

Introduction

Different robot versions

The IRB 6400, as mentioned above, is available in several different versions. The following different robot types are available:

Robot Versions	
IRB 6400/ 2.4-120	IRB 6400F/ 2.4-120
IRB 6400/ 2.4-150	IRB 6400F/ 2.4-150
IRB 6400/ 2.4-200	IRB 6400F/ 2.4-200
IRB 6400/ 2.8-120	IRB 6400F/ 2.8-120
IRB 6400/ 3.0-75	IRB 6400F/ 3.0-75
IRB 6400S/ 2.9-120	IRB 6400FS/ 2.9-120
IRB 6400PE/ 2.25 -75	IRB 6400FHD

Definition of version designation

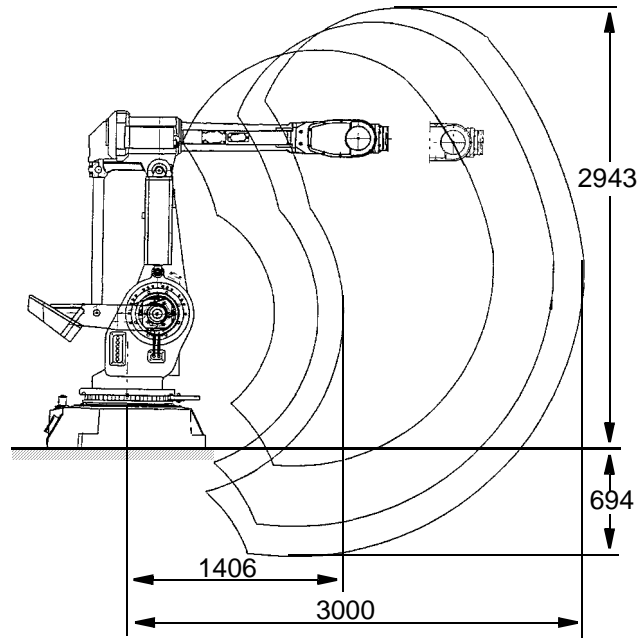
IRB 6400 Application, Mounting/ Reach - Handling capacity

	Prefix	Description
Application	PE	Robot adapted for poke welding
	F	Manipulator adapted for use in harsh environments (e.g. foundry)
	HD	Heavy Duty
Mounting	-	Floor-mounted manipulator
	S	Shelf-mounted manipulator
Reach	x.x	Indicates the maximum reach at wrist centre (m)
Handling capacity	yyy	Indicates the maximum handling capacity (kg)

2.8 Robot Motion

Floor-mounting

Dimensions apply to
IRB 6400/ 3.0-75



Shelf-mounting

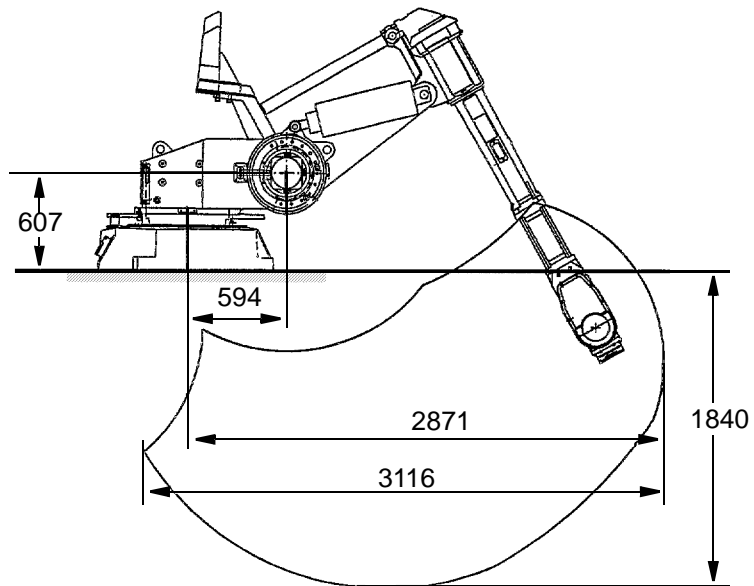


Figure 8 Working space of IRB 6400 and IRB 6400S (dimensions in mm).

