顺泰科技
SHUNTAI KEJI

Automatic *Industry*

COMPANYPROFILE

//用技术提升生产效率//

宁波顺泰自动化有限公司

NINGBO SHUNTAIAUTOMATION CO., LTD

01 企业介绍
ENTERPRISE INTRODUCTION

宁波顺泰自动化有限公司，成立于2015年，是一家专注于高端智能制造领域的科技型企业。多年来，公司始终秉承“精益求精，追求卓越”的理念，致力于高精尖设备的研发与制造。公司历经技术革新、软件迭代和经验积累，成功研发出多款行业领先的智能化生产设备，为客户提供高精度、高效率的生产解决方案。为顺应高端装备制造业的蓬勃发展，公司于2021年正式更名为宁波顺泰自动化有限公司，进一步聚焦航空航天、汽车、电子、电器、五金等领域的精密制造需求，提供从软件开发、硬件设计到生产制造的全方位服务。

Ningbo Shuntai Automation Co., Ltd., established in 2015, is a technology-driven enterprise specializing in high-end intelligent manufacturing. For years, the company has been adhering to the principle of "Striving for Excellence and Pursuing Perfection", dedicated to the research, development, and manufacturing of advanced and sophisticated equipment.Through continuous technological innovation, software iteration, and experience accumulation, the company has successfully developed a series of industry-leading intelligent production equipment, providing customers with high-precision and high-efficiency manufacturing solutions. To adapt to the rapid development of the high-end equipment manufacturing industry, the company officially changed its name to Ningbo Shuntai Automation Co., Ltd. in 2021. It further focuses on the precision manufacturing needs of industries such as aerospace, automotive, electronics, electrical appliances, and hardware, offering comprehensive services from software development and hardware design to production and manufacturing.

未来，宁波顺泰自动化有限公司将继续深耕智能制造领域，不断提升自身的技术实力和服务水平，为客户创造更大价值，助力中国制造迈向高端化、智能化的新时代！

In the future, Ningbo Shuntai Automation Co., Ltd. will continue to cultivate the intelligent manufacturing field, constantly improve its technical strength and service level, create greater value for customers, and contribute to the advancement of Chinese manufacturing towards a new era of high-end and intelligent development!

公司坐落于风景秀丽、经济发达的浙江宁波，地处宁波自贸区北仑片区这一战略要地，距离宁波舟山港和宁波保税区仅5公里，坐拥得天独厚的地理优势，交通便捷，物流畅通，为公司的发展提供了强大的区位优势。

The company is located in the beautiful and economically dynamic city of Ningbo, Zhejiang Province. Situated in the Beilun District of the Ningbo Free Trade Zone, a strategic location, it is only 5 kilometers away from the Ningbo Zhoushan Port and the Ningbo Bonded Area. This prime location offers unparalleled geographical advantages, convenient transportation, and smooth logistics, providing a powerful locational advantage for the company's development.

Introduction

02 数字伺服旋铆机介绍
Introduction to Digital Servo Riveting Machines

随着工业4.0和智能制造理念的迅速推广，数字伺服旋铆机正逐渐成为现代制造业的重要利器。这种先进的铆接技术设备能够与自动化生产线和数字化管理系统无缝结合，实现高效、灵活的生产模式。

With the rapid promotion of Industry 4.0 and smart manufacturing concepts, digital servo riveting machines are gradually becoming essential tools in modern manufacturing. This advanced riveting technology can seamlessly integrate with automated production lines and digital management systems, achieving efficient and flexible production modes.

作为高精尖设备，数字伺服旋铆机在制造业不断发展的背景下，市场需求日益增加，已成为许多精密铆接工艺的最佳选择。它主要应用于精密机械工程领域，其显著功能特点包括：

As a high-precision device, the demand for digital servo riveting machines is increasing against the backdrop of ongoing developments in the manufacturing industry. They have become the optimal choice for many precision riveting processes. These machines are primarily used in the field of precision mechanical engineering, and they possess several notable features:

- **高精度：确保每一连接点的精确度，满足严格的公差要求**
  High Precision: Ensures the accuracy of each connection point, meeting strict tolerance requirements.
- **快速速度：提升铆接效率，缩短整体生产周期**
  Fast Speed: Enhances riveting efficiency and shortens overall production cycles.
- **卓越控制性和稳定性：保证铆接过程的一致性，从而降低误差**
  Excellent Control and Stability: Guarantees consistency throughout the riveting process, thereby reducing errors.
- **节能环保：有效减少能耗及环境影响，符合可持续发展的要求**
  Energy Saving and Environmental Protection: Effectively reduces energy consumption and environmental impact, aligning with sustainable development goals.
- **低噪音运行：营造更为舒适的工作环境，减轻操作员的疲劳感**
  Low Noise Operation: Creates a more comfortable working environment and alleviates operator fatigue.
- **高效率：优化生产流程，提升整体生产能力。**
  High Efficiency: Optimizes production workflows and increases overall production capacity.
- **便捷操作：用户友好的界面使操作者更易上手，降低培训成本**
  User-Friendly Operation: An intuitive interface makes it easier for operators to get started, reducing training costs.
- **高安全性：设计充分考虑到操作人员的安全，降低事故风险**
  High Safety: Designed with a strong emphasis on operator safety, minimizing the risk of accidents.

数字伺服旋铆机的核心原理是通过旋转运动将铆钉头部成型，以实现稳固的紧固效果。与传统的冲击铆接方法相比，旋铆过程更加平稳，能够显著减少对工件的冲击和损伤，从而确保连接部位的强度与美观。

The core principle of the digital servo riveting machine is to shape the rivet head through rotational motion to achieve a secure fastening effect. Compared to traditional impact riveting methods, the riveting process is smoother, significantly reducing the impact and damage to workpieces, thus ensuring the strength and aesthetics of the connection points.

近年来，数字伺服旋铆机因其众多优势，已被广泛应用于先进制造与高精密生产领域，对推动各行业的技术进步和产品质量提升起到了重要作用

In recent years, due to its numerous advantages, the digital servo riveting machine has been widely applied in advanced manufacturing and high-precision production fields, playing an important role in promoting technological advancement and improving product quality across various industries.

