

定制化解决方案  
Customized Solution

# 第七轴&桁架 机器人 应用集成商

APPLICATION INTEGRATOR FOR THE 7<sup>TH</sup>  
AXIS ROBOT & TRUSS MANIPULATOR

您身边的智能制造合作伙伴 · INTELLIGENT MANUFACTURING PARTNERS AROUND YOU ·



**苏州通锦精密工业股份有限公司**  
SUZHOU TONGJIN PRECISION INDUSTRY JOINT-STOCK CO., LTD



# 智能制造领航者

LEADER IN INTELLIGENT MANUFACTURING

# COMPANY PROFILE

# 苏州通锦

苏州通锦精密工业股份有限公司成立2002年12月，目前座落于苏州市高新区建林路411号，注册资本2700万元，2015年9月股改，2016年5月18日在全国中小企业股份转让系统挂牌，股票代码837453，现有员工150余人，其中大专以上学历占比85%，研发人员近50人。目前拥有现代化的办公和厂房面积约15000平方米。

Suzhou Tongjin Precision Industry Joint-stock Co.,Ltd Was established in December 2002, is located in suzhou high-tech zone to build forest road 411, the registered capital of 27 million yuan, in September 2015 the share reform, On May 18, 2016, it was listed in the National Sme Share transfer System, stock code 837453, existing staff 150 people, including college degree or above accounted for 85%, the researchers nearly 50 people now has a modern office and factory building area of 15000 square meters.

公司已获得“江苏省高新技术企业”、“江苏省智能装配工程技术研究中心”、“江苏省研究生工作站”、“江苏省民营科技企业”、“苏州市企业技术中心”、“苏州市智能伺服压装机工程技术研究中心”、“科技创新先进单位”、“优秀产学研合作单位”、“高新区瞪羚企业”、“高新区专精特新企业”、“知识产权贯标单位”、“华东理工大学”、“南京航空航天大学研究生培养基地”称号、“江苏省HV电机自动产线首台套项目”、“江苏省智能制造服务示范企业”、“苏州高新区智能制造十佳示范企业”等多项荣誉称号。通过了ISO9001:2015质量管理体系认证、ISO14000:2015环境管理体系认证。

The company has been awarded as a high-tech enterprise in Jiangsu Province. Jiangsu province engineering research center for intelligent assembly graduate workstation private technology enterprises in jiangsu province suzhou city in jiangsu province enterprise technology center of suzhou intelligent servo press machine engineering technology research center of advanced science and technology innovation of enterprises industry-university-institute cooperation unit high-tech zone gazelle unit high-tech zone specialization, the new east China university of science and technology enterprise intellectual property rights, jitc unit of nanjing aerospace university graduate cultivation base title of HV motor automatic production line of jiangsu province first sets project intelligent manufacturing service demonstration enterprise of jiangsu province A number of honorary titles, such as The Top ten Intelligent Manufacturing Demonstration enterprises in Suzhou High-tech Zone, have passed the ISO9001:2015 quality management system certification, ISO14000:2015 environmental management system certification.

多年来公司一直以“工厂实现绿色无人化”为愿景；以“通向世界、锦绣中华”为使命；以“创新、进取、诚信、和谐”为企业核心价值观。公司在引进国外高尖端自动化核心元件的基础上，大力投入研发资金，主要针对新能源汽车，军工，光伏、5G等行业智能伺服装配技术需求，已成功自主开发了通锦牌伺服电动缸、智能伺服压装机、第七轴机器人、桁架机器人等自主产品，结合六关节机器人实现自动化、安全化、无人化的智能装配绿色无人化生产线，提供一站式工厂智能装配自动化系统整体解决方案，实现工业4.0。

For many years, the company has been to achieve green plant unmanned vision; To the world splendid China for the mission; With innovative and enterprising good faith harmony for enterprise core values in the imported sophisticated automation on the basis of the core components, efforts on research and development funds, mainly for new energy vehicles, military industry, photovoltaic 5 g industry such as intelligent servo technology demand, has successfully developed the tong jin brand servo electric cylinder intelligent servo press installed 7 axis products such as truss robot autonomous robots, automated security six joint robot of unmanned green unmanned intelligent assembly production line, to provide one-stop intelligent assembly automation system overall solution, implement industrial 4.0

通锦近年来一直注重研发投入，加大人才引进与自身培养，公司已申请专利200余项，已授权60项，其中发明专利20项；实用新型专利40项；已获得软件著作权10项；软件产品2项；江苏省高新技术产品5项；有效商标注册5项，申请国际PTC专项2项。

