

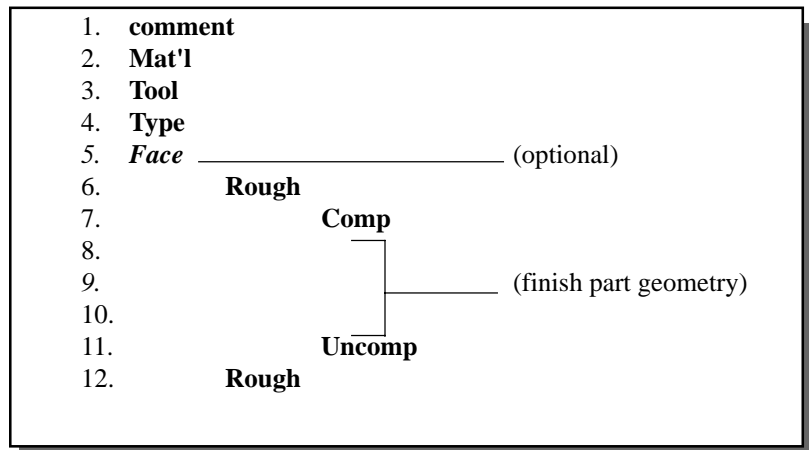
G-ZERO Lathe

Power Tips

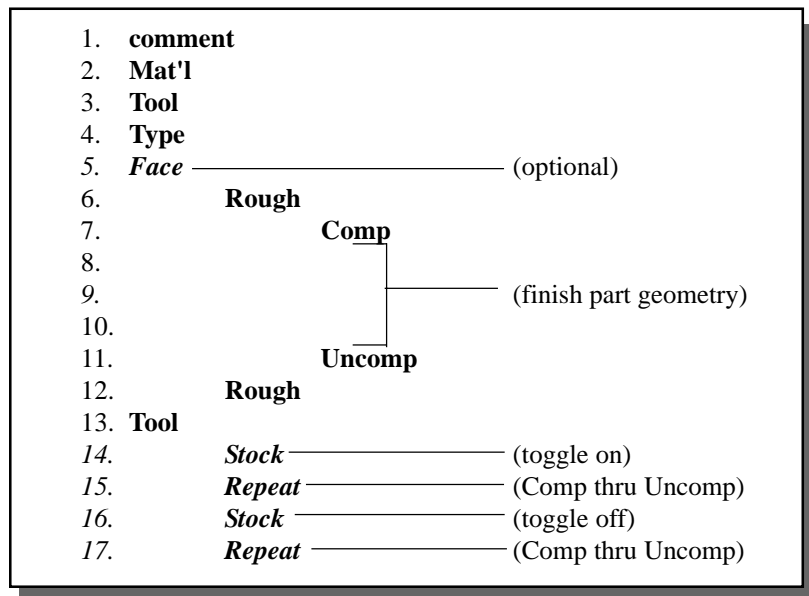


Roughing

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:

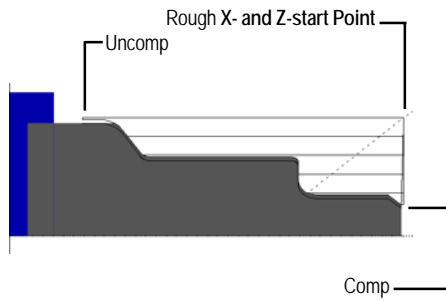
Program a lead-on (approach) **Point** before the first **Rough** command. Program a lead-off (retract) **Point** after the second **Rough** command (of the pair).

OD

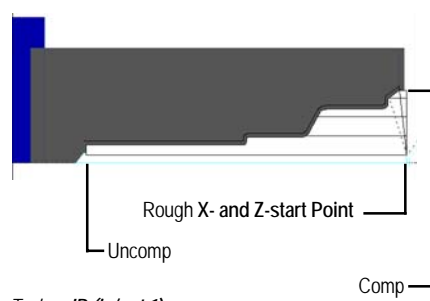
ID

OD ROUGHING (G71)

ID ROUGHING (G71)



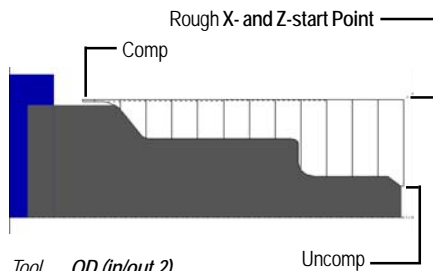
Tool **OD** (in/out 2)
 Comp Cutter on the **RIGHT**
 Program the contour towards the chuck.



