

Programming possibilities

- Absolute and incremental values
- Subroutine technique and jump functions
- Mirror image around the axes X-Y-Z-C-A
- 2 coordinate systems (machine and workpiece)
- 6 zero shifts G54 to G59 (machine and workpiece)
- Conversion mm/inch
- Background programming
- Languages to be selected over parameters, E, G, F
- HAUSER user's software including:
 - Machining cycles to be activated over G-functions
 - Bore grinding cycle U (planetary grinding)
 - Bore grinding cycle U (chop grinding)
 - Contour grinding cycle (cycle infeed in X, Y)
 - Pocket grinding cycle
 - Dressing cycle (bores and contours)
 - Tool radius registering (with the extension MSS, Multi-Sensoric-System)
 - Machining data (parameters for the machining cycles)
 - Tool administration for max. 32 tools
 - Communication with the rapid stroke Z:
 - Calling-up of 10 preselected stroke planes with the corresponding speeds, to be activated over M-functions.
 - Switchover between rapid stroke Z and NC-Z, over M-function.

**HAUSER does more
with the
GE FANUC 15 MA
control**



Data input and output

- Manually: Over the keyboard
- Externally: 1 serial interface RS-232, prepared for GE FANUC peripheral appliances

Input and output units (GE FANUC):

- Tape reader/punch/printer combination (desk top model) as an accessory
- Desk top floppy disc drive as an accessory

Operating modes

- Manually: Over the axes keys or the electronic hand-wheel; manual input mode.
- Automatically: Consecutive block and block by block mode, programs from internal or external memory.
 - Approach of the machine datum reference mark for all axes. Program test with and without axes motions.
- Graphics: 2D presentation for simulating a ready prepared program or for showing the machining process actually running.

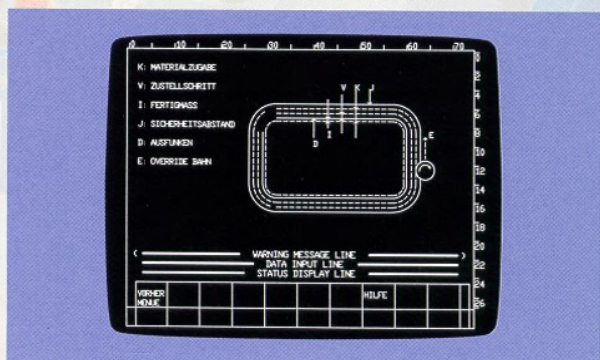
Program memory; system software

The system software is stored on EPROMS. Input/output of machine parameters over the RS-232 interface. Memory capacity for 100 machining programs and 128 KB (320 m) for workpiece and tool data. Data safe in case of power failure for approx. 2500 h.

Options

- 203960 APC-system for the automatic part change with the ITS pallet system of EROWA. In conjunction with HI-CUT and MSS, the machine can operate unmanned.
- 203995 CBN dressing attachment with HF drive
- 240724 Rotation of the coordinate system
- 203985 Program memory extension up to 512 KB
- 203986 Scale modification
- 203988 Zero shifts, extension to 48 shifts

Graphic support for contour grinding cycle



HAUSER

Technical data

Capacity

Range of adjustment X, Y	500 × 300 mm (19 1/2 × 11 7/8 in)
Vertical adjustment of the grinding head (W)	450 mm (18 in)
Clearance between grinding motor and table	0–485 mm (0–19 in)
Distance between spindle center and column	365 mm (14 3/8 in)
Max. diameter ground without extension plate	230 mm (9 in)
with extension plate	360 mm (14 in)
Taper grinding, max. included angle	16°

Table

Working surface	600 × 380 mm (23 5/8 × 15 in)
6 T-slots, width	10 mm (.393 in)
Admissible load, max. (with HI-CUT system max. 250 kg)	300 kg (660 lb)

Feeds

Traversing speed X, Y	1'200 mm/min (47 in/min)
Machining speed X, Y	0–1'200 mm/min (0–47 in/min)
Traversing speed W	approx. 900 mm/min (35 1/2 in/min)
Machining speed NC-Z	0–1'500 mm/min (0–59 in/min)
Traversing speed NC-Z	1'500 mm/min (59 in/min)

Grinding spindle

Diameter of the spindle sleeve	100 mm (3 15/16 in)
Grinding spindle speed	
Motors, infinitely adjustable	4'500–80'000 r.p.m.
Turbines, adjustable up to	100'000 resp. 160'000 r.p.m.
Slot grinding attachment infinitely adjustable	4'500–22'500 r.p.m.
Planetary speed (C)	
DC drive, infinitely adjustable	5–300 r.p.m.
Servo controlled DC-drive, up to	5 r.p.m.
Stroke speed Z (alternating stroke motion) infinitely adjustable	V _{min} 0,5 mm/min (.02 in/min) V _{max} 12'000 mm/min (472 1/2 in/min)
Stroke length Z infinitely adjustable, max.	110 mm (4 5/16 in)
Tolerance of the reversing points	≤ 0,05 mm (.002 in)
Stroke frequency Z	max. 5 Hz
Radial fine feed (U) up to	5,5 mm (7/32 in)