Technical specification

**IRB 6400 /2.4-120, /2.4-150, /2.4-200, /2.8-120, /3.0-75
IRB 6400FHD**

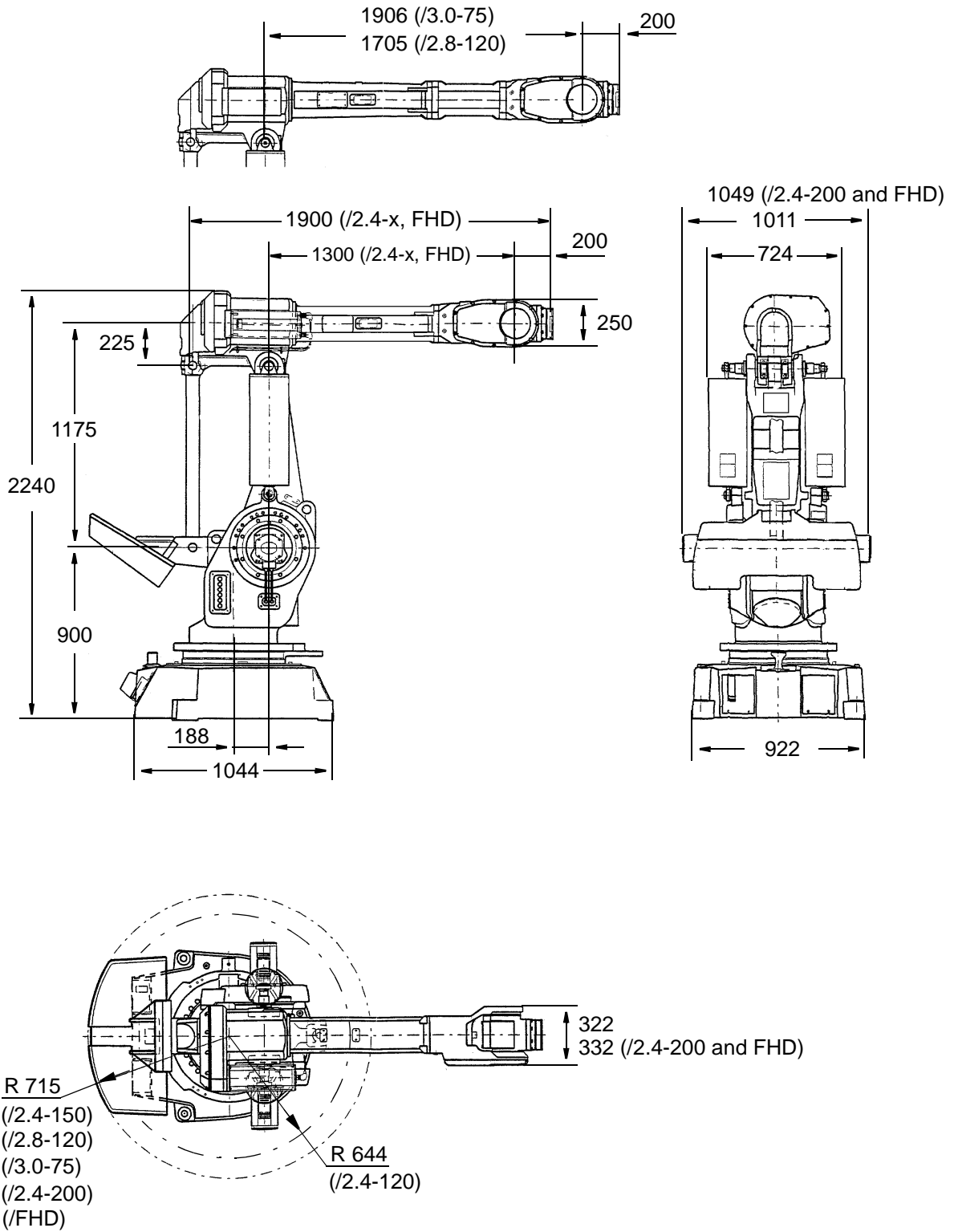


Figure 11 View of the manipulator from the side, rear and above (dimensions in mm).