In recent years, Tongjin has been paying attention to r&d investment, increasing talent introduction and self-training. The company has applied for more than 200 patents, and has authorized 60 patents, including 20 invention patents. 40 utility model patents; 10 software Copyrights have been obtained; 2 software products; 5 high-tech products of Jiangsu Province; There were 5 valid trademark registrations and 2 special applications for international PTC



## 型号定义

TJS 05 TW L040 V08 A08 L1 E1 2

1 2 3 4 5 6 7 8 9

1	“TJS”代表通锦公司出品的第七轴，与电缸中的“TJE”、模组中的“TJM”、“TJH”相呼应，代表公司品牌	2	两位数字表示负载，单位为“吨”。 “05”表示0.5吨 “20”表示2吨	3	第七轴机器人分为两种类型。线性导轨英文linear guide，取首字母“LG”表示线性导轨式第七轴机器人；滚轮英文trolley wheel，取首字母“TW”表示滚轮式第七轴机器人	4	取“L”加三位数字表示总长。总长单位为“米”， “040”表示4米， “120”表示12米； （有效行程在最终技术文件中确定）
5	速度英文velocity，取首字母“V”加两位数字表示额定速度。速度单位“米每秒”。数字“08”表示0.8m/s。如无要求可不填以1m/s为准	6	加速度英文acceleration，取首字母“A”加两位数字表示加速度。单位为“米每二次方秒”。数字“08”表示0.8m/s <sup>2</sup> 。如无要求可不填以1m/s <sup>2</sup> 为准	7	润滑英文lubrication，取首字母“L”表示。目前润滑有“手动润滑脂”、“自动润滑油”、“自动润滑脂”三种，分别用L1、L2、L3表示； “L1”表示手动润滑（脂） “L2”表示自动润滑油 “L3”表示自动润滑脂（如不填表示自动润滑脂）		
8	取环境英文environment首字母“E”表示防尘方式。目前齿条防尘基本为钣金折弯一种。导轨分为钣金折弯和风琴罩两种，分别用E1、E2表示； “E0”表示无防护 “E1”表示钣金防护（如不填表示钣金防护） “E2”表示风琴罩防护 “E3”表示焊接用全密封 “E4”表示喷涂用全密封			9	最后一位数字代表拖链要求，现以“1”表示塑料拖链，“2”表示金属拖链，“3”表示特殊要求。（如不填表示塑料拖链）		

## ROBOT 7<sup>th</sup>-AXIS 第七轴机器人

ROBOT 7<sup>th</sup>-AXIS



## 结构构成 Structural Formation

新型的机器人第七轴由一个或一组的高强度结构件捏接而成，经过二次去应力回火后通过精密龙门铣床对基座进行精加工，并采用意大利伽比尼研磨的齿轮齿条配合台湾/日本直线导轨为传动,最后通过伺服电机、高精度减速机的紧密配合，使得机器平稳快捷。

The new robot 7th-axis consists of a or a set of high-strength structural welding sections, after two times stress relieving and the fine finishing of the foundation bed through the precise CNC gantry milling machine and then combine with the hardening and grinding helical gears and racks, finally through the tight fitting of the servo motor and APEX gear box makes the conveying of the robot more precise, steady, smooth and speedy.

## 功能优点 Features and benefits

- (1)定制化行程。第七轴可以根据客户需要进行扩展长度。
- (2)安装灵活，精度高。第七轴可以使用可调节的地脚螺栓安装在地面上，这使得在凹凸不平的地面以及其他如路线和管道等不利于安装的空间能够快速安装并确保其精确度。
- (3)安全性高。第七轴设置了限位开关，增加了机械安全限位机构防止关节机器人意外脱轨，确保机器运行安全可靠。
- (4)绿色环保。第七轴轴上可装配导轨风琴护罩，防止无污染，便于维护保养。

(1)Customized travel. According to the customer requirement the 7<sup>th</sup> axis can be extended length.  
(2)Flexible installation, high precision. The 7<sup>th</sup> axis is bolted to the ground by using adjustable floor-mounting elements. This ensures a fast and accurate installation and allows for uneven ground as well as obstacles such as wiring and tubing.  
(3)High safety. In the 7<sup>th</sup> axis has set the limit switch and added the mechanical safety limit to prevent the accidental derailment of the articulate robot and ensure the safe and reliable operation of the robot.  
(4)Environmental Protection. On the 7<sup>th</sup> axis we can assemble with organ shield for guide rail, dust prevention and non-pollution, easy maintenance.

