simply select the devices to manage and the software application does the rest with no need for integration or additional programming code

**SmartStud:** The SmartStud software application features a set of ready-to-use technical instructions to manage your stud welding systems and the most common types of fieldbuses, with no need for process integration or additional programming code

**SmartArc:** SmartArc incorporates a dedicated application software that allows the operator to set welding parameters and manage the complete system from the teach pendant, by means of a dedicated user interface

**SmartGlue:** The SmartGlue application package provides full support for material delivering, gluing and sealing processes

**SmartHand:** This application package provides full management for tools such as grippers that are used for material handling and attach to the end of the robot arm

**SmartSpot:** The SmartSpot application package provides a full support and management of resistance welding technological process

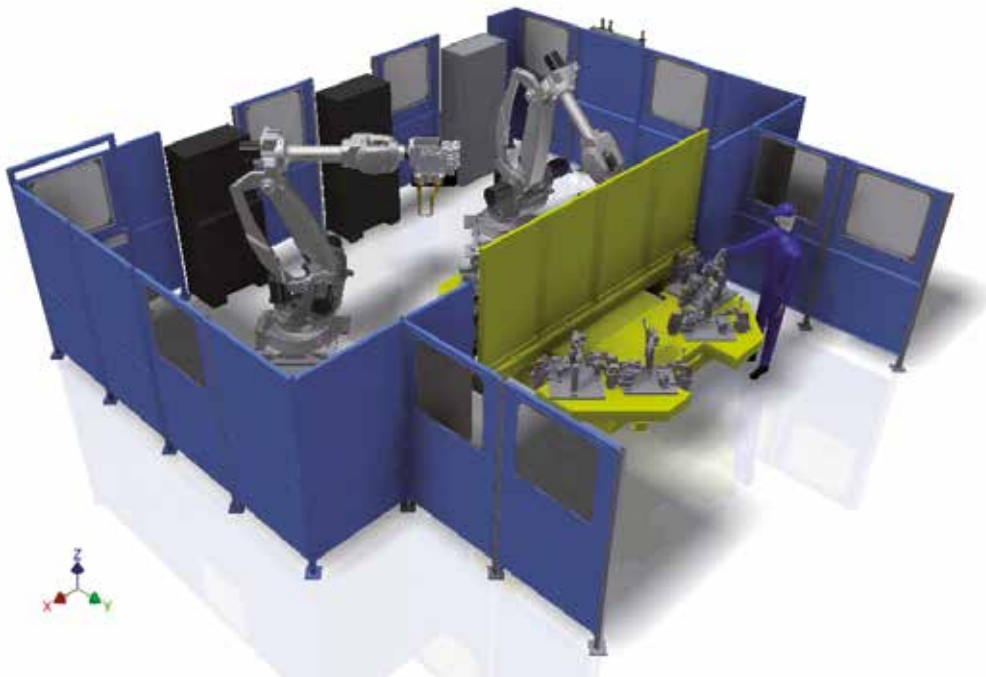
**Palletizing Motion:** This optional feature allows any anthropomorphic or parallelogram robot with a 6 axes, spherical wrist to be used as a palletizer. The robot will always keep the flange parallel, in a downward position, to the floor; axis 4 is not used

**Axes Pursuit:** The Axes pursuit functionality makes it possible to move one or more axes belonging to one arm while allowing one or more axes of a different Arm to pursue it, and works in both Automatic and Programming mode

**Interference Regions:** This algorithm constantly monitors the robot in any system state and automatically slows down and halts the robot speed when the TCP (Tool Center Point) meets the boundary of user-defined “Forbidden Regions” and speeds it up in “Allowed Regions”

**Wrist Singularity Management:** An optional function for spherical wrist SMART family robots that helps programming in cases where there could be motion through the wrist singularity, by enabling the trajectory planner to evaluate whether or not to automatically modify the “W” attitude flag and evolution modality

**Weaving Motion:** Weaving is an oscillating motion superimposed on a Cartesian trajectory used to distribute material in gaps with large cross sections relative to the material bead, for arc-welding applications and some gluing and sealing applications

