G-ZERO Lathe

Power Tips

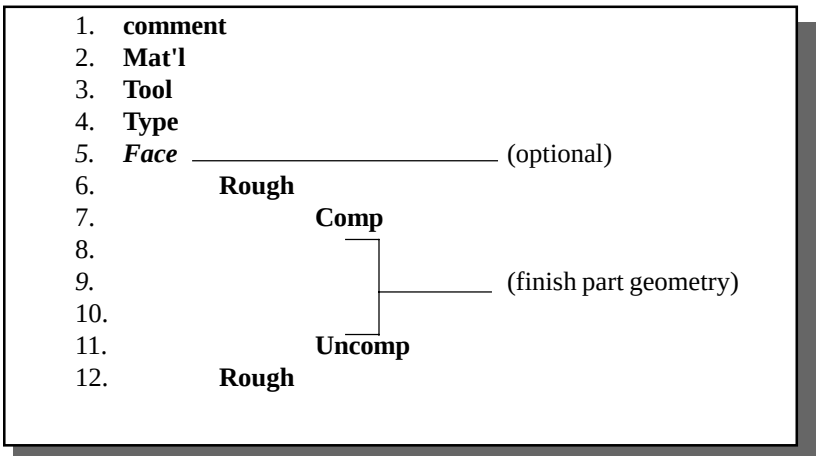
G-ZERO CAM Software

RAPID OUTPUT

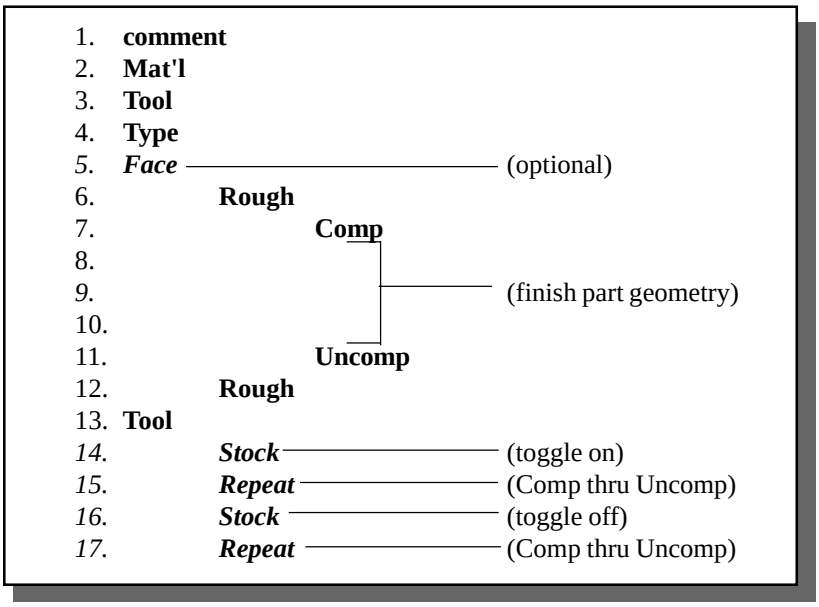
(925) 264-4495
www.g-zero.com

Roughing

The most common Source programming format for a lathe roughing operation is:



To rough and then take several clean up passes:



The **Rough** command is always programmed in pairs. The second **Rough** command must be identical to the first **Rough** command (of the pair).

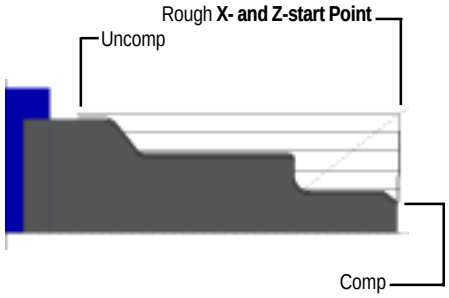
Comp thru **Uncomp** describes the finished part geometry without lead-on or lead-off **Points**.

Optional:

Program a lead-on (approach) **Point** before the first **Rough** command. Program a lead-off (retract) **Point** after the second **Rough** command (of the pair).

