GSK广州数控
Command the Future_

Diligent Chinese Robot



Intelligent Equipment Manufacturing Expert

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All pictures herein are subject to the material. If parameter changes based upon the technical improvement without further notice!

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广州数控设备有限公司 GSK CNC EQUIPMENT CO., LTD.



Numerical Control Industrial Base of South China

Founded in 1991, GSK CNC EQUIPMENT CO., LTD (GSK), being the Numerical Control Industrial Base of South China, had been experienced starting up business, innovation and creation, and has been one of the first new high-tech enterprises, providing with complete intelligent equipment solutions.

Aiming at the CNC machine tool industry, automatic control field and injection molding industry, GSK provides for users with machine tool CNC systems, servo drivers, servo motors, CNC machine tool's chain marketing exhibition rooms, machine tool CNC engineering, automatic control systems, industrial robots, precise CNC injection machines and CNC training institution, and offers overall process solutions of intelligent manufacture to users.

Building century enterprise, creating golden brand

We believe that the future industry is in the intelligent manufacture world everywhere the CNC technology and artificial intelligence are, which will change the industry manufacture method and human's life style. Cooperating and sharing values each other, GSK is willing to grow with its partners and establishes a more precise, more efficient and more intelligent manufacture platform through sustained technical progress and innovation, which can promote blend between human and machines, between machines and machines, and between machines and factories. It makes unremitting endeavor to promote users' product values and efficiency and to impetus intelligent equipment localization, which comes to use Chinese equipments to equip China toward the world.

Diligent Chinese Robot

With the industry control technology R&D, and manufacture experience for more than 20 years, GSK has produced our industrial robots with independent intellectual property rights, including robot controllers, servo motors and servo drivers and other key functional components. Presently, GSK's industrial robots are divided into 6 series covering transportation, welding, polishing, painting, stacking and paralleling, up to 20 kinds of product.
Being one of enterprises undertaking "National Intelligent Manufacturing Equipment Development Special Project", GSK independently researches and develops industrial robots carrying high quality and high technology of GSK's CNC systems. According to users' requirements, it provides robots with superior performance, and design and manufacture of work fixtures and logistics conveyor lines used for the robot's automatic application.


C3-1100


C4-1100


RSP600B15


RSP600A15


RH06


RMD08


RMD20


RMD120/RMD160/RMD200


RB130


RB210


RB165


RB50


RB06L


RB15L


RB20


RB10


RB08


RB08A3


RB03A1

RB Series

Application field: It is widely used in burnishing, polishing, machine loading/unloading and automatic transport on punching automation production lines.

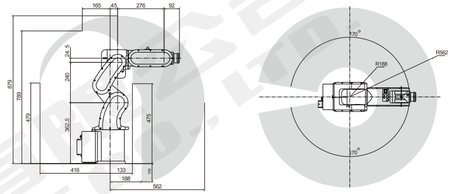
Type		DOF	Drive Method	Effective Loading (kg)	Repeated Positioning Accuracy (mm)	Motion Range(°)						Top Velocity(°/s)						Allowed Top Torque (N.m)			Motion Radius (mm)	Machine Weight (kg)
						J1	J2	J3	J4	J5	J6	J1	J2	J3	J4	J5	J6	J4	J5	J6		
RB03A1		6	AC Servo Drive	3	±0.02	±150	+144~-51	+64~-131	±150	±120	±360	375	375	419	600	600	750	9.3	9.3	4.5	562	36
RB08		6	AC Servo Drive	8	±0.05	±170	+120~-85	+75~-155	±180	±135	±360	154	154	154	420	252	620	14	12	7	1389	180
RB08A3		6	AC Servo Drive	8	±0.05	±150	+140~-90	+85~-150	±180	±135	±360	208	200	200	400	356	600	14	12	7	1450	210
RB10		6	AC Servo Drive	10	±0.05	±170	+150~-85	+85~-170	±360	±120	±360	200	160	200	360	360	600	43.2	43.2	25.4	1550	240
RB20 Series	RB06L	6	AC Servo Drive	6	±0.05	±170	+132~-95	+73~-163	±180	±133	±360	163	135	165	300	198	394	40	50	22	2000	305
	RB15L	6	AC Servo Drive	15	±0.05	±170	+132~-95	+73~-163	±180	±133	±360	163	135	165	300	198	394	40	50	22	1810	300
	RB20	6	AC Servo Drive	20	±0.05	±170	+132~-95	+73~-163	±180	±133	±360	163	135	165	300	198	394	40	50	22	1595	290
RB50		6	AC Servo Drive	50	±0.05	±178	+130~-90	+75~-200	±360	±115	±360	171	171	171	215	251	365	196	196	127	1956	600
RB130		6	AC Servo Drive	130	±0.20	±175	+75~-60	+80~-185	±360	±115	±360	100	94	104	165	174	238	951	951	490	2715	1420
RB165		6	AC Servo Drive	165	±0.20	±175	+75~-60	+80~-185	±360	±115	±360	100	94	104	152	160	220	951	951	490	2463	1400
RB210		6	AC Servo Drive	210	±0.20	±175	+75~-60	+80~-185	±360	±115	±360	100	94	104	144	118	200	1274	1274	686	2463	1430

Note: Avoid to contact with the imflammable, explosive and corrosive gas and liquid; do not splash the water, oil and dust; keep away from the electric appliances' noisy resource (plasma).

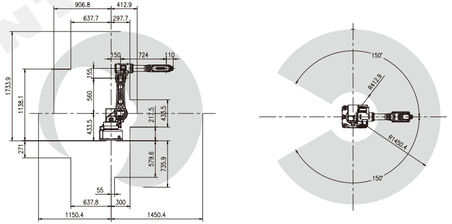


RB130 RB210 RB165 RB50 RB06L RB15L RB20 RB10(赤金龙) RB08 RB08A3 RB03A1

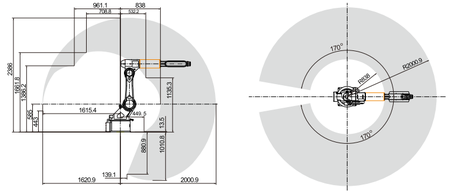
RB03A1 Motion range diagram



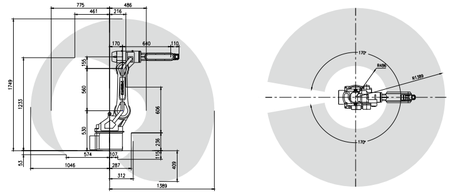
RB08A3 Motion range diagram



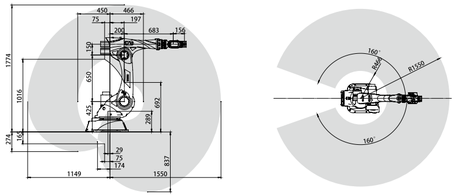
RB06L Motion range diagram



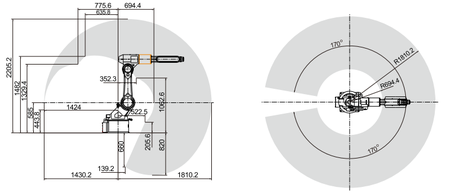
RB08 Motion range diagram



RB10 Motion range diagram



RB15L Motion range diagram

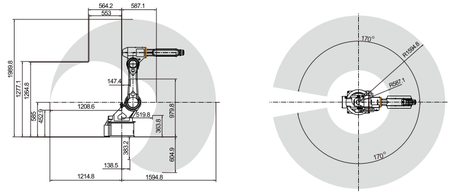


GSK CNC EQUIPMENT

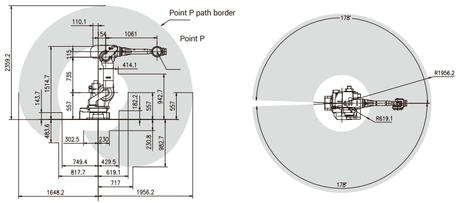
RB Series

Application field: It is widely used in burnishing, polishing, machine loading/unloading and automatic transport on punching automation production lines.

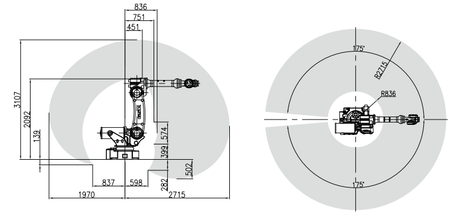
RB20 Motion range diagram



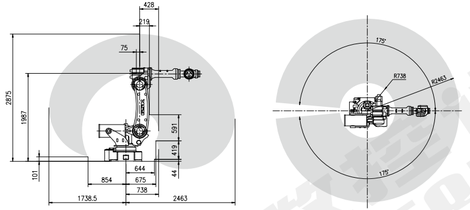
RB50 Motion range diagram



RB130 Motion range diagram



RB165/RB210 Motion range diagram



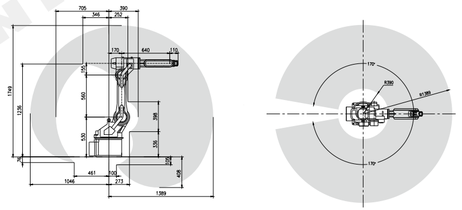
RH Series

Application field: It is widely used in automobiles and their accessories, motorcycles and their accessories, and agricultural machines, engineering machines and other hardware welding fields.

