

# Kawasaki Robot

Simple  friendly

## Cautions to be taken to ensure safety

For those persons involved with the operation/service of your system, including Kawasaki Robot, they must strictly observe all safety regulations at all times. They should carefully read the manuals and other related safety documents.

Products described in this catalogue are general industrial robots. Therefore, if a customer wishes to use the Robot for special purposes, which might endanger operators or if the robot has any problems, please contact us. We will be pleased to help you.

Be careful as photographs illustrated in this catalogue are frequently taken after removing safety fences and other safety devices stipulated in the safety regulations from the Robot operation system.

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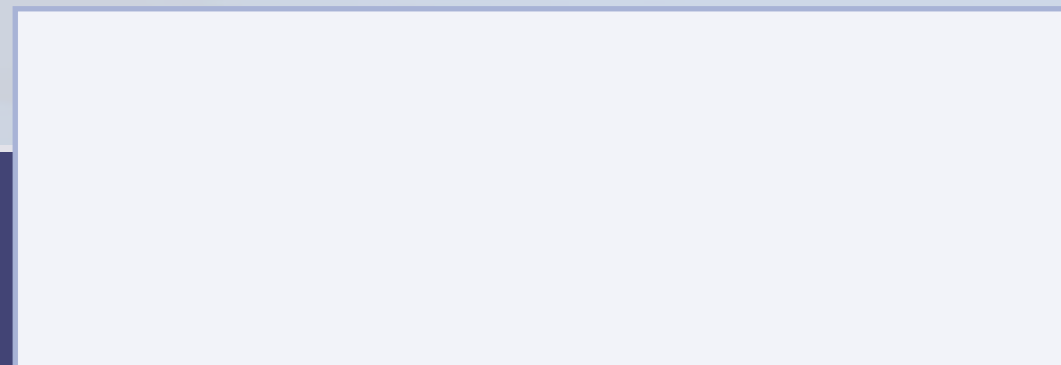
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## Agent



EUROPE



100 – 300 kg Payload



# Kawasaki Robot

Simple & friendly

## Automotive and General Industries, ...



The Kawasaki Z-Series high performance robots provide flexibility as well as the ability, at high payloads and long reach, to suit all applications, including welding, handling, tending and much more. With twelve different versions, divided into three distinct design groups the Z-series can provide the right model for all future applications.

Whether it's the "ZX" for floor mounting, the "ZT" for shelf mounting or the "ZB" as a compact arm, the Z-series can do it all. All Z-Series robots are powered by the D-Controller, flexible Controller Unit.

### Improved cycle times

A weight-optimised construction, the use of high-speed motors and high-efficiency gears permit an optimisation of the maximum speed and acceleration.

### Large working range and low power consumption

The Z Series has a broad working range thanks to the large reach and small blind angle. Axis 1 can be pivoted around 360° and has mechanical locks. Through the use of the patented hybrid link configuration by Kawasaki the power consumption during the robot movements could be reduced.

### Space saving and easy installation through a small foot print

More space means higher costs. The small base sizes and slim arm profile of the Z Series robot arm allows a space-saving construction of working cells.

### Protective configurations IP65, IP67

Protection class IP65 applies for the robot arm and IP67 for the wrist part. This means that the Z Series can be used without problems in rough working environments.

### Convertability

Simple hardware and software modifications allow an optimisation of the ZX165U in terms of reach or payload. A subsequent adjustment of the robot to different tasks poses no problems and can be carried out at low cost



Spot welding



Palletizing



Spot welding



# Kawasaki Robot

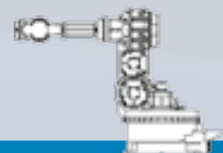
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## Specifications