## 可选配件

- ★运动控制相关控制系统
- ★动部件防尘组件
  - (1)风琴护罩
  - (2)金属护板
- ★齿轮齿条润滑GAMBINI润滑组件
- ★直线导轨润滑的全自动集中润滑系统
- ★分段式行程开关
- ★高精度的位移光栅尺

## OPTIONS/ACCESSORIES

- ★Control system related to motion control
- ★Dustproof components
  - (1)Organ shield
  - (2)Sheet metal guard
- ★GAMBINI lubrication unit for gears and racks
- ★Automatic centralized lubrication system for guide rails
- ★Segment-based travel switch
- ★High-precision displacement grating scale

## 长度配置

单根总长度7M ,行程约6M  
(不同关节机器人行程稍有变化)。

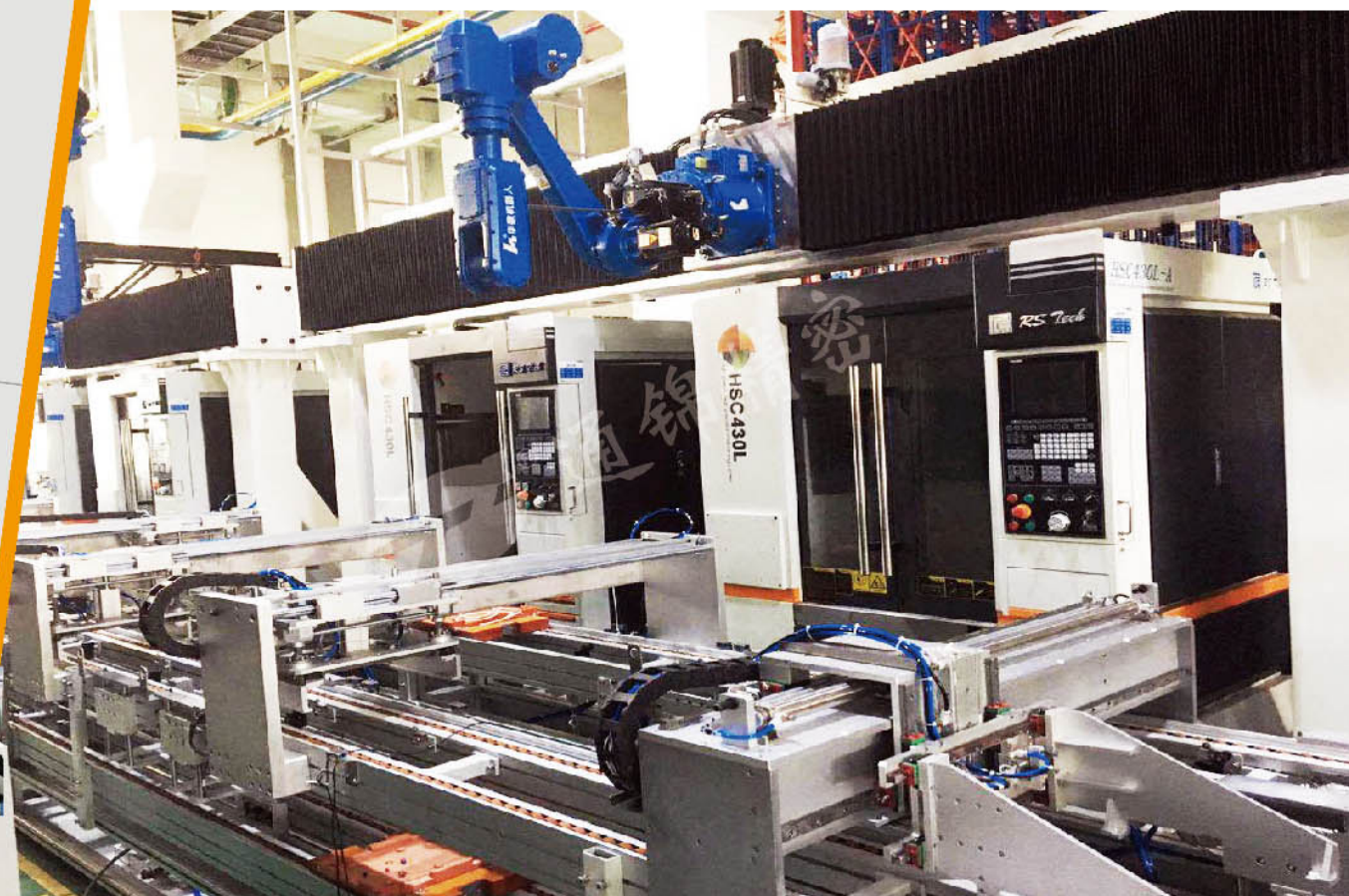
## LENGTH CONFIGURATION

single length 7m, travel 6m  
(2some differences for different articulate robot)



