

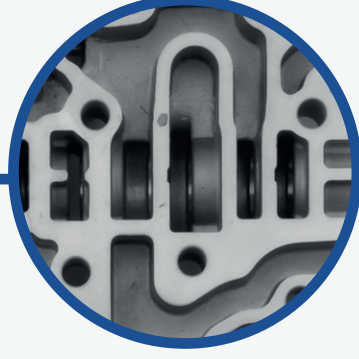
DEG-TECH

德工精机



数控转塔式六轴高压清洗机床
6-Axis CNC Waterjet Clean Center





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公司简介

德工精密机械有限公司坐落于重庆璧山国家级高新区，公司联合重庆大学、德国慕尼黑应用技术大学，致力于为客户解决清洁度方面的难题，推出了DM系列数控转塔式六轴高压清洗机床，系统工作压力达 50 MPa，能够彻底去除交叉孔、深孔和螺纹孔内的毛刺和铁屑，适用于变速箱壳体、阀板、发动机缸体、电机壳体、转向泵、ABS阀体、液压阀体等零件的去毛刺清洗处理。

About us

DEG PRECISION MACHINERY Co.,Ltd is located in Chongqing China. Technically cooperating with Chongqing University and Munich University of Applied Sciences, the company focuses on the high-pressure deburring and washing. Being targeted with a pressure of up to 500 bar (high pressure) directly at the workpieces requiring treatment, we have launched the 6-Axis CNC Waterjet Clean Center which can completely remove burrs, chips and other impurities in cross holes, deep holes and threaded holes, and finds wide application in parts such as cylinder blocks and heads, crankshafts, camshafts, transmissions components, valve body, ABS mouldings, pumps, complex-shaped parts, etc.

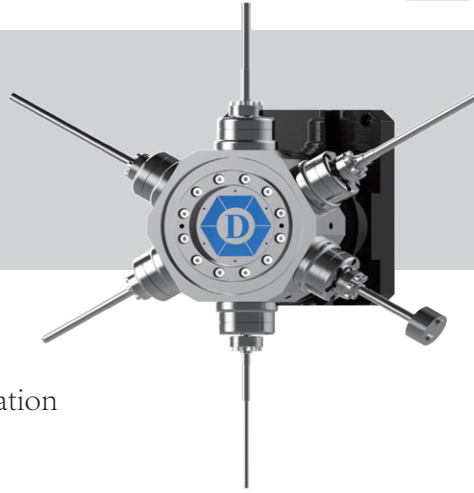
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转塔机构

- 高压密封智能化设计
- 完全创新的技术

Turret

- High pressure water seal with smart design
- Products with completely technological innovation



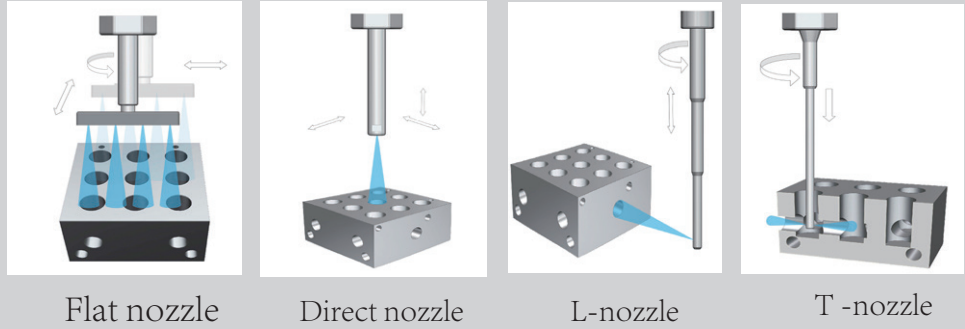
产品特点

- 高压力
工作压力达 50 MPa，在 0—50 MPa 范围内可程序控制。
- 高精度
定位精度 0.05 mm，重复定位精度 ± 0.03 mm。
- 高效率
喷枪切换只需 1 秒，X / Y / Z 轴快移速度 48 m/min，自动变速器阀板节拍 65 秒左右。
- 高柔性
六轴六自由度，一次性清洗六个面，适用于几乎所有复杂零件。
- 高可靠
高压密封智能补偿设计，整机状态监控。

Main features

- High pressure
The pressure up to 50 MPa and can be programmed through the CNC system.
- High accuracy
Positioning accuracy of 0.05mm, repeated positioning accuracy of ± 0.03 mm.
- High efficiency
Tool change takes only 1 s, X/Y/Z axis rapid speed 48 m / min, the valve body in AT for washing about 65s as example.
- High flexibility
Six axes with six degrees of freedom, six faces cleaned at once, fit for almost all complex parts.
- High reliability
High pressure seal with the automatic compensation design, the status of machine can be monitored.