Type	DOF	Drive Method	Effective Loading (kg)	Repeated Positioning Accuracy (mm)	Motion Range(°)						Top Velocity(°/s)						Allowed Top Torque (N.m)			Motion Radius (mm)	Machine Weight (kg)
					J1	J2	J3	J4	J5	J6	J1	J2	J3	J4	J5	J6	J4	J5	J6		
RH06	6	AC Servo Drive	6	±0.05	±170	+120～-85	+75～-155	±180	±135	±360	154	154	154	420	252	620	12	10	6	1389	180

Note: Avoid to contact with the imflammable, explosive and corrosive gas and liquid; do not splash the water, oil and dust; keep away from the electric appliances' noisy resource (plasma).

RH06 Motion range diagram



★ Matched with MEGMEET, GSK, EWM, LORCH, KEMPPI, ESAB's welders, GSK Series Welding Robot can realize DeviceNet bus digital communication, realize I/O analog communication matched with LINCOLN, OTC, Panasonic welders, and transform the present welders to meet customers' requirements.

MEGMEET GSK OTC Panasonic ewm ESAB KEMPPI LORCH LINCOLN ELECTRIC



GSK BRH350
Full-digital welder



RH06

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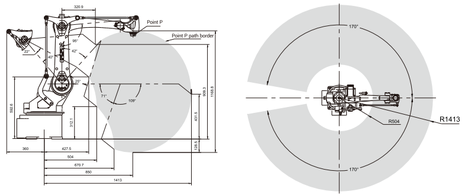
RMD Series

Application: stacking, unstacking, transferring, stamping, loading and unloading in packing, drinking, chemical industry and food industry.

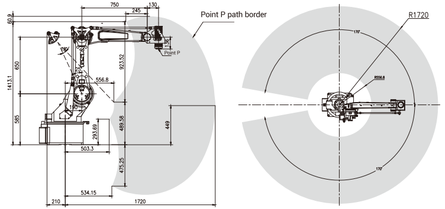
Type	DOF	Drive Method	Effective Loading (kg)	Repeated Positioning Accuracy (mm)	Motion Range (°)				Top Velocity (m/s)				Wrist Allowable Load Inertia (kg·m²)	Cycle Time (r/h)	Motion Radius (mm)	Machine Weight (kg)
					J1	J2	J3	J4	J1	J2	J3	J4				
RMD08	4	AC Servo Drive	8	±0.08	±170	+90~-40	+68~-90	±360	251	149	166	367.5	0.25	900②	1413	180
RMD20	4	AC Servo Drive	20	±0.08	±170	+115~-25	+70~-90	±360	140	140	150	330	0.51	\	1720	256
RMD120	4	AC Servo Drive	120	±0.3	±180	+100~-44	+121~-15	±360	128	126	135	300	78	1560①	3150	1500
RMD160	4	AC Servo Drive	160	±0.3	±180	+100~-44	+121~-15	±360	123	123	128	300	78	1500①	3150	1500
RMD200	4	AC Servo Drive	200	±0.3	±180	+100~-44	+121~-15	±360	105	107	114	242	78	1300①	3150	1500

Note：① The testing track covers 150 mm in height and 1000mm in width. Actual cycle time is subject to actual operating condition.
② The testing track covers 400 mm in height and 2000 mm in width. Actual cycle time is subject to actual operating condition.
Avoid contacting inflammable, explosive and corrosive gas and liquid; do not splash water, oil or dust; keep away from electrical appliance and other noise sources (plasma).

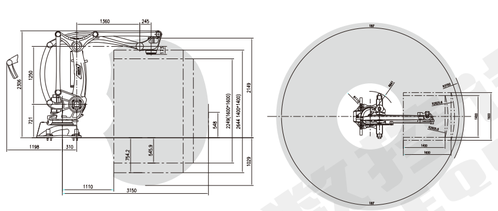
RMD08 Motion range diagram



RMD20 Motion range diagram



RMD120/160/200 Motion range diagram





RMD120/RMD160/RMD200

RMD20

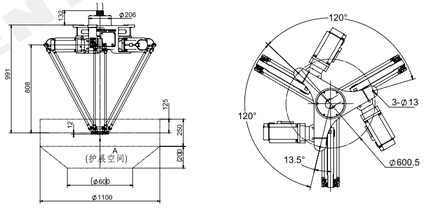
RMD08

Application field: It is widely used in electron, light industry, food and medicine etc., which can achieve the high-speed holding/unholding and sorting packing operations.

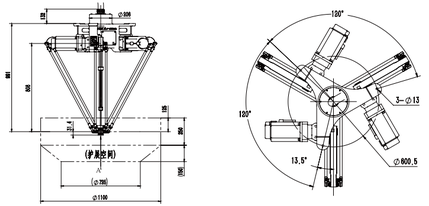
Type	DOF	Drive Method	Rated Loading (kg)	Max.Loading (kg)	Repeated Positioning Accuracy (mm)	Working Range (mm)	Revolving Angle (°/s)	Top Acceleration (m/s²)	Top Velocity (Loading) (m/s)	Typical Beat Time (s)		Machine Weight (kg)
										25/305/25[mm]	30/400/30[mm]	
C3-1100	3	AC Servo Drive	1	3	±0.05	Φ1100x250	-	120	10	0.33(0.3kg)/0.38(1kg)	0.48(0.3kg)/0.50(1kg)	95
C4-1100	4	AC Servo Drive	1	3	±0.05	Φ1100x250	±180	120	10	0.33(0.1kg)/0.38(1kg)	0.48(0.1kg)/0.50(1kg)	110

Note: Avoid to contact with the imflammable, explosive and corrosive gas and liquid; do not splash the water, oil and dust; keep away from the electric appliances' noisy resource (plasma).

C3-1100 Motion range diagram



C4-1100 Motion range diagram





C3-1100



C4-1100

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SCARA Robot

Application field: It is widely used in electronics, plastic, drug and food industry, used to perform grasp, assembly, gluing and other operations.

Type	Standard Period (s)	Rated Loading (kg)	Max. Loading (kg)	Axis Specification						Top Speed (°/s)			Repeated Positioning Accuracy (mm)			Machine Weight (kg)
				X axis		Y axis		Z axis	R axis	X,Y axis (m/s)	Z axis (m/s)	R axis (°/s)	X,Y axis	Z axis	R axis	
				Arm Length	Rotation Angle	Arm Length	Rotation Angle	Stroke	Rotation Range							
RSP600A(B)15	0. 68	2	5	350mm	±140°	250mm	±135°	150mm	±360°	5.5	1.1	588	±0.01	±0.01	±0.01°	160/23

Note: It is the value of the parameter with • when the ambient temperature is certain;
Avoid to contact with the imflammable, explosive and corrosive gas and liquid; do not splash the water, oil and dust;
Keep away from the electric appliances' noisy resource (plasma).

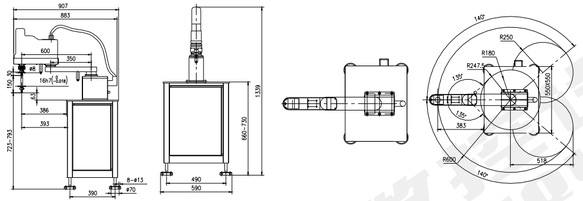


RSP600A15

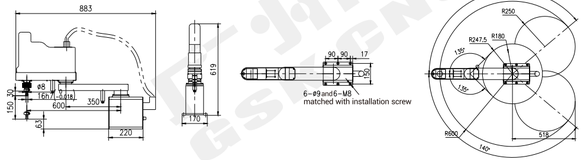


RSP600B15

RSP600A15 Motion range diagram



RSP600B15 Motion range diagram

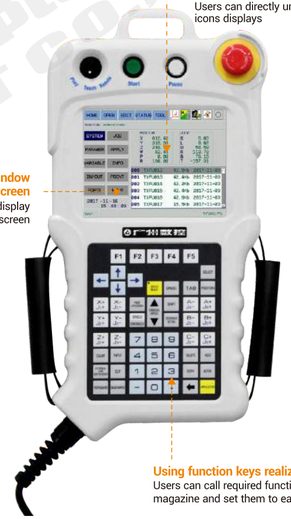


Key Functional Components

Mainly include: controller (electric cabinet &teaching box), SJTR Series Servo Motor, GE Series AC Synchronic Servo Drive Unit, Hypocycloid Cross Roller Reducer.