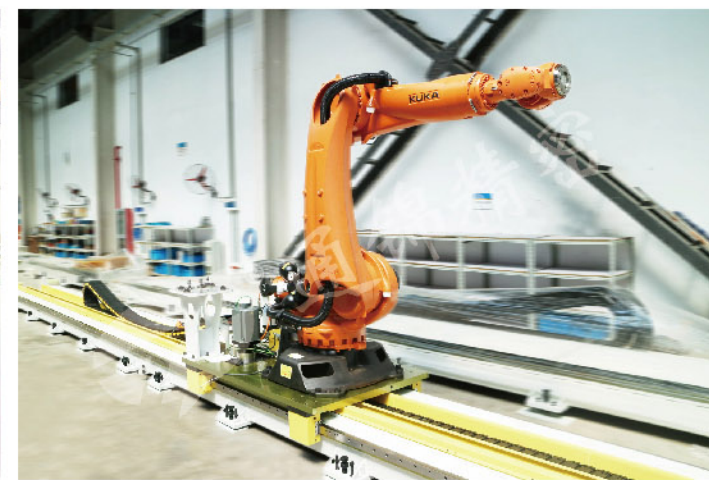
# 数控车床上下料机器人

Manipulator for workpiece load/unload  
of the CNC machine tools



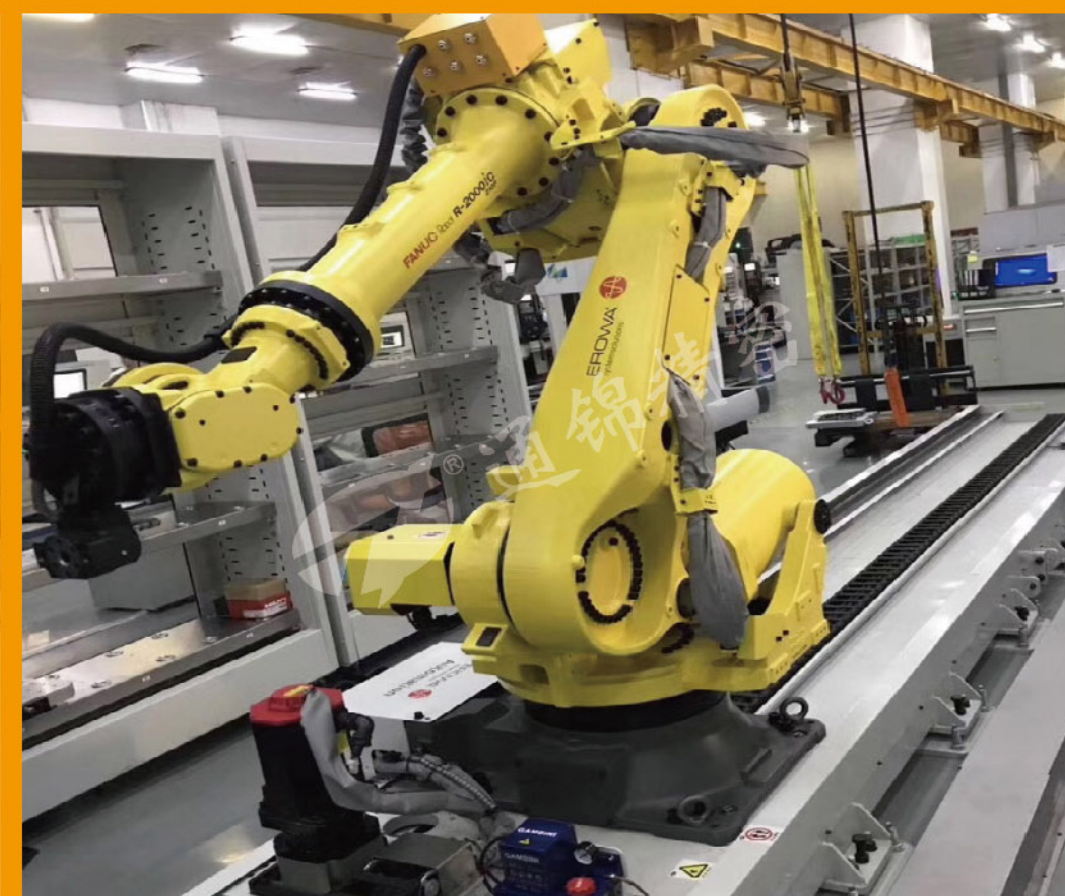
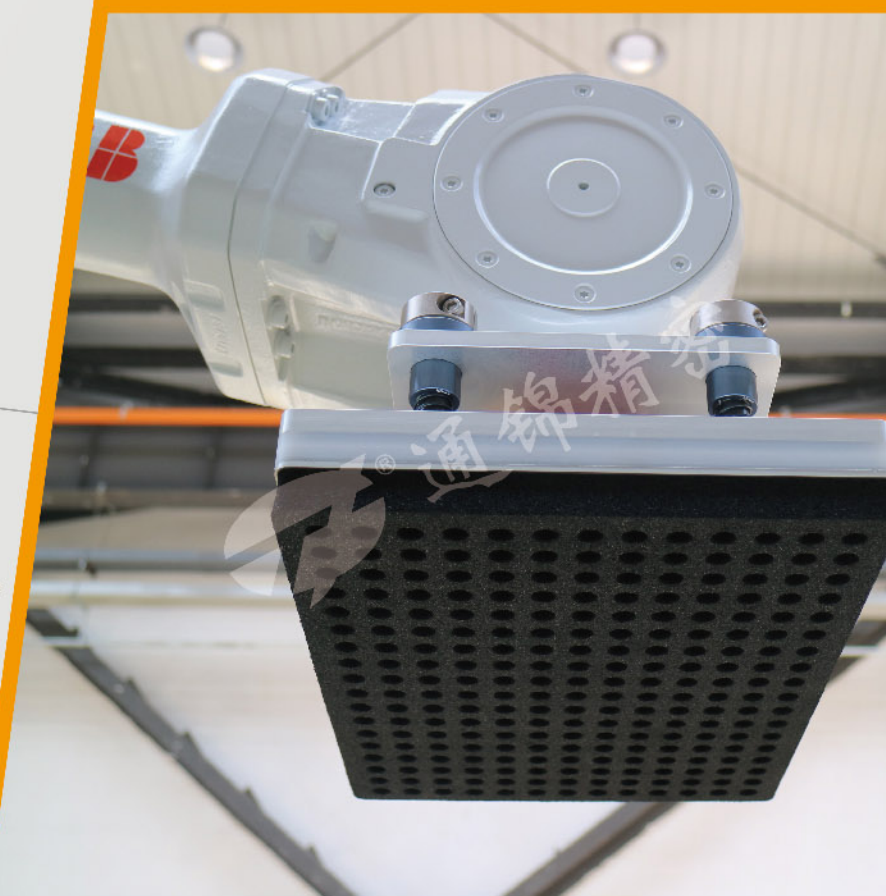
## 冲床上下料机器人