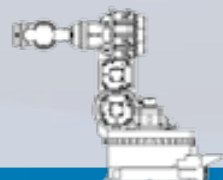
TYP	ZB100L	ZB150S	ZT130L	ZT130U	ZT165U	ZT200U	
Type of arm	Articulated arm						
Degrees of freedom	6 axes (optional 7 axes)						
Reach	1,655 mm	1,365 mm	3,530 mm	3,230 mm	3,230 mm	3,230 mm	
Maximum Payload	100 kg	150 kg	130 kg	130 kg	165 kg	200 kg	
Maximum stroke	JT1	± 160°	± 160°	± 180°	± 180°	± 180°	
	JT2	+120°~-70°	+120°~-70°	+60°~-75°	+60°~-75°	+60°~-75°	
	JT3	+100°~-150°	+100°~-150°	+165°~-95°	+165°~-95°	+165°~-95°	
	JT4	± 360°	± 360°	± 360°	± 360°	± 360°	
	JT5	± 130°	± 130°	± 130°	± 130°	± 130°	
	JT6	± 360°	± 360°	± 360°	± 360°	± 360°	
	JT7	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm
Maximum speed	JT1	100°/s	100°/s	105°/s	105°/s	105°/s	90°/s
	JT2	100°/s	100°/s	105°/s	105°/s	105°/s	90°/s
	JT3	90°/s	90°/s	105°/s	105°/s	105°/s	90°/s
	JT4	135°/s	135°/s	140°/s	140°/s	135°/s	120°/s
	JT5	135°/s	135°/s	135°/s	135°/s	135°/s	115°/s
	JT6	210°/s	210°/s	230°/s	230°/s	210°/s	180°/s
	JT7	1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s
Repeatability	± 0,3 mm						
Moment*	JT4	0 N·m	911.4 N·m	735 N·m	735 N·m	911.4 N·m	980 N·m
	JT5	0 N·m	911.4 N·m	735 N·m	735 N·m	911.4 N·m	980 N·m
	JT6	0 N·m	450.8 N·m	421 N·m	421.4 N·m	450.8 N·m	490 N·m
Moment of inertia	JT4	78.4 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	51.9 kg/m <sup>2</sup>	51.9 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	93.1 kg/m <sup>2</sup>
	JT5	78.4 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	51.9 kg/m <sup>2</sup>	51.9 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	93.1 kg/m <sup>2</sup>
	JT6	40.18 kg/m <sup>2</sup>	40.18 kg/m <sup>2</sup>	27.4 kg/m <sup>2</sup>	27.44 kg/m <sup>2</sup>	40.18 kg/m <sup>2</sup>	46.1 kg/m <sup>2</sup>
Weight	915 kg	900 kg	1,565 kg	1,550 kg	1,550 kg	1,550 kg	
	1,500 mm/s	1,500 mm/s	2,500 mm/s	2,500 mm/s	2,500 mm/s	2,500 mm/s	
Recommended Controller	D42						
Installation	Floor						
Integrated functions	Air Line (12 mm Ø)		Air lines (12 mm Ø x 2), wiring for the solenoid valves of the grab (A.C. 24V)				
Optional	Mechanical stopper JT1/JT2/JT3, special colour.		Mechanical stopper JT1/JT2/JT3, special colour, internal wiring for end effector, twin solenoid valve 1/2, single solenoid valve 1/2, twin solenoid valve 1 + single solenoid valve 1, 1 filter control unit, internal hoses for welding gun cooling water				
Colour	Munsell 10GY9/1 or equivalent						

## Specifications

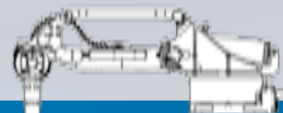
ZX130L	ZX130U	ZX165L	ZX165U	ZX200U	ZX300S	TYP
Articulated arm						Type of arm
6 axes (optional 7 axes)						Degrees of freedom
2,951 mm	2,651 mm	2,810 mm	2,651 mm	2,651 mm	2,501 mm	Reach
130 kg	130 kg	165 kg	165 kg	200 kg	300 kg	Maximum Payload
± 180°	± 180°	± 180°	± 180°	± 180°	± 180°	JT1
+75°~-60°	+75°~-60°	+75°~-60°	+75°~-60°	+75°~-60°	+75°~-60°	JT2
+250°~-120°	+250°~-120°	+250°~-120°	+250°~-120°	+250°~-120°	+250°~-120°	JT3
± 360°	± 360°	± 360°	± 360°	± 360°	± 360°	JT4
± 130°	± 130°	± 130°	± 130°	± 130°	± 120°	JT5
± 360°	± 360°	± 360°	± 360°	± 360°	± 360°	JT6
standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	standard 2,000 mm	JT7
110°/s	110°/s	100°/s	110°/s	95°/s	100°/s	JT1
110°/s	110°/s	105°/s	110°/s	95°/s	85°/s	JT2
110°/s	110°/s	95°/s	110°/s	95°/s	85°/s	JT3
140°/s	140°/s	135°/s	135°/s	120°/s	90°/s	JT4
135°/s	135°/s	135°/s	135°/s	115°/s	90°/s	JT5
230°/s	230°/s	210°/s	210°/s	180°/s	150°/s	JT6
1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s	1,000 mm/s	JT7
± 0,3 mm						Repeatability
7.35 N·m	7.35 N·m	911.4 N·m	911.4 N·m	980 N·m	1,715 N·m	JT4
7.35 N·m	7.35 N·m	911.4 N·m	911.4 N·m	980 N·m	1,715 N·m	JT5
221.4 N·m	221.4 N·m	450.8 N·m	450.8 N·m	490 N·m	862.4 N·m	JT6
51.94 kg/m <sup>2</sup>	51.94 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	93.1 kg/m <sup>2</sup>	166.6 kg/m <sup>2</sup>	JT4
51.94 kg/m <sup>2</sup>	51.94 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	78.4 kg/m <sup>2</sup>	93.1 kg/m <sup>2</sup>	166.6 kg/m <sup>2</sup>	JT5
27.44 kg/m <sup>2</sup>	27.44 kg/m <sup>2</sup>	40.18 kg/m <sup>2</sup>	40.18 kg/m <sup>2</sup>	46.1 kg/m <sup>2</sup>	107.8 kg/m <sup>2</sup>	JT6
1,400 kg	1,350 kg	1,355 kg	1,355 kg	1,350 kg	1,400 kg	Weight
2,500 mm/s	2,500 mm/s	2,500 mm/s	2,500 mm/s	2,500 mm/s	2,500 mm/s	
D42						Recommended Controller
Floor						Installation
Air lines (12 mm Ø x 2), wiring for the solenoid valves of the grab (A.C. 24V)						Integrated functions
Mechanical stopper JT1/JT2/JT3, special colour, internal wiring for end effector, twin solenoid valve 1/2, single solenoid valve 1/2, twin solenoid valve 1 + single solenoid valve 1, 1 filter control unit, internal hoses for welding gun cooling water						Optional
Munsell 10GY9/1 or equivalent						Colour



