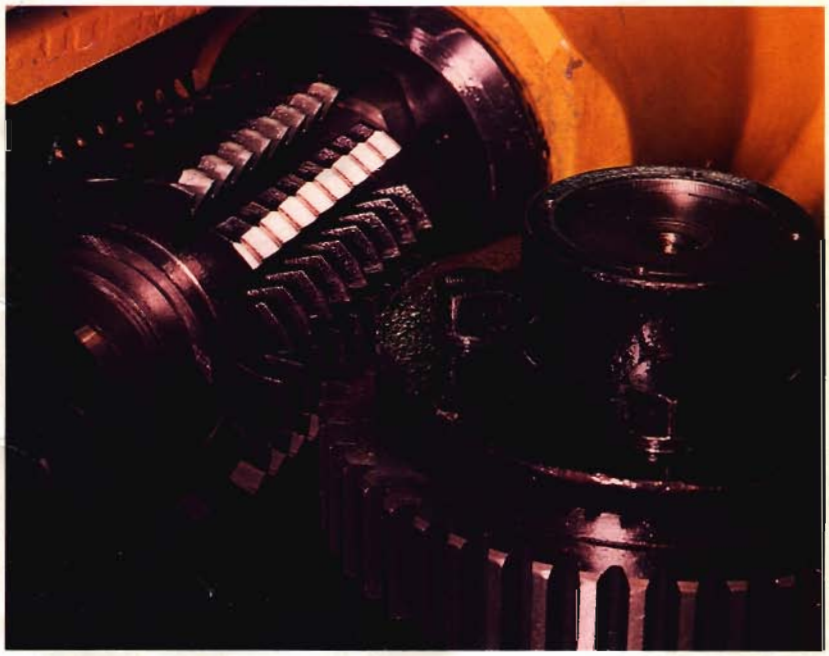
Avtomation in industry

NUMERICAL CONTROL SYSTEM CNC – 20H

ACCURACY IS QUALITY

Iskra

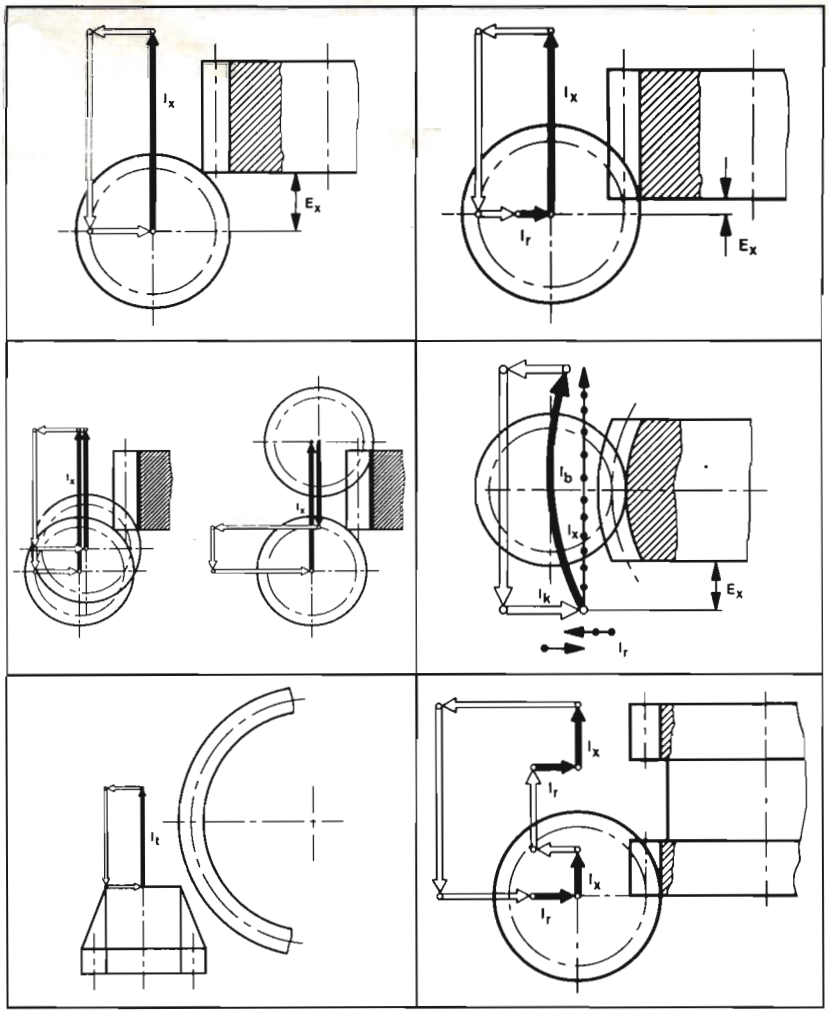
CONTROLLER FOR GEAR HOBBING TOOL MACHINE CNC–20H



