PROFESSIONAL GEAR CUTTING WITH HORN AND DMG MORI



DMG MORI

Do you already utilise your machine's full potential? Increase your own added value with HORN cutting tools and DMG MORI technology cycles.

MASTERING PROCESSES

GEAR SKIVING

GEAR MILLING

GEAR BROACHING

HORN AND DMG MORI

GEAR CUTTING – WE HAVE THE SOLUTION



+ Gear hobbing of internal and external gears up to MODULE 11 + Gear cutting quality ≥ 7

FOCUS

- + NLX & CTX
- + NTX & CTX TC (4A)
- + DMU eVo & DMF & DMU/C FD (monoBLOCK, duoBLOCK and Portal)



+ Gear cutting with standard tools ≥ MODUL 3 + Gear cutting quality ≥ 5

FOCUS

- + NTX & CTX TC (4A)
- + DMU eVo & DMF
- + DMU/C FD (monoBLOCK,
- duoBLOCK and Portal)



+ Gear shaping of internal and external gears up to MODUL 4 + Gear cutting quality ≥ 9

FOCUS + NTX

- + CTX TC
- + CTX TC (4A)



SPUR GEARS

+ Spur, helical and double-helical gears + Segments

ø3,200 mm MAX. DIAMETER **BEVEL GEARS** WORM GEARS + Spur, helical, spiral + Profil ZA + Profil ZN and hypoid gears

INTERNAL & EXTERNAL GEARS

+ Axis angles other than 90 + Profil ZI + Klingelnberg Zyklo-Palloid® + Gleason





+ Solid carbide tools and interchangeable insert systems + Version with internal coolant supply + Tools from module 0,2 to module 8



External gears: Conversational input of all necessary gear data

| Focus machines | NLX/CTX (incl. Y-axis) | NTX 1000/ CTX beta TC | NTX 3000 / CTX gamma TC | DMU eVo/DMF | DMU/C FD (monoBLOCK, duoBLOCK and Portal) |
|----------------|---------------------------|--------------------------|-----------------------------|-------------|----------------------------------------------------|
| Module* | ≤ 1.5 | ≤2 | ≤ 4 | ≤2/≤5 | ≤3/≤11 (mB:10) |
| Quality* | ≥ 9 | ≥7 | | | |
| Diameter** | max. 150 mm | max. 340 mm | max. 500 mm/ max. 530 mm | max. 800 mm | max. 3,200 mm |

*Depending on machine & technology

**Depending on internal or external gear teeth as well as tool dimensions and machine size



EXCLUSIVE TECHNOLOGY CYCLE – gearSKIVING UP TO 8 TIMES FASTER THAN GEAR SHAPING

- + Straight and helical external or internal spur gears and splines
- + Internal teeth possible without an angle head
- + Synchronisation and tool path controlled by the cycle
- + Available for machines with SIEMENS/CELOS with SIEMENS and MAPPS/CELOS with MAPPS
- + TURN & MILL and DMF
- Herringbone teeth with offset**
- Crown gears by mathematical transformation of the 6th virtual axis* on TC & DMF machines

*NTX & CTX TC with counter spindle and SIEMENS







Internal gears: The technology cycle automatically creates the NC program



EXCLUSIVE TECHNOLOGY CYCLE – gearMILL GEAR MILLING ON STANDARD MACHINES WITH STANDARD TOOLS

- + Program creation based on part drawings or gear data
- + Contact pattern individually modifiable
- + Post processor for SIEMENS, HEIDENHAIN and MAPPS
- + Interface for coordinate measuring machine
- (Klingelnberg, Leitz, Zeiss)
- + SPUR GEARS: Straight, helical and herringbone gears, segments
- + BEVEL GEARS: Straight, helical, spiral and hypoid gears, shaft angles not equal to 90°, Klingelnberg Zyklo-Palloid® and Gleason
- + WORM GEAR: Profile ZA, ZN and ZI





- + Solid carbide tools and interchangeable insert systems
- + Version with optional coolant supply
- + Tools for all module sizes





Simple creation of the NC program by entering the gear parameters. CAM programming, post processors and simulation of the NC program.