Controller (Cabinet&Teaching Box)

Robot Teaching Box



Perceptual intuition operation interface
Users can directly understand operations via icons displays

Large window
High definition color screen
6.4-inch color LCD display
High-sensitiveness touch screen

Using function keys realizes simple operations
Users can call required functions from the function magazine and set them to each function key.



RB Series Robot Controller | RMD Series Robot Controller | RB 03A1 Robot Controller

Features

1. With the most developed GSK-RC control system in the domestic, the robot always optimizes acceleration/deceleration according to its actual load, as far as possible to shorten operation period;
2. The robot can monitor its motion and load, and optimize its service requirements by its built-in system information system (SIS), which gains longer continuous working period.
3. Built-in robot controller: based on ARM+DSP+FPGA hardware structure, controlled 4-8 axes, arithmetic speed up to 500MIPS, high-speed motion controlling on-site bus, Ethernet, RS232, RS485, CAN and DeviceNet's any one interface, continuous path teaching and on-line teaching, remote monitor and diagnosis functions;
4. The robot on-site bus (GSK-Link): high-speed real-time character, breaking contradiction between bandwidth and real-time, combining communication rate and real-time control, resolving data real-time interaction problems among different modules;
5. Dynamics self-adaption identification control technology: considering gravity, Coriolis force, centrifugal force and other external forces' interference, apply self-adaption identification control technology to improve the robot's dynamic performance.

广州数控设备有限公司 GSK CNC EQUIPMENT CO., LTD.

Key Functional Components

Mainly include: controller (electric cabinet &teaching box),
SJTR Series Servo Motor, GE Series AC Synchronic Servo Drive Unit,
Hypocycloid Cross Roller Reducer.

Project		GSK-GRC
Control System	Teaching Method	Teaching Playback/Remote Control
	Driving Mode	Digital Bus AC Servo Drive
	Number of Controlled Axes	Six Axis (extend to eight axis)
	Position Control Method	PTP/CP
	Speed Control	TCP Constant Speed Control
	Coordinate System	Joint Coordinate/Cartesian Coordinate/User Coordinate/Tool Coordinate
Memory	Memory Medium	Flash Memory
	Memory Capacity	256M
	Memory Content	Point, line, arc, condition command, etc.
Action	Interpolation Function	Linear Interpolation, Arc Interpolation
	Manual Operation Speed	5 Levels Adjustable (speed limit 250mm/s)
	Edit	Add, input, copy, cut, delete, modify, check
External Control Input	Condition Setting	Set up Conditions in Program
	General Physical I/O	Digital I/O panel, standard input/output 32 points respectively, extend and support 2 analog output
	Application	Arc welding, transferring, rubber coating, spraying, etc.
	External Communication	USB, Ethernet, Modbus TCP
	Protection	Welding gun mechanical anti-collision sensor, servo anti-collision sensor, position software limit, mechanical hardware limit (partial axes) control cabinet
	Maintenance	Check the abnormal records regularly
	Anomaly Detection	Emergency stop anomaly, control time sequence anomaly, servo anomaly, encoding disk anomaly, teaching box anomaly, user operation anomaly, spot welding anomaly, arc welding anomaly, sensor anomaly
	Diagnosis	Key diagnosis, signal diagnosis, alarm diagnosis, etc.
	Origin Point Reset	Supported by encoding disk battery; no need to reset origin point for every starting-up.
	Cooling System	Air Cooling
	Noise	<70dB
	Ambient Temperature/Humidity Range	0~40°C (No Frost) / 0~90%RH(No Frost)
	Power Supply	Three-phase AC220V 50/60HZ(single phase for a small number of models) (Note: the exported robot is configured according to local voltage)
	Ground	Special grounding for D-class robot or above



SJTR Series Servo Motor

Features

1. It adopts the optimum electromagnetic design, low noise, stable operation, and high efficiency;
2. It adopts high performance rare-earth permanent magnetism material, perfect low-speed character and strong overloading capacity (3 times);
3. It adopts a 17-bit absolute high-speed and high accuracy photoelectric encoder, which can achieve a high-accuracy control matched with a high-performance drive unit;
4. It adopts an imported high-accuracy bear and rotor with high-precision dynamic technologies to ensure that the motor is stable and reliable, less vibration and low noise when it operates within the high speed range;
5. The motor can be reliably used in -15°-40 ° ambient temperature and the dust oil-mist environment;
6. It owns high torque inertial ratio and strong rapid response capacity.

Parameters

Type	Rated Power (Kw)	Rated Current (A)	Zero Torque (N.m)	Rated Torque (N.m)	Top Torque (N.m)	Rated Velocity (r/min)	Top Velocity (r/min)	Revolving Inetia (kg.m2)
60SJTR-MZ003E	0.1	1.2	0.318	0.318	0.955	3000	5000	0.05×10^{-4}
60SJTR-MZ005E	0.16	1.65	0.5	0.5	1.5	3000	5000	0.07×10^{-4}
80SJTR-MZ006E	0.2	2.9	0.637	0.637	1.91	3000	6000	2.71×10^{-5}
80SJTR-MZ010E	0.3	3.1	1.0	1.0	3.0	3000	6000	3.36×10^{-5}
80SJTR-MZ013E	0.4	3.3	1.27	1.27	3.81	3000	6000	3.88×10^{-5}
150SJTRG-MZ040C	0.84	5.5	4	4	12	2000	3500	1.3×10^{-3}
150SJTRG-MZ060C	1.26	8.6	6	6	18	2000	3500	1.9×10^{-3}
150SJTRG-MZ080C	1.68	11.2	8	8	24	2000	3500	2.9×10^{-3}
150SJTRG-MZ100C	2.1	14.3	10	10	30	2000	3500	3.4×10^{-3}
150SJTRG-MZ120C	2.5	14.5	12	12	33.8	2000	2800	3.9×10^{-3}



GE Series AC Synchronous Servo Drive Unit

GE Series AC Synchronous Servo Drive Unit, including GE2000(220V power supply) and Ge3000 (380V power supply), uses the industrial Ethernet bus communication interface latest developed by GSK, its servo parameters to be adjusted conveniently, simple interfaces, high stability, wide compatibility. It can be adaptive to incremental encoders and variety of 17-bit absolute encoders to realize open-loop and closed-loop control, which meets robots, CNC machine tools, automation and other devices.

Features

1. Use the industrial Ethernet bus communication transmission method to gain fast data transmission speed up to 100MBit/s;
2. Higher resistance to interference, error rate: 10-12, least communication cycle: 50μs;
3. Matched with servo motors which power is 0.1～12kW;
4. GE Series matched with torque motor is taken as a direct-drive rotary table, high positioning precision and fast speed;
5. Servo parameters can be conveniently adjusted.
6. Modifying servo parameters and monitoring servo states can be done in the robot system interface; GE absolute servos matched with the robot bus systems can realize the coordinate system power-down memory, and realize none-debugging operations after power on again.
7. Better low-speed performances, high load inertia match and dynamic response performance to meet use requirements of all robots.

广州数控设备有限公司 GSK CNC EQUIPMENT CO.,LTD.

Key Functional Components

Mainly include: controller (electric cabinet &teaching box), SJTR Series Servo Motor, GE Series AC Synchronic Servo Drive Unit, Hypocycloid Cross Roller Reducer.

Hypocycloid Cross Roller Reducer





Features

1. **Compact structure**
   The transmission axial dimension can be shorten, compact because of the transmission structure in the planet carrier's bearing spindle.
2. **Big bearing capacity**
   Because curvature radius of the hypocycloid is bigger than that of the epicycloid in the same conditions, its bearing capacity is bigger than that of the epicycloid.
3. **Stable drive and long working life**
   Using 2-level reducing structure makes the low-speed cycloid pinwheel planetary reducer more stable, and the tumbler bearing's working life greatly increases because its quantity increases and the inside/outside ring speed drops.
4. **Small backlash**
   Optimized design gains small manufacture error, high motion precision and small backlash
5. **Good output rigidity**
   The hypocycloid planetary transmission's output structure uses embedded cross roller bearing which two ends are supported as possible as to gain big rigid disc output structure, which rigidity is more than that of RV cycloid reducers' output structure (angular contact bearing structure) with greatly improved shock resistance.
6. **Hollow structure**
   Hollow structure is conveniently to layout the robot, to shorten its base dimension and protect it from be winded.

GSK Series Reducer Type Presentation and Technical Parameters

E Series

GSK–BJN–40E–121–B

- GSK: Company code
- BJN: hypocycloid reducer
- 40E: foundation No.
- 121: type: E input axis build-in
- B: input axis type (A thin axis type, B thick axis type)



C Series

GSK–BJN–50C–33.39

- GSK: Company code
- BJN: hypocycloid reducer
- 50C: foundation No.
- 33.39: body reduction ratio
- C: type: hollow type



Technical Specification 1

Output Velocity (r/min)	5		15		20		25		30	
Type	Output Torque (Nm)	Input Power (KW)	Output Torque (Nm)	Input Power (KW)	Output Torque (Nm)	Input Power (KW)	Output Torque (Nm)	Input Power (KW)	Output Torque (Nm)	Input Power (KW)
GSK-BJW-20E	231	0.16	167	0.35	153	0.43	143	0.5	135	0.57
GSK-BJN-40E	572	0.4	412	0.86	377	1.05	353	1.23	334	1.4
GSK-BJN-50C	681	0.48	490	1.03	450	1.26	420	1.47	398	1.67

Note: The output torque is rated one when the output velocity is set to 15r/min.

