

Benennung:

Technical Delivery Conditions

According to the recommendation of the German Association of Turned Parts

Änderungs-Nr.

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I.) Scope

These technical delivery conditions are valid in the event of missing or unclear drawing specifications as a supplement to the customer's drawing. In that event the technical delivery conditions have to be considered as further applicable document. Nevertheless drawing information and, if applicable, further applicable documents of and provided by the customer as well as special quotation texts and notations in the special quotations texts take priority.

II.) Design

1.) Primary Materials

- 1.1 Material: We don't provide any special crack testing according to DIN 10277-1.
- 1.2 Incl. company certificate 3.1 according to DIN EN 10204, as far as available and if there is no other agreement.

2.) Form and Location Tolerances

- 2.1 Dimension tolerances as well as form and location tolerances according to DIN ISO 2768-mK..
- 2.2 For dimensions below 0.5mm which are not tolerated we assume ± 0.1 mm.
- 2.3 Chamfers and broken edges with angle specifications for which general tolerances apply are manufactured with $\pm 5^\circ$.
- 2.4 For all angle specifications without indication of tolerances a tolerance of $\pm 2^\circ$ applies.
- 2.5 For chamfers and roundings without indication of tolerances the following length tolerances apply

Nominal dimensions to 0.2 mm	± 0.1 mm
Nominal dimensions over 0.2 to 0.5 mm	± 0.2 mm
Nominal dimensions over 0.5 to 1.0 mm	± 0.3 mm
Nominal dimensions over 1.0 mm	± 0.4 mm

3.) Edge States / Burr

- 3.1 For all not dimensioned work piece edges applies: Outer edges - 0.25 mm
Inner edges + 0.45 mm, see DIN ISO 13715.
- 3.2 Edge descriptions like "sharp edged free of burrs" and similar will be assumed with ± 0.05 mm according to DIN 6784.
- 3.3 Drilling intersections may have a firmly adhering burr of max. + 0.1mm. A separate burring work step is not scheduled. If an intersection free of burrs is required the chamfer size is undefined.
- 3.4 If boreholes have to be made in uneven surfaces and if the drilling edges have to be chamfered, the chamfers will be countersunk to a depth that the chamfer has a width of min. 0.1 at the smallest point.

4.) Threads

- 4.1 We may freely chose the manufacturing method of threads (cut, chased, rolled, spiralled, etc.).
- 4.2 The execution of the start and the end of threads depends on the manufacturing process, generally chamfered. The end of threads towards the collar are executed on the basis of DIN 76 Form A with a normal length.
- 4.3 Thread tolerances refer from the third thread turn i.e. the scrap side of limit gauges may be screwed in or on in this area.
- 4.4 If specifications are missing in the drawing we will manufacture outer threads with a thread tolerance of 6g, inner threads with a thread tolerance of 6H.

5.) Fits

- 5.1 On testing by means of test pins it is accepted as OK that the scrap side of the test pins has a slight contact to the beginning of the fit.
- 5.2 If the fits are noncircular due to the instability of the workpiece (deformation) internal fits refer to the incircle and external fits refer to the radius.

6.) Positioning of Faces etc.

- 6.1 In the absence of indications of angle or position the spanner flats, hexagonals, slots and cross-holes are not manufactured in alignment to each other.

7.) Millings

- 7.1 Faces or slots may be produced optionally in a dipping process or in a through feed process. For plunge milled faces or slots a curved base of slot and/or a curved transition to a further outline of the part arises depending on the tool diameter.

8.) Blind Holes

- 8.1 For blind holes the shape of the drill bit is optional.

9.) Cut Off

- 9.1 If the removal of cut offs is not stated expressly in the drawing cut offs may exist at the front sides (plane surfaces). This applies also in the event of a generally valid sign of machine finish degree in or at the labelling field.
- 9.2 The size of the cut off is calculated by DIN 6785.