Manipulator for workpiece load/  
unload of the punching machine



## 包装码垛上下料机器人

Packing and palletizing  
manipulator



# 新能源电池电机机器人

New energy battery motor manipulator



## 喷涂式机器人

Spray type manipulator



## 汽车焊装机器人

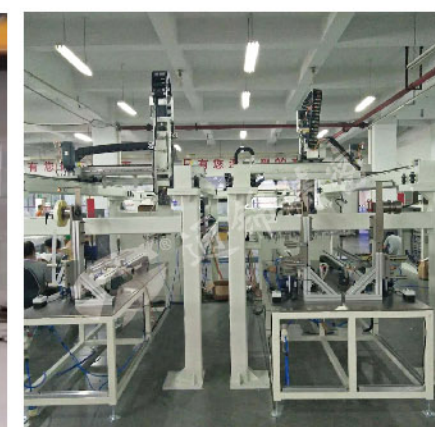
Automobile welding manipulator

# 桁架式机器人

## Truss Manipulator

桁架式机床上下料机器人是用于数控机床自动化上下料的直角坐标机器人机械手，数控机床桁架式机械手是工业应用中，能够实现自动控制的、可重复编程、多功能、多自由度、运动自由度间成空间直角关系的自动化设备。桁架式机床上下料机器人与数控机床相结合，可以实现所有工艺过程的工件自动抓取、上料、下料、装卡、工件移位翻转、工件转序加工等，能够极大的节约人工成本，提高生产效率。

Truss manipulator for workpiece load/unload of the machine tools is a kind of cartesian coordinate robot for automatic workpiece load/unload of the CNC machine tools, truss manipulator for CNC machine tools is the automation equipment, which can achieve the automatic control, repeatable programming, multi-function, multi-degree of freedom, freedom of movement between the space at right angles in the industry application. Combined with CNC machine tools, the truss manipulator for workpiece load/unload of the machine tools can achieve the workpiece automatic collection, load, unload, mounting, workpiece inversion transference, workpiece turn sequence and so on, which can greatly reduce labor costs, improve production efficiency.