Accuracy

* Positional uncertainty (approached from ± direction) P _z	0,002 mm (.00008 in)
* Positional deviation (approached from ± direction) Pa _z	0,001 mm (.00004 in)
Contouring accuracy (measured with a ring gauge approx. Ø 200 mm)	0,005 mm (.0002 in)

Conditions for the installation

Installed power	7,5 kW
Air requirement (suction capacity of the compressor)	approx. 20 m ³ /h (706 cu. ft)
Required mains pressure	5 bar

Weights

Machine, net weight	3'100 kg (6'835 lb)
Machine with HI-CUT system, net weight	3'250 kg (7'166 lb)

* The accuracy specification is the result of proven and strictly applied testing methods. It compares with various recommendations published by different Trade Associations i.e. the «NMTBA» (National Machine Tool Builders Association) or the «VDI/DGQ 3441» (Verein Deutscher Ingenieure, Deutsche Gesellschaft für Qualität).

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All specification of the machine and of the accessories are subject to modification

Printed in Switzerland

S35-600

Jig grinding

machine



S35-600 HI-CUT

HAUSER

S35-600

Jig grinding machine

The S35 is a high performance single column machine with a working range of 500 x 300 mm. The robust construction guarantees a long life and constant accuracy. The field of application is the manufacture of elaborate contour elements for tool and mold making, as well as the automatic production in series of highly accurate bores and contours. The specific user software, produced by HAUSER, is integrated in the system and includes an optimum administration of machining and tool data as well as a number of graphically supported machining cycles, perfectly adapted to the application range. Here-with, considerably easier workpiece programming is guaranteed.

As an extension, the machine can be furnished in our workshops in Bienne, with a HI-CUT system, permitting the use of grinding oil. Under ideal conditions, this permits an increase of the stock removing capacity of up to 100%; reduction of production costs of up to 40%.

Main features

- High quality standards and economical machining in the field of production grinding.
- Generously dimensioned, scarped, respectively hardened and ground guideways guarantee a high geometric accuracy over the entire life of the machine.
- Outstanding operating ease thanks to the ergonomically suitable layout of all the operating elements.

User Software

MAPA - Data bank for jig grinding (196500)

Technology data bank for the determination of the optimum machining parameters for bore and contour grinding. Data input and output alternatively in metric or inch dimensioning.

GEOPAC (240743/240744)

Software for the NC programming desk on PC for graphically supported 2D geometric definitions, for the production of the corresponding ISO code, including the post-processor for the controls CNC 400, CNC 600, CNC 314 and CNC 311.

Options

203905

HI-CUT cooling system for the use of cutting oil

203916

MSS, Multi-Sensoric-System

203920

NC-circular table HV 315 (A/D-axis)

203223

Execution of the machine in inch version, measuring and feed-scales in inch

145841

Voltage adaptation transformer. Only required when voltage is different from execution 3 x 380 V, 50 Hz or 3 x 440 V, 60 Hz.

The Control CNC 600 (GE FANUC 15 MA)

Generalities

3D continuous path control with controlled axes X, Y, C, U, Z, including possible options for the axes A and W.

Axes configuration

X, Y, Z: Linear and circular interpolation. Tool radius compensation and constant feed calculation in relation to the workpiece contour. Direct, linear measuring system, resolution 0,0001 mm (Z-axis 0,001 mm); switchover of planes X/Y or X/Z or Y/Z.

Rapid stroke Z: 10 stroke planes to be called-up over M-functions.

C: Interpolation axis in relation to X, Y with automatic follow-up over a G-function which guarantees the rectangularity of the infeed axis U in relation to the tangent of the workpiece contour. If required, block by block programming is possible. Resolution of the measuring system 0,001°.

U: Programmable infeed axis. Automatic bore grinding cycles for bores of different diameters. Resolution of the measuring system 0,0001 mm.

A: NC circular table, for horizontal and vertical use. Interpolation axis. Resolution of the measuring system 0,0001°.

W: NC positioning axis for the approach of the working level or in connection with APC (automatic part changer). Resolution of the measuring system and of the display 0,001 mm (option).

Spindles

Grinding motors: Programming and display of the grinding wheel r.p.m. or circumferential speed (switchable).

Automatic adaptation of speed for dressing.

Planetary motion: Programming and display of the speed.

Display

14 inch, colour screen

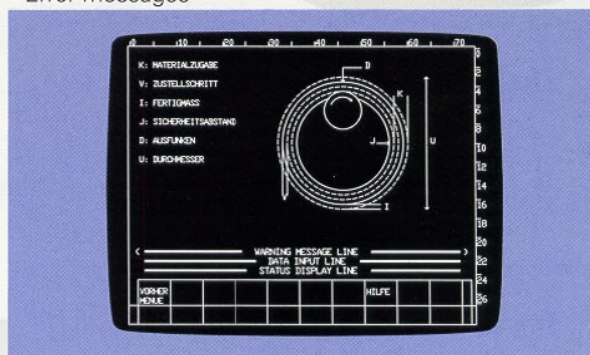
Display: X, Y, U 0,0001 mm (.00001in)

C 0,001°

Z 0,001 mm (.0001in)

A 0,0001°

- Program, cycle, correction and tool data
- Error messages



Graphic support for bore grinding cycle

Graphic support for tapered bores