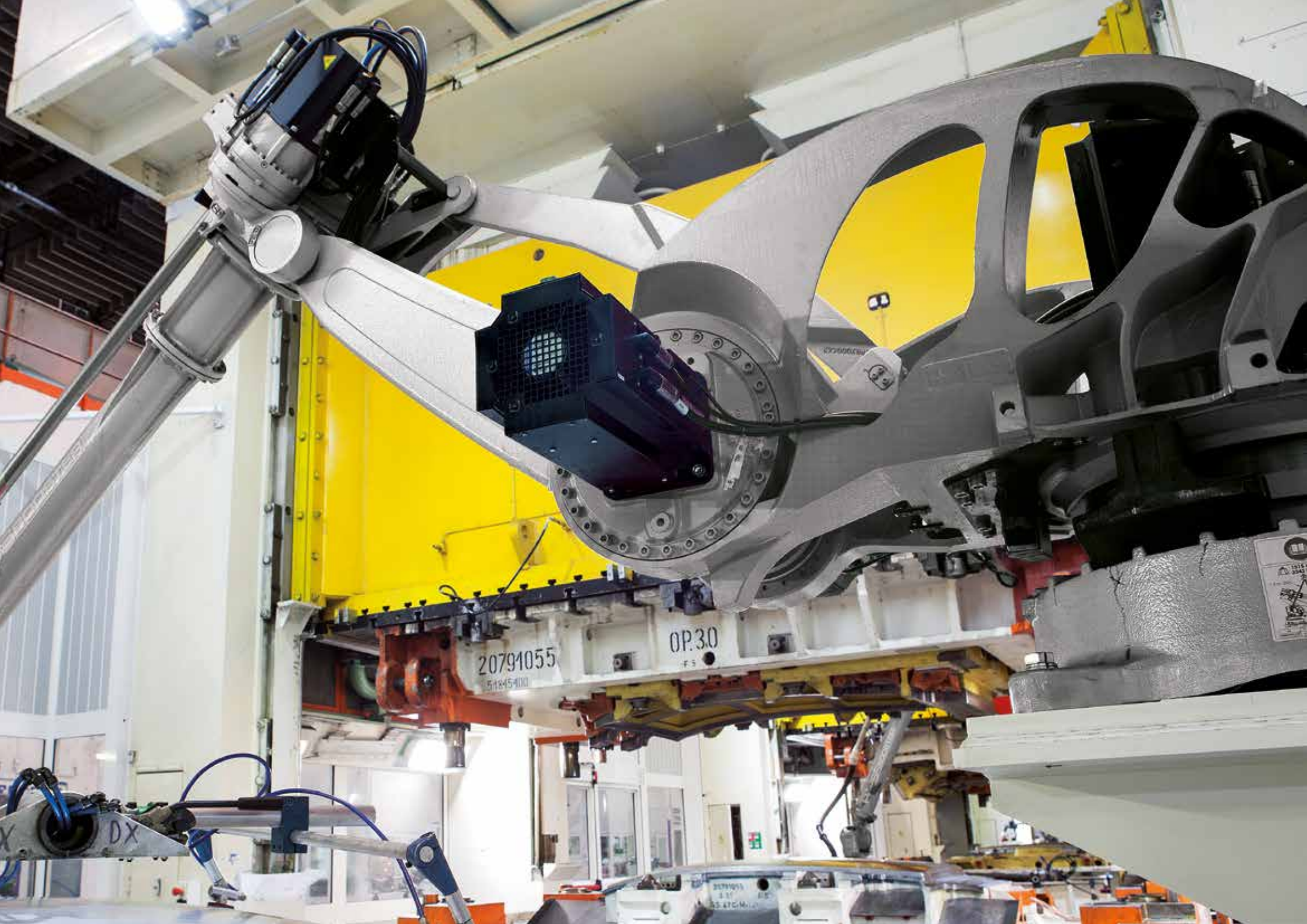


# ***PRESS*** ***automation***

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**Complete turn-key solutions  
for Press Lines**





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# The PRESS Excellence Center

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The know-how of Comau Robotics results from a long and well-established experience gained in the automation of the press lines in traditional cold stamping and modern hot forming methods.

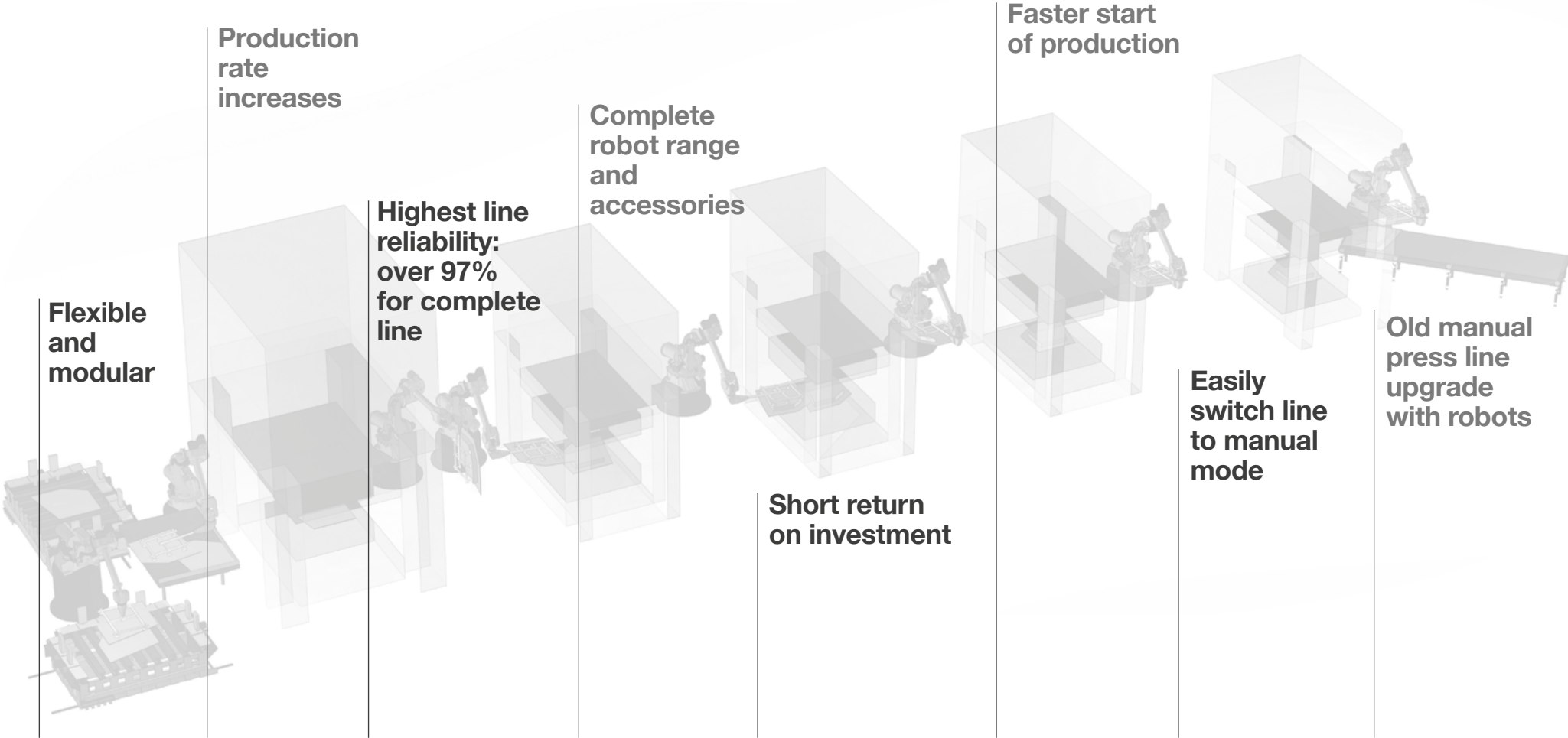
Since 1984, Comau has been developing highly efficient solutions with its dedicated PRESSbooster robot family and **SMART\_IP software**. During these years, Comau has improved its skills and gained experience in automatic press lines, making Comau a global leader in its sector.