Technical Specification 2

Type	Deceleration Ratio	Top Value of Output Speed (r/min)	Top Dry Stroke (arc.min)	Instantaneous Top allowed torque (Nm)	Torsional Rigidity (Nm/arc.min)	U (kg)
GSK-BJW-20E	121	75	1	833	49	5.0
	105					
	71.77					
GSK-BJN-40E	121	70	1	2058	108	9.9
	105					
	73.94					
	52.4					
GSK-BJN-50C	33.39	50	1	2450	255	17

广州数控设备有限公司 GSK CNC EQUIPMENT CO., LTD.

Welding Positioner



Uniaxial welding positioner



Biaxial welding positioner

Type	Driving Method	Max. Loading (kg)	Repeated positioning accuracy (mm)	Motion Range (°)		Rated Speed (°/s)		Rated Torque (N.m)		Machine Weight (kg)
				倾动轴	回转轴	倾动轴	回转轴	倾动轴	回转轴	
HBS150-1	AC Servo Drive	200	±0.15	±135	±370	125	124	330	144	200
HBD250-1	AC Servo Drive	300	±0.10	/	±370	/	124	/	244	105

Features: using the reducers and servo motors developed by GSK can ensure various welding joints of welding workpieces rotate to the best position, which avoids vertical position welding and over-head position welding, and improves the welding quality and production efficiency. The robot control system also controls the robot body motion, but also automatically control the positioner to send welding start commands, automatic control and regulation welding parameters (voltage, current), and automatically checks whether arc striking is done successfully. The single-axis positioned is also applied to automatically load/unload.

Movement Guide Rail



Type 1



Type 2

Type	Application Robot	Top Motion Speed (m/s)	Repeated Positioning Accuracy (mm)	Top Loading (kg)	Application Robot
Type one (Grounding installation method)	RB series Multi-joint robot	1.5 (Related with motor)	±0.05 (Top)	800	Ambient temperature: 0-45° Ambient humidity: 20~80%RH (No condensation)
Type two (Gantry movement method)				400	

Vision System

Features: The robot can automatically analyze the workpiece position and grabs the workpiece according to the "vision" identification. The vision matching positions the incoming-material workpiece, and omits the mechanical positioning operation when the workpiece material is supplied, which saves the system time, and improves automation rate of the system overall.

Application: Product transportation, sorting, packing and picking material etc.



Use the robot's vision system to complete sorting transportation work



Off-line Programming System

Features: The preprocessing can be generated by the off-line programming software; and then changing coordinates and optimally outputting machining file compiled by the robot language can generate complicated paths.

Application: It mainly used for cutting, gluing, painting, milling, graving and welding of tridimensional entities.



Use the robot off-line programming technique to draw dragons



"Intelligent Manufacturing"& "Digitalized Factory" Overall Solution and Engineering Implementation

GSK Production Line Unit Control System

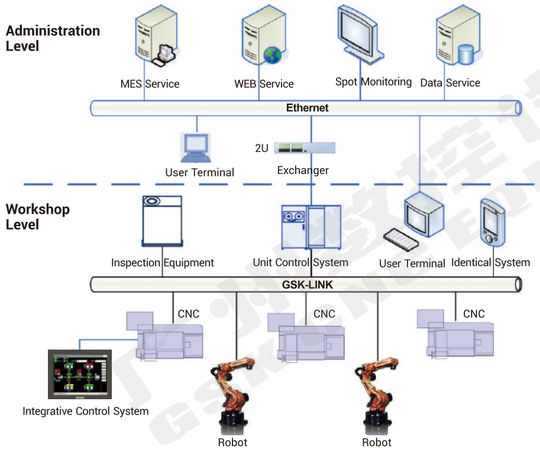
1. It is for a machining field's monitor management system to assemble lines of production equipments used for machining all kinds of parts;
2. Utilizing GSK-LINK on-site bus realizes high-speed connection between the CNC machine, industrial robot and production line's auxiliary operation device;
3. On-line and off-line programming support;
4. Simply humanized operation;
5. Maximally improve production efficiency and stability of production quality
   Reduce labor cost;
6. Optimize and improve customers' management system.





GSK General Control Management System

1. It is used for achieving the "Digitalized factory", "Intelligent workshop" management system;
2. CAM and CAPP application and management;
3. Conveniently flow plan fast;
4. Count and regulate production capacity;
5. Equipment utilization statistics;
6. Production flow interference;
7. Elevate C/T and so on.



Loading/Unloading Application

01 Auto interior automatic cutting flash application of GSK RB08 transfer robot

Customer Requirements

- Robot replacing manual labor to achieve automatic cutting of the injection molding flash.

Application Effect

- Orientation and confirming the artificial hair blank in a fixed fixture;
- 1 RB08 transfer robot, 1 set of plasma cutting device, the cutting head installed at the end flange of the six-axis robot;
- The manual teaching robot is programmed, and the robot cuts off the flash along with the contour of the product.
- The robot replacing manual work and manual shift can work at any time for 24 hours, and stably completes the work task;
- The robot cuts the flash and can effectively reduce the cutting problems and ensure the consistency of the products;
- Greatly improve the product quality and improve the impact of enterprises.



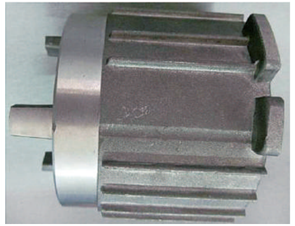


02 GSK RB08 Transfer Robot Applied to Load /Unload for the Turning Machine

Customer Requirements

- One robot with two turning machines consists of one set of the robot loading/unloading system;
- Closely match with the production cycle time to ensure production efficiency.





Application Effect

- Being parts occupying much space, to guarantee processing volume and positioning precision for more than 2 hours, use double-servo high precise sliding table design to alternately operate to get high efficiency;
- Workblank loading structure and finished product unloading structure are integrated, which shortens the robot running time and gets continuity and fluency during automatic production;
- The robot with high flexibility makes it alter its posture in smaller space, which increases space utility;
- Its control system takes GSK98 CNC System as its main control unit to get simple operations and good stability.









03 GSK RB08 Transfer Robot Applied to Load/Unload for the Machine Tool

Customer Requirements

- Using two turning machines performs two processes to completely machine parts;
- The first process is to machine the inner, end and groove, taking 40s;
- The second process is to machine the outer, end and groove, taking 48s.

Application Effect

- Use the servo rotary loading table to get high positioning accuracy;
- The rotary index is performed by GSK96 CNC System's programming, with high universality;
- Grab and lift parts by a rodless cylinder to guarantee automatic operation for more than 2 hours;
- Its production cycle time is closely matched, and its run in use is smooth.

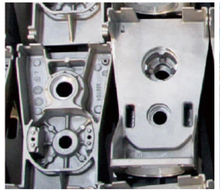
04 GSK RB08 Transfer Robot Applied to Load/Unload for the Machining Center

Customer Requirements

- One robot with two CNC machines consists of one set of robot loading/unloading system;
- The 1st machining center machines the part's yellow end and inner bore, and the 2nd does the green inner bore;
- One cycle time takes 57s to completely machine a part.

Application Effect

- The workpiece clamped on the machine is positioned by a pin to gain high accuracy;
- Using two loading machines, the robot normally operates to guarantee continuous production process when reloading is performed;
- High machining, loading/unloading efficiency does not occupy the turning machine's wait time to realize 100% machining time utilization in the whole process.





05 GSKRB08 Transfer Robot Applied to Load/Unload for the Machine Tool

Customer Requirements

- One RB08 robot, two CNC turning machines and one automatic loading/unloading auxiliary device consists of a robot turning machine loading/unloading system;
- It can closely follow the production cycle time to gain high production efficiency, safety and reliability during production;
- Workpiece grabbed by its gripper cannot be released or fall out when the robot is turned off or its gas runs out, and the gripper has a position confirmation switch.
- Its loading/unloading system with strong flexibility can be generally used in many kind of workpiece automatically loading/unloading.