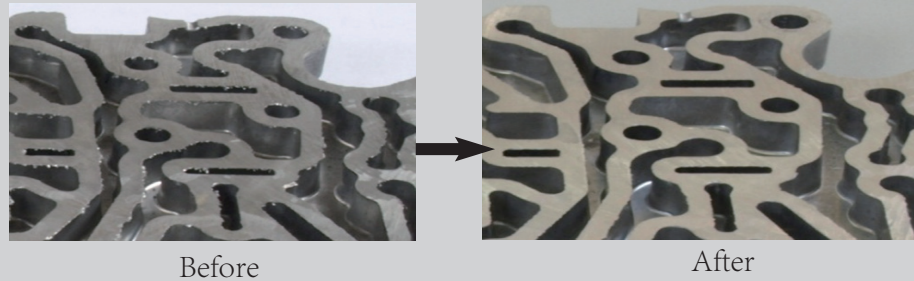
喷枪 Nozzle



根据零件的几何形状，设计了四种通用型的喷枪，包括平面喷枪、直射喷枪、L型万向喷枪和T型喷枪。平面喷枪适用于清洗表面，直射喷枪适合清洗螺纹孔或盲孔，L型万向喷枪适用于清洗侧面的孔，T型喷枪适用于清洗交叉孔。

Four general-purpose nozzles are designed based on the geometry of the part, including flat nozzles, direct nozzles, L- nozzles, and T-nozzles. The flat nozzle is suitable for cleaning the surface, the direct nozzle is suitable for cleaning threaded holes or blind holes, the L-shaped universal nozzle is suitable for cleaning the side holes, and the T - nozzle is suitable for cleaning the cross holes.

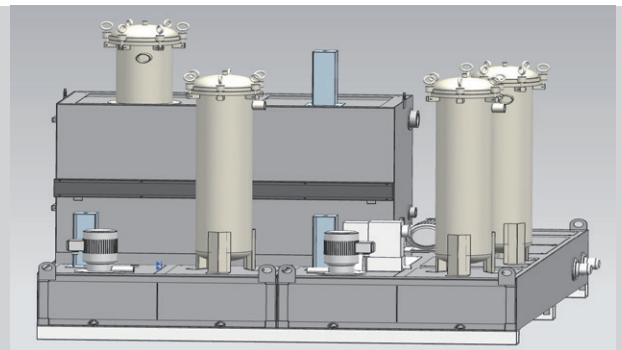
清洗效果 Effect



高压泵将清洗液加压至 50 MPa，数控系统选择适宜的喷枪并以适当的靶距作用在工件上，彻底去除工件内外的毛刺、油污等杂质，达到相应的清洁度要求。

The pump pressurizes the cleaning agent to 50 MPa, then CNC system selects the appropriate nozzle and parameter to treatment the workpiece, The washing agent can completely remove burrs, chips and other impurities, thereby improved part cleanliness.

过滤系统 Filtration System



标配4级过滤器，4级内循环过滤。
根据清洗对象不同，可选多种不同组合的过滤器，
可选配:

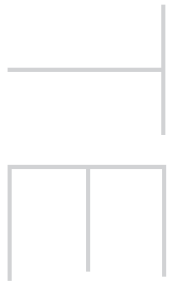
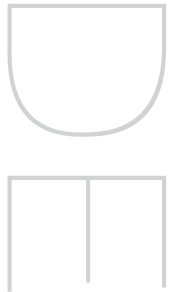
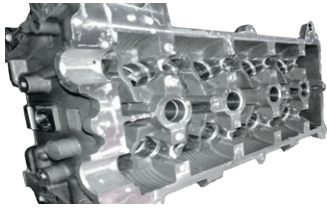
- ◆ 磁性过滤器
- ◆ 滚动式过滤器
- ◆ 离心式过滤器

Four internal loop filtration.
Depending on the cleaning parts, you can choose from a variety of different combined filter:

- ◆ Magnetic filter
- ◆ Rolling filter
- ◆ Centrifugal filter

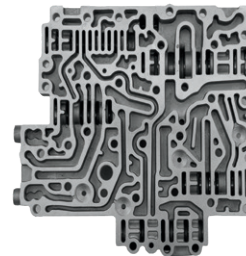
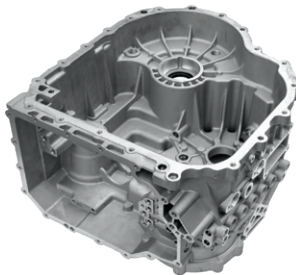
对象工件

Applicable parts



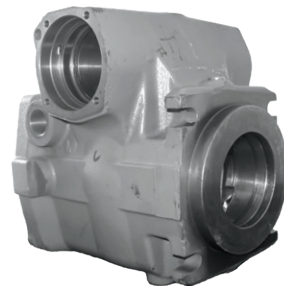
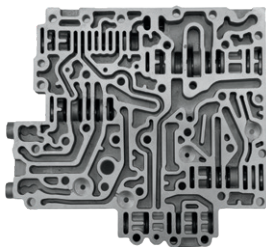
- 动力系统：缸盖、缸体、电机壳体、曲轴、凸轮轴等

Power system : Cylinder blocks and heads, motor housing, crankshafts, camshafts



- 传动系统：变速器壳体、阀体、油泵壳体等

Transmission system : Transmissions components, valve body



- 制动系统：ABS单元
 - 转向系统：转向泵
 - 其他领域：液压件及其它高精密零件
- Others : ABS mouldings, pumps, complex-shaped parts, etc

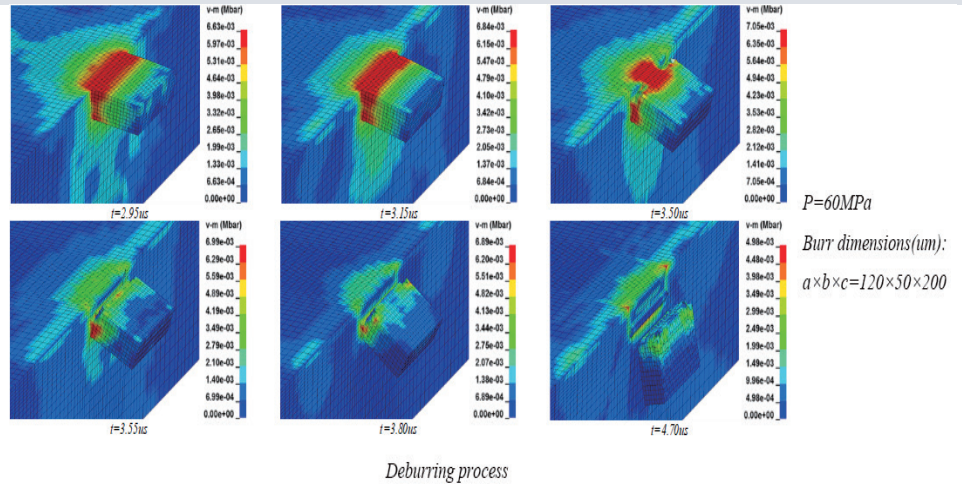
研究 Research

毛刺去除过程

◆ 水射流加载、毛刺根部应力集中、毛刺根部裂纹形成、裂纹扩展、剪切失效。

Deburring process

◆ The burr removal process is loaded water jet, stress concentration burr root, crack formation, crack enlargement, shear fracture.