With different levels of automation and customized products, Comau's turnkey solutions grant high production flexibility and a quick return on investment.

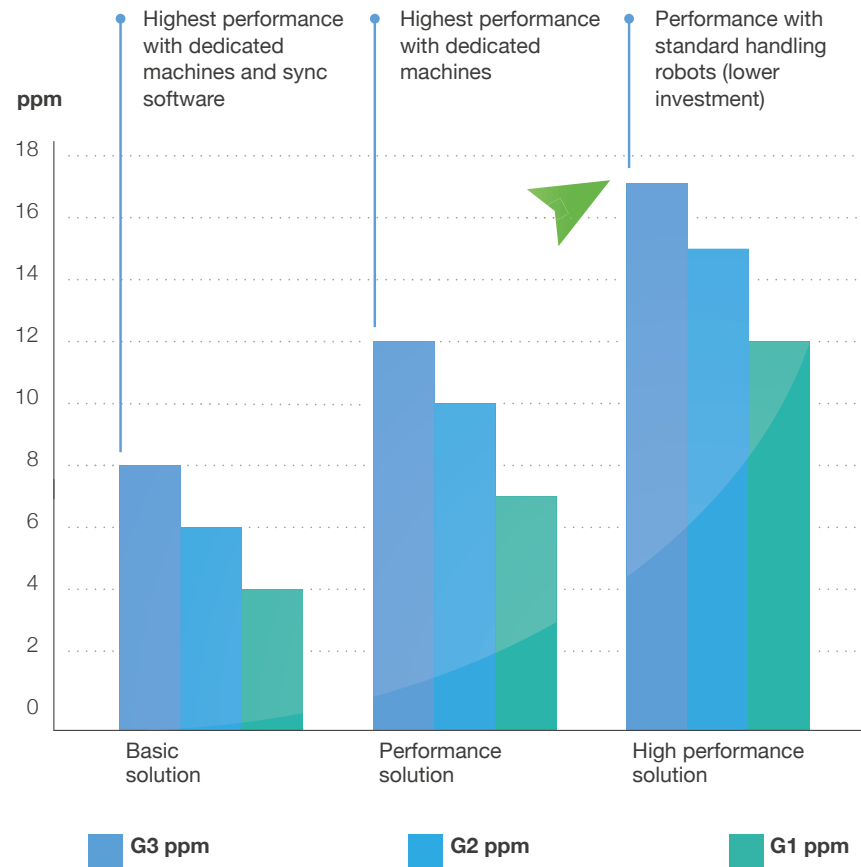
*Experience*  
**Knowledge Solutions**  
*Automation*  
**Project Management**  
*Future*  
*Performance* **Competence**  
*Innovation*

# PRESS automation benefits

OVER 200  
LINES INSTALLED  
WORLDWIDE



Comau Robotics provides different levels of automation, performance and investment, from a portion of the line to the automation of the entire press line, according to instantaneous press speed, automation production rate increases, depending on the robot type and management software.