Application Effect

- The resolution sticks to design principles of economy, safety, excellent operation, reliability, and higher flexibility, slightly regulating its rotary loading machine and gripper can be applied to load/unload four kind of workpiece provided by customers;
- After the robot outputs the signal, the turning machine inputs it, and after the robot enters the turning machine, it outputs the signal, the turning machine receives the signal interlock to prohibit all motion structures'operations till the robot complete escapes from the turning machine, then the signal is reset to guarantee safe and reliable between the robot and the machine tool.
- Its control system has soft/hard limit, controls abnormality, emergency stop and other default displays and alarm functions. Workpiece grabbed by its gripper cannot release or fall out when the robot is turned off or its gas runs out.
- The resolution can perform three shifts working with enough workblank provided by workers to complete continuous machining and high production efficiency.

06 GSK RB08 Transfer Robot applied to Gear Machining Loading/Unloading

Customer Requirements

- One robot with two turning machines composes a loading/unloading system;
- Closely match with the production cycle time to ensure production efficiency.





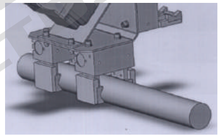
Application Effect

- It is used in gear machining, and the turning machine's fixture with high precision, smaller clearance, and supplied materials are conveyed by flow channels to acquire big randomness and the economical and practical;
- The robot's gripper increases secondary positioning device, which makes the gear installed into the turning machine's gripper consistent.
- The machining loading/unloading with high efficiency and positioning precision does not occupy the machine wait time and reaches 100% machining time utilization.

07 GSKRB08 Transfer Robot Applied to Load/Unload Motor Shafts

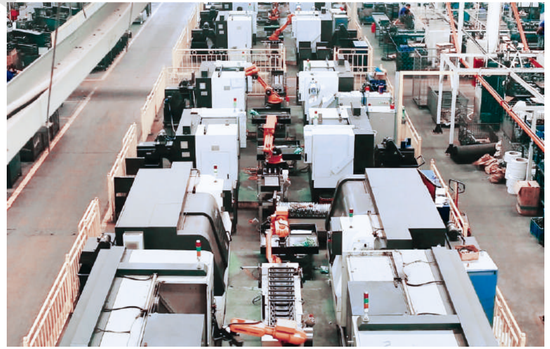
Customer Requirements

- The machined workpiece is a motor shaft with 360-490 length, and about 3-6kg weight;
- Machining cycle time of the production line is within 140s, i.e., one production line performing one finished product takes even 70s;
- Ensure stable, safe and reliable working.



Application Effect

- Its storage shelf can arrange MS100L 180 rods once to meet 3-hour continuous machining, and it is not regulated during changing rods with the same diameter and different specifications, and is slightly done during changing rods with different diameter;
- The stacked rack is driven by the motor, the splitting wheel runs and carries the blank to the robot loading position to transport materials to the robot. When the sensor have not inspected the material within one minute, the motor stops rotation, and sends guard signals to remind the workers to charge into the stock bin. The whole robot setting has multiple guard, safe and stable;
- According to 26 days per month, 2 shifts to 16 hours per day, the counted machining time of MS100L part, a finished product formed in 65s and more than 18000PS per month, the planned production program can meet the customer requirements.



08 GSK RB08 Transfer Robot Matched with a Die-Casting Machine Applied to Pour

Customer Requirements

- The robot replacing manual transport pours aluminium water into one die-casting machine.

Application Effect

- The robot replaces manual work, performs operation any time within 24 hours and stably completes working task;
- The die-casting industry is danger, and high-temperature has an effect on worker's physical and psychological health, so using the robot can avoid all kind of accidence;
- Die-casting experts think it is a general tendency that the robot is used in the die-casting industry, which is not only pushed by the market, but also required by the technical upgrade.





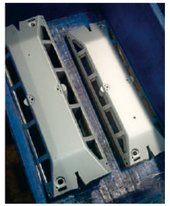
09 GSK RB08 Robot Applied to Punching Workshops

Customer Requirements

- Punching machines in the punching workshop perform automated on-line, and 8 punching machines do continuously punching;
- After being punched, the workpiece is taken out of the punching machine by the robot and then it is input into the next punching machine in parallel, which procedure is repeated till the last process, the punched workpiece taken out by the robot from the last punching machine is put on the conveyor, and then is checked by workers and packed.

Application Effect

- One finished product is performed within about 10s, and its yield is 8600pcs in 24h production time per day, which improves 15% compared to manual work;
- Safety and reliability, and preventing working accidences.





GSK CNC EQUIPMENT CO., LTD.

10 GSKRB08 Transfer Robot Applied to Automatic Line of Electric Kettle's Rough Punching

Customer Requirements

- The robot matched with a punching machine loads/unloads electric kettles, and the control process is stable, is closely match with the production cycle time, and customer requires the whole frequency is 12-14s/pcs to ensure production efficiency.

Application Effect

- It improves its operation safety, and reduces labor intensity and disabling injury frequency rate;
- It improves the product quality and consistency, and reduces labor cost;
- Its punching frequency is 9.5s, it performs 2 shifts per day, which shortens machining cycle time and improves production efficiency;
- Realize precise positioning in high-speed production.




11 GSK RB08 Transfer Robot Applied to Load/Unload Air-Condition's Shell

Customer Requirements

- The robot matched with a punching machine loads/unloads the air-condition's shell, and the control process is stable, safe and reliable;
- Closely match with the production cycle time to ensure production efficiency.



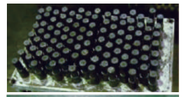
Application Effect

- The robot's gripper uses frame-type chuck structure which is conveniently adjusted and meets the same type of workpiece with different dimension;
- It improves its operation safety, and reduces labor intensity and disabling injury frequency rate;
- Compared to traditional manual labor, the robot cooperated with the punching machine can reach 10s production period, shortening machining cycle time and improving production efficiency;
- Shorten processing cycle time and improve production efficiency;
- Realize precise positioning in high-speed production.

12 GSK RB08 Transfer Robot Matched with the Punching Machine Applied to Load/Unload

Customer Requirements

- 2 robots, 2 cooling extruding machines and a 4-axis hydraulic machine complete twice extrusion moulding of a rod; Extruding workpiece: Phosphatized rod;
- One robot loads material and another unloads material from the 1st hydraulic machine, then loads material to the 2nd and last unloads.





Application Effect

- For shaft parts, it uses rolling-magazine loading type (including positioning, separating structure) to ensure more than 2 hours automatic production;
- Preset clearance between the part and hydraulic machine's grinding apparatus is 0.08mm, which effectively demonstrates the RB08 robot's repeated precision (the moulding does not increase auxiliary positioning device);
- Compared to the original manual work, two RB08 robots cooperating shortens wait time of two operations, and one complete workpiece process period is 30s;
- RB08 has more flexible, which makes it avoid barriers with its proper pose in smaller space;
- Humanized operation programming makes customers be familiar with and know well operations, and shortens input use time.

13 GSK RB08 Transfer Robot Applied to Load/Unload for the Turning Machine

Customer Requirements

- One robot with two CNC machines consists of one set of robot loading/unloading system, low-cost and high reliability design;
- Its fixture can simultaneously grab two parts, which compactly fits the part machining's production cycle time to ensure working efficiency.



Application Effect

- Economic design, a one-piece structure of loading/unloading parts;
- Simple and practical overturn structure based on parts with some taper;
- Use pneumatic high-accuracy rotary structure to simplify control and reduce cost;
- According to the turning machine's internal space, distance between the turning machine's chuck and tool post is less than or equal to 260mm, and the robot's paw uses the right-angle structure.

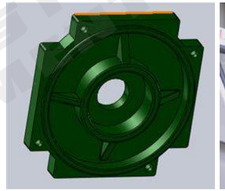
14 GSK RB08 Transfer Robot Applied to Production Lines of the Motor's Rear end Cover

Customer Requirements

- Products are the motor's end covers which both sides are machined by two turning machines (it takes teaching demonstration effect on production automation).

Application Effect

- Production lines for motor's rear end cover use 2 robots to realize double-station machining, its double grippers get integrated loading/unloading material，which does not occupy the tool machine's machining time, and largely improves machining efficiency;
- It meets customers' requirements about production cycle time, which has important meaning for teaching demonstration;
- The whole production line is equipped with monitor equipments, and there is a brake protection between the machine and robot to get reliable safety during machining.




15 Automatic punch production line application of GSK RB20 and RB08 transfer robot

Customer Requirements

- The robot equipped with supporting punching devices to form an automatic punching production line.

Application Effect

- 2 RB20 and 4 RB08 transfer robots, grabbing a workpiece from a bar magazine; after secondary orientation, putting the workpiece into a punching device for punching of various process, placing a workpiece in a finished bar magazine, and then complete automatic punching;
- The magnetisable material is divided by using a magnetic separator, and the non-magnetisable material is divided by a saw-tooth separator so as to prevent the workpiece from stacking;
- Stable and efficient production and ensure product quality;
- Auto-punch production line has become the target of automation factory, and it has a big application market




16 LOADING AND UNLOADING APPLICATION OF GSK RB20 TRANSFER ROBOT IN GEAR PARTS

Customer Requirements

- The gross weight of the gear is 2～6kg, and combine with the gear machining process to achieve the automatic loading and unloading of the gear parts on the lathe and the machining center;
- The loading and unloading system has strong flexibility, and can be applicable to workpieces with various specifications;
- In line with the beat of the part machining and with reasonable layout to guarantee the production quality.