ZB100L



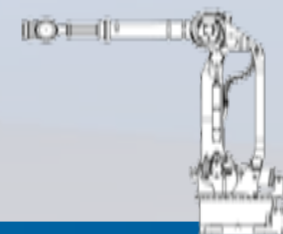
ZB150S



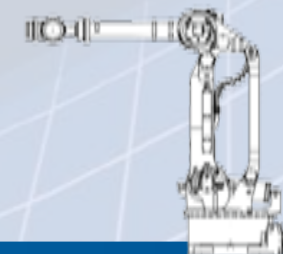
ZT130L



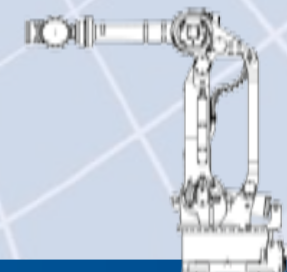
ZT130U  
ZT165U  
ZT200U



ZX130L



ZX130U  
ZX165U  
ZX200U

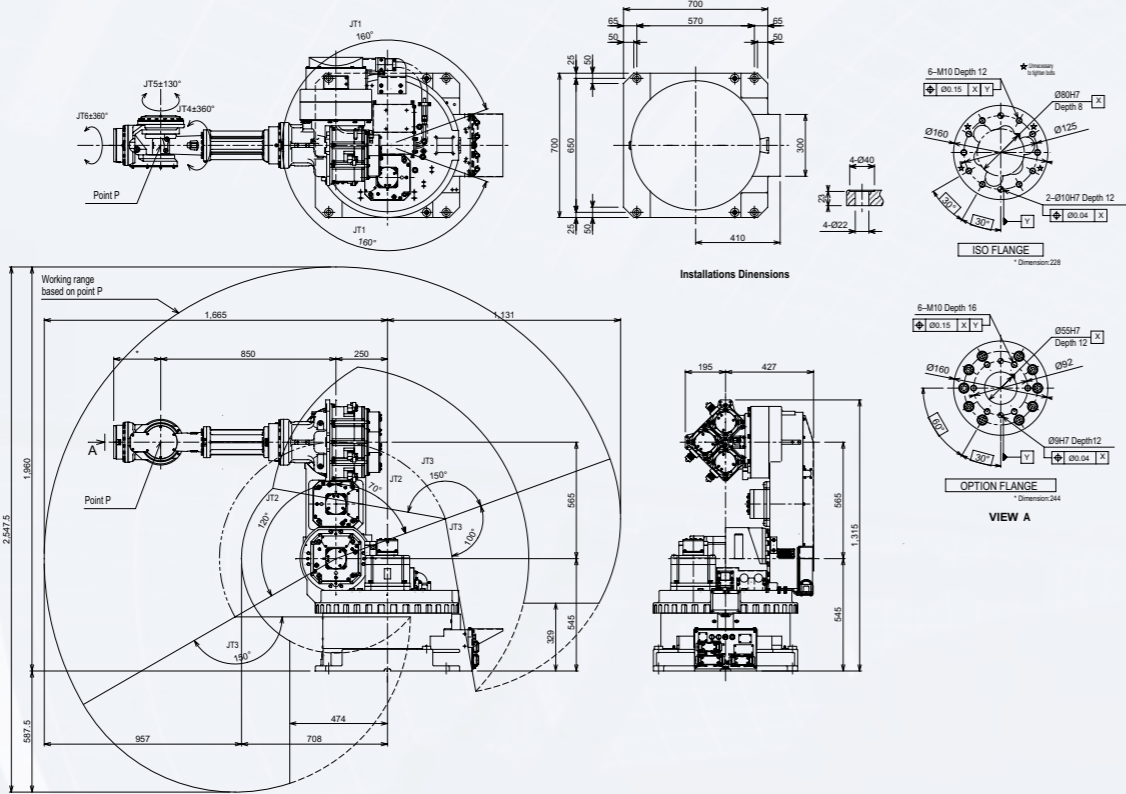


