

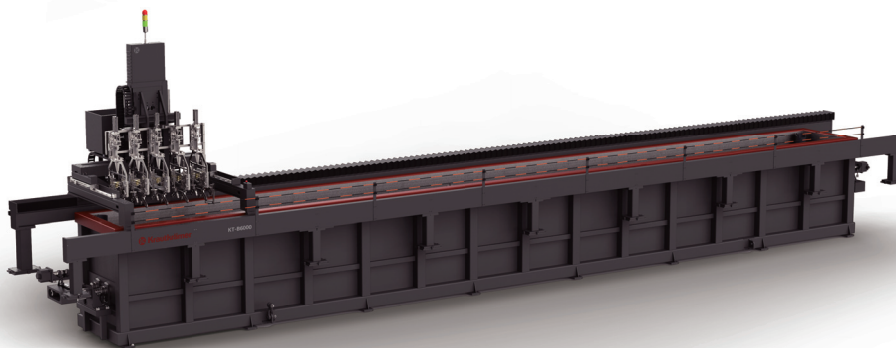
# KT-B6000/8000 Ultrasonic Immersion System

## KT-B6000/8000超声波水浸检测系统

### System Introduction 系统简介

KT-B series immersion ultrasonic C-scan inspection system is targeting to inspect regular big diameter bars, which is designed with up-to 5-axis scanning mechanism (linear axes + rotation axes). The system is used as full immersion pulse-echo method (multi-zone inspection with longitudinal wave). Bar is rotated on the roller of rotation axis, probe holder will move along bar length direction as index which driven by linear axis. Big diameter bar inspection is realized in rotation-index mode. This application is applied to the big diameter bars NDT inspection of finished raw material or semi-finished material in aerospace, automobile, railway, metallurgy and forging industry.

KT-B系列水浸式超声C扫描检测系统用于检测规则的大直径圆棒，配置多达5轴（线性轴+旋转辊轮）的扫查机构，采用全水浸脉冲回波法（多分区纵波检测），将圆棒材放置在旋转轴上进行原地旋转，探头机构在线性轴的驱动下沿棒材的长度方向步进，通过旋转-步进式扫查，实现对大直径棒材的无损检测。特别适用于航空航天、汽车、铁路、冶金、锻造等行业对大直径圆棒材的原材料成品或半成品的无损检测。



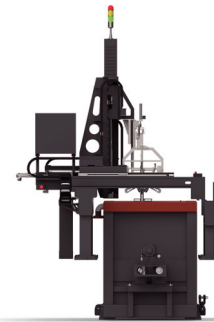
## Application Fields 应用领域

- Parts finished raw material or semi-finished material used for aerospace, astronautics industry  
航空、航天等零件原材料或半成品检测
- Round bar inspection for high-temperature alloy, Ti-alloy, stainless steel or other metal material  
高温合金、钛合金、不锈钢或其它金属圆棒材检测
- Inspection for special steel, casting, forging and bearing, etc.  
特殊钢、铸造、锻造、轴承等检测
- Inspection for non-metallic material, pipes with thick wall thickness  
非金属材料、厚壁管材等零件的检测
- Typical application: based on following ultrasonic inspection standards, such as AMS-STD-2154, AMS-2628, AC7114-7/7S, RRP58002, etc.  
典型应用：按AMS-STD-2154、AMS-2628、AC7114-7/7S、RRP58002等标准要求进行超声波检测

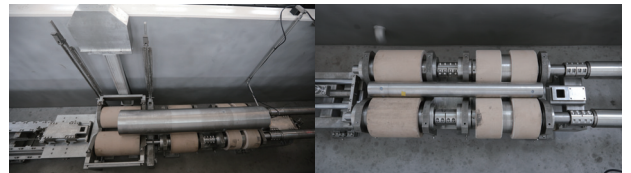
Inspection dimension 检测尺寸	KT-B6000	KT-B8000
Inspection diameter 检测直径:	Ø100-600mm	Ø100-600mm
Inspection length 检测长度:	500-6000mm	500-8000mm
Inspection load 检测重量:	10000kg	10000kg

## System Composition 系统组成

- Tank body, linear axes system, production rotation axis, calibration rotation axis (optional), multi-channel probe holder with following mechanism, water circulation system (including skimmer, water heating system, UV sterilization and filter)  
水槽体、线性轴系统、检测辊轮、校准辊轮(可选配)、多通道机械跟踪探头架、水循环系统(带撇渣器、水加热、UV杀菌、过滤)