Application Effect

- Adopt the multi-position loop material storage rack and each position's orientation mechanism can be adjusted, and the clamping finger can be adjusted or replaced to adapt to workpieces with various specifications;
- The automatic production line consists of 1 robot for two lathes, one robot for 2 machining centers for loading and unloading, 2 robots transfer workpieces through conveying belts;
- Making use of production line of GSK control system unit to manage the communication between robots and lathes, robots and storage racks, robots and belts, etc. and also manage the statistics for calculation of production capacity and devices utilization rate,etc.




17 Application of GSK RB20 six-joint robot and punch coordinating with ram.

Customer Requirements

- Upgrading the original production line, and transforming the last four steps into an automation unit;
- The robot is used for replacing manual carrying, and the robot is used for loading and unloading of the punch ;
- The automation unit needs to achieve seamless butt joint on the original production line to meet the requirement of the beat.

Application Effect

- The workers put the semi-finished products of the previous process on the conveying line and through the visual system above the conveying line, robot grips the workpieces to the loading of punch and achieve the butt joint with the robot;
- 5 robots are used respectively to feed the 4 punches, and the product finally flows out of the conveying line, and is picked up by someone.
- The reformed production line saves the cost of three workers ,which obviously saves the production cost;
- The robot can work at any time for 24 hours and it can replace manual work to complete the work tasks steadily;
- The ram work is dangerous, when the workers are working repeatedly for a long time, it is easy to have a feeling of fatigue and boredom. Making the use of robots can avoid the occurrence of various accidents.

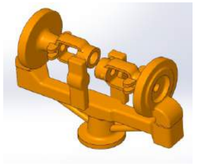




18 Flame cutting system matching application of GSK BRB20 six-joint robot

Customer Requirements

- The robot replaces the manual cutting workpiece, and the cutting accuracy is ±5mm;
- The workpiece orientation clamping device is designed reasonably, and the product compatibility is considered (there are two kinds of products in total, with 2 specifications per product).



Application Effect

- Adopt "one for two" layout form, that is, a robot, two turrets and a pneumatic clamp of each turret can be respectively compatible with workpieces of two specifications of the same type, and the workers unload at the turret side;
- A flame cutting system is mounted on the robot, and the complex cutting path is completed in cooperation with the turret.
- Compared with the manual cutting, the clamping time of the product is shortened, the cutting speed is accelerated, and the production efficiency is remarkably improved;
- Cutting experts believe that flame cutting automation is the trend in the industry, which is both the push of the market and the requirement of technological upgrading.





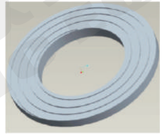
19 GSK RB20 Transfer Robot Applied to Load/Unload for the Turning Machine

Customer Requirements

- One robot with two CNC machines consists of one set of robot loading/unloading system, and each turning machine separately completes a workpiece process machining;
- At least complete 5 type of worpiece machining.

Application Effect

- Regulate the position of the positional pin which is assembled on the rotary platform's, and change the gripper and realize at least 5 kind of disc workpiece's loading/unloading machining;
- Use one rotary platform to load/unload. After all workpieces are completely machined, workers load/unload workpieces on the rotary platform.





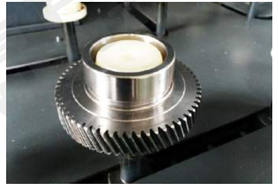
20 GSK RB20 Transfer Robot Applied to Load/Unload for the Gear Hobbing Machine

Customer Requirements

- One robot matched with three devices consists of one set of robot loading/unloading system;
- The 1st gear hobbing machine machines the part's tooth profile, and the 2nd chamfering machine does the part's tooth profile corner, and the 3rd gear shaving machine does the part's gear profile;
- One TAKT cycle is 60s to complete part machining.

Application Effect

- The workpiece is clamped on the machine tool with pins, high-precision.
- Matched with one load/unload rack, and servo rotary load/unload rack, the robot can get highly repeated positioning precision and more than 2 hours automatic production;
- Loading/unloading with high-efficiency does not occupy the machine wait time, which realizes 100% machining time availability in the whole process.





21 GSK RB50 Transfer Robot Applied to Load/Unload Hubs

Customer Requirements

- Load/unload hubs. The robot grabs the outer pointed by the yellow arrow in the following figure. Three-jaw chuck end closes the small convex platform. Use the turning machine to completely machine the hub's inner hole, end and outer, taking 3 minutes and 45 seconds;
- Use the milling machine to machine thread, each big hole of the big end, using 7 minutes

Application Effect

- The machined parts are the automobile hubs, using a center propulsive structure guarantee the parts' positioning accuracy on the turning machine's chuck;
- Linear guide increases the robot's motion stroke, and simultaneously the robot loads/unloads for several machines;
- The vision positioning system resolves workpieces which are disorderly placed, grabbed on the convey belt.





22 GSK RB50 Transfer Robot Applied to Load/Unload to Multi-Axis Machine

Customer Requirements

- Two robots matched with four multi-machines consist of one set of robot loading/unloading system;
- The machine's 4 stations simultaneously load/unload, and machine end face's holes, side holes and threaded holes;
- One TAKT is 80S can completely machine four workpieces.

Application Effect

- The workpiece is gripped on the machine tool with pins, high-precision;
- Matched with one ring rack with many stations, the robot simultaneously grabs 4 workpieces with highly repeated positioning precision, more than 2 hours automatic production;
- The transfer table completes parts transportation by the magnetic coupling rodless cylinder, reversing parts is done by rotating the air cylinder and clamping it, which can realize process join of two robots;
- The robot can normally work to ensure continuous production process during reloading;
- Loading/unloading with high-efficiency does not occupy the machine wait time, which realizes 100% machining time availability in the whole process.









23 automatic dip floating sand application of GSK RRB50 transfer robot

Customer Requirements

- Robots replace the manual work of clamping wax mould for dipping and floating sand.



Application Effect

- 1 RB50 transfer robot grabbing the workpiece from the bar magazine and carrying out dipping and floating sand, putting the workpiece back into the bar magazine and completing the work;
- The robot wears protective clothing for dust prevention, and the control cabinet adopts sealed industrial air-conditioning heat dissipation.
- The robot can work at any time for 24 hours and it can replace manual work to complete the work tasks steadily;
- The dipping and floating sand is a high dust job, which has certain damage to the health of human body so the employment is difficult, and the robot can solve this problem.
- In many industries, there is a process of dipping and floating sand, so the application prospect is considerable.





24 Servo system gripping application of GSK165 robot 2D vision automobile floor

Customer Requirements

- Vehicle floor information: Dimensions: 1700mm × 1500mm, Weight: 20kg, material; Q235A;
- Workpieces are conveyed at a speed of 750mm/ s on the belt, and the robot needs to follow up to grip workpieces;
- There are four different workpieces at the same time on the production line, and the robot needs to recognize to grip automatically.
- 1 piece of workpiece packing shall be completed every 6 seconds for the whole line beat;

Application Effect

- 1 RB50 transfer robot grabbing the workpiece from the bar magazine and carrying out dipping and floating sand, putting the workpiece back into the bar magazine and completing the work;
- The robot wears protective clothing for dust prevention, and the control cabinet adopts sealed industrial air-conditioning heat dissipation.
- The robot can work at any time for 24 hours and it can replace manual work to complete the work tasks steadily;
- The dipping and floating sand is a high dust job, which has certain damage to the health of human body so the employment is difficult, and the robot can solve this problem.
- In many industries, there is a process of dipping and floating sand, so the application prospect is considerable.





25 Transfer application of GSK RB165 robot 3D vision-guided condenser

Customer Requirements

- Casually place the condenser on the static accumulation chain tray to the belt conveyor line in the uniform motion;
- Move the casually placed condenser on the conveying belt which is in uniform motion under some circumstance to the static accumulation chain tray;
- Compatible with the gripping of 6 different workpieces;
- The entire line beat is 10 seconds.