03 径向旋铆机原理
Principle of Radial Riveting Machine

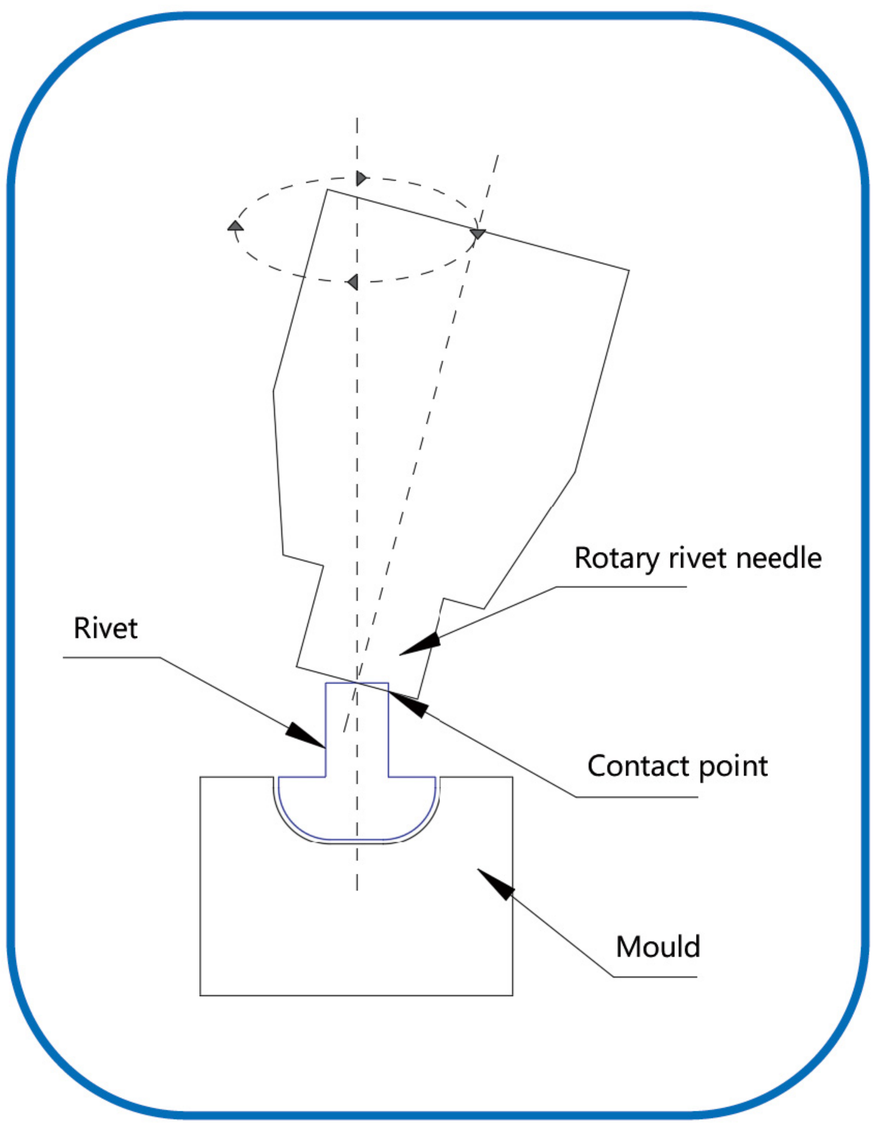
数字伺服旋铆机是一种利用旋转和径向压力将铆钉固定在工件上的先进设备。其工作原理结合了旋转运动与压制力来实现高效、精确的铆接。以下是径向旋铆机的基本原理和工作过程。

The digital servo riveting machine is an advanced device that uses rotation and radial pressure to secure rivets in workpieces. Its working principle combines rotational motion with compressive force to achieve efficient and precise riveting. Below are the basic principles and working process of the radial riveting machine.

1. 工作原理Working Principle

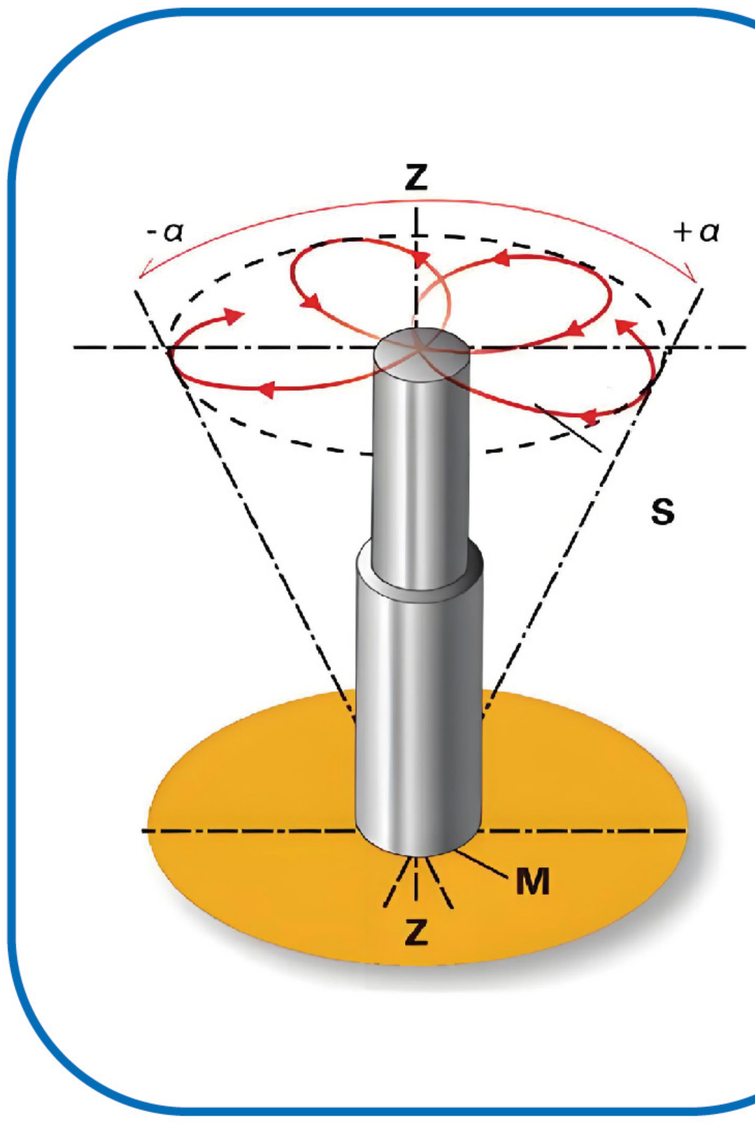
旋转运动： 数字伺服旋铆机通过电动机驱动铆钉旋转，使铆钉的头部在与工件接触时产生切割和变形。这种旋转运动可以使铆钉更好地适应孔的形状，提高连接的牢固性。

Rotational Motion: The digital servo riveting machine drives the rivet to rotate using a motor, causing the head of the rivet to cut and deform upon contact with the workpiece. This rotational motion allows the rivet to better conform to the shape of the hole, enhancing the strength of the connection.