ZX300S



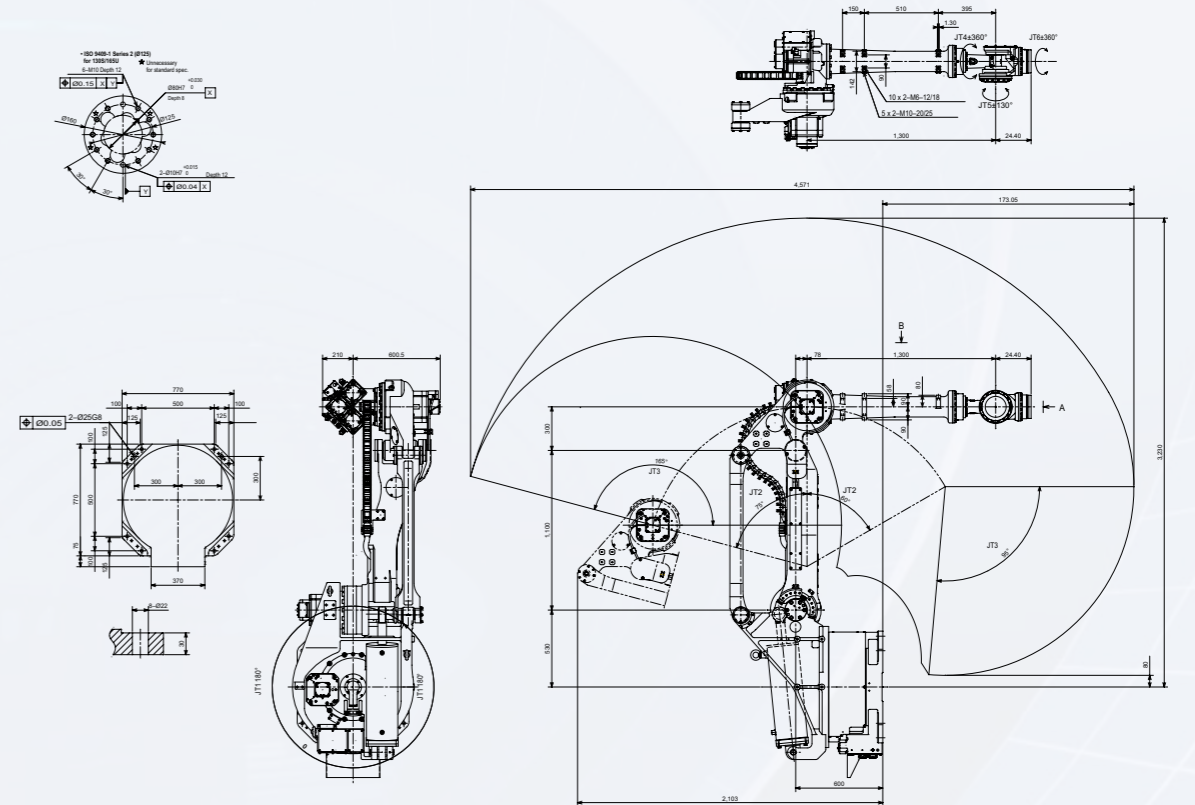
## Motion Range & Dimensions

### ZB100L

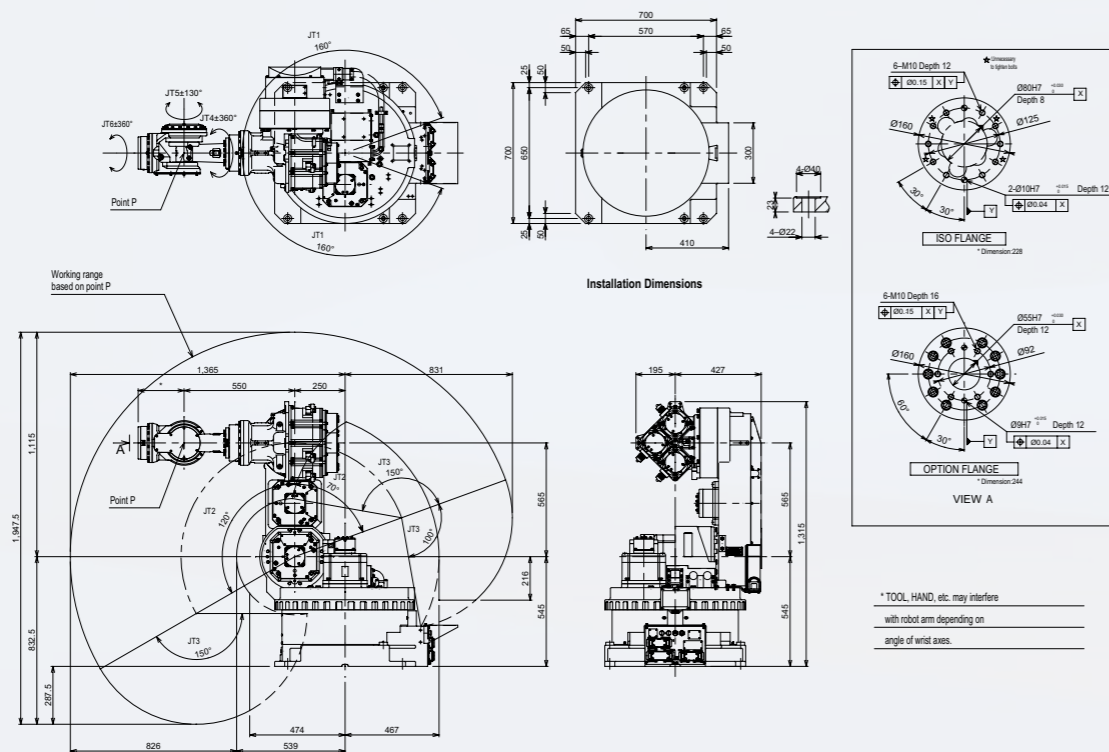


## Motion Range & Dimensions

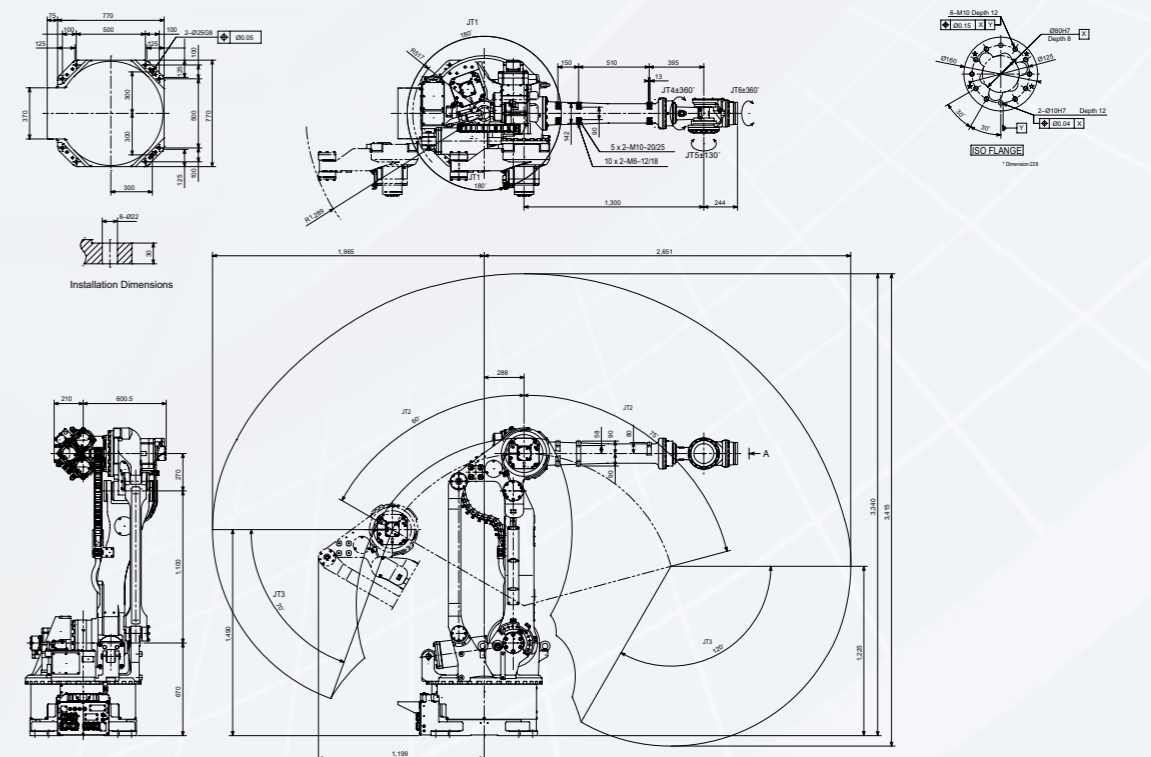