Controller CNC–20H is based upon general-purpose CNC control unit ISKRA. It enables gear hobbing or grinding according to shaping and dividing process.

Basic properties of the CNC system are:

- Eight servo translation and/or rotation axes;
- Four high-precision synchronized axes, easy to be defined and changed by program;
- Eight additonal axes;
- Two additional differentials, calculated by control unit from data about workpiece (WD) and tool (TD);
- Powerful program languare that enables manufacture of very general and complex cycles for cutting various gears according to different technologies;
- Many ready – made cycles for standard gear shapes;
- Enables rescue movements in cases of emergency on a machine;
- Axial compensation in translation axes and angular compensation in rotation axes;
- Backlash compensation;
- Max. counting frequency 2MHz x 4;
- Integrated PLC



Machining cycles

Axial hobbing;
Radial hobbing;
Radial – axial hobbing;
Radial – tangential hobbing;
Tangentional hobbing;
Diagonal hobbing;
Conical gears;
Individual tooth hobbing by means of dividing profile hobbing process;
Gear hobbing in several cuts;
Premachined gear hobbing;
Gear grinding following all above-mentined processes;

TECHNICAL DATA

Hardware:

Modular microprocessor structure;
16/32 bit microprocessor – based technology;
Standard VME bus;
Additional industrial bus for 24V input/output units;
Separated operating unit connected through RS 422;
Communication with other media trough different serial communications;

Software

NC interpreter;
Integrated PLC;
Possible PLC programming and input of machine parameters directly through keyboard CNC, by using UTYLITY programs;

NC section

8 servo axes;
8 additional axes;
System resolution from 0,01 to 0,0001 mm o angle degree;
Max.programmed path from 9999, 9999 to 9999999,99 mm or degrees;
High – precision synchronization which enables gear ratio programming from 1/9999 to 9999;
Two programmable differentials which take into account data from tool and workpiece data tables;
Input of tool and workpiece geometry into TD and WD tables;
Rescue function to be activated in emergency states of machines;
Programmed position limits;
Possible axial and angular compensation;
Adaptation of main spindle acceleration with regard to workpiece teeth number;
Adjustable dynamics of CNC control unit filters, with regard to machine dynamics;
Program execution without movement (simulation);
Automatic compensation of servo controller drift;
Maximum counting frequency 2MHz x 4;
Taking into account the brakes in servo axes;

Programming

Linear interpolation in 6 axes;
Circular interpolation in two of the three main axes;
Programming in radius or diameter;
Contour programming;
Accurate positioning;
Main spindle positioning;
Rescue function activated through PLC–NC interface;
Machining cycles can be called by means of function keys;
Programmed position limiting;
Possible application of main programs and subroutines;
Programming by means of three types of parameters;
Possible transfer of a part of parameters through NC–PLC interface;
Possible reading and writing of data value tables for workpieces, tools, zero offsets and tool corrections within the program;
Indirect addressing;
Arithmetic, trigonometric, comparative and selection functions;

Measuring inputs

Inputs for pulse generators;
Inputs for measuring scales;

Feeding

In mm/min, grad/min, mm/rev. and grad/rev.
Change of speed with potentiometer from 0 – 200 %;