IRB 6400PE /2.25-75

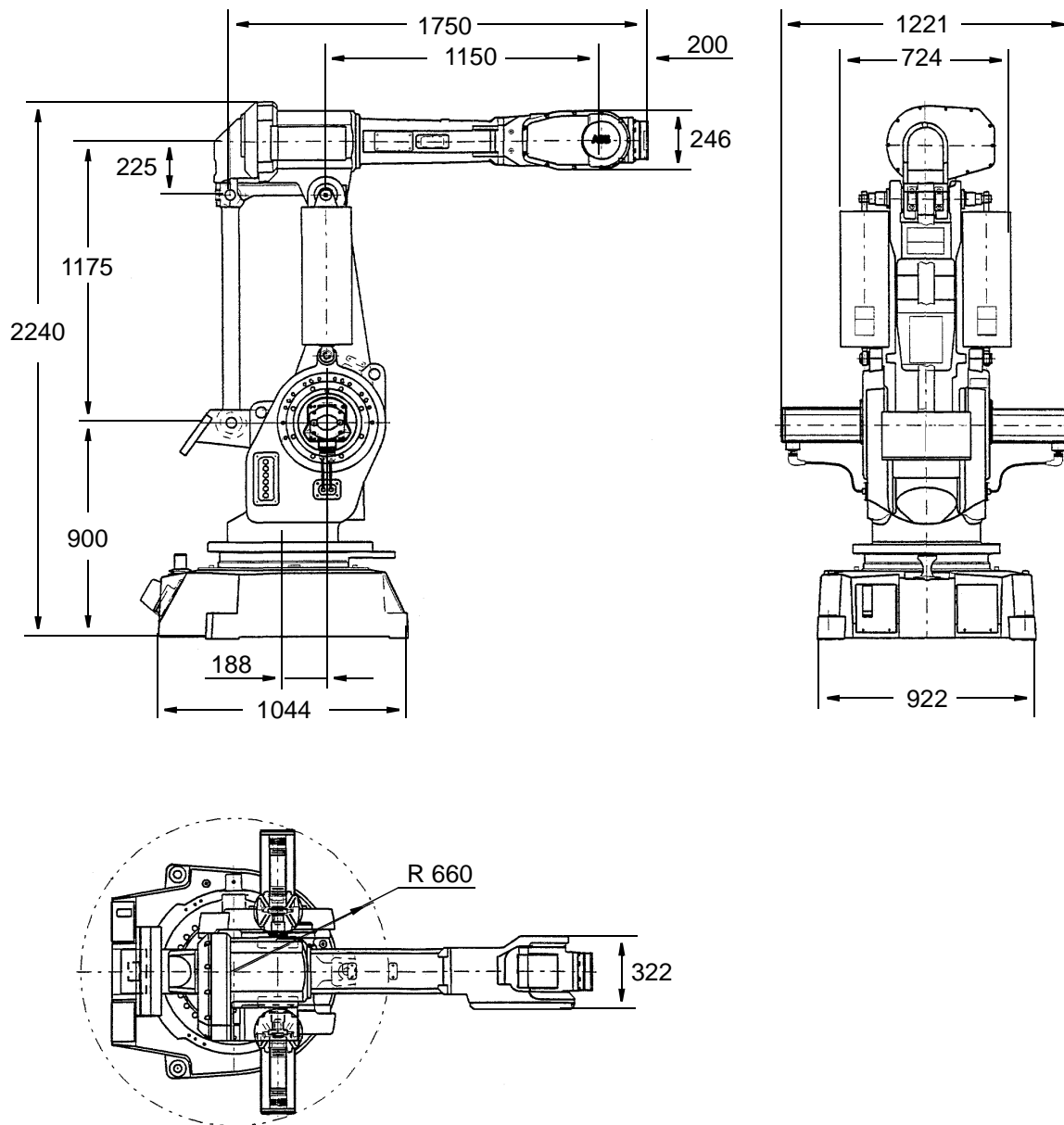


Figure 12 View of the manipulator from the side, rear and above (dimensions in mm).