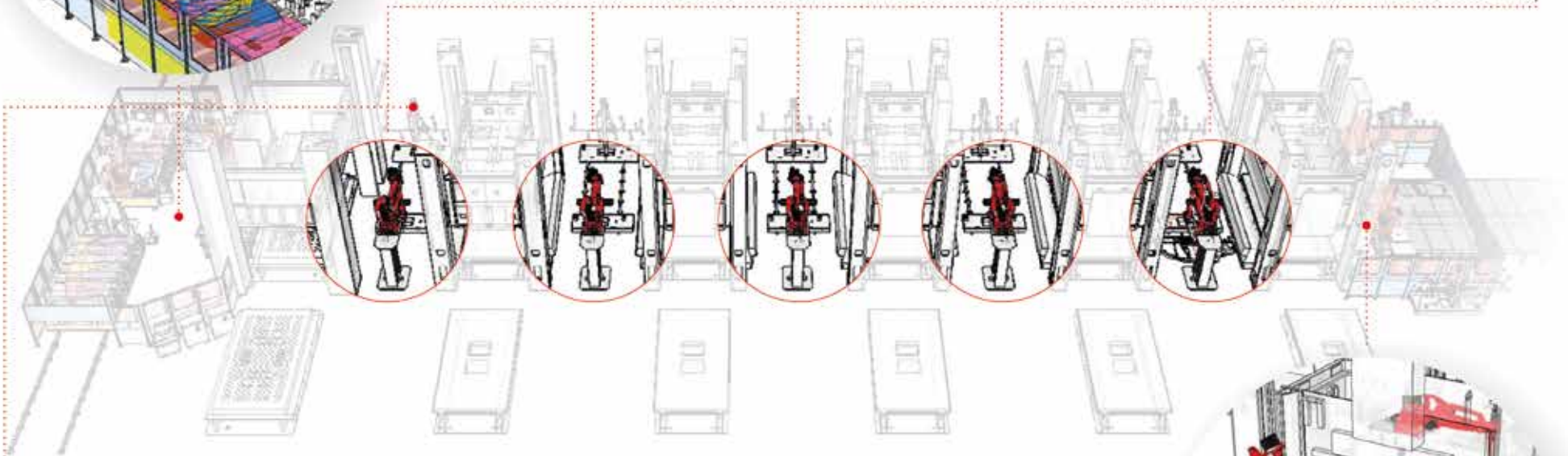
## Tandem press lines classification

1° PRESS SIZE (Ton)	PRESSES DISTANCE (m)	COMAU ROBOT TYPE
G1: 2000 T XL and XXL size blanks	7.0 to 9.0	NJ130-3.7 P NJ140-3.7 F
G2+: 1600 T L size blanks	6.0 to 8.0	NJ130-3.7 P NJ140-3.7 F NJ100-3.2 P
G2: 1000 T M and L size blanks	5.0 to 7.0	NJ100-3.2 P
G3: 600 T S and M size blanks	4.0 to 6.0	NJ100-3.2 P



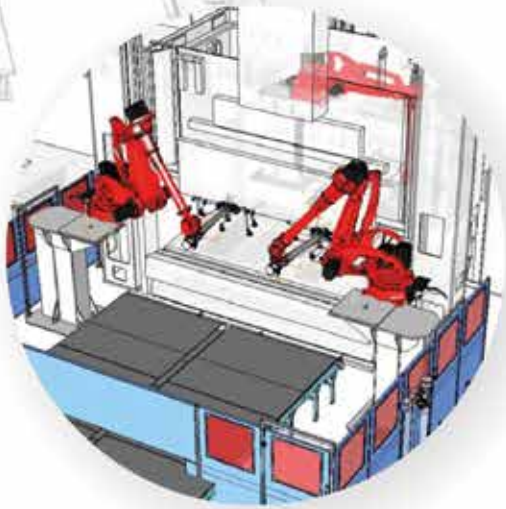
**Destacking station – Front of Line (FOL)**  
Robots handle blanks from pallet to leading press.  
Station can be equipped with optional cleaning system.  
**Comau can provide a destacking station that is fully integrated in existing lines.**

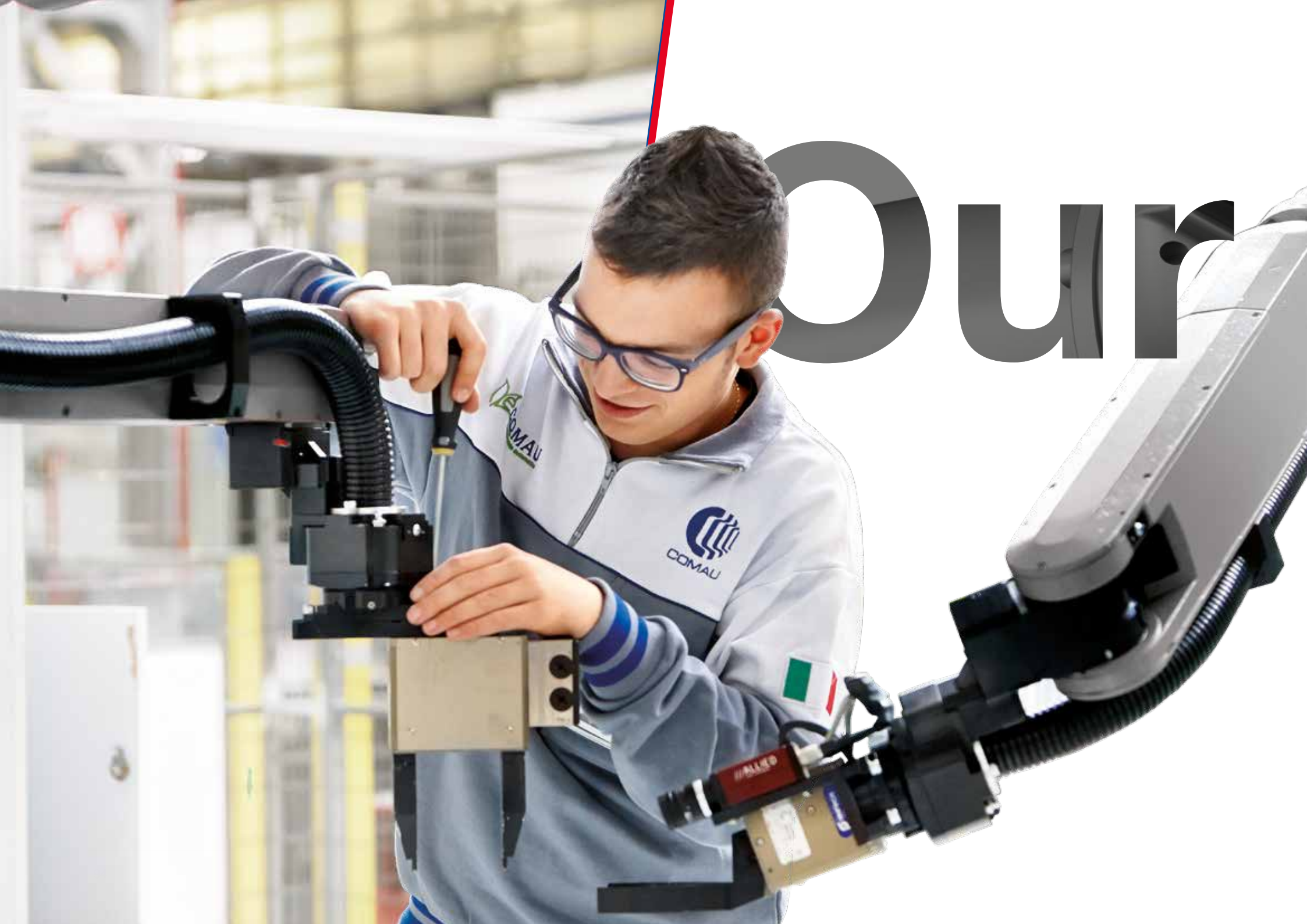
**Press-to-press handling stations with:**  
▸ Part **TURNOVER** option with 2 robots  
▸ **INTERPRESS** with 1 robot  
**Fitting to single or double action press.**



