

9.4 Gear shaving machine

Gear shaving machine

It is a machine processing tooth surface in a precise way with shaving cutter based on generating method. It can be classified into two types, vertical and horizontal type. Gear shaving machine is mainly used to process precisely the spur gear or helical gear whose hardness is no more than HRC48 and that has shaved the front gear hobbing and gear shaping. It can also used to process internal gear when accessory is added. The maximum diameter can be 5m, the processing precision can reach to Class 7~6 and the surface roughness is $0.63\sim 0.32\mu\text{m}$. The outline drawing of Y4232A type gear shaper can be seen from Figure 9-8.

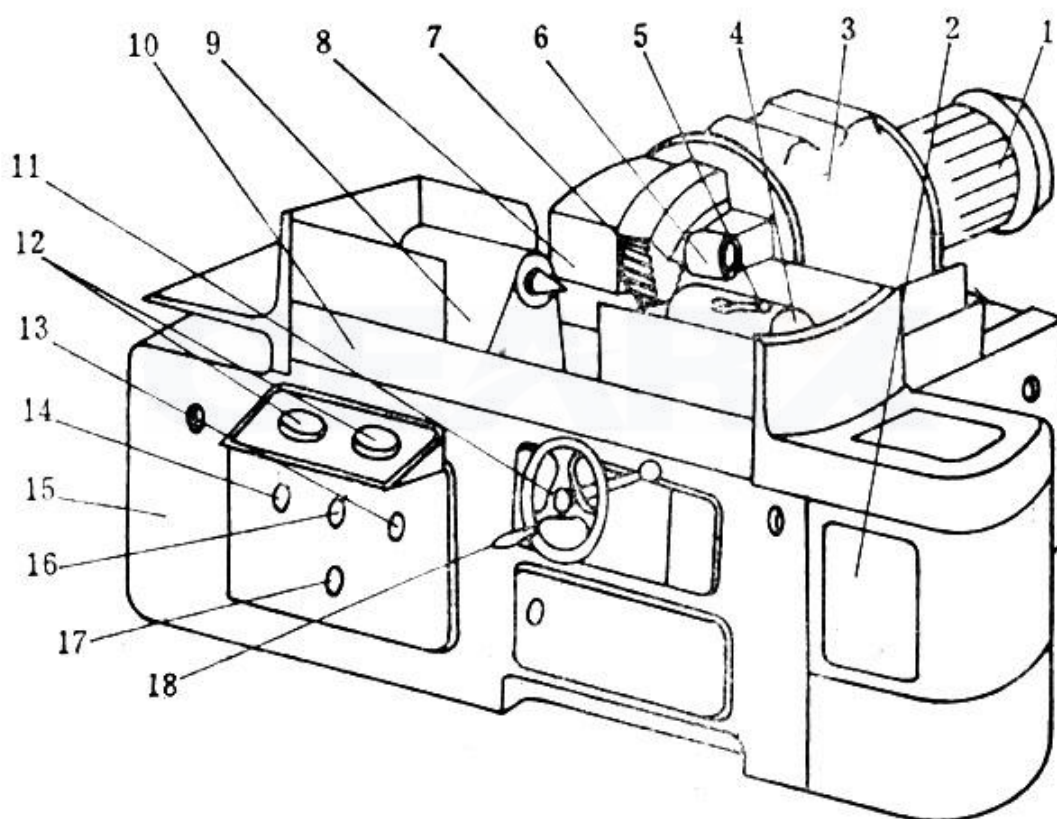


图 9-8

- 1—主传动电动机 2—往复行程箱 3—立柱 4—右顶针座
 5—右顶针的快速移动手柄 6—主轴外支承 7—剃齿刀 8—刀架
 9—左顶针座 10—工作台 11—刀架与立柱径向移动的操纵手轮
 12—安置工件及装卸工件时使用位置 13—剃齿刀换向开关
 14—主电动机变速开关 15—床身 16—电源总开关
 17—冷却液泵开关 18—机动径向进刀的接通与断开手柄

Large scale gear shaving machine

It is one of the machines that process tooth surface in a precise way with shaving

cutter based on generating method. Most of them are vertical types. The driving character is that the shaving cutter rotates driven by workpiece and the cutting tool makes axial movement. When shaving on two faces, the cutting tool makes radial feeding; when shaving on single face, a braking torque needs to be added on the main shaft of the cutting tool. Large scale gear shaving machine is mainly used in heavy machinery such as haulage motor, mine industry and ships. The processing structure, type and range of gear are similar to that of the common gear shaving machine. The machining accuracy can reach Class 7~6 and the surface roughness is $R_a 0.63\sim 0.32 \mu_m$.

Horizontal gear shaving machine

It is one of machines processing tooth surface in a precise way with shaving cutter based on generating method. The total layout of the machine is horizontal. But the structure can be divided into two types: one type with the cutting tool over workpiece and the machine structure is very tight. It covers a relative small area and widely used in batch production of medium and small type gear. It is better if the processed gear's diameter is below 500mm; another holds the cutting tool behind the workpiece. It is convenient to load or unload the workpiece. The latter is always used in processing large and medium type gear and shaft gear. The diameter of machining gear can reach 5m with the machining accuracy being Class 7-6. The surface roughness is $R_a 0.63\sim 0.32 \mu m$.

Shaft gear shaving machine

Shaft gear shaving machine is used in shaving and cutting the tooth surface of shaft gear which has not been quenched. There is faceplate on the end of principal axes. It can precisely shave the tooth of internal gear. The rotational speed of the spindle can be changed through the gear on headstock. The axial feeding can be conversed with the feed box. The radial feeding can be realized by controlling shaving machine with hydraulic equipment.