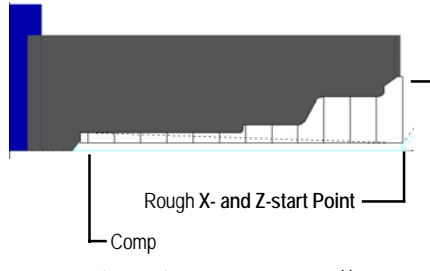
Tool **ID** (in/out 1)
 Comp Cutter on the **LEFT**
 Program the contour towards the chuck.

OD FACE ROUGHING (G72)

ID FACE ROUGHING (G72)



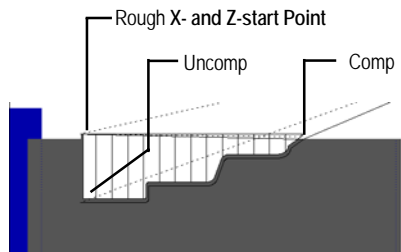
Tool **OD** (in/out 2)
 Comp Cutter on the **LEFT**
 Program contour away from the chuck.



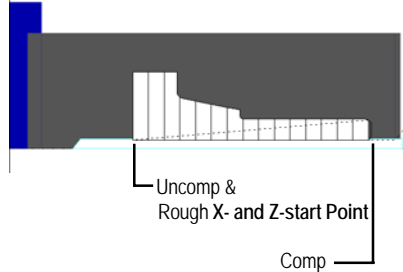
Tool **ID** (in/out 1)
 Comp Cutter on the **RIGHT**
 Program contour away from the chuck.

◆ OD BACK GROOVING (G72)

◆ ID BACK GROOVING (G72)



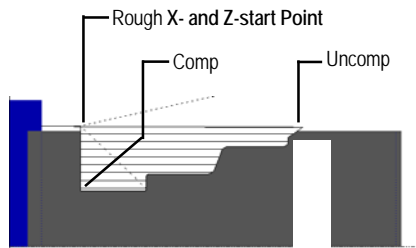
Tool **OD** (in/out 4)
 Rough **Negative (-) zstock**
 Comp Cutter on the **RIGHT**
 Program contour towards the chuck.
 (Not available for Apprentice)



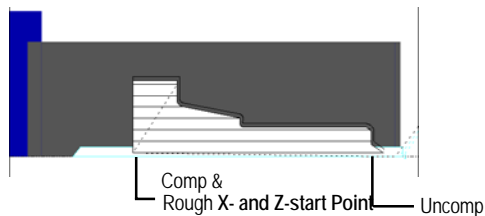
Tool **ID** (in/out 3)
 Rough **Negative (-) zstock**
 Comp Cutter on the **LEFT**
 Program contour towards the chuck.
 (Not available for Apprentice)

◆ OD BACK TURNING (G71)

◆ ID 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



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

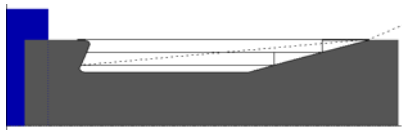
Comp Cutter on the right
Program contour towards the chuck.

Tool 2 in/out 4

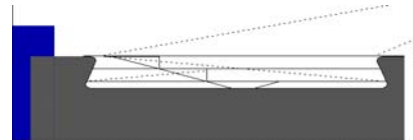
Rough Negative (-) depth of cut

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:

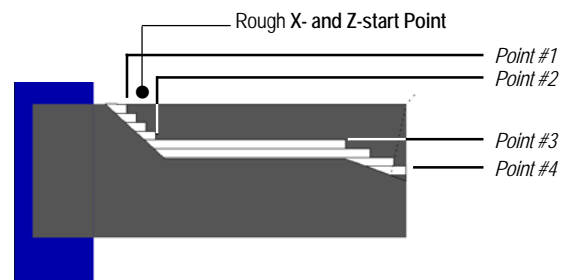
Program casting Points away from the chuck immediately after the **FIRST** Rough command before the contour.

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.