In-process measuring, tactile using a measuring probe and NEW: optically using a laser scanner - accuracy similar to that of a coordinate machine.

| Focus machines | NTX 1000/ CTX beta TC | NTX 3000/ CTX gamma TC | DMU eVo/DMF | DMU/C (monoBLOCK) | DMU/C (duoBLOCK and Portal) |
|----------------|--------------------------|-----------------------------|-------------|-----------------------------|-----------------------------------|
| Module | ≥3 | | | | |
| Quality* | ≥7 | | ≥5 | | |
| Diameter** | max. 500 mm | max. 670 mm/ max. 700 mm | max. 800 mm | max. 1000 mm | max. 3,200 mm |

*Depending on machine & technology

**Depending on internal or external gear teeth as well as tool dimensions and machine size





+ Single-tooth to four-tooth cutting tools with clear tool definition + High productivity in combination with broaching attachment + Tools up to module 4



Parametric definition of the tools

| Focus machines | NTX 1000/CTX beta TC [4A] | | | |
|----------------|---------------------------|--|--|--|
| Module* | ≤2 | | | |
| Quality* | | | | |
| Diameter** | max. 500 mm | | | |

*Depending on machine & technology

**Depending on internal or external gear teeth as well as tool dimensions and machine size

EXCLUSIVE TECHNOLOGY CYCLE – gearBROACHING POSITION-ORIENTED MACHINING OF GEARS AT THE MAIN AND COUNTER SPINDLES

- + Internal and external gears
- + Ideal for workpieces with shoulders or interference contours due to runout
- + Compensation parameters for deflection of the tool holder
- + Available for machines with SIEMENS/CELOS with SIEMENS







Automatic compensation of tool displacement



UTILISE YOUR MACHINE'S FULL POTENTIAL

You might well know the problem. You get an enquiry for a range of components that, at first sight, are ideal for your machines. But the devil is in the detail. Special operations are needed, e. g. internal teeth which you are unable to produce. You now have to choose whether to turn down the order or buy in the service from outside. However, this can be avoided using HORN cutting tools and exclusive DMG MORI technology cycles. On the following pages, you will find out how to overcome these challenges, and increase added value with a simple software upgrade.

FASTER: Thanks to menu-guided entry of gear parameters **SIMPLE:** Automatic calculation of NC program based on gear parameters **RETROFITTABLE:** Pure software solution – integration in new and existing machines*

* Retrofitting of gearBROACHING and gearSKIVING depends on control system version

HORN AND DMG MORI

UNIQUE DMG MORI GEAR CUTTING SOLUTIONS

55 DMG MORI TECHNOLOGY CYCLES – COMPLEX MACHINING IMPLEMENTED WITH EASE

- + 23 MACHINING CYCLES e.g.: new machining processes and enhanced machine capability such as gear machining +15 HANDLING CYCLES
- e.g.: simplification of machine operation and automated sequences
- + 9 MEASURING CYCLES e.g.: increased machining accuracy and transparency of QA processes
- + 8 MONITORING CYCLES e.g.: increased machine safety and process reliability





CONVERSATIONAL PROGRAMMING IS 60 % FASTER

The exclusive DMG MORI technology cycles are genuine assistive systems for shopfloor programming that boost productivity and safety as well as enhancing machine capability.

- + Clear programming structure
- + Up to 60% faster programming
- + Error reduction thanks to conversational programming
- + New technologies (gear cutting, grinding)
- +Technology know-how saved in the program



YOUR CONTACT PERSON

(ph HORN ph)



Key Account/Head of OEM

Joachim Hornung Your contact for Tools Hartmetall-Werkzeugfabrik Paul Horn GmbH Tel +49 7071 70 04 20 91 joachim.hornung@PHorn.de

DEUTSCHLAND, STAMMSITZ

GERMANY, HEADQUARTERS

Hartmetall Werkzeugfabrik Paul Horn GmbH Horn-Straße 1 D-72072 Tübingen

Tel +49 7071/70040 Fax +49 7071/72893

info@PHorn.de PHorn.de

Find your country: PHorn.com/countries



Your contact for Turning + Turn & Mill (CTX and CLX TC/CTX TC)

Dr.-Ing. Edmond Bassett Engineering Development Manager GILDEMEISTER Drehmaschinen GmbH

Tel +49 5205 74 30 83 edmond.bassett@dmgmori.com



Your contact for Turning + Turn & Mill + Milling (NLX, NTX and NHX)

Lorenzo La Rosa Team Leader Applications DMG MORI in Wernau Tel +49 7153 934 198 lorenzo.larosa@dmgmori.com



Your contact for Milling + Mill & Turn (FD)

Thomas Lochbihler Head of Technology Excellence DECKEL MAHO Pfronten GmbH

Tel +49 8363 89 517 thomas.lochbihler@dmgmori.com