径向压力： 同时，机器施加径向压力（或称为轴向压力），使铆钉在工件之间形成紧密的连接。该压力促使铆钉材料发生塑性变形，从而扩展到工件内部。

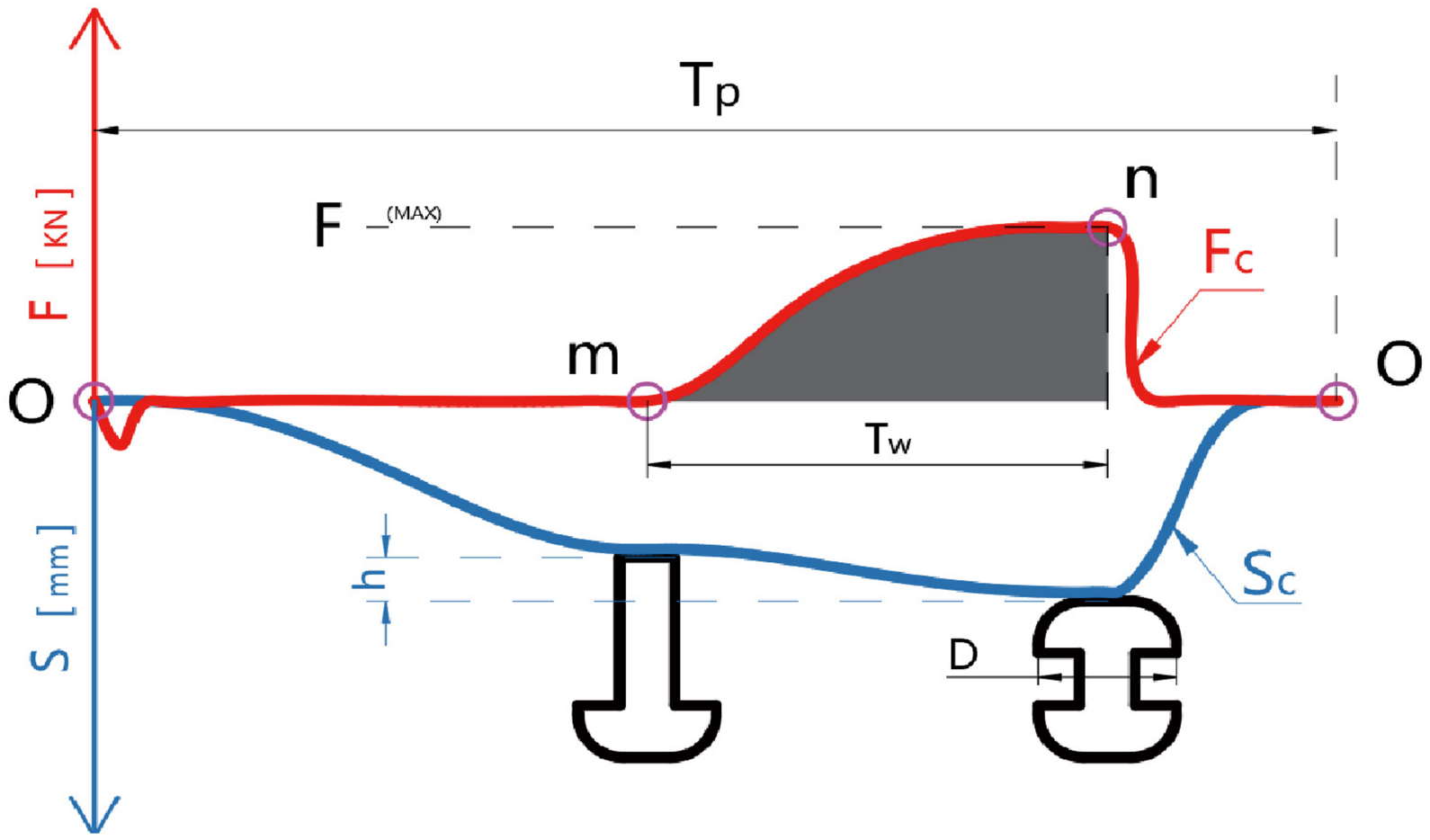
Radial Pressure: At the same time, the machine applies radial (or axial) pressure, tightly connecting the rivet between the workpieces. This pressure causes the material of the rivet to undergo plastic deformation, expanding it into the interior of the workpiece.



04

铆接过程控制系统

Riveting process control system

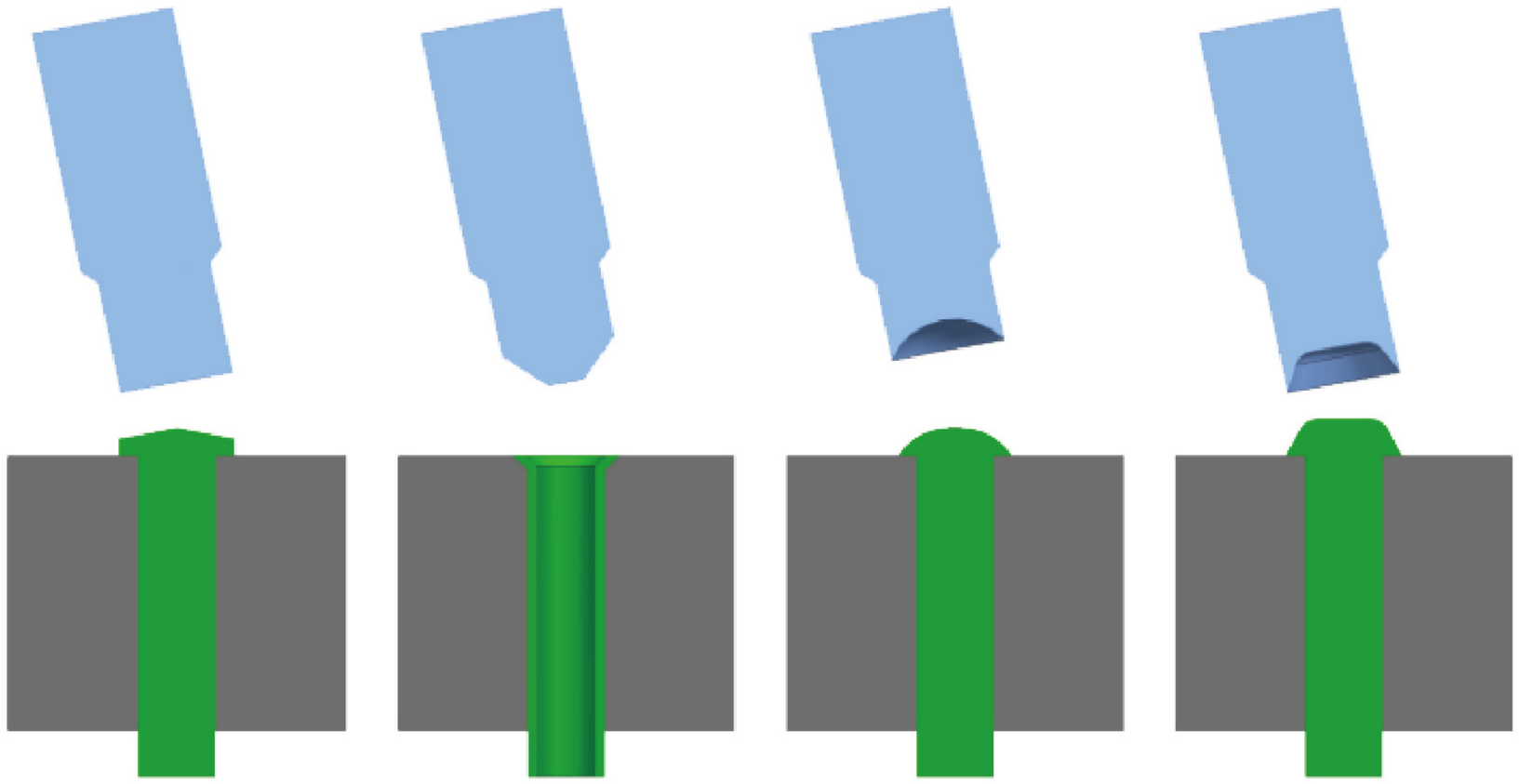


Tp :	工作过程	Working process
O:	原点	Origin
n:	铆接结束点	Rivet ending point
h:	铆接量	Rivet quantity
Fc:	力学曲线	Mechanical curve
F:	铆接压力	Rivet pressure
Tw:	铆接时间	Rivet time
m:	铆接起始点	Rivet starting point
D:	铆接尺寸	Rivet size
Sc:	位移曲线	Displacement curve