**Automatic Tool Changer (ATC)**  
Sliding carts, rotating tables, stationary tables.  
**For high speed die change and ergonomics.**

**EOL station with manual or automatic racking station**  
Station behind last press with 1 or 2 robots handling parts from die to conveyor. Parts can be handled into containers:  
▸ Manually by operators  
▸ Automatically by additional racking robots  
**Comau also offers automatic racking stations as a modular upgrade to existing lines.**





Our



# Services

## Our business is to take care of your business

The satisfaction of our customers is always at the top of Comau Robotics strategy.

Prompt and flexible after-sales service close to customers throughout the life cycle of their equipment. A complete range of services allows the customer to maximize the performance of the Comau solution.

- Training at either the Comau Training Center or customer's sites with multi-language sessions
- On-line support through remote diagnostics and remote aids enabled by the connection capacity of the new robot control C5G
- Activities developed by experienced technicians at the customer's site, delivery of spare parts, repairs and re-conditioning services, worldwide maintenance plans

## Training & Education

We offer extensive and complete training courses for programmers, maintenance experts and robot operators with multi-language sessions held at Comau's Training Center or at the customer's site by qualified skilled instructors with field experience. Complete and detailed documentation concerning course and a "certificate of attendance" is issued upon completion of training courses.

- Training courses held by field skilled teachers
- Training area with robotized cells and dedicated rooms
- Training in the customer's language at our site or customer's site
- Tailored courses based on customer needs
- Courses from basic maintenance to advanced programming and diagnostics
- On-the-job training

## Service

- Help Desk
- Commissioning
- Robot & PLC Programming
- Service
- Maintenance & Refurbishment
- Support to Production
- Field Modification & Retrofit
- Hardware & Software upgrade
- Service Contract Management
- Spare Parts
- Supply of spares/repairs for at least 10 years after the end of production for a product

# ***TRAINING***



## Personalized solutions for efficient results

### Our courses mix in a coherent way:

- Challenging practical activities
- Tools
- Theoretical content

**We adopt an innovative learning methodology, combining classroom training, business experience and multimedia tools**

## Solution 1: e-learning + in-person training

**E-learning** - *to explore processes and behaviours, practice, reflect and receive feedback*

- Theoretical content (videos, animations, texts)
- Practical content (exercises and simulations)
- In-depth analysis
- Test + feedback

**In-person training** - *to share knowledge and practice on robotic systems*

- Hands-on activities and real exercises in Comau offices
- Reflection and sharing with Comau experts

## Solution 2: in-person training with multimedia

*During the classroom training, teacher and participants can share content, exercises and tests through multimedia tools (smart whiteboard, tablet and PC). This solution increases the involvement of participants, who are active subjects and share knowledge and experience.*

**Multimedia classroom** - *content shared with multimedia tools*

- Theoretical content (videos, animations, texts)
- Practical content (exercises and simulations)
- In-depth analysis
- Test + feedback

**In-person training** - *to share knowledge and practice on robotic systems*

- Hands-on activities and real exercises in Comau offices
- Reflection and sharing with Comau experts