龙门倒挂机器人  
通锦制造  
0512-68416781

## 变位机及上下料机构和桁架机械手功能简介

Function brief about the positioning equipment, load/unload mechanism and truss manipulator

### 1、变位机主要技术参数

- (1)夹持工件长度范围1400-2800mm
- (2)夹持工件直径范围200-500mm
- (3)适用工件重量在2000kg内
- (4)旋转台主轴速度为0.5-10r/min  
可以任意调速
- (5)转台与尾架水平方向定位精度 $\pm 1\text{mm}$
- (6)支臂台垂直方向定位精度 $\pm 1\text{mm}$

### 2、链条输送机主要技术参数：

- (1)最大负载6000kg
- (2)输送长度在4430mm
- (3)输送宽度在1400-2800mm
- (4)速度变频调速0.5-6m/min
- (5)链条输送机有三组行程开关和一组接近开关控制料到达准确位置

### 3、电动升降机举料主要技术参数：

- (1)升降台最大负载在3000kg内
- (2)升降机升降变频调速在0.5-10m/min

### 4、成品置料架主要技术参数：

- (1)吊大负载4000kg内
- (2)可以放置工件长度1400-2800mm
- (3)可以放留直径500mm工件一件或者直径250mm工件三件
- (4)安装了聚氨酯减震垫

### 5、三轴桁架机械手主要技术参数：

- (1)X轴行程范围在0-3000mm
- (2)Z轴行程范围在0-550mm
- (3)Y轴行程范围在0-350mm
- (4)三轴共有九组行程开关控制到达准确位置
- (5)Y轴桁架机械手臂上安装了焊接枪，最大负载100kg

### 1.Main technical parameters about positioning equipment:

- (1)Length range of clamping workpiece 1400-2800mm
- (2)Diameter range of clamping workpiece 200-500mm
- (3)Suitable workpiece weight is within 2000kg
- (4)Spindle speed of the rotary table is 0.5-10r/min  
(speed can be adjusted)
- (5)Horizontal positioning accuracy of rotary table and tailstock  $\pm 1\text{mm}$
- (6)Vertical positioning accuracy of support table  $\pm 1\text{mm}$

### 2.Main technical parameters about chain instant freezer:

- (1)Max.load 6000 kg
- (2)Conveying length is 4430mm
- (3)Conveying width is 1400-2800mm
- (4)Speed frequency control 0.5-6m/min
- (5)There are three sets of travel switches and a set of approach switch in the chain conveyor to control the workpiece to reach the precisely position

### 3.Main technical parameters about the electric lift:

- (1)Max.load of the lift table is within 3000kg
- (2)Lifting frequency control of the lifter 0.5-10m/min

### 4.Main technical parameters about the finished parts rack:

- (1)Max.load is within 4000kg
- (2)Length range of the placed workpiece is 1400-2800mm
- (3)It can be placed with 1 pcs workpiece with diameter 500mm or 3pcs workpieces with diameter 250mm
- (4)Polyurethane cushion is installed

### 5.Main technical parameters about the 3 axis truss manipulator:

- (1)Travel range of X axis is 0-3000mm
- (2)Travel range of Z axis is 0-550mm
- (3)Travel range of Y axis is 0-350mm
- (4)There are nine sets of travel switches on the 3 axis to control the workpiece to reach the precisely position
- (5)On the Y axis a weld gun is installed, the Max. load is 100kg



## 变位机主要技术参数

Main technical parameters about positioning equipment

- (1)自由度 Degree of freedom: 360°
- (2)载荷 Load: 50T
- (3)重复定位精度 Repeat positioning accuracy:  $\pm 0.2\text{mm}$
- (4)回转最大速度 Max. rotating speed: 55°/S
- (5)倾斜最大速度 Max. tilting speed: 55°/S
- (6)回转角度 Rotating angle:  $\pm 180^\circ$
- (7)倾斜角度 Tilting angle:  $\pm 75^\circ$
- (8)安装方式 Installation method: 落地式 floor stand
- (9)许用回转半径 Permissible rotary radius: 550mm
- (10)驱动方式 Drive mode: 高精度伺服电机 High precision servo motor