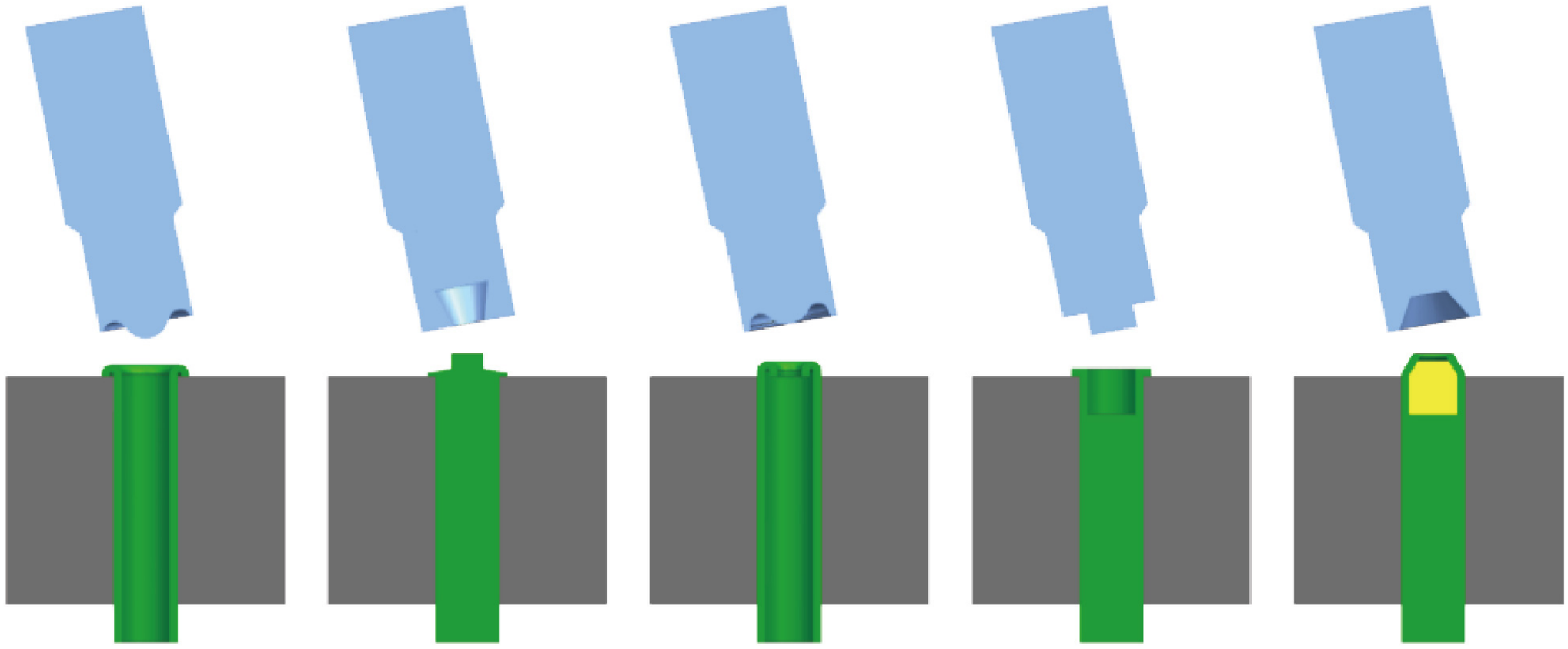
05

Riveted shape

铆接形状



S 1	S 2	S 3	S 4
扁平型	沉头型	球头型	圆盖型
Flat Type	Countersunk Type	Ball Head Type	Round Cap Type



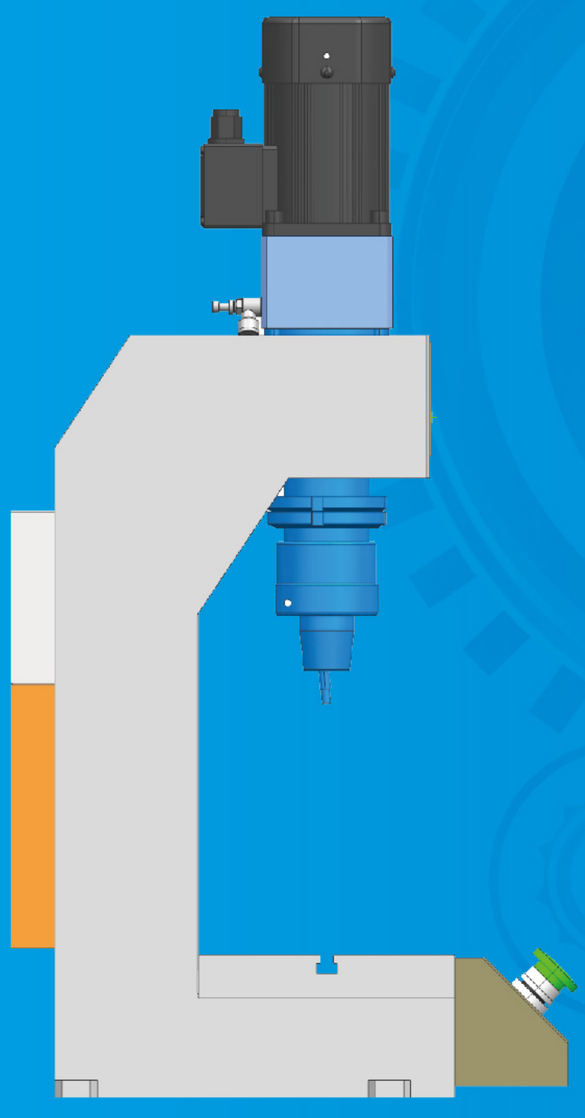
S 5	S 6	S 7	S 8	S 9
外翻型	圆柱型	内翻型	平台型	内缩型
Flared Type	Cylindrical Type	Recessed Type	Platform Type	Conical Type