喷枪的流场参数

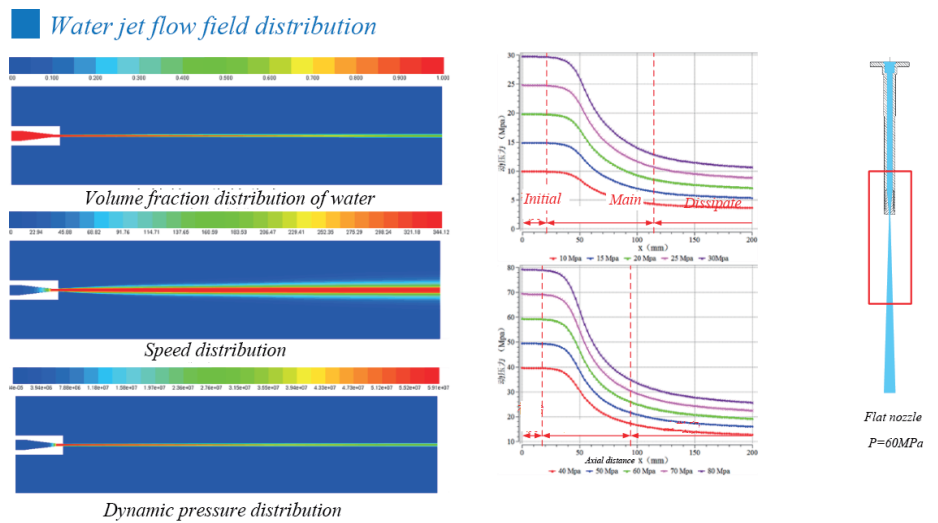
◆ 高压水射流流场结构是评判水射流加工性能的依据。

◆ 优异的喷枪造型是保证水射流流场的关键。

Water jet flow field distribution

◆ High-pressure water jet flow field structure is the basis for judging the performance of water jet processing.

◆ Proper nozzle model is the key to ensuring the flow field.



水射流去毛刺能力

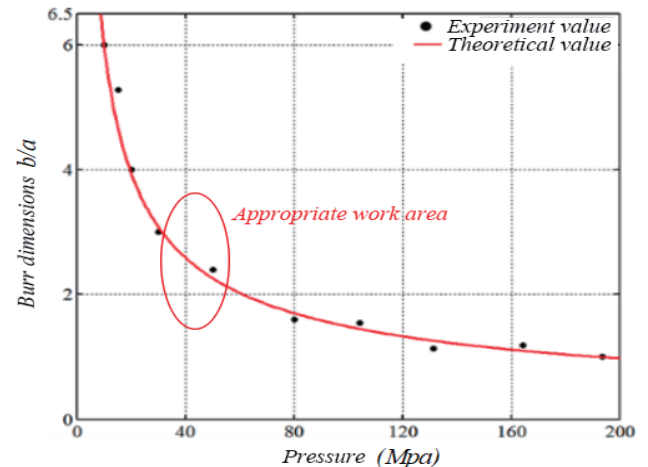
◆ 50MPa 射流压力内，大多数尺寸的毛刺都能够被去除。

◆ 通过模拟和实验，表明毛刺去除时间在 0.1 秒到 1 秒之间。

Water jet burr removal capability

◆ Most sizes of burrs can be removed within 50MPa jet pressure.

◆ Through simulation and experiment, it shows that the burr removal time is between 0.1s to 1s.





定制化系统解决方案 Customized system solutions

- ◆ 根据工件外形尺寸、工件材料、清洁度要求等参数定制高压清洗机床及清洗工艺参数。
- ◆ Customized machines according to workpiece size, workpiece material and cleanliness requirements.

自动化清洗单元 Automated cleaning unit

- ◆ 转塔式高压清洗机床 + 真空干燥机 + 传送带
- ◆ 转塔式高压清洗机床 + 真空干燥机 + 桁架机器人
- ◆ 6-Axis CNC Waterjet Clean Center + Vacuum dryer + Automatic feeding systems
- ◆ 6-Axis CNC Waterjet Clean Center + Vacuum dryer + Crane Robot

服务 Service

- ◆ 培训服务
为客户提供 6 轴清洗机床编程服务、编程培训服务和操作培训服务。
- ◆ 备件支持
机床核心零部件全由本公司制造，为您提供专业的备件服务。
- ◆ Technical Training
DEG-TECH offer a variety of technical training courses (e.g. machine operation, maintenance and programming) to our customers.
- ◆ Spare Parts Support
The core components are all manufactured by our company, we provide you with professional spare parts service.

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产品规格/Specification

项目/Item		数据/Date	DM 765	备注/Remarks
行程(mm)	Travel (mm)	X Axis	700	MAX.1500
		Y Axis	600	MAX.1200
		Z Axis	500	MAX.1000
数控系统	Control System	—	FANUC	
清洗压力	Pressure	MPa	0-50	Programmable
流量	Flow rate	L/min	28	
喷头数量	No. of tools		6	MAX.8
喷头切换时间	Tool Indexing Time	s	1	
快进速度	Fast Moving Speed	m/min	48	
定位精度	Positioning Accuracy	mm	0.05	
重复定位精度	Repeatability	mm	±0.03	
设备重量	Weight	kg	7000	
设备尺寸	Dimensions	mm	4700×1800×2700	
电源容量	Power Capacity	kVA	50	

产品更新中，具体参数请以最新产品为准 Subject to change without further notice



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德工精密机械有限公司

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