Application Effect

- The shape of the condenser is irregular, the grabbing structure is spatial three-dimensional grabbing, and is arranged at random on the product accumulation chain tray and the belt line;
- The robot gripping scheme is guided by 3D vision, the robot hand gripping adopts the simulated structure, and the contact part of the condenser adopts soft polyurethane;
- The condenser grabbing on the accumulation chain tray is guided and positioned by identifying the white plastic feature of the condenser endworking part, and the camera is mounted on the robot hand gripper;
- The condenser grabbing on the conveying line is guided and positioned by identifying characteristics of the surface of the condenser, and the camera is fixed above the conveying line;



Figure 1 Condenser



Figure 2
Condenser on accumulation chain tray



Figure 3 Condenser on the belt line



Figure 4 Accumulation chain tray



Figure 5 Endworking feature



Figure 6 Robot hand gripping



Figure 7 Surface feature

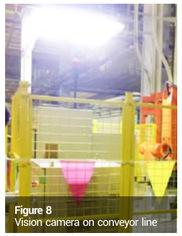


Figure 8
Vision camera on conveyor line

- Two RB165 robots are used to transfer the condenser to the conveyor line from the accumulation chain tray to form two unloading automatic integration workstations. 2 RB165 robots are used to transfer the condenser from the conveyor line to the product accumulation tray to form two loading automatic integrated workstations.
- The robot replaces the manual labor, and is guided stably by the 3D visual guide, and the production line beat is 10 seconds;
- 24 hours working at any time and finish the work task stably;
- The robot automatically recognizes the workpieces and automatically transfer the expected purpose of the loading and unloading, and can be simultaneously applied to the production of six products and the exchange production of products with each other;
- It can be used for more products by replacing the gripper in the late stage.





Welding Application

01 Application in aluminum template industry of GSK RH06 welding robot

Customer Requirements

- Robot replaces manual work, and alternative welding with double-sposition.



Figure 1.1 Product Image

Application Effect

- The general loading and clamping workpiece, pneumatically clamping to orientate the workpiece, the robot completes welding according to a preset program, and the double-position man-machine alternating operation is performed;
- Equipped with automatic torch cutting mechanism to effectively guarantee the continuity of production.
- 2 welds are replaced by two robots at the same time, and the work can be stably carried out for a long time;
- The welding is a high-risk industry, the high temperature/ smoke dust/ arc light has certain negative influence on the physical and mental health of workers, and robots can avoid the occurrence of various accidents;
- The application of the welding robot in the trend that the manufacturing cost is saved, the quality of the product is greatly improved, and the stability of manufacturing the production capacity of the enterprise is effectively ensured, and the welding robot is an essential element for transforming the labor-intensive manufacturing enterprise to the intelligent manufacturing enterprise.



02 GSK RH06 Welding Robot Applied to Laser Welding

Customer Requirements

- GSK LRH06 welding robot application in small appliance industry

Application Effect

- Robot replaces manual welding, stainless steel sheet (0.6mm) is welded, and there is no obvious deformation and turn through.
- The general loading and clamping workpiece, pneumatically clamping to orientate workpieces, and the robot completes the welding according to a preset program;
- The robot equipped with optical fiber transmission laser welding machine is capable of high-speed continuous welding;
- Replacing the welder by the robot, replacing the traditional argon arc welding machine by a laser welding machine;
- The welding speed is much quicker than that of the traditional argon arc welding, the welding deformation is small, the forming consistency and color of the welding bead are better than that of argon arc welding;
- The use cost of welding consumables is lower than that of argon arc welding.





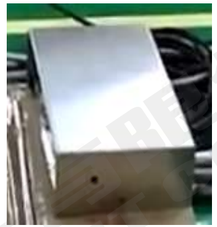
03 Application of GSK RRH06 welding robot in electrical industry

Customer Requirements

- Robot substitutes artificial loading, unloading and welding, stainless steel products TIG welding.

Application Effect

- The robot grips the workpiece to rotate to the orientation tool, automatically clamping and orientation workpiece, and the robot completes the welding according to a preset program;
- The robot is matched with pneumatic clamping and argon-arc welding, and can be automatically welded after loading and unloading;
- Replacing operator and welder by robot to achieve full-automatic welding without personnel involvement;
- The tooling is flexible tooling, and the length and width can be adjusted automatically according to the selected procedure.







04 GSK RH06 Welding Robot Applied to Some Company's Welding Fixture

Customer Requirements

- The spot welded semi-product completes full-length welding, and the welding must not be distorted;
- The workstation can apply products with different specifications, the weld assembly can be dismounted during welding to save time;
- The workstation with compact structure and proper rational utilization has arc light guard.







05 GSK RH06 Welding Robot Applied to Axle

Customer Requirements

- The spot welded semi-product completes full-length welding, and the welding must not be distorted, must not appear insufficient welding, undercut, air vent and other welding faults, and the welding fixture should be as simple as possible.

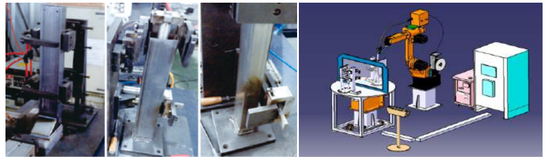




06 GSK RH06 Welding Robot Applied to Jiechang Linear Transmission Company's Welding Fixture

Customer Requirements

- Parts and components are clipped by the customized fixture to perform full-length welding, and the welding must not be distorted, must not appear insufficient welding, undercut, air vent and other welding faults
- Try to reduce manual work activity range between two stations in the robot reaching area. Rationally distribute workstations, and loading/unload.
- The workstation has interference to arc light and other guard facilities. Two stations independently work, impact and interfere each other to further improve the device utilization;
- The worktable is applied to three products' welding requirements.



Application Examples

07 GSK RH06 Welding Robot Applied to MAG/ CO2 Welding



Customer Requirements

- The product must meet customers' techniques, process drawing and quality's requirements;
- Butt welding interval is less than 0.5mm;
- Corner joint welding interval is less than 1mm;
- Conformity error at workpiece welding joint is less than 0.3mm;
- Workpieces have no welding burs and other flaws after being welded;
- Welding efficiency: the welding time is ≤30S/PC.



08 GSK RH06 Welding Robot Applied to Laser Welding

Customer Requirements

- One robot and one welding station consist of one robot welding system;
- Have no obvious weld penetration, well consistent welding forming;

Application Effect

- Manually clamp workpieces, use pneumatic to complete clamp positioning, and the workpiece clamped one time completes all welding work;
- Consistent welding forming appearance is beautiful without weld penetration, stable quality and small deformation after welding.





09 GSK RH08 Welding Robot Applied to Wuhan Company's Welding Fixture



Customer Requirements

- Elements of parts are welded together, the welding must not be distorted, and the weld assembly can be dismounted simultaneously during welding to save time.

Application Effect

- Using industrial robot to replace manual welding improves the welding quality and efficiency, and the welding appearance is beautiful to bring perfect vision.

10 GSK RH06 Welding Robot Applied to Automobile Accessories' Welding Fixture



Customer Requirements

- Parts and components are clipped by the customized fixture to perform full-length welding, but the welding must not be distorted, must not appear insufficient welding, undercut, air vent and other welding faults;
- Reduce manual work's operation range between two stations as much as possible in the range of the robot arriving, properly layout stations, and workstations should be compact, reasonably using space, and reducing occupied area;
- Its workstations have arc light protection, safety light curtains and other safety facilities, two stations separately perform and do not influence each other, which further improve the device's utilization.

Application Effect

- Manually clamping workpieces uses pneumatic to complete clamp positioning, and the workpiece clamped one time completes all welding work;
- When the worker mounts workpieces, the robot performs welding at other side to gain continuous production process.





Stacking/Stamping Application

01 Application of RMD08 Palletizing Robot in Metal Plate Stamping



Customer Requirements

- Use four robots to load and unload materials for three punching machines, finished products are sent from conveyor line;
- High flexibility for loading and unloading system, suitable for workpieces with different specifications.

Application Effect

- Workers put semi-finished product in the previous process to conveyor line. Positioning with the upper visual system; the robot grabs workpiece to load materials for punching machine;
- Use four robots to load and unload materials for three punching machines, finished products are sent from conveyor line, taken by workers;
- The renovated assembly line greatly saves cost by cutting down three workers;
- Robot replaces workers to work 24/7 and finish work task steadily;
- Convenient operation, high efficiency and high quality.

02 Palletizing washing machine application of GSK RMD160 palletizing robot



Customer Requirements

- The palletized workpiece is 500 * 500 * 720mm, and the finished product of the washing machine with the weight of about 40-60kg;
- The beat of the stacking line meets the beat of the upstream production line, and the robot palletizing beat is 15s;
- Ensure stability and reliability during the process.

Application Effect

- One RMD160 transfer robot and the hand to grip the washing machine, moves the washing machine out of the conveying line, and finishes the palletizing operation on the tray;
- A pressure sensor is arranged on the robot hand gripper to prevent the washing machine from being damaged, and the washing machine is orientated at the end of the conveying line.
- Robot palletizing unit is compatible with 5 types of palletizing;
- The RMD robot will palletize the left and right, i.e., two stacks, one stack of left and right stacks, eight 60kg robots per stack, the stack type being divided into upper and lower layers, each layer being 4 sets;
- According to the production plan of 26 days every month, 2 shifts per day for 16 hours per day, according to the palletizing beat of 15s; monthly robot palletizing is 99840 sets in the large unit of washing machines. And fully meets the production line capacity of the washing machine.