## Comau Web Academy

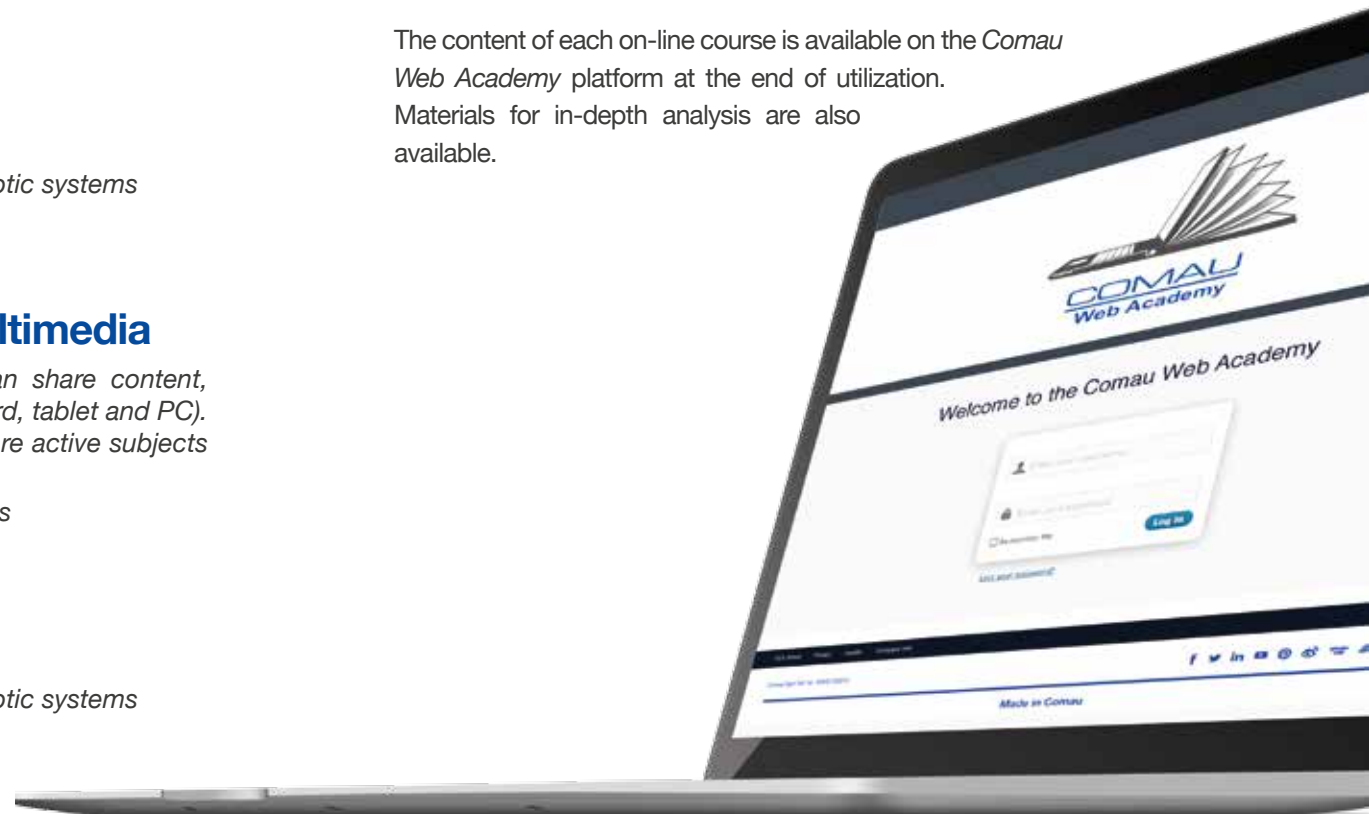
The *Comau Web Academy* gathers the Comau on-line training offer. The courses are accessible from PC and tablet.

The participants can access the courses they are registered to, whenever they wish and can interrupt and resume the use of content, according to their needs.

Each course consists of a training part and an evaluation part (test) useful to verify the progressive learning of the content.

At the end of on-line course a final test is scheduled and a certificate of attendance will be issued.

The content of each on-line course is available on the *Comau Web Academy* platform at the end of utilization. Materials for in-depth analysis are also available.



# Mobile Training Cell



## You can't come to us? The Mobile Training Cell will come to you!

**The perfect solution for teaching the basics of robotics and industrial automation, wherever you want**

Comau has developed a **mobile cell for training, easily transportable and compactible with retractable robot**

This helps minimize its size from 1140x940x1700 to 1140x940x970 optimizing the transporting

It can travel inside a small van so as to **reach easily the location of the courses**

The Mobile Training Cell allows to carry out **basic and advanced programming exercises, and processes management applications**

Racer3, 6 axes robot, the smallest of the Comau family, is optimal and comprehensive for **learning the robotics basics** from both a theoretical and practical point of view

It is equipped with a camera mounted on the structure to permit the screening of the work area on the external monitor

This enables the teacher to manage the **training for groups of very numerous learners also**, ensuring for all a homogeneous learning

The perforated work surface allows to assemble various options developed by Comau, thanks to an anchoring system with quick release pins, available on the market

Therefore, the user will also be able to develop specific equipment (tools) depending on his own needs, that can easily be installed in the Comau Mobile Training Cell

**An excellent tool for schools, universities, training and research centers**

### Features

- Transportable on euro pallet ISO2 size 1200x1000 mm
- Height of the cell transport box 1110 mm
- Compactible with retractable robot
- Equipped with small size Racer3 robot
- Height of the open Cell in working position 1700 mm
- Height of the collapsed Cell 970 mm
- Forkliftable
- Easy movement due to the wheels
- The work surface can be fitted with accessories where to do programming exercises
- Transportable on commercial vehicles small van
- Cell and robot power supply 230 Vac  $\pm$  10% 50-60 Hz ( $\pm$ 2 Hz) 3 kW  
main switch rated current 16 A @ 250 Vac

# AFTER SALES



**Comau After Sales** is committed to support customers during the entire product life cycle of a robot by providing:

- Installation, commissioning and programming support
- Preventive maintenance, auditing and consultancy services to extend the Mean Time Between Failure (MTBF)
- Training packages to develop customer competencies in the use, maintenance and programming of robots through on-line courses or in-class tailored solutions
- Help Desk support, Remote Monitoring and Response Time services to reduce downtime (MTTR)
- Innovative upgrades and refurbishment solutions to improve performance during the product life cycle.

