Technical Remarks

CLAMPING FIXTURES
(Additionally required) clamping fixtures will be quoted separately upon receipt of workpiece drawings.
The documentation is delivered in standard version as follows:
- Assembly drawing(s) as per Gleason standard for drawings with Gleason title block
- Dimensions: metric
- Language: German or German/English
- File format: PDF
(Other versions against extra charge.)

CUTTING TOOLS
To assure full utilization of the capabilities of the machine we recommend purchase of the required tools together with the machine.

ADDITIONAL EQUIPMENT AND ACCESSORIES
have been or will be designed for the wide range of application of our machines.
Please advise if you wish to receive a supplementary quotation for your specific requirement.
Compliance with technical specifications regarding the machine design might require extra charges.
If we have to comply with any such specification for your machine please advise.

EQUIPMENT PROCURED BY CUSTOMER
We can assume no warranty for any accessories or equipment etc. procured by the customer.

AMBIENT TEMPERATURE
» Shaving, honing and threaded wheel grinding machines:
Room temperature for operating a standard machine is between 15° and 40° Celsius.
Permissible thermal fluctuation of the room temperature during machine operation is up to max. 4° Celsius. Humidity: 20 % to 85 % (non-condensing)

» Hobbing and Shaping machines:
Room temperature for operating a standard machine is between 15° and 35° Celsius.
Permissible thermal fluctuation of the room temperature during machine operation is up to max. 4° Celsius. Humidity: 20 % to 85 % (non-condensing)

» Grinding machines:
Room temperature for operating a standard machine is between 18° and 26° Celsius.
For a constantly high operating quality the room temperature fluctuation during machine operation should not exceed 2° Celsius. Humidity: 20 % to 85 % (non-condensing)
Differing conditions as well as special quality requirements might require additional machine equipment (such as special cooler, warm-up program).
If the machine will be operated outside the above mentioned range of temperature and humidity we will not take any warranty for damages.

PROCESS MATERIALS
Process materials, e.g. lubricants, coolants, hydraulic oil etc., are not included in the scope of delivery of our machines but will have to be procured by the customer according to our recommendations and/or specifications.

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MAINTENANCE SERVICES
Professional and reliable service allows you to ensure highest productivity and consequently increase the profitable efficiency of your machine investment. Comprehensive and entire first-hand service is provided by Gleason-Pfauter specialists.
Our service pays off by:
» Increased economic efficiency through maximum machine availability
» Transparent cost planning
» Reduction in internal service and maintenance costs
» Minimization of lost output and scrapped parts
» Ready capacity availability of for greater competitiveness
» Ability to maintain machine value
As a result from the requirements of our customers, our service strategy consists of several levels of service. We would be pleased to offer a service package tailored to your individual convenience.

CE MARKING
Our machines are in accordance with the European Machine Directive 2006/42 EG.
On request, we will provide an EC Conformity Statement.
For a machine documentation as per the machine directive it is required to take a photo of the machine after commissioning at customer's plant. For this we take your kind approval for granted.

RISK ASSESSMENT
The risk assessment and calculations as per ISO 13849 are part of the required technical documents according to the Machinery Directive 2006/42. These documents contain information that are intended for internal use only. The risk analysis and calculations as per ISO 13849 can thus not be delivered with the documentation for the machine. On appointment, these documents can be viewed at the premises of Gleason. Please note that these documents are prepared in German only. We kindly ask for your special approval and refer to the VDW industry report dated August 2012 as well as the guideline for the application of the Machinery Directive 2006/42/EC, published by the European Commission Enterprise and Industry, 2nd Edition 2010, paragraph 393.

COMPRESSED AIR
If the equipment requires compressed air the machine is designed for a compressed air supply according to ISO 8573-1:
Solid contamination according to ISO 8573: Class 4
(permissible particle size maximum 0.015 mm, particle density maximum 8 mg/m³)
Maximum pressure dewpoint according to ISO 8573: Class 4 (pressure dewpoint 3 °C)
In addition, the pressure dewpoint must be at least 10 °C below ambient temperature!
Oilfree compressed air.
Residual oil contamination according to ISO 8573: Class 4
(Permissible residual oil of compressors maximum 0.1 mg/m³ for HEES fluids (synthetic esters) and bio-oils and maximum 5 mg/m³ for mineral oil)
Required pressure at inlet of our air preparation unit: minimum 4.0 bar - 5.0 bar
(depending on machine type).

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Additional notes regarding Grinding Machines:

COOLANT
We recommend the use of CASTROL coolant "Variocut G 600 SP" for grinding.
All calculated and guaranteed grinding times are based on the exclusive use of this coolant.
Address in Germany:
Deutsche Castrol Industrieöl GmbH
Postfach 30 12 49
20305 Hamburg
GERMANY
or the relevant agencies abroad.

FIRE PROTECTION
The grinding oil used with our grinding machines for process cooling creates a mixture of oil mist and air during the operation which is basically inflammable. For the unlikely case of fire, the machine is equipped with a fire alarm system according to European machine guidelines.