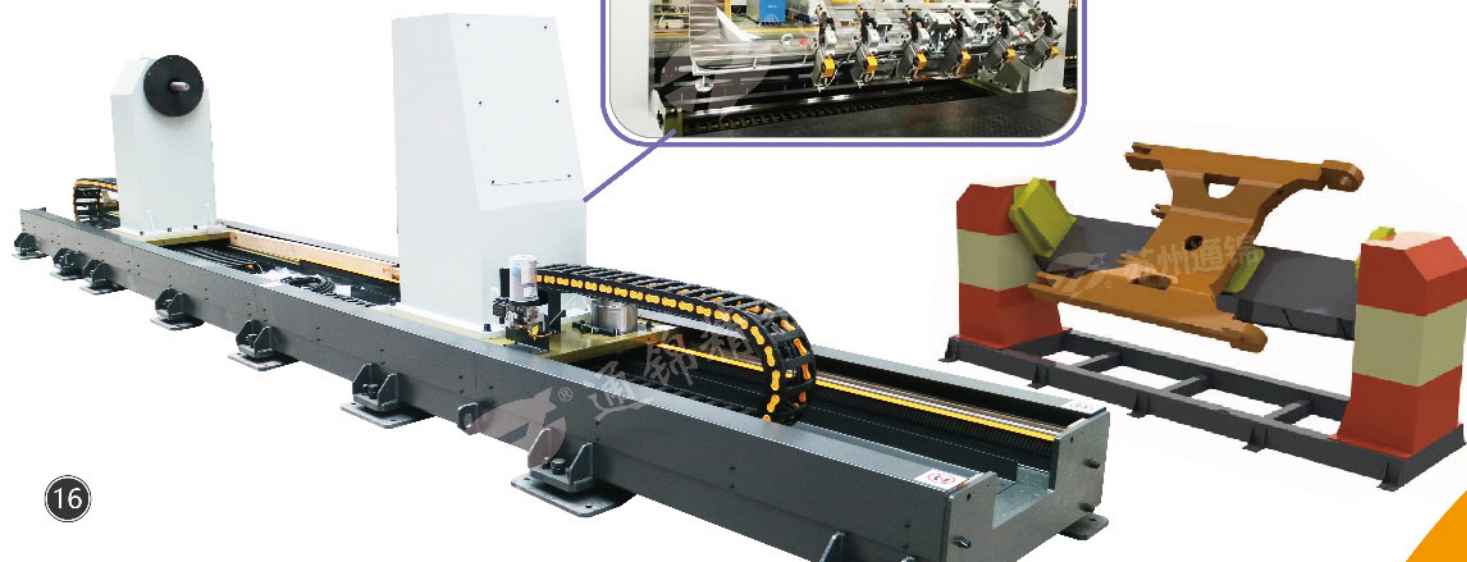
## 功能及特点 Function & Features

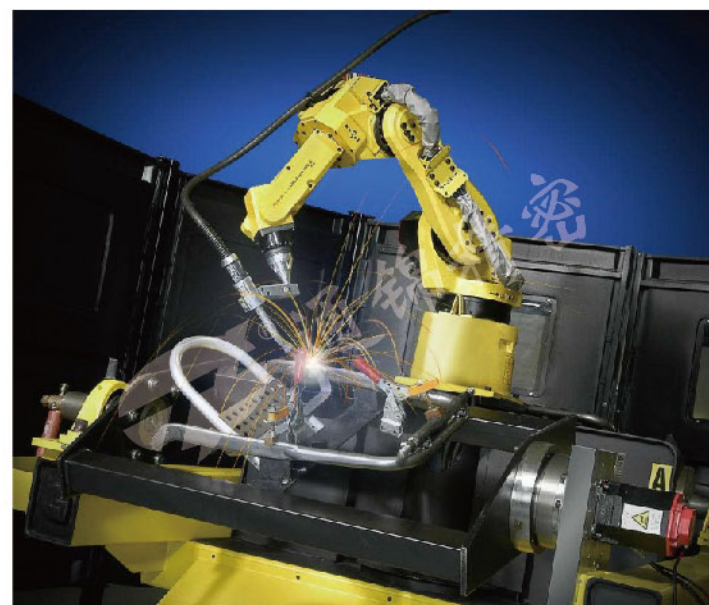
- 1、变位机机座由钢件型材焊接、钣金件组装而成；整体钢性好，强度高，表面喷漆防锈，结构紧凑、小巧，外形美观。
  - 2、旋转主轴采用专业厂家加工定制，严格按照轴的加工工艺、热处理，高精度，高刚性。轴承采用专用滚动轴承，承载能力强，寿命长。
  - 3、摆动驱动方式采用伺服电机直连减速器，整个摆动装置精度高，具有高抗弯矩能力。
  - 4、旋转驱动方式采用伺服电机连接减速器，整个旋转装置精度高，可靠性好，负载能力强等特点。
1. Stand of the positioning equipment is assembled by the welding steel profile, sheet metal: made by the whole steel; The overall rigidity is good, high strength, the surface spray for rust, compact, beautiful appearance.
2. Rotary spindle is custom-made by the professional manufacturers, strictly accordance with the the processing technology of the axis, heat treatment, high precision, high rigidity. Using the professional rolling bearings, carrying capacity, long life.
3. Swing drive mode is using the servo motor to connect the reducer directly, the whole swing device has high precision and high bending resistance.
4. Rotary drive mode is using the servo motor to connect the reducer, the whole rotation device has high precision, good reliability, strong load capacity and so on.