10.) General Surface Quality

- 10.1 Concerning the surface standards we are geared to the recommendations of VDA 2005 and VDA 2006.
- 10.2 The roughness indications - invalid by now - according to DIN 140 („triangles“) will be interpreted according to DIN EN ISO 1302 /line2 /measured value Ra.
- 10.3 For available measuring length below 0.8 mm we chose the max. possible length on an optically comparable area.
- 10.4 Surface quality in drillings

Range of tolerance according to DIN	Surface finish
ISO 286-1	
Drilling without ISO-fits	Ra 12.5
Fits IT 11, z.B. H11	Ra 6.3
Fits IT 10, IT 9, IT 8	Ra 3.2
Fits IT 7, IT 6, IT 5	Ra 0.8

11.) Heat Treatment / Surface Treatment

- 11.1 Coating is a service which we assign to selected suppliers. For reasons of precaution we refer to possible liability limitations of the performing company. The offered execution bases on assumptions which require an exact clarification upon receipt of an order. Before acceptance of an order the requirements have to be adjusted by means of the checklist between customer, Prefag and supplier.
- 11.2 Depending on the specified process discolorations and/ or a layer of scale may remain at sections which are not treated after the heat treatment.
- 11.3 If grinding or a further treatment is necessary after the surface hardening the case depth will be referred to this section. In other sections the depth will be exceeded by the respective stock.

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von:	Dirk Rivoir	von:	Dirk Rivoir 	von:	

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12.) Cleanness / Corrosion Protection

12.1 The parts are cleaned in a modern cleaning plant with tetrachloroethylene (PER) and a filter for ultrafine particles (<10µm). If necessary the parts are coated with a corrosion protective film as part of the cleaning process.

13.) Shipping

13.1 The outer packaging for the despatch is made in non-returnable cardboards or alternatively in customer supplied recycling packaging (KLT).
13.2 If the parts are packed like in bulk an appropriate handling is scheduled. But the handling in bulk goods implicates that it has to be reckoned with small points of impact especially at exposed areas. Interferences of specifications like surface quality, edge stages etc. are unavoidable.

14.) Application

14.1 The customer is responsible for the type test of the products for the respective application. Prefag accepts the guarantee only for the delivery according to the agreed execution up to the merchandise value.

15.) FMEA

15.1 Depending on the required volume and size of the project we reserve the right to invoice nonrecurring costs for the procedure of a FMEA in addition to the unit price and to the tool costs. For reasons of knowhow protection the FMEA documentation remains at Prefag but may be reviewed by the customer.

16.) Deviations

16.1 In case of an order the admissible deviations have to be agreed in written form.
16.2 The drawing in connection with the quotation and/or order confirmation text as well as our technical delivery conditions represent exclusively the design agreed for delivery.

17.) FAIR

Unless otherwise agreed the FAIR according to Prefag-Standards on the basis of VDA volume 2, consisting in cover sheet, material quality certificate and test results, is made with 2 initial samples.

III.) Quality Assessments

1.1 Drawing indications stated as circled dimensions (critical or important features, etc.), will be tested in process by means of a test plan which prescribes measurement interval, quantity of specimen and testing equipment.
1.2 Quality assessments in written form and/or records of dimensions as well as SPC-data will be only supplied on demand and, if necessary, the costs will be invoiced.
1.3 We assume a receiving inspection test at the customer according to § 377 HGB.
1.4 Inspection documents: unless otherwise agreed inspection documents for primary materials are issued in form of a test report 3.1 according to DIN EN 10204 (see II.)1.2)

1.5 If the delivered parts are bulk goods the points of impact are not taken into consideration in the process capability study. The points of Impact don't influence the result of the determination of the surface quantity either.
1.6 Unless otherwise stated expressly on the drawing or applicable documents the ordered parts are subjected to a dimensional check. Additional checks concerning the characteristics of the ordered parts (e.g. tensile test, hardness test, decarbonisation test, restart testing, bolt head impact testing, pressure test, beam impact test, torsion test, leakage test, test of technical cleanness, functional test, etc.) must be stipulated separately.
1.7 The compliance with quality assurance agreements, standards of the supplier, etc. can only be assured with a mutual written agreement and in the version relevant upon conclusion.

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