Technical specification

IRB 6400S /2.9-120

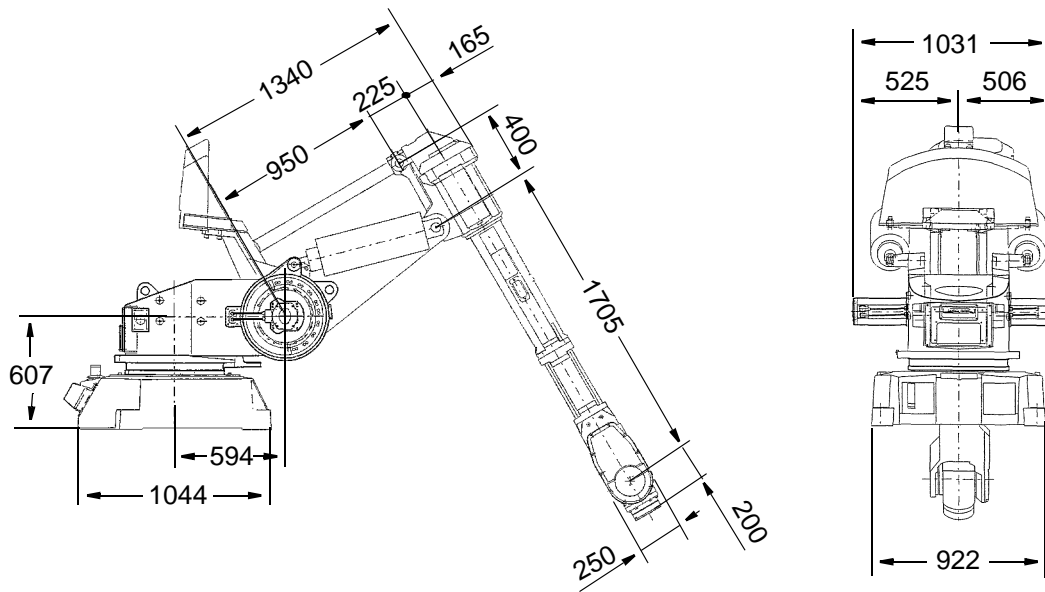


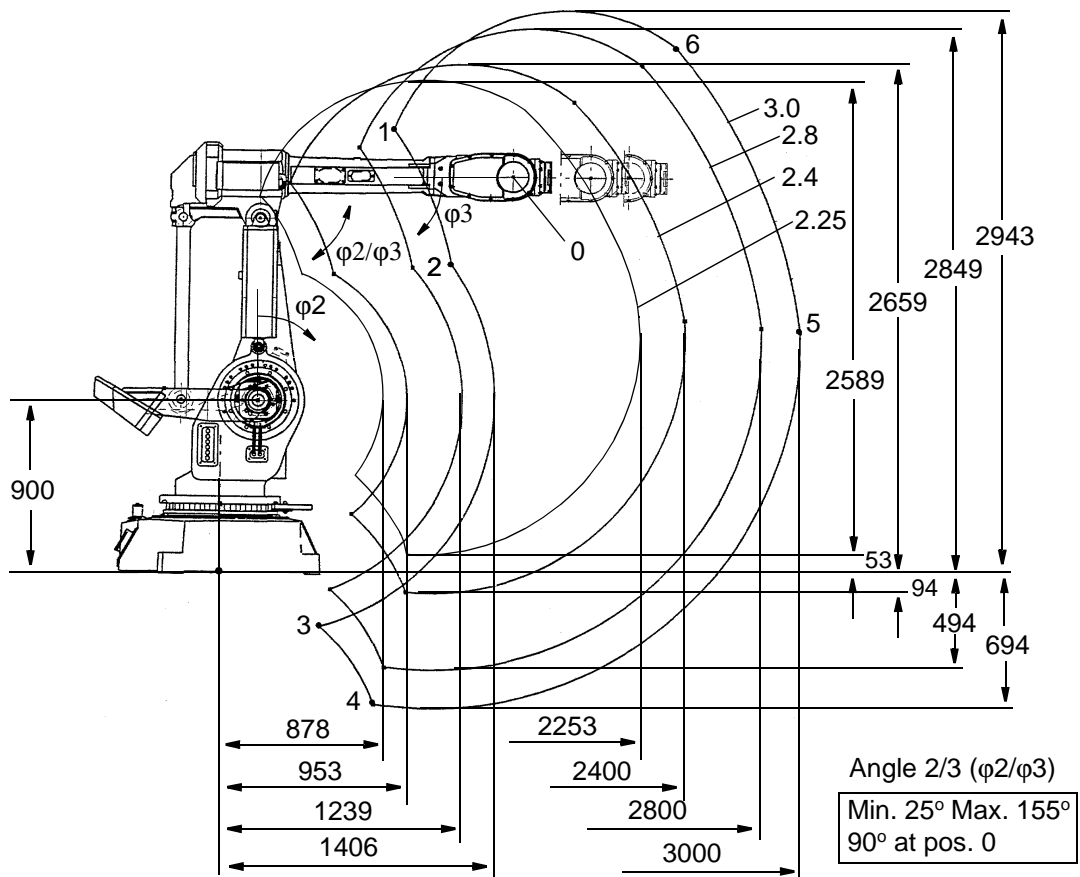
Figure 13 View of the manipulator from the side and rear (dimensions in mm).
The robot is shown in its calibration position.

3.8 Robot Motion

IRB 6400 /2.4-120, /2.4-150, /2.4-200, /2.8-120, /3.0-75, FHD and PE/2.25-75

Type of motion	Range of movement