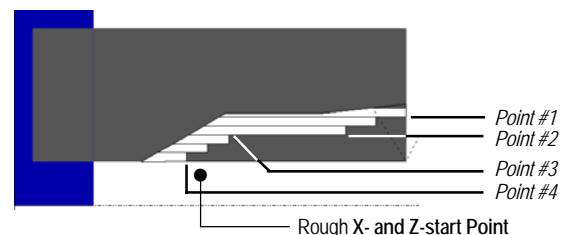
1. Tool
 2. Type
 3. Point(Approach Point if ID)
 4. Rough
 5. Point #1
 6. Point #2
 7. Point #3
 8. Point #4
 9. Comp
 - 10.
 - 11.
 - 12.
 13. Uncomp
 14. Rough
- (Always program the casting Points before the part contour and always in the opposite direction.)
- (final contour)

OD CASTING



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

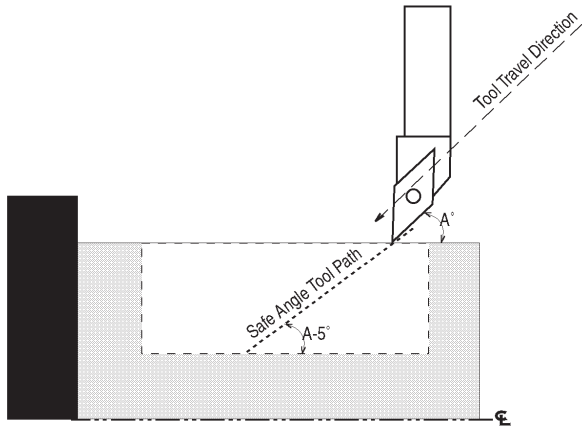
ID CASTING



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

◆ CALCULATING SAFE ANGLES (Not available in Apprentice version)

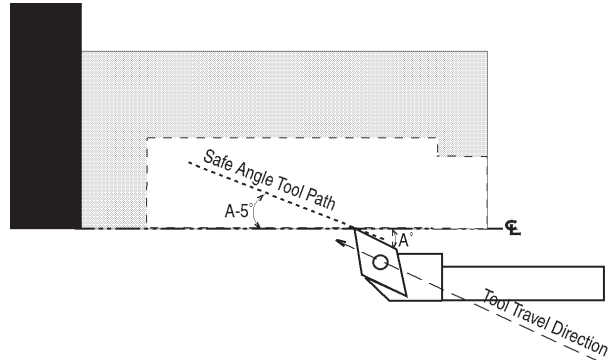
OD SAFE ANGLES



$$\text{OD Safe Angle} = (A - \text{clearance angle}) + 180^\circ$$

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

ID SAFE ANGLES



$$\text{ID Safe Angle} = 180^\circ - (A - \text{clearance angle})$$

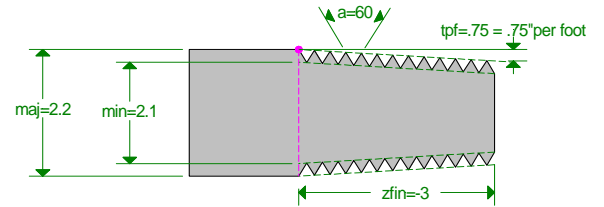
Ex: $A = 45^\circ$
 minimum desired clearance angle = 5°
 So, ID Safe Angle = $180^\circ - (45-5) = 140^\circ$

Pipe Threading

(Reading your blueprint)

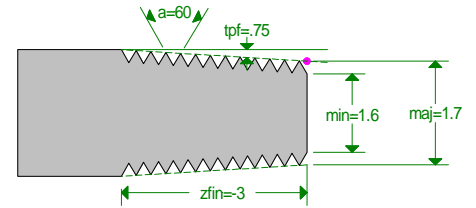
Major and minor OD as the thread ends:

PIPE ret0 tpf.75 x2.2 z-3
 THREAD maj2.2 tpi8 min2.1 S300 z.2 zfin-3 num5 a60



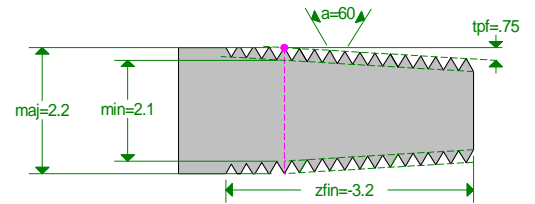
Major and minor OD at start point:

PIPE ret0 tpf.75 x1.7 z0
 THREAD maj1.7 tpi8