A complete Service Agreement Portfolio to meet the specific requirements of each single customer



A global team to serve local needs

# Comau services







## Spare parts and logistics

Professional consultancy and flexible solutions for your spare parts logistics and stock

Support and management of parts, exchange units and repairs with a reliable response time in order to assure continue production

Regional Logistic Centers in Italy, Brazil, US and China



## Training

Education and training with learning paths ranging from «*basic*» to «*advanced*» levels supplied at our Training Center, at the customer premises and with our new web-base interactive platform

A complete training catalogue including basic use and programming, advanced programming, diagnostics and maintenance, application packages, and more

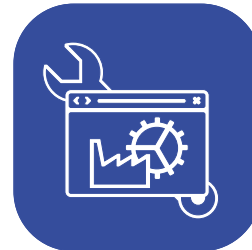


## Field service and agreements

Local teams to support customers, provide process reliability, improve product performances and maintain investment value

Help Desk support, remote diagnostics and fault analysis by highly skilled engineers to support troubleshooting and address critical emergency situations

A range of service agreement solutions to cover any specific need



## Advanced services

Analysis of customer needs and process improvement packages that combine experience and knowledge with new technologies to enhance system performance or reconfigure existing applications

Industrial engineering support, upgrades, new software versions, hardware renewal and reconditioning

# Maintenance



## Preventive maintenance

The purpose of **preventive maintenance** is to maintain the efficiency of the robot over time, by retaining its original integrity

This helps to eliminate production stops caused by the failure to execute controls and calibrations that together form the basis for efficient operation

To achieve this objective, Comau offers a range of services designed for all the robots in its range

These services include the careful control of mechanics and electronics

The object of **preventive maintenance** is to highlight malfunctions and identify parts to replace which could compromise the reliability of the machine if not treated with a **planned, scheduled maintenance**



## Typical maintenance

### ROBOT ARM

#### Annual controls and activities

- Check calibration position
- Check backlash
- Visual check of lubricant leaks
- Check wiring harness
- Clean calibration references
- Clean robot
- Reset recovery position
- Fill out the maintenance card with relevant observations

#### Controls and activities (every 3 years)

- Replace gearbox lubricants
- Replace fifth wheel lubricant
- Grease bearings

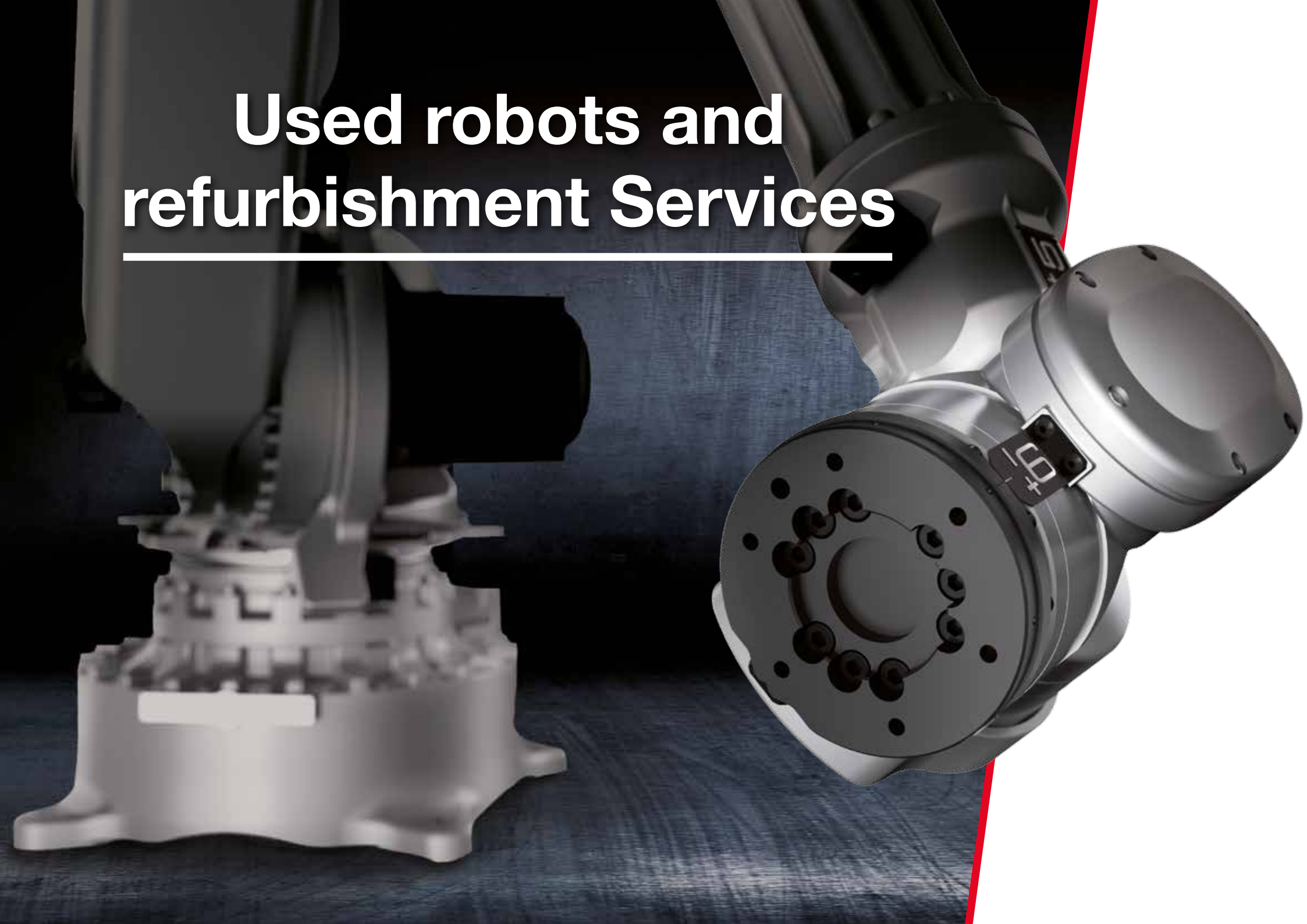
### ROBOT CONTROLLER

#### Annual controls and activities

- Save user programs on USB
- Check fans and clean cooling system
- Control emergency button on the ITP
- UPS battery check
- APC battery check
- Check grounding strips
- Control connections, clamping connectors and screws
- Control mains voltage (380/500 V +/- 15%)
- Control SDM voltage
- Control filters
- Check dial functionality of the ITP
- Check selector functionality on TP
- Check general integrity of the C5G system
- Fill out the maintenance card with relevant observations