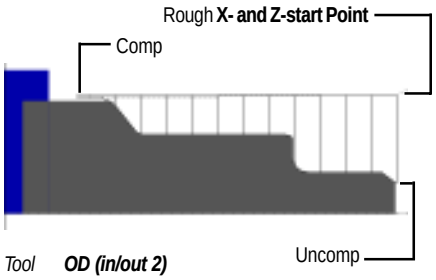
OD

OD ROUGHING (G71)



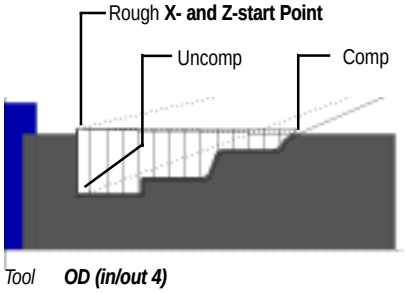
Tool ***OD (in/out2)***
Comp ***Cutter on the RIGHT***
Program the contour towards the chuck.

OD FACE ROUGHING (G72)



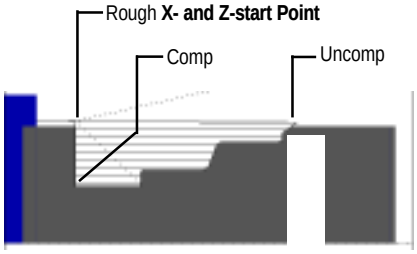
Tool ***OD (in/out 2)***
Comp ***Cutter on the LEFT***
Program contour away from the chuck.

◆ OD BACK GROOVING (G72)



Tool ***OD (in/out 4)***
Rough ***Negative (-) zstock***
Comp ***Cutter on the RIGHT***
Program contour towards the chuck.
(Not available for Apprentice)

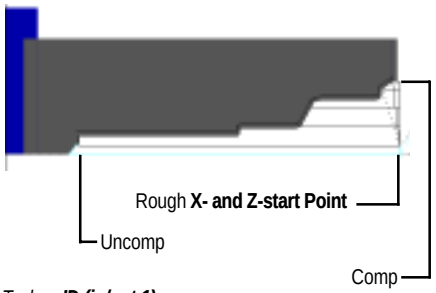
◆ OD BACK TURNING (G71)



Tool ***OD (in/out 4)***
Rough ***Negative (-) zstock*** ***SAFEANG must be correct***
Comp ***Cutter on the LEFT***
Program contour away from the chuck

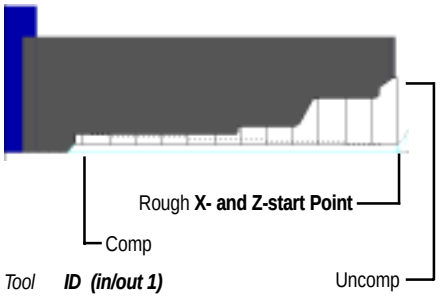
ID

ID ROUGHING (G71)



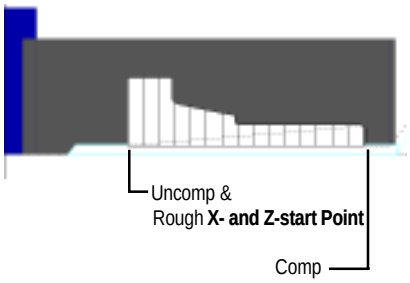
Tool ***ID (in/out 1)***
Comp ***Cutter on the LEFT***
Program the contour towards the chuck.

ID FACE ROUGHING (G72)



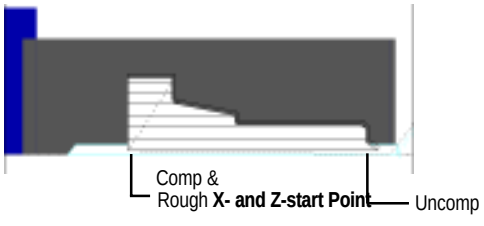
Tool ***ID (in/out 1)***
Comp ***Cutter on the RIGHT***
Program contour away from the chuck.

