

# YN31125CNC/YN31160CNC YN31200CNC/YN31320CNC型 数控滚齿机



## 主要特点:

本机床为六轴数控滚齿机, 数控轴分别为: 径向进给轴(X轴); 轴向进给轴(Z轴); 切向运动轴(Y轴); 刀架转角回转轴(A轴); 滚刀主轴回转轴(B轴); 工作台回转轴(C轴)。

1、为适应大模数齿轮的高效强力切削, 机床工作台壳体独立安装并与床身对接, 切削力可直接传递到坚固的地基上; 工作台主传动采用双蜗轮副结构, 消除了啮合间隙, 提高了工作台传动平稳性和传动精度。

2、为满足不同加工对象的要求, 该机床有两种形式的刀架结构可供用户选用:

标准刀架: 机床滚刀主轴交流伺服电机通过两个皮带轮传动, 经过高精度齿轮副传至滚刀主轴, 滚刀主轴末端齿轮采用一齿差消隙机构。主轴支承采用高刚度、高精度主轴专用复合滚动轴承, 提高了传动刚性和抗扭振能力。

大刀架: 机床滚刀主轴交流伺服电机直接安装在刀架滑板上, 经过高精度齿轮副传至滚刀主轴, 滚刀主轴末端齿轮采用一齿差消隙机构。滚刀主轴支承采用静压轴承, 提高了传动刚性和抗扭振能力。

3、X轴床身导轨采用镶钢导轨与注塑滑动面以及无间隙滚动块导向方式相结合的组合导轨形式。两侧宽平面镶钢淬硬导轨采用预负荷压板机构, 保证了大立柱在滚齿时产生断续交变切削力作用下而不产生振颤。中间无间隙滚动块导轨导向结构, 提高了X轴的定位与重复定位精度。

4、机床配有全封闭罩壳及油雾分离设备, 可确保强力切削大流量冷却液产生的油雾能得到有效处理。

5、机床可配置专用铣内齿刀架, 扩大加工功能。

本机床适用于军工、风电、船舶制造、矿山机械、冶金机械、起重机械、工程机械等行业内、外齿轮的加工。

## Main features:

This machine is a six-axis CNC gear hobbing machine, of which the CNC shafts are radial feeding shaft (X-axis), axial feeding shaft (Z-axis), tangential feeding shaft (Y-axis), toolpost angle rotating shaft (A-axis), hobbing cutter spindle rotating shaft (B-axis) and worktable rotating shaft (C-axis).

1. To adapt to the high-efficiency high-power machining of large modulus gears, the machine worktable housing is independently installed and is connected to the bed so that the cutting force can be directly transmitted to the firm foundation. The main drive of the worktable adopts double worm gear pair structure to eliminate the backlash and improve the drive stability and accuracy of the worktable.

2. To meet the requirements of different machining objects, this machine offers two types of toolpost structure at the user's choice:  
Standard toolpost: The motion of the hobbing cutter spindle AC servo motor is transmitted by two pulleys and high-precision gear pairs to the hobbing cutter spindle and a tooth difference anti-backlash mechanism is installed on the end gear of hobbing cutter spindle. The spindle is supported by special spindle combination rolling bearings of high stiffness and high accuracy to improve the drive stiffness and distortion/vibration resistance.  
Large toolpost: The motion of the hobbing cutter spindle AC servo motor directly installed on the toolpost slide is transmitted by high-precision gear pairs to the hobbing cutter spindle and a tooth difference anti-backlash mechanism is installed on the end gear of hobbing cutter spindle. The hobbing cutter spindle support adopts static pressure bearings to improve the drive stiffness and distortion/vibration resistance.

3. The X-axis bed slideways adopt the combination slideways that integrate the steel-embedded slideway and injection molded sliding surface and the zero-clearance rolling block guide mode. The preload pressure plate mechanism is applied for the wide-plane steel-embedded hardened slideways on two sides to eliminate the chattering of large column under the action of intermittent alternating cutting force during the gear hobbing. The middle zero-clearance rolling block slideway guide structure improves the X-axis positioning accuracy and repeated positioning accuracy.

4. The machine is installed with full-enclosed housing and oil-mist separator to effectively handle the oil mist generated during the high-power cutting with high coolant flow.

5. The machine can be installed with special internal gear milling toolpost to expand the machining functionality.

This machine is applicable for the machining of internal and external gears in the military, wind power, ship-building, mining machinery, metallurgical machinery, hoisting machinery, and construction machinery industries.

## 主要技术规格参数: Main technical specification parameters

主要规格	Main specification	YN31125CNC	YN31160CNC	YN31200CNC	YN31320CNC	单位Unit
加工范围	Machining scope					
最大工件直径	Maximum workpiece diameter	φ1250	φ1600	φ2000	φ3200	mm
最大模数	Maximum modulus	24	24	32	32	mm
加工斜齿轮螺旋角	Helical angle of machined helical gear	±45	±45	±45	±45	°
尺寸规格	Dimensions					
可安装滚刀最大直径	Maximum diameter of installed hobbing cutter	φ350	φ350	φ450	φ450	mm
可安装滚刀最大长度	Maximum length of installed hobbing cutter	375	375	500	500	mm
滚刀最大轴向移动量	Maximum axial movement of hobbing cutter	300	300	450	450	mm
滚刀可换芯轴直径	Replaceable mandrel diameter of hobbing cutter	40、50、60、80	40、50、60、80	50、60、80、100	50、60、80、100	mm
滚刀主轴锥孔锥度	Conicity of hobbing cutter spindle taper bore	HSK-B160	HSK-B160	HSK-B160	HSK-B160	mm
滚刀中心到工作台中心水平距离	Horizontal distance from center of hobbing cutter to center of worktable	0~800	100~1000	50~950	570~1820	mm
滚刀中心到工作台台面垂直距离	Vertical distance from center of hobbing cutter to surface of worktable	440~1440	440~1440	440~1440	500~2100	mm
后立柱顶尖到工作台台面距离	Distance from rear column center to worktable surface	890~1790	890~1790	890~1790	无后立柱 No rear column	mm
工作台台面直径	Diameter of worktable surface	φ1000	φ1460	φ1460	φ2500	mm
工作台台面至床身底面距离	Distance from worktable surface to bed bottom	1010	1010	1010	1000	mm
运动参数	Motion parameters					
刀架回转速度(A轴)	Rotating speed of toolpost (A-axis)	0~3	0~3	0~3	0~3	°/s
滚刀主轴转速范围(B轴)	Speed range of hobbing cutter spindle (B-axis)	26~265	26~265	20~200	20~200	rpm
径向进给速度范围(X轴)	Radial feeding speed range (X-axis)	1~3000	1~3000	1~3000	1~3000	mm/min
切向运动最大速度(Y轴)	Maximum tangential motion speed (Y-axis)	1~3000	1~3000	1~3000	1~3000	mm/min
轴向进给速度范围(Z轴)	Axial feeding speed range (Z-axis)	1~4000	1~4000	1~4000	1~4000	mm/min
工作台最高转速(C轴)	Maximum speed of worktable (C-axis)	16	8	8	4	rpm
机床体积(长×宽×高)	Machine volume (Length × Width × Height)	769×610×390	872×617×480	872×617×480	872×729×480	cm
机床净重	Net weight of machine	33	33	33	50	t