### ZT130U ZT165U ZT200U



### ZB150S



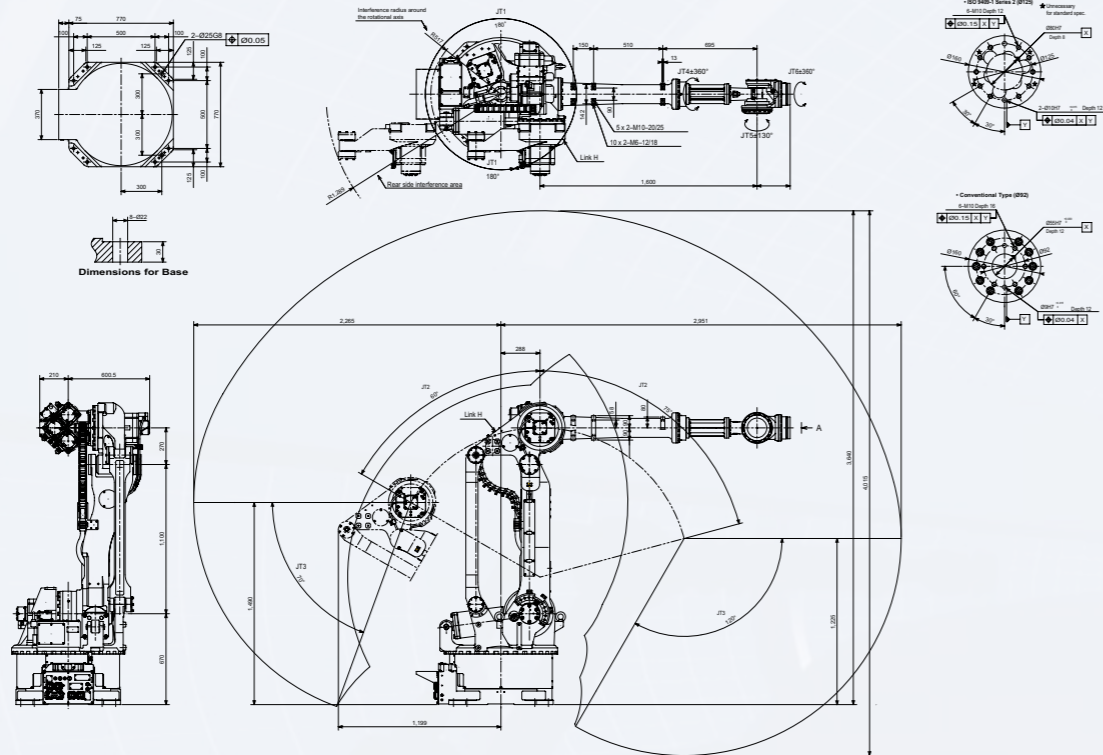
### ZX130U ZX165U ZX200U





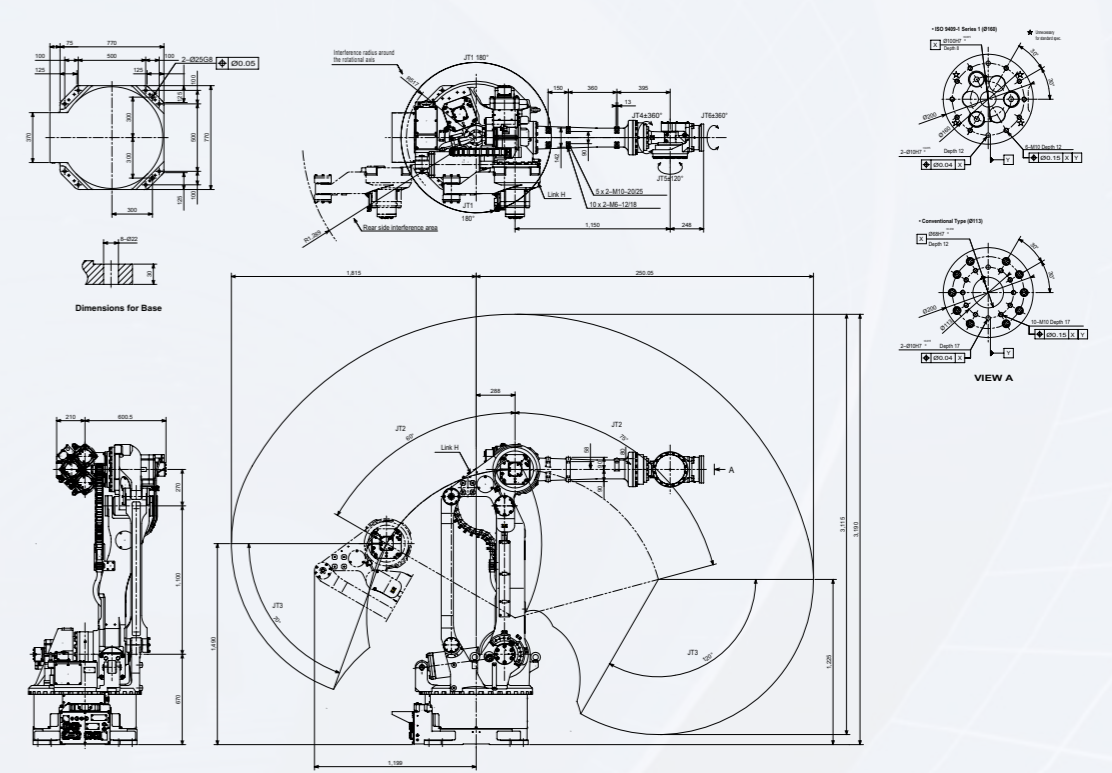
## Motion Range & Dimensions

### ZX130L

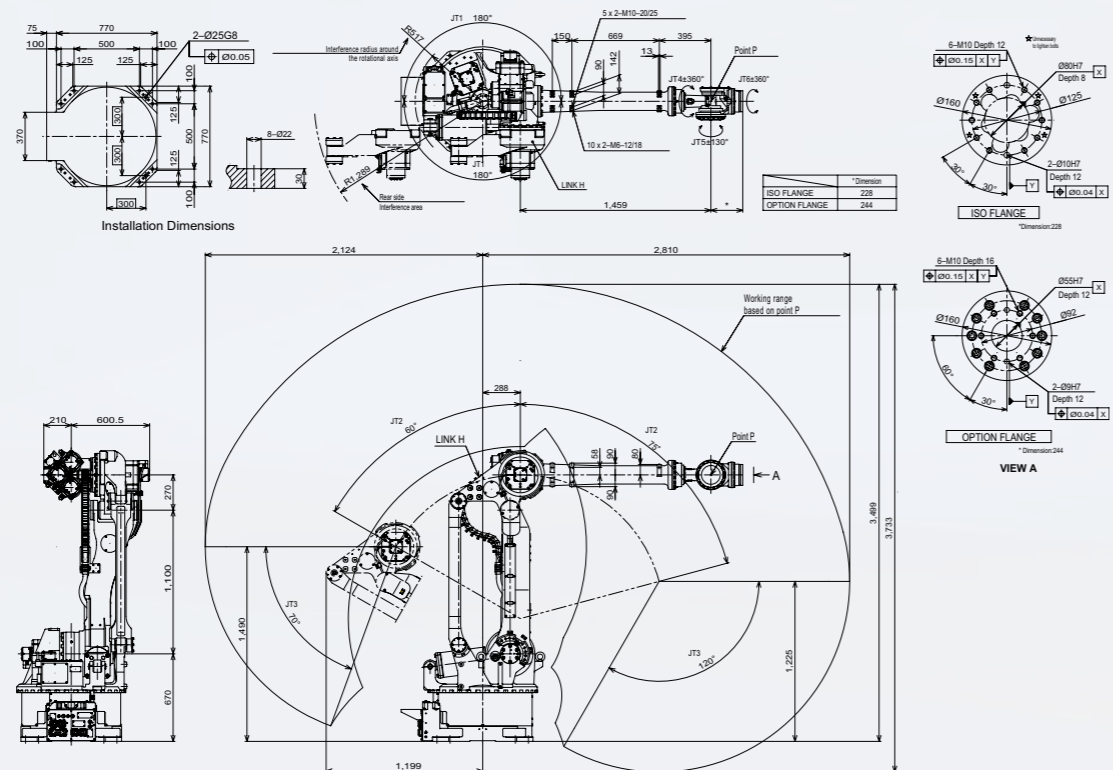


## Motion Range & Dimensions

### ZX300S



### ZX165L





## Ergonomic operation

### • Optimised work at the teach pendant

The Teach Pendant (TP) is a combination of control keyboard and an easy-read, 6.4 inch colour LCD touch-screen. A new hardware structure for the TP reduces the key response time and the ergonomic arrangement of the keys helps the operator achieve optimised inputs and programming. The workflow is optimised and the TP becomes an ergonomic user platform for operating the robot.