◆ ID BACK GROOVING (G72)



Tool ***ID (in/out 3)***
Rough ***Negative (-) zstock***
Comp ***Cutter on the LEFT***
Program contour towards the chuck.
(Not available for Apprentice)

◆ ID BACK TURNING (G71)



Tool ***ID (in/out 3)***
Rough ***Negative (-) zstock*** ***Negative (-) depth of cut***
SAFEANG must be correct
Comp ***Cutter on the RIGHT***
Program contour away from the chuck

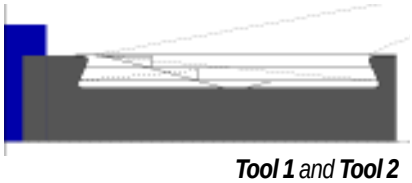
◆ ROUGHING UNDERCUTS *(Not available in Apprentice version)*

OD DOUBLE UNDERCUT EXAMPLE:

Tool 1 *in/out 2*
Rough *Negative (-) depth of cut*
Safeangle MUST be correct
Comp *Cutter on the right*
Program contour towards the chuck.
Tool 2 *in/out 4*

Rough *Negative (-) depth of cut*
Negative (-) z-stock
Safeangle MUST be correct
Comp *Cutter on the left*
Program contour away from the chuck.

Tool 1



Tool 1 *and* ***Tool 2***

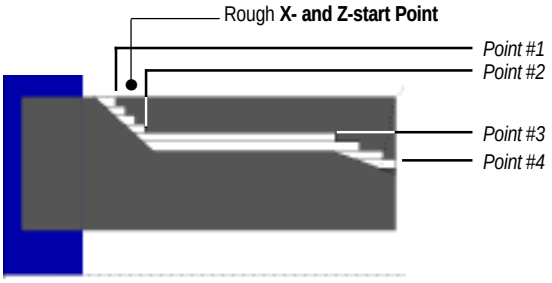
◆ ROUGHING CASTINGS *(Not available in Apprentice version)*

If *Comp - Uncomp* ***(the final contour) will be programmed towards the chuck:***
Program casting *Points* ***away from the chuck immediately after the FIRST*** *Rough* ***command before the contour.***

If *Comp - Uncomp* ***(the final contour) will be programmed away from the chuck :***
Program the casting *Points* ***towards the chuck immediately after the FIRST*** *Rough* ***command before the contour.***

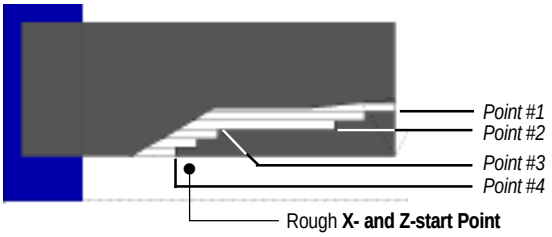
1. *Tool*
2. *Type*
3. *Point* (Approach ~~**Point**~~ if ID)
4. *Rough*
5. *Point #1* — (Always program the casting **Points** before the part contour and always in the opposite direction.)
6. *Point #2*
7. *Point #3*
8. *Point #4*
9. *Comp* — (final contour)
10.
11.
12.
13. *Uncomp*
14. *Rough*

OD CASTING



Rough ***Negative (-) depth of cut***
Safeangle MUST be zero (0).

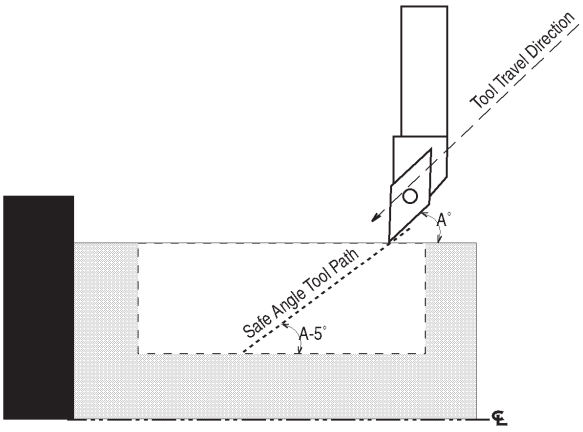
ID CASTING



Rough ***Negative (-) depth of cut***
Safeangle MUST be zero (0).

