

# DEEP GRINDING

## The knee grinding



The knee implant is, in the vast majority of cases, coming from a cobalt chromium alloy.

From the casting to the implant, different steps of production can be done. The casting blanks can be either directly polished, either milled before polishing or be ground.

Deep's grinding center enables to:

- grind the useful areas where the geometrical and dimensional characteristics must be perfect to insure the quality of the implant,
- mill, to drill and to thread the inaccessible areas for the grinding wheel in order to achieve the part in one single clamping situation,
- use a belt finishing unit to achieve a Ra which drastically limits the polishing cycle time.

## Advantages and limitations of the process

The cobalt chromium alloy is difficult to mill whereas it's easy to grind.

By opting for a grinding process, the cutting tool cost per part becomes paltry.



The smooth finishes and the repeatability achieved by a grinding process are remarkable thanks to a grinding wheel which is dressed in process. The dressing enables to know accurately the grinding wheel geometry all along a series of parts to produce whereas the wear of a milling cutter generates a loss of accuracy.

A multiple-head grinding center enables to grind two knee implants simultaneously and that during dressing time for the highest productivity and quality level.

Compared to the polishing process directly from the casting which brings heat inside the part with an alteration risk of the material and a random accuracy along series to produce, the grinding process onto a Haas grinding center insures a cool cutting and a perfect geometrical and dimensional accuracy thanks to automatic adjustable nozzles which follow the geometry of the grinding wheel all along its dressing cycles.

In order to finish the part onto the machine in one





clamping situation, the grinding machines offered by Haas are also able to mill and to drill to reach areas where the grinding wheels can go.

In addition to the grinding, milling and drilling process, belt finishing unit can also be used to insure the best smooth finish.

## Medical applications

- femoral implants,
- tibia implants,
- modular neck (for hip implants),
- the spheres (for hip implants),
- the rasps,
- the cortical screws,
- reamers and other medical tools.

## Quality guarantees

Each year, more than 1 million of knee implants are built onto Haas grinding centers all over the world.

A various of sanitary administrations and thus all over the world have given their approvals to our customers to produce in high volumes their knees onto Haas's machines.

The cool cutting achieved by the grinding wheels, the repeatability and the dimensional insured onto the Haas grinding machines makes this process a standard of accuracy and stability.

## Partner

*The company Haas Schleifmaschinen GmbH based in Trossingen, Germany, produces a range of universal grinding centers for the medical industry, tools, cutters and gears cutter manufacturing, as well as the aeronautical components.*

*Haas with a large know-how developed since 1934 and also with investment in R&D, offers a large range of effective technologies for products in the medical field (knee implants, rasps, modular necks and other medical tools).*

*Haas, by designing and manufacturing the complete set of process components: the machines, the software, the clamping devices, the automatic loading, the dressing units, the belt units... is more a process provider than a machine manufacturer.*

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