## Special software combined with standards

Applications Software Modules facilitate programming for a wide range of applications such as palletizing, handling, spot welding, bonding and arc welding. The simplified block programming and Kawasaki's high level robot language (AS-language) provide enormous possibilities for innovative movement- and process control. Using the available options – such as servo-welding, network support and a high-performance visualisation system – a platform is created to find flexible solutions for even the most complex of applications.

## High performance through modern control technology

A RISC, 64-bit high-speed dual processor provides the computing power. The use of a fully digitally controlled servo-system has significantly improved operating performance, cycle time and path accuracy. In addition, system errors have been reduced to a minimum through collision detection/automatic stop and path recovery after an emergency stop. The controller is of course fully downwardly compatible. This means that the D controller can be integrated in existing old systems with no problems.

## Modular and flexible control design

### • Connection of peripheral equipment

Standard I/O connections and a number of field bus interfaces such as Interbus, Profibus, CC-Link and DeviceNet etc. are available as interfaces to the peripheral equipment. The peripheral equipment is connected directly and permits the system's high flexibility. Furthermore, K-Logic (integrated software PLC) allows the creation of a highly complex Integrated system at a minimum cost

### • Network communication

The controller also supports network communication via Ethernet to communicate with a host computer and for an easy upload and download of the programs to be run. Furthermore, the status of the robot can be monitored per remote access via an Intranet/Internet connection.

### • Extension with additional axes

A further two axes can be integrated in the standard controller without any problems and without an additional housing. Three or more additional axes are available by selecting SSCNET-compatible motors. This allows multi-axial systems to be easily configured to match the customer's requirements.

## User-friendly design

A reduction of the robot's internal wiring and the use of modular assemblies facilitates servicing and ensures shorter working times when repairing or replacing parts with no long and costly downtimes. What's more, supporting service functions such as data storage help the user locate the causes of existing problems. The service software includes restoration procedures\* in the event of system errors (Z Series) and an Ethernet interface allows a remote system diagnosis.

\*In the event of system errors the service and support function of the Z Series offers procedures to display: possible sources of errors and probabilities as well as diagnosis, replacement instructions and times to remedy faults.



### Teach Pendant

- Large LCD colour monitor with touchscreen functions.
- Ergonomically arranged cursor keys.
- The key layout has been optimised with respect to the frequency of use by the operator.
- Deadman's switch with three positions on rear.



## Specifications

MODEL		D 42	
		STANDARD	OPTION
Design		Standalone main housing	
Number of controlled axes		6 axes	Maximum 16 axes*1
Servomotor		A.C. servomotor	
Position detection		Absolute encoder	
Drive system		Fully digitally controlled servo-system	
Programming		Block teaching or AS language	
Coordinates Systems		Axis, basis, tool	Fixed tool point
Types of motion control		Movement with axis, linear and circle interpolation	
Multi-purpose signals	Ext. control signals	Motor voltage Off, Hold	
	Input signals	32 channels	64/96/128 channels
	Output signals	32 channels	64/96/128 channels
Storage capacity		1 MB: approx. 10,000 program steps	2/4/8 MB: approx. 20,000/40,000/80,000 program steps
External memory		PCMCIA card slot	
Data communication interface	PC, network, etc.	RS232C, Ethernet	
	Field bus	RS485 CC-Link, DeviceNet, Profibus-DP, ControlNET, AB Remote I/O, Interbus	
Teach pendant		6.4" TFT LCD touchscreen, 640x480 VGA, "E-Stop", teach lock switch, deadman's switch, 58 hardware keys (keys for manual operation of the robot, cursor keys, etc.)	
Control panel		Basic switch: motor voltage on, cycle start, error reset, "E-Stop", run/hold, teach/repeat, etc.	
Cable length	Teach Pendant	10 m	5 m, 15 m, 20 m, 25 m, 30 m
	Robot controller	10 m	5 m, 15 m, 20 m, 25 m, 30 m, 35 m, 40 m
Dimensions (WxDxH)		600 mm x 550 mm x 1,200 mm	
Weight		130 kg	approx. 200 kg (with transformer)
Necessary power supply		A.C. 380/400/415/440/460/480V ± 10%, 50/60Hz, 3 phases, 11,4 KVA	A.C. 200/220V ± 10%, 50/60Hz, 3 phases, 11,4 KVA
Own earthing of the robot		< 100 Ω; maximum leakage current 100 mA	< 100 Ω; max. leakage current 100 mA (with transformer)
temperature/humidity		0-45° C, 35-85% humidity without dew formation and frost	
Colour		Munsell 10GY9/1 or equivalent	

\*1 Please contact us if you use 7 axes or more.

## External View & Dimensions D42