## 变位机

Positioning equipment

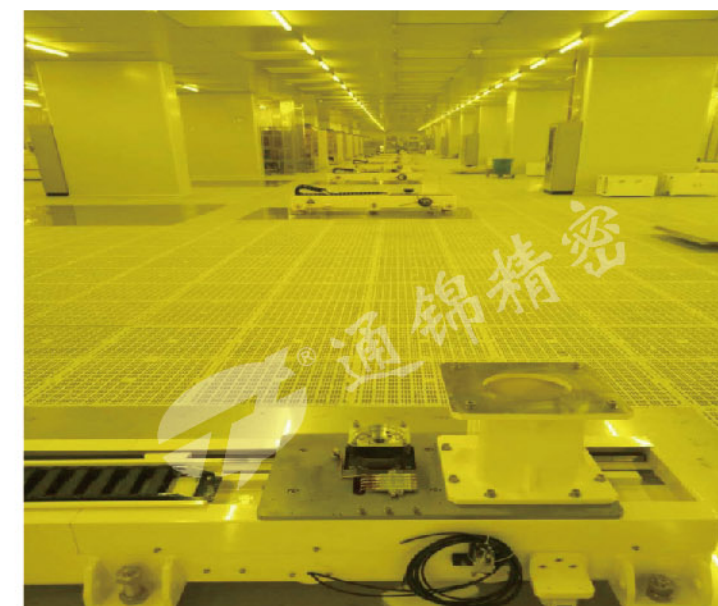




# 应用案例 Applications

- 1、焊接
  - 2、搬运
  - 3、焊接
  - 4、焊接
  - 5、3D打印
  - 6、热熔涂胶
  - 7、加工
  - 8、仓储
  - 9、CNC加工上下料
  - 10、电子类产品
- 1.Welding
  - 2.carry
  - 3.Welding
  - 4.Welding
  - 5.3D printing
  - 6.Hot-melt adhesive
  - 7.Machining
  - 8.Storage
  - 9.Load/unlaod for CNC machining
  - 10、 Electronic products

1	2	3	
4	5	6	
7	8	9	10





**全球战略合作伙伴**  
Strategy partner

# 荣誉资质

## Honor & Qualification



追求卓越 永不止步

## 基本配置 / 品牌

机架 / Frame

—— 通锦 / TJ

伺服马达 / Servo Motor

—— Panasonic / Schneider

减速机 / Gear Box

—— APEX

导轨 / Guide Rail

—— HIWIN

齿条 / Rack

—— GAMBINI

行程开关 / Travel Switch

—— OMRON

## 技术参数 / Technical parameters

最大行程 / Max. Travel	70m
最大速度 / Max. Velocity	3m/s
最大加速度 / Max. Acceleration	3m/s <sup>2</sup>
最大负载 / Max. Payload	6000KG
重复定位精度 / Repeat Accuracy	±0.1mm

※ 行程按客户要求

※ Travel depends

Servo Motor

## 第七轴机器人客户需求表 / Customer request list for the 7<sup>th</sup> Axis Robot

机器人型号 / Type of the Robot	
机器人品牌 / Brand of the Robot	
有效行程 / Effective travel (m)	
速度要求 / Speed requirement (m/s) 【参考值 / Reference value : ≥2T ( < 0.8m/s ) ; 200-800KG ( < 3m/s ) 】	
加速度要求 / Velocity requirement (m/s <sup>2</sup> ) 【参考值 / Reference value : ≥2T ( < 1m/s <sup>2</sup> ) ; 200-800KG ( < 3m/s <sup>2</sup> ) 】	
宽度要求 / Width requirement (m)	
高度要求 / Height requirement (m) ( 工作台面到地面的距离 / Distance from workbench to the ground )	
重复定位精度要求 / Repeat accuracy requirement	<input type="checkbox"/> 标准 / Standard ±0.1mm <input type="checkbox"/> 最高 / Precision ±0.05mm
最大负载 / Max. Load (KG)	
防尘要求 / Dust preventing requirement	<input type="checkbox"/> 风琴护罩 / Rgan shieldo <input type="checkbox"/> 金属护板 / Sheet metal guard <input type="checkbox"/> 自定义 / Custom
润滑要求 / Lubricating oil requirement	<input type="checkbox"/> 手动集中供油 / Manual concentrated oil supply <input type="checkbox"/> 自动集中供油 / Automatic concentrated oil supply
颜色 / Lubricating oil requirement	
应用场合 / Application	
其他要求 / Other requirement	

## 苏州通锦精密工业股份有限公司

SUZHOU TONGJIN PRECISION INDUSTRY JOINT-STOCK CO., LTD

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