Axis 1 Rotation motion	+180° to -180°
Axis 2 Arm motion	+70° to -70°
Axis 3 Arm motion	+105° to -28°
Axis 4*) Wrist motion	+300° to -300° +200° to -200° (PE /2.25-75)
Axis 5*) Bend motion	+120° to -120°
Axis 6 Turn motion	+300° to -300°

*) For IRB 6400FHD, see load diagram Figure 20.



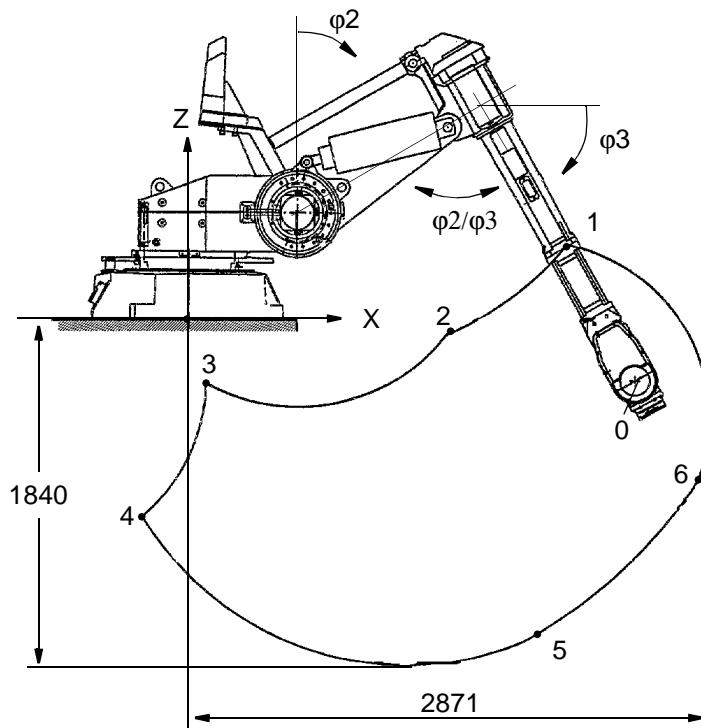
All dimensions refer to the wrist centre (mm)