◆CALCULATING SAFE ANGLES *(Not available in Apprentice version)*

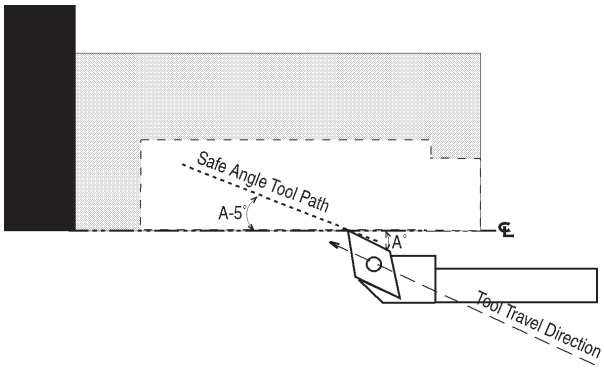
OD SAFE ANGLES



OD Safe Angle = (A - clearance angle) + 180°

Ex: **A = 45°**
minimum desired clearance angle = 5°
So, OD Safe Angle = (45-5) + 180° = 220°

ID SAFE ANGLES



ID Safe Angle = 180° - (A - clearance angle)

Ex: **A = 45°**
minimum desired clearance angle = 5°
So, ID Safe Angle = 180° - (45-5) = 140°

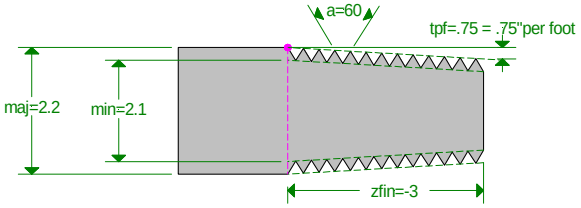
Pipe Threading

(Reading your blueprint)

Major and minor OD as the thread ends:

PIPE ret0 tpf**.75** x2.2 z-3

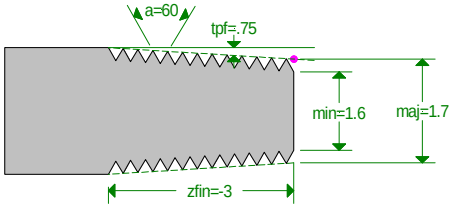
THREAD maj2.2 tpi8 min2.1 S300 z.2 zfin-3 num5 a60



Major and minor OD at start point:

PIPE ret0 tpf.75 x**1.7** z**0**

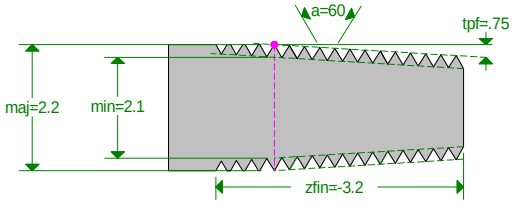
THREAD maj**1.7** tpi8 min**1.6** S300 z.2 zfin-3 num5 a60



Major and minor OD slightly past the thread ends:

PIPE ret0 tpf.75 x2.2 z-3

THREAD maj2.2 tpi8 min2.1 S300 z.2 zfin-3**.2** num5 a60

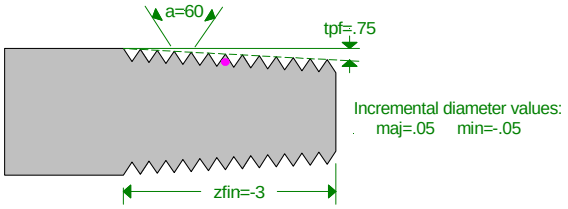


Major and minor OD inside the thread:

Incremental values

PIPE ret0 tpf.75 x**1.85** z**-1.5**

THREAD maj**.05** tpi8 min**-.05** S300 z.2 zfin-3 num5 a60



● Blueprint reference point