3 linear axes and tank body  
三轴及槽体



Roller 辊轮



Probe holder 探头架

## System Characteristics 系统特点

- The latest digital UT electronics UTxx is used in the system, which is working in multi-channel, parallel and fast-response mode. Together with Nuscan software, system can realize data acquisition, image analysis, real-time A/C-scan display and storage.  
系统采用最新数字超声电子UTxx, 多通道、全并行, 响应快速, 配合Nuscan采集、分析软件, 实时A/C扫描显示, 存储。
- Robust and reliable mechanical design. Separation of tank body and linear axes will ensure high-accuracy, high-stability and high-reliability of mechanical system.  
结实、可靠的机械部件设计, 水槽体与线性轴分离, 确保设备机械系统高精度、高稳定性、高可靠性。
- Length adjustable rotation axis design to compatible with different length bars. New rotation axis design supports the bar in front-end positions, section in between will be suspended. This design will ensure the contact area between the roller and bar surface during rotation and the degree of wear will be well-distributed. It can also avoid the impact to the rollers for any not well-straight bars inspection to ensure the rollers life time and system operation stability.  
长度位置可调式辊轮设计, 适配不同长度的圆棒材产品检测。辊轮新设计采用架住圆棒两头、中间部位悬空的原理, 在旋转过程中确保棒材表面与辊轮表面的接触, 最大程度的使辊轮磨损均匀化, 并且避免辊轮受弯曲棒材旋转时的冲击, 确保辊轮的工作寿命及运行稳定性。
- Separate driven rotation axis for calibration bar, easy to calibrate in dynamic mode and increase production efficiency.  
独立驱动的试块辊轮, 方便进行动态校验, 提高生产效率。
- Up-to 10 channel multi-zone inspection, multi-channel probe holder with surface follower mechanism. Each probe can be adjusted in 5 degrees of freedom, as gimble-gimble angles (A/B), water path (WP), if using cylindrical focus probe, probe can be adjusted in C axis (rotates along Z axis), and each probe can be configured to inspect in longitudinal or shear wave mode as defined. Probe holder is designed with anti-collision and air bubble removal for eliminating bubbles on bar surface.  
多达10通道分区检测, 配置带机械跟踪的多通道探头架, 每个探头可独立调节声束垂直 (A/B), 水距 (WP), 当使用线聚焦探头时可旋转调节, 使声束焦点平行于棒材轴线 (C), 探头架的任意探头可用于纵波或横波检测。探头架带防碰撞及清除棒材表面气泡设计。
- System comes with features such as stop at defect position, acoustic-visual alarm, go-to-defect, scan stop/pause/continue, etc. 检测过程中缺陷处停止、声光报警、返回到缺陷处、扫描中断/继续等功能。
- The system is capable of beam profile test and equipped with FFT for frequency spectrum analysis. Reports can be generated.  
超声探头的声场均匀性测试及FFT功能, 并可生成测试报告。
- Motion control system is designed with safety monitoring module to avoid any hurts to peoples due to malfunction or maloperation and protect the personnel.  
运动控制系统配备速度安全监控模块, 防止机电设备因任何异常导致的误动作对操作人员造成伤害, 保护操作人员安全。

## KT-B6000/8000 Parameters KT-B6000/8000参数列表

Motion module parameter 运动包络参数					
Axis 轴 <sup>A</sup>	Max. Stroke 最大行程		Max. speed 最大运行速度B	Positioning 定位精度C	Repeatability 重复性
	KT-B6000	KT-B8000			
X	~12000mm	~14000mm	500mm/s	±0.1mm/m	±0.05mm/300mm
Y	500mm (检测时>200mm)		150mm/s	±0.1mm/m	±0.05mm/300mm
Z	950mm		100mm/s	±0.1mm/m	±0.05mm/300mm
W1	360°		40RPM	±0.1°	±0.1°
W2	360°		40RPM	±0.1°	±0.1°
Roller parameter 辊轮参数					
	KT-B6000		KT-B8000		
Roller diameter 辊轮直径	Ø250mm				
Max. inspection diameter 最大检测直径	Ø600mm				
Min. inspection diameter 最小检测直径	Ø100mm				
Max. length 最大长度	6000mm		8000mm		
Max. load 最大载重	10000kg				
System appearance dimension 设备外形尺寸					
Tank body & Linear axes 水槽及线性轴	16m*3m*4m		18m*3m*4m		
Electrical cabinet dimension 电控柜尺寸	2.4m*0.8m*2m				
System power 设备功率					
Total power requirement 40kW, 3 Phases + N+PE, except for water circulation system 总功率40KW, 三相五线, 不含水系统功率					
Water circulation system 水系统加热循环过滤模块					
Water circulation flow 水循环流量	16m <sup>3</sup> /h				
Filtration capability 过滤能力	25µm				
Max. operation power 最大运行功率	42KW				
Min. operation power 最小运行功率	2KW				
Temperature control 温控	±2°C				

**Notes 备注:**

A. Axes definition 运动轴定义

a) X Along ways on the tank 沿水箱长度方向

b) Y Along bridge across the tanks 水槽横向

c) Z Perpendicular to the X-Y plane 与X-Y平面垂直方向

d) W1 Rotation around Y axis 绕Y轴旋转的辊轮模块

e) W2 Rotation around Y axis, for calibration 绕Y轴旋转的试块辊轮模块

B. Due to safety regulations, in manual mode the speeds for the axis are reduced.

- 考虑到设备操作安全, 手动模式下运动轴速度有所降低。

C. The position accuracy is tested under unloaded condition

- 定位精度在无负载情况下测试。