# Used robots and refurbishment Services

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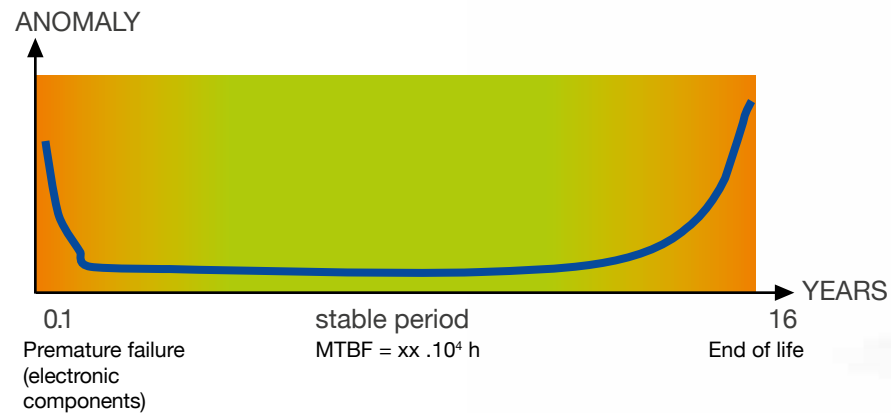
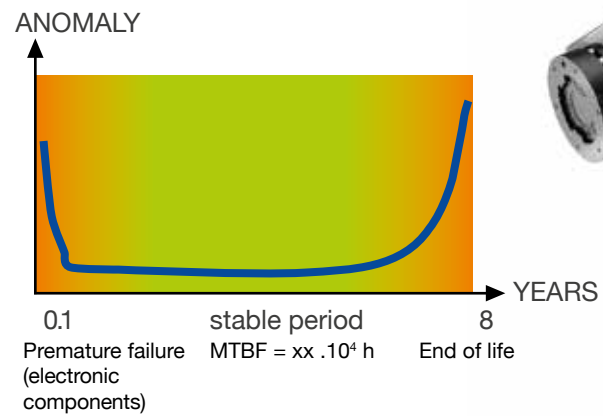
## Used robots and refurbishment services

A refurbished robot is a used robot that has undergone an overhaul to return it to its original condition.

This procedure prolongs its operational lifespan.

After careful inspection, each robot is load tested for twenty-four hours.

Comau guarantees its refurbished robots for a period of 12 months from the date of shipment.



# Robot retrofit



# Components subject to retrofit

Lubrication & backlash check

Visual inspection of all parts



Always



As necessary

Replace the application loom and the wiring harness



Replace the gearboxes for axes 4-5-6

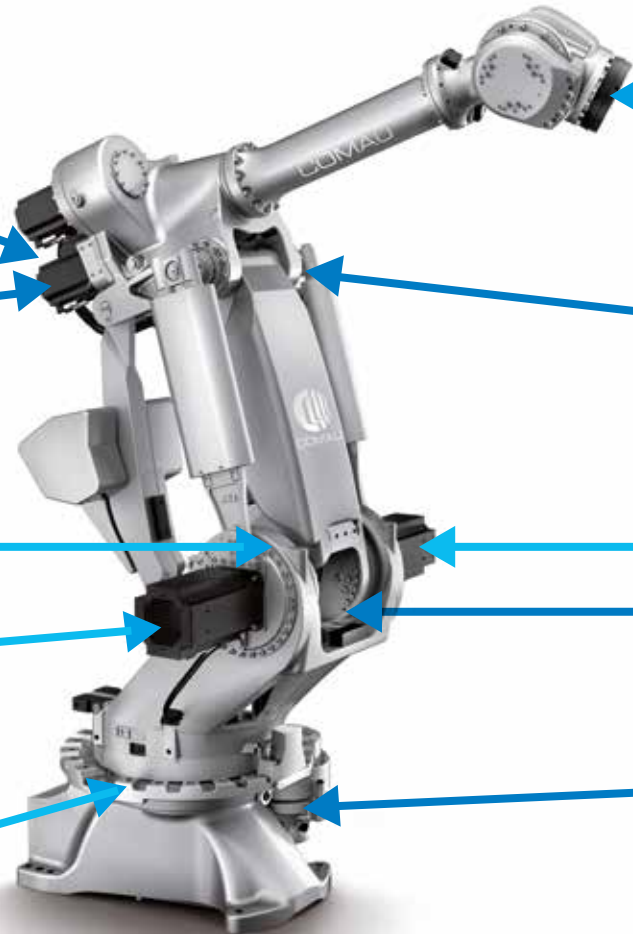


Replace the axis 3 gearbox



Revise the axis 3 motor

Replace the axis 1 fifth wheel



Revise the wrist



Replace the spring bearings



Revise the axis 2 motor

Replace the axis 2 gearbox



Revise the axis 1 gearbox

Ready for

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the future



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The illustration does not necessarily show the products in their standard version.

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