ENCLOSURE A 1 - ELECTRICAL EQUIPMENT OF MACHINES

1. Special conditions (DIN EN 60204-1, paragraph 1)
1.1 The machine cannot be operated outdoors.
1.2 The machine doesn't use or process explosive or flammable materials.
1.3 The machine is not destined to be used in potentially explosive or inflammable atmosphere.
1.4 The machine is not destined to be used for mining.
2. Electric supplies and related conditions (DIN EN 60204-1, paragraph 4.3)
2.1 Expected voltage fluctuations not exceeding +/- 10 %.
2.2 Expected frequency fluctuations not exceeding +/- 2 %.
2.3 Voltage supply breaks no longer than specified in DIN EN 60204-1 (paragraph 4).
3. Physical ambient and operating conditions (DIN EN 60204-1, paragraph 4.4)
3.1 As per its electromagnetic environment (DIN EN 60204-1) the machine is destined for industrial sectors (paragraph 4.4.2).
Special preconditions or requirements:
3.2 Ambient temperature for the electrical equipment within 5 - 40° Celsius (other temperature ranges on request).
3.3 Humidity within the limits as stated in DIN EN 60204-1 (paragraph 4.4.4).
3.4 Altitude of installation up to 1,000 meter above mean sea level.
4. Electrical set-up
Specification for each power supply:
4.1 Nominal voltage three-phase, 400 V, 50 cycles resp. as per order.
4.1.1 Mains voltage for 1 phase devices (e.g. 160CPS), 110 - 230V, 50 / 60 cycles resp. as per order.
4.2 Grounding nature of power supply (see IEC 60364-1):
TN-S (mains with directly grounded point and with separate protective conductor (PE) directly connected to this point). The grounded point is the neutral point (midpoint conductor, neutral).
The equipment includes a low ohm neutral conductor.
4.3 The neutral conductor is loadable.
4.4 Separation protective unit:
Separation of the neutral conductor (N) is not required.
A removable connection for separating the neutral conductor (N) is not required.
4.5 For different mains such as IT or TT an isolating transformer (line side delta, load side wye) is mandatory required. In addition, a separate grounding shall be connected to the machine.
5. Accessories and lighting (DIN EN 60204-1, paragraph 15)
5.1 Schuko outlet socket (isolated ground receptacle, German design).
6. Marking, warning signs and reference marks (equipment identifying symbols) (DIN EN 60204-1, paragraph 16)
6.1 Function symbols as per Gleason-Pfauter standard.
7. General
7.1 Control cabinet:
Control voltage (feed-in/inputs/outputs) - 24 Volt DC
Main contactors (motors/aggregates) - 24 Volt DC
Reversible motor controlled via electrically interlocked reversing contactors.
Safety disconnects for all auxiliary circuits.
All electrical components of the machine are identified by corrosion resistant labels in accordance with the wiring diagram.
7.2 Machine:
All limit switches conform to DIN specifications.
For hobbing and shaping machines a halogen lamp with IP 65 protection serves as machine lamp.
For grinding machines protective fluorescent lamps with IP 67 protection are used.
Electrical installations are exclusively with PUR-coated cables.

7.3 Control panel:
The control panel is located ergonomically.
The status of the machine can be monitored continuously. The CRT display provides the necessary information on the status of inputs and outputs of the PLC also during the program.
This facilitates trouble-shooting considerably.
Special preconditions or requirements:
7.4 In addition any induction voltage influences of welding equipment, furnaces, power cables or similar equipment nearby have to be eliminated by adequate measures (such as separate current supply etc.) Suitable measuring apparatus have to be used if these data are not available.
If required, we could provide a recording measuring apparatus for this purpose on loan basis (subject to availability). Please give full details of the mains if you are interested in a quotation for special equipment.
To be considered for Profile Grinding Machines in addition:
Disturbances of the mains supply exceeding the above-mentioned values, as well as complete power failure can lead to interruptions of the process. Therefore, we recommend the use of a UPS unit for bridging power failure for a safe machine operation also in case of mains voltage fluctuations up to +/- 25 % and mains voltage breakdowns up to 1.5 sec.
In case of considerable disturbances there is a controlled disengagement of the tool, in order to guarantee protection of machine, workpiece and grinding wheel.

ENCLOSURE A 9 - NOTE TO NOMINAL MODULE OF MACHINE

One feature for comparing gear cutting machines is their maximum module applicable under economic conditions.
The most important limits set by the machine are:
- its capacity to locate the required tools
- the rigidity of machine frame and mechanical and electronic transmission trains
- the torque available at the tool spindle within the required tool speed range respectively the stroke drive power for gear shaping machines

Our machines are mechanically designed to allow that from this side there are no problems even if a considerably larger nominal module has to be machined.
It is for this reason that in many cases gears with modules larger than the nominal module can be machined.
The actual limit depends on the specific parameters as, for example, workpiece diameter, helix angle, rigidity of workpiece and clamping fixture, workpiece material, cutting tool material, workpiece geometry and cutting data.

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