Main spindle

Speed programming;
Direction programming;
Acceleration definition;
Change of speed with potentiometer from 0 – 150 %;

Tool

Tool number T1 to T99;
Tool table TD from TD1 to TD20;
Tool corrections from D1 to D20;

Additional zero offsets

6 for each axis;

Workpiece table WD from WD1 to WD20

Manual modes

Continuously and incrementally;
Handwheel;
Possible synchronization;

Diagnostics

Diagnostic messages in all modes of operation;

NC memory

64 K/192K

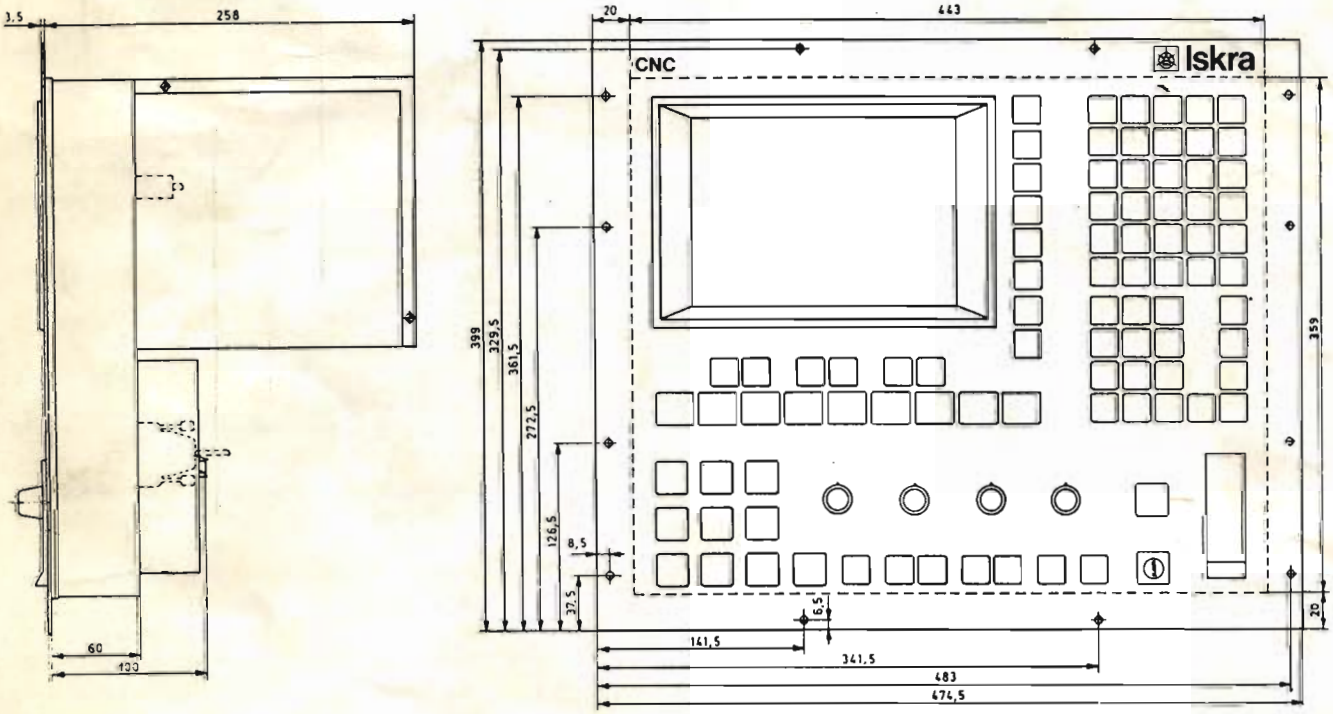
Communication

Serial communication RS 232, RS 422 or TTY

UTYLITY programs

Possible PLC editing through own keyboard;
Possible editing of machine parameters;
Inputs of PLC programs and machine parameters into E^2PROM;
Possible entry of PLC programs into CNC through PC XT/AT;
PLC program language is STEP 5;

DIMENSION



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