03 Loading and unloading of GSK RMD200 palletizing robot in a famous machine tool factory



Customer Requirements

- Replace the manual operation on the whole assembly line with automated whole-process monitor
- Robot automated motion such as loading, unloading, glue filling, drying and cooling multistation;
- Identify position offset while clamping product every time.

Application Effect

- Use additional axis rail to help robot monitor multistation;
- Automatic compensation and correction of high-precision visual system towards position offset;
- High automation of assembly line and continuously steady process flow.

04 GSK RMD120 Stacking Robot Applied to Rice Stacking Production Line

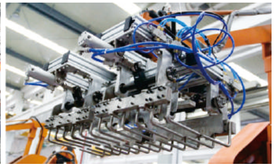
Customer Requirements

- The stacking process is stable, and the rice bags cannot drop out;
- The manipulator can automatically brake to avoid the rice bag dropping out when the stacking process is turned off;
- One stacking production line per day can meet the customers' concrete requirements to ensure the production efficiency.

Application Effect

- Realize rapidly stacking exactly, save labor and reduce injury risk;
- Smaller occupied area to layout production lines compared with the automatic stacking machine;
- Realize about 1000 times/hour stacking efficiency, and meet the customers' requirements;
- Stable performances, lower part fault rate and simple maintenance

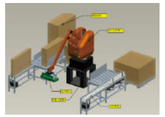




Application Examples

05 GSK RMD120 Stacking Robot Applied to Transfer LCD TV





Customer Requirements

- Carton 1's dimension and weight:
- Carton 2's dimension and weight:
- One workpiece's production time is at least 15s, and the transfer working must be done within 15s;
- Small cartons (below 50 cun, one cun is equal to 1/3 decimeter) are packed to 3 layers, and big ones (50 cun or more) are packed to two layers;
- Production line: outlet method divided into vertical, roller, high gravity center.

Application Effect

- The robot's one working cycle time is 6s, and two production lines is about 12s, which fully meet the customers' efficiency requirements;
- Compared to automatic stacking machines, the stacking robot occupies small area with small power consumption, and saves manual work.
- Stable performances, lower part fault rate and simple maintenance

06 GSK RMD120 Stacking Robot Applied to Some Famous Facial Tissue Company's Stacking Line



Customer Requirements

- Automatically convey pallets
- Automatically raise/drop down pallets
- Weight cannot exceed 25kg, and time is less than 6s;
- The finished products to be a whole package automatically turn.

07 GSK RMD200 Stacking Robot applied to Brickmake Stacking

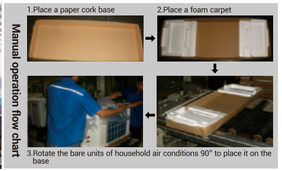


Customer Requirements

- Frequency: 500 times/h
- load:185kg(including the gripper)
- height: 22 layers• or 18 layers•110mm
- Tray: 1000mm•1000mm
- 500ms during gripping, placement delay

08 GSK RMD200 Stacking Robot Applied to Some Famous Air-Conditioner Company's Stacking Production Line





Customer Requirements

- Outdoor units and bare units of household air conditioners are automatically put on paper cork bases;
- It is commonly applied to the machine type 1P-3P;
- Its carrier weight＞130kg, its frequency≤6s/pc.

Application Effect

- Only two points in programs for the transfer robot are needed to position, one is for the grab on which each left and right there is one put point, pathway beyond the three points is controlled by the PC, and the PC itself looks for the three points' proper pathway to move, which teaching method is simple and easily understood;
- It has the product in-position check, cork base in-position check, device halt-restart continuous transfer function, and other safety protection function;
- The transfer manipulator's clamper uses the left-right clamping type to ensure the bare unit cannot be damaged;
- The transfer manipulator's each axis motion and motion range have their limit protection to ensure the device runs and personnel is safe;
- The control system conveniently sets, stores, extracts the motion mode of the manipulator collecting space coordinates;
- Reserved surplus position is conveniently used for manual transport when the device breaks down.

Polishing Application

01 GSK RB08 Robot Applied to Deburring in Automobile Assembly Production

Customer Requirements

- Connected with their customers' devices, it can automatically load, perform burring, unload and other operations meeting general user operation conditions.

Application Effect

- The whole robot system runs stably, saving device investment, ensuring well continuous production;



02 GSK RB20 Robot Applied to Polish Cylinder in Automobile Industry

Customer Requirements

- Docking Party A's device, automatically polish and bur the workpiece;
- Total loading/unloading, polishing and burring time is below 85S;

Application Effect

- Closely match with its cycle time, the robot's production runs smoothly, and its cycle time 70S.



Professional Skill Competition Platform

01 GSK Series of industry robot professional skill competition platform (CLASS II)

GSK03A2 intelligent manufacturing real training platform consists of six-axis industrial robot unit, numerical control machine tool, intelligent bar magazine, visual detection device and control system, intelligent production line control system and so on. The platform can intelligently identify the randomly placed blank in the bar magazine through color, number, shape, feature and the like, and send the identified position, type and other data to the industrial robot. The industrial robot grips the blank, the intelligent production line control system automatically calls the program in the numerical control machine tool, the blank is machined, and after the processing is finished, the robot returns the finished product to the designated position of the finished product magazine. And the intelligent manufacturing of different quantities of different workpieces can be completed according to the uninterrupted circle function achieved by the proposed program.





02 GSK INTELLIGENT MANUFACTURING AND PRODUCTION PRACTICE TRAINING BASE ——The national first intelligent manufacturing technology application skill competition designated technical platform (class I events)

The platform is based on the practical application and development of intelligent manufacturing technology. According to the principle of "Equipment Automation + Lean Production + Management Informatization + Artificial High Efficiency", The typical manufacturing equipment, such as NC machining equipment, industrial robot, product detection equipment and data information collecting equipment, are integrated into the "hardware" system of intelligent manufacturing unit, and combined with the comprehensive application of "software" such as intelligent control technology, high efficiency machining technology, industrial internet of things technology, RFID digital information technology, etc. to form the technology platform of competition. The competition highlights the technical skills of intelligent decision-making management system such as digital equipment interconnection, man-machine coordination and part flexibility design, traceability process and MES.

Application Examples

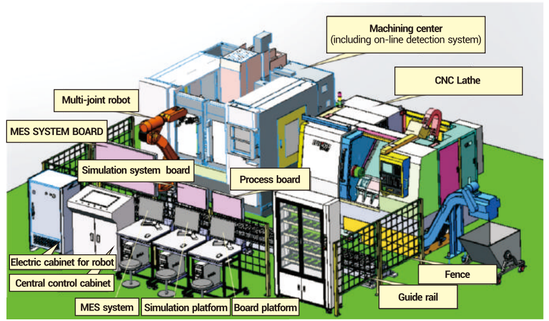
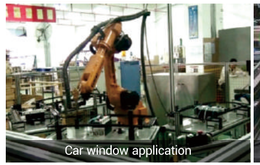


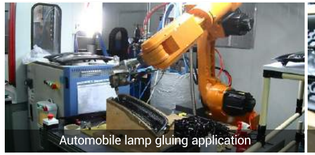
Table1. Main configuration list of cutting processing intelligent manufacturing unit

Serial No.	Device Name	quantity	Unit
1	CNC Lathe	1	Set
2	Machining center (three-axis)	1	Set
3	On-line measuring device (for machining center)	1	Set
4	Pneumatic accurate flat clamp (for machining center)	1	Piece
5	Industrial robot and clamp	1	Set
6	Guide rail for industrial robot	1	Set
7	Stereoscopic warehouse	1	Set
8	Visualization system and display terminal	3	Set
9	Central electrical control system (including wireless router)	1	Set
10	MES software system	1	Set
11	Safety protection system	1	Set
12	FRID reader/ writer and FRID chip	1	Set
13	Intelligent manufacturing simulation software	1	Set
14	CAD/ CAM software	1	Set
15	Programming and design position computer	2	Set

Gluing Application


Car window application


Kitchen ware gluing application


Automobile lamp gluing application


Car lamp gluing application (detailed drawing)

Packaging Application


Food packaging application

Haier
Galanz
CHIGO
FOTILE
HITACHI Inspire the Next 日立
Vinda
HUSEN
Comba
BAI YUN
CHMTI 重庆机床
SHINRI 新瑞
Das Auto.
GAG GROUP 广汽集团
中国一汽
BYD 比亚迪汽车
长安汽车
BOSCH 博世
DFM
Fast
BOSHI 宝鸡机床
DMTG 大连机床
秋田齿轮 专心 专注 专业
塞纳瑞液压 SCENERY
中国航天 CASC 一六五所 陕西航天机电环境工程设计院有限责任公司
LMH LIFT MUNICH 幕尼黑電梯有限公司 LIFT MUNICH CO.,LTD.
TBEA 特变电工
KBT 极东机械
WDL 威德力
OLONG 卧龙控股
力源液压 LIYUAN