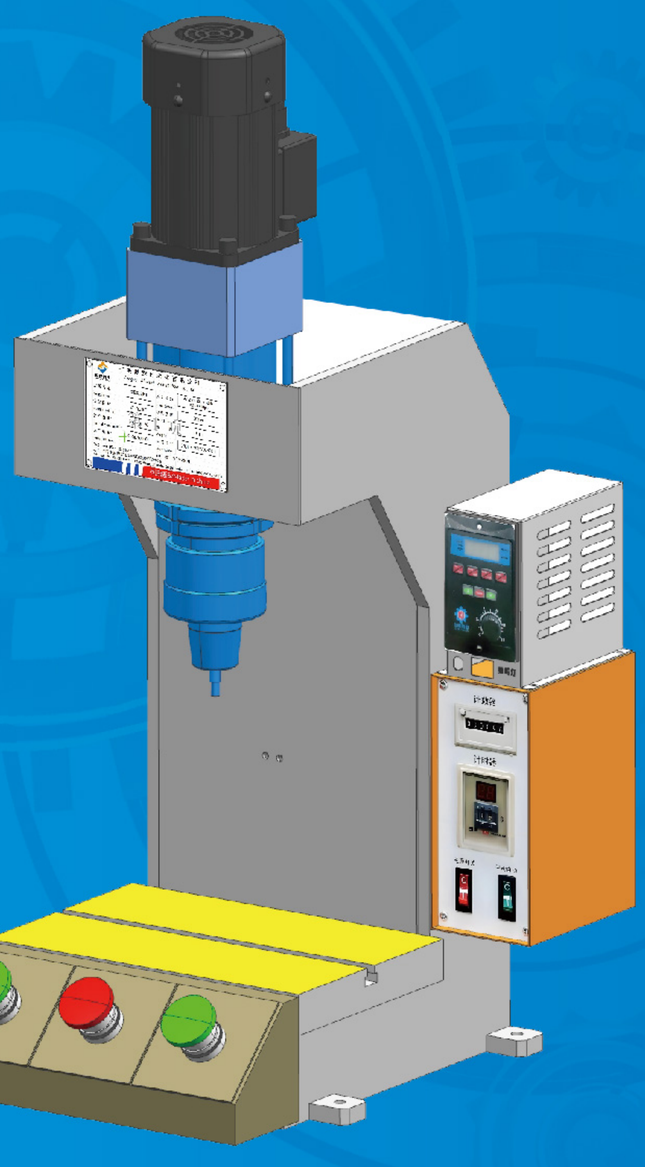
06

Appearance design

外观设计

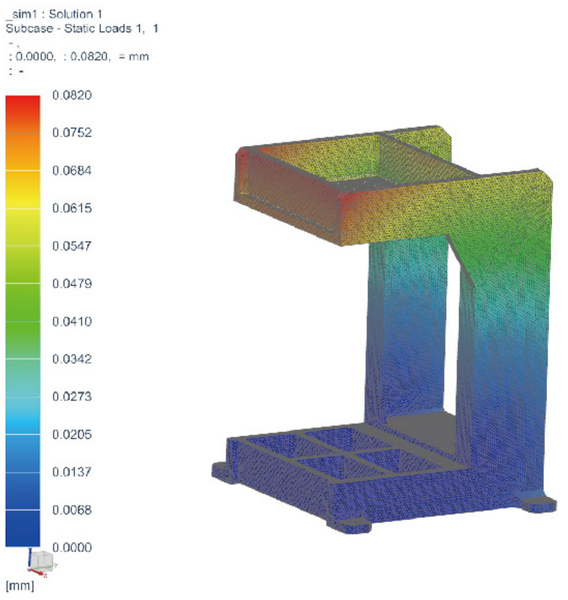
伺服旋铆机计

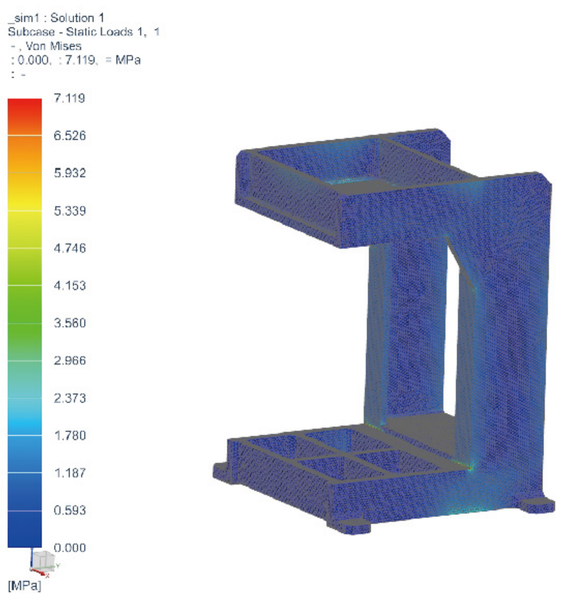


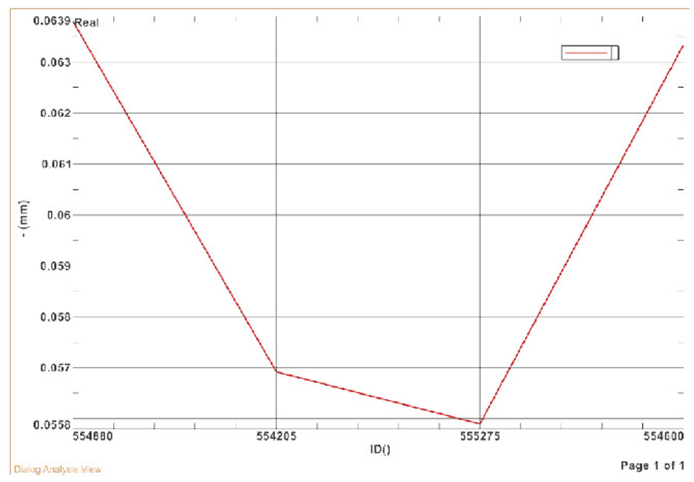


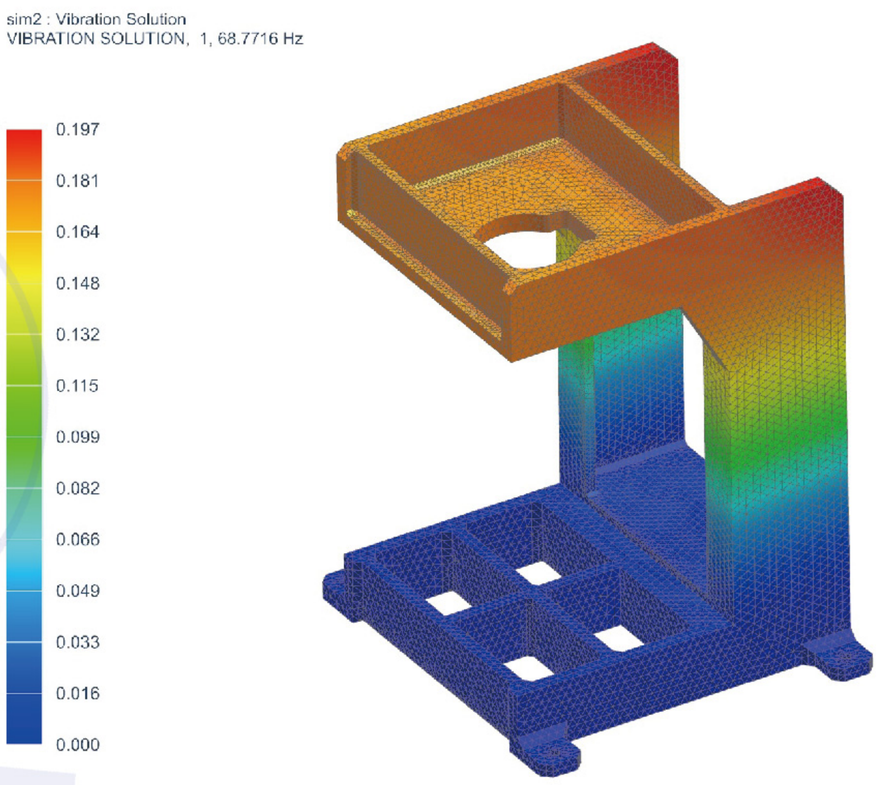
气动旋铆机

有限元分析图

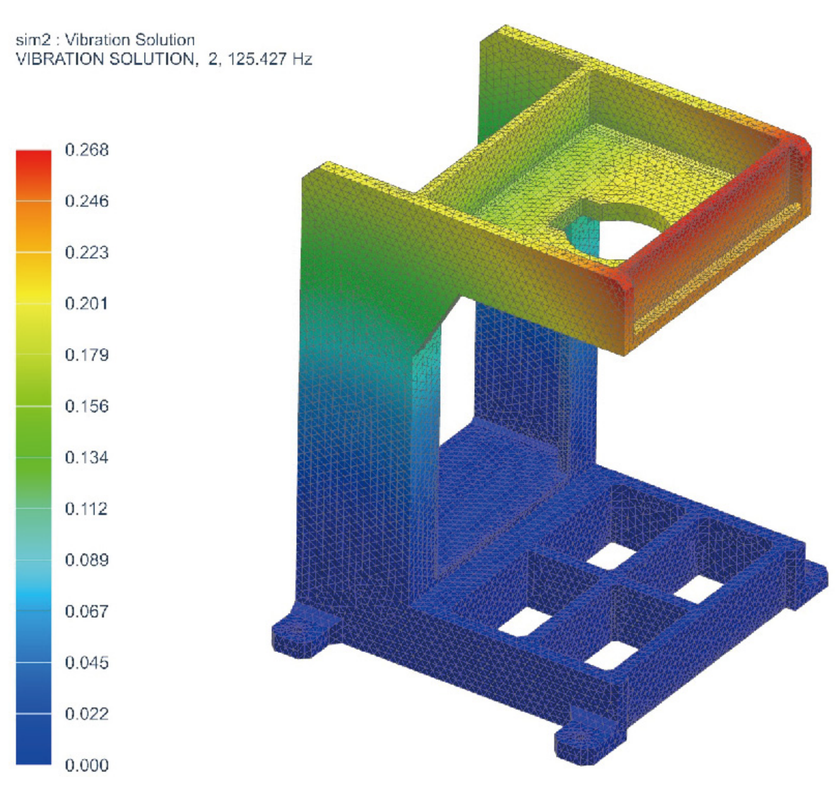




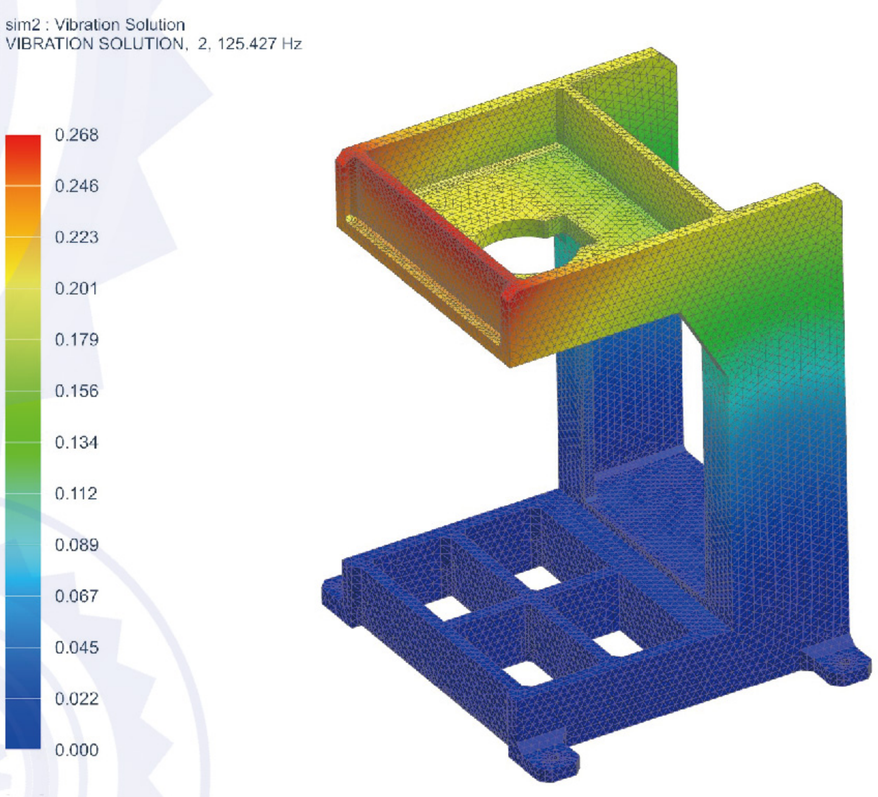




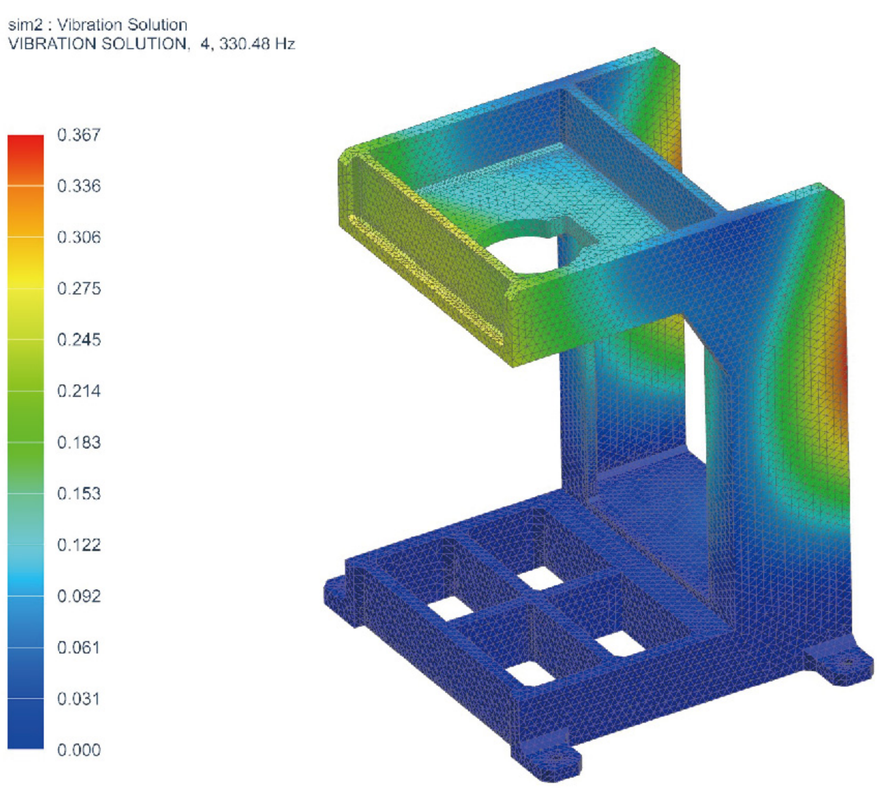
一阶模态



二阶模态

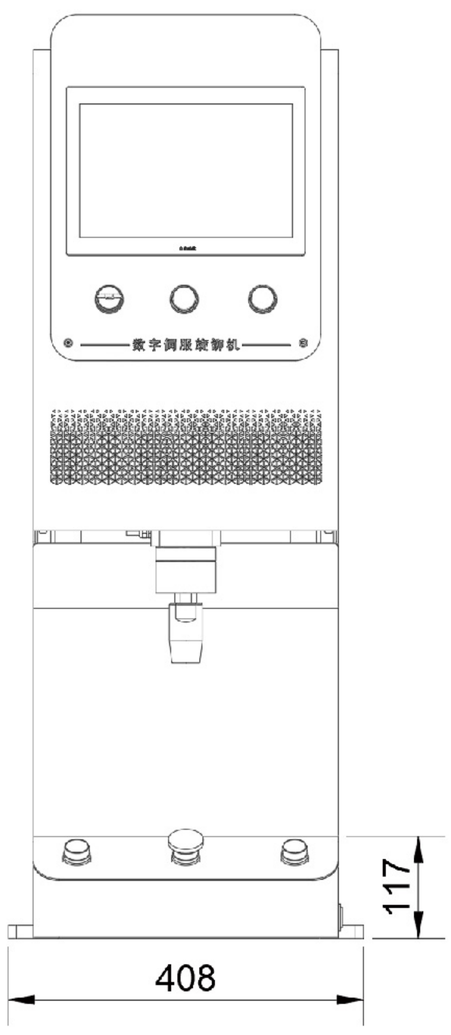


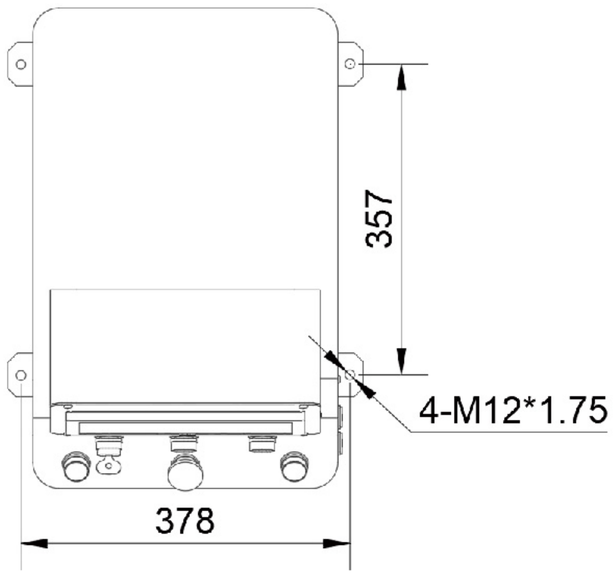
三阶模态

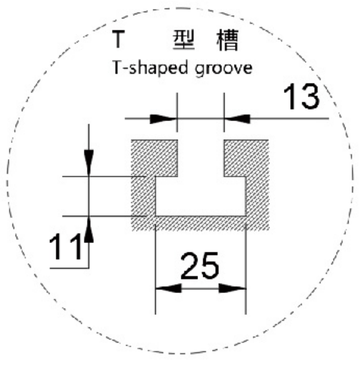


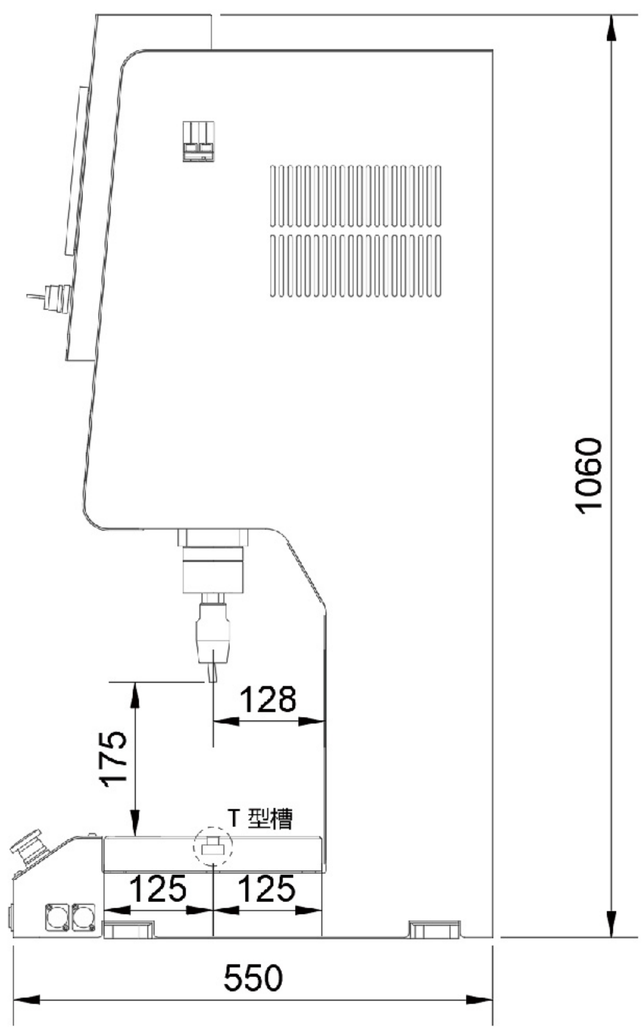
四阶模态

伺服旋铆机尺寸

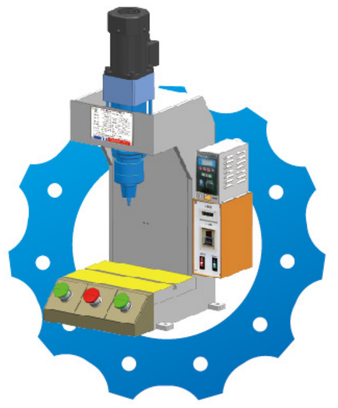


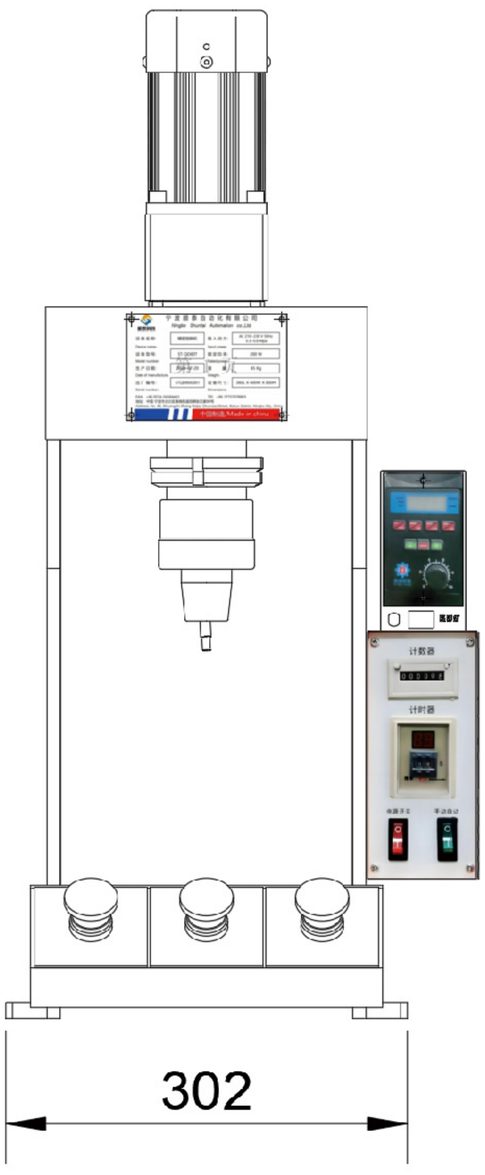


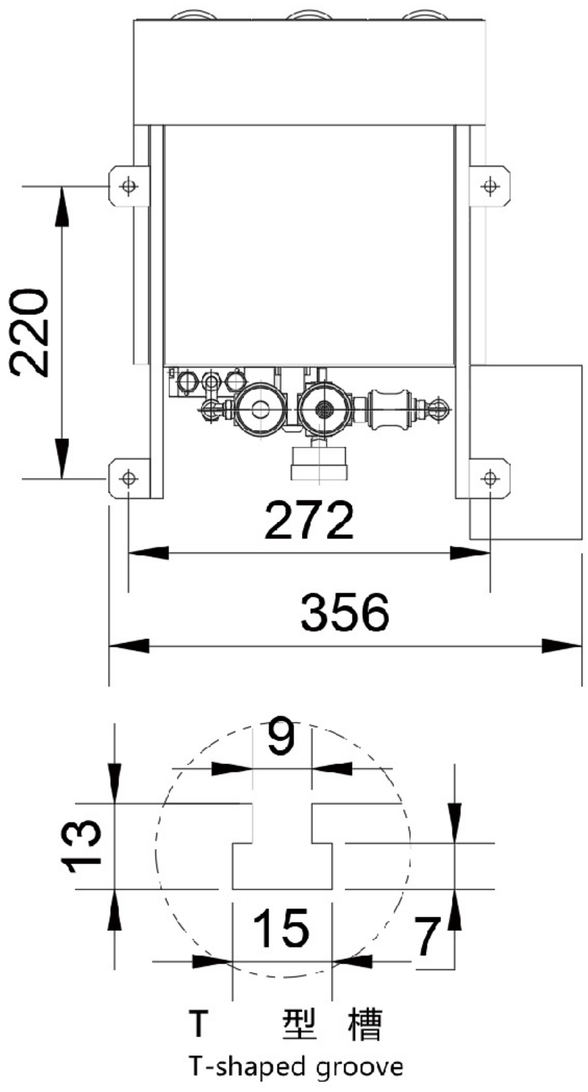


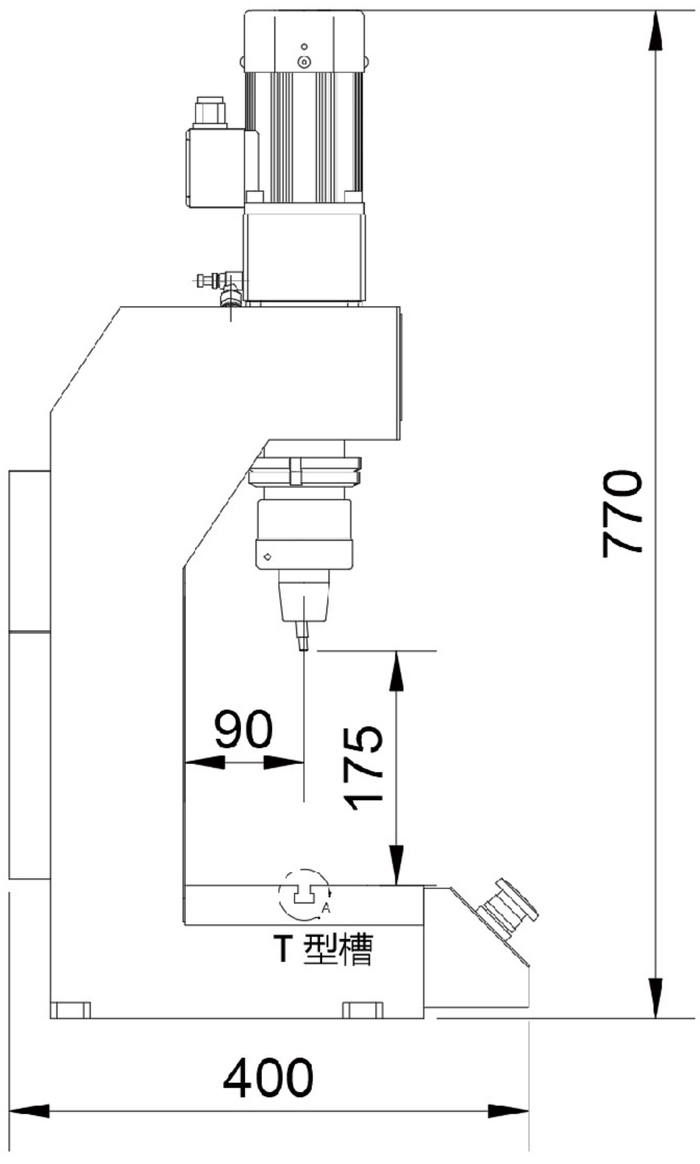


气动旋铆机尺寸









气动旋铆机设备规格表

设备型号		单位	80	100	125
压力范围		N	2500N	4000N	7000N
行程		mm	38	40	42
调整行程		mm	20	20	20
铆接时间		mm/s	30 ~ 600	30 ~ 400	30 ~ 250
速度		s	0.1 ~ 9.9	0.1 ~ 9.9	0.1 ~ 9.9