pos.	Positions at wrist centre (mm)								Angle ϕ_2, ϕ_3 (degrees)		
	2.4 -120 -150 -200		2.8-120		3.0-75		PE/2.25-75		pos.	axis 2 (ϕ_2)	axis 3 (ϕ_3)
	x	z	x	z	x	z	x	z			
0	1488	2075	1892	2075	2094	2075	1338	2075	0	0	0
1	388	2034	695	2224	873	2318	205	1963	1	-70	-28
2	571	1563	974	1598	1175	1615	421	1549	2	-70	-5
3	680	314	575	-77	523	-271	718	459	3	40	105
4	962	-89	857	-479	805	-674	1000	56	4	70	105
5	2395	1336	2798	1300	2999	1283	2246	1349	5	70	5
6	1802	2467	2159	2657	2337	2752	1669	2397	6	37	-28

Figure 31 The extreme positions of the robot arm

IRB 6400S /2.9-120

Type of motion	Range of movement
Axis 1 Rotation motion	+180° to -180°
Axis 2 Arm motion	+140° to +10°
Axis 3 Arm motion	+155° to +47°
Axis 4 Wrist motion	+300° to -300°
Axis 5 Bend motion	+120° to -120°
Axis 6 Turn motion	+300° to -300°



All dimensions refer to the wrist centre (mm)

Angle 2/3 (ϕ_2/ϕ_3)

Min. 25° Max. 155°
90° at pos. 0

Positions at wrist centre (mm)

pos.	x	z
0	2464	-282
1	2086	449
2	1418	-46
3	94	-317
4	-245	-1045
5	1863	-1709
6	2802	-842

Angle ϕ_2 , ϕ_3 (degrees)

pos.	axis 2 (ϕ_2)	axis 3(ϕ_3)
0	60	60
1	10	47
2	10	75
3	90	155
4	140	155
5	140	75
6	112	47

Figure 32 The extreme positions of the robot arm.

Technical specification

Performance according to ISO 9283

At rated load and 1 m/s velocity on the inclined ISO test plane with all six robot axes in motion.

Unidirectional pose repeatability:

RP = 0.1 mm (IRB 6400/2.4-120)

RP = 0.15 mm (IRB 6400/2.4-150 and IRB 6400/2.4-200)

RP = 0.2 mm (Others)

Linear path accuracy:

AT = 2.1 - 2.5 mm (IRB 6400/2.4-120)

AT = 2.5 - 3.0 mm (Others)

Linear path repeatability:

RT = 0.5 - 0.8 mm (IRB 6400/2.4-120)

RT = 0.8 - 1.4 mm (Others)

Minimum positioning time, to within 0.4 mm of the position:

0.2 - 0.3 sec. (IRB 6400/2.4-120, on 35 mm linear path)

0.6 - 0.8 sec. (IRB 6400/2.4-120, on 350 mm linear path)

0.3 - 0.5 sec. (Others, on 35 mm linear path)

0.7 - 0.9 sec. (Others, on 350 mm linear path)

The above values are the range of average test-results from a number of robots. If guaranteed values are required, please contact your nearest ABB Flexible Automation Centre.

Velocity IRB 6400 versions:

2.4-120	2.4-150	2.8-120	3.0-75	S/2.9-120	PE/2.25-75
	2.4-200				
	C/ B-150				
	FHD				

Axis no.

1	100°/s	90°/s	100°/s	100°/s	100°/s	70°/s
2	100°/s	90°/s	100°/s	100°/s	100°/s	70°/s
3	100°/s	90°/s	100°/s	100°/s	100°/s	70°/s
4	210°/s	120°/s	210°/s	210°/s	210°/s	210°/s
5	150°/s	120°/s	150°/s	150°/s	150°/s	150°/s
6	210°/s	190°/s	210°/s	210°/s	210°/s	210°/s

There is a supervision function to prevent overheating in applications with intensive and frequent movements.

Resolution

Approx. 0.01° on each axis.