回程速度		mm/s	30 ~ 800	30 ~ 500	30 ~ 320
电机转速		rpm	1450 ~ 2800	1450 ~ 2800	1450 ~ 2800
行程次数		min^{-1}	0.1 ~ 30	0.1 ~ 19	0.1 ~ 12
喉深		mm	90	90	100
T型槽宽度		mm	M8	M8	M10
旋铆头角度		°	5 / 7	5 / 7	5 / 7
旋铆头直径		mm	8	8	12
旋铆功率		kw	170W	0.75	1.5
进给功率		kw	0.75	0.75	1
使用温度		℃	-30°C ~ 50°C	-30°C ~ 50°C	-30°C ~ 50°C
工作台尺寸		mm	265 X 180	265 X 180	320 X 200
工作台厚度		mm	40mm	40mm	40mm
外形尺寸		mm	360L X 400W X 800H	360L X 400W X 850H	420L X 450W X 850H
固定螺栓尺寸		mm	M10	M10	M12
固定螺栓距离	前后	mm	220±0.2	220±0.2	270±0.2
	左右	mm	272±0.2	272±0.2	330±0.2
重量		kg	60KG	70KG	95KG
电源		v	200~240 50/60Hz	200~240 50/60Hz	200~240 50/60Hz
气压		Mpa	0.3 ~ 0.8	0.3 ~ 0.8	0.3 ~ 0.8
输入输出点位	I		2	2	2
	O		3	3	3
操作方式			手动/自动	手动/自动	手动/自动
动作类型			双手/脚踏/IO/触控	双手/脚踏/IO/触控	双手/脚踏/IO/触控

伺服旋铆机设备规格表

设备型号		单位	80	100	125
压力范围		N	7500N	15000N	30000N
行程		mm	100	100	100
快下速度		mm/s	0.1 ~ 230	0.1 ~ 150	0.1 ~ 75
回程速度		mm/s	0.1 ~ 230	0.1 ~ 150	0.1 ~ 75
探测速度		mm/s	0.1 ~ 5	0.1 ~ 5	0.1 ~ 5
铆接速度		mm/s	0.01 ~ 15	0.01 ~ 15	0.01 ~ 15
进给电机最高转速		rpm	3000	3000	3000
旋铆最高转速		rpm	3000	3000	3000
铆接保压时间		s	0.01 ~ 99.99	0.01 ~ 99.99	0.01 ~ 99.99
位移重复精度		mm	± 0.01	± 0.01	± 0.01
位移分辨率		mm	0.01	0.01	0.01
压力精度		kg	0.1	0.1	0.1
压力分辨率		kg	0.01	0.01	0.01
最小闭合高度		mm	80	80	80
行程次数		min-1	0.1 ~ 70	0.1 ~ 70	0.1 ~ 70
喉深		mm	125	125	125
T型槽宽度		mm	M12	M12	M12
旋铆头角度		°	5 / 7	5 / 7	5 / 7
旋铆头直径		mm	8	8 / 10	12
旋铆功率		kw	0.75	0.75	1.5
进给功率		kw	0.75	0.75	1
使用温度		°C	-30°C ~ 50°C	-30°C ~ 50°C	-30°C ~ 50°C
工作台尺寸		mm	350 X 250	350 X 250	400 X 300
工作台厚度		mm	40mm	40mm	40mm
外形尺寸		mm	400L X 550W X 1060H	400L X 550W X 1060H	400L X 600W X 1150H
固定螺栓尺寸 O		mm	M10	M10	M12
固定螺栓距离	前后	mm	357±0.2	357±0.2	407±0.2
	左右	mm	378±0.2	378±0.2	428±0.2
重量		kg	200KG	200KG	250KG
电源		v	200~240 50/60Hz	200~240 50/60Hz	200~240 50/60Hz
输入输出点位	I		2	2	2
	O		3	3	3
操作方式			手动/自动	手动/自动	手动/自动
动作类型			双手/脚踏/IO/触控	双手/脚踏/IO/触控	双手/脚踏/IO/触控

设备核心功能
Core functions of the device

- 压挤装配 - Compression Assembly
- 冷压铆接 - Cold Riveting
- 旋转铆接 - Rotational Riveting
- 钣金折弯 - Sheet Metal Bending
- 钣金成型 - Sheet Metal Forming
- 切边裁切 - Edge Trimming
- 旋边成型 - Flanging
- 打孔攻牙 - Punching and Tapping
- 定向锁紧 - Directional Locking
- 压力检测 - Pressure Testing
- 扭力检测 - Torque Testing
- 抗压检测 - Compressive Strength Testing
- 螺纹通止检测 - Thread Run-out Testing
- 疲劳耐久检测 - Fatigue Durability Testing
- 弹簧刚度测量 - Spring Stiffness Measurement
- 碳纤维缠绕 - Carbon Fiber Winding

航空航天
- Aerospace-

汽车配件
- Automotive Parts-

医疗器械
-Medical Devices-

车门铰链
-Door Hinges-

农用机械
- Agricultural Machinery-

高级锁具
- High-End Locks

PCB线路板
- PCB Circuit Boards

精密电子
- Precision Electronics

家用电器
- Household Appliances-

医疗器械
-Medical Devices-

五金零件

医疗器械

汽车配件

车门铰链

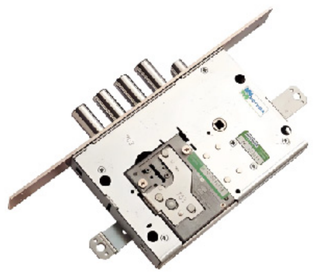
刹车片

安全带扣

车门锁

电器配件

应用领域
application area



精密锁具

五金配件

线路板

医用剪刀

品质从优，技术领先

打造工业智能化第一品牌

宁波顺泰自动化有限公司
Ningbo Shuntai Automation Co., Ltd.

地址：宁波市北仑区春晓双狮张贝家80号
Address: No. 80, Zhang Beijia, Chunxiao Shuangshi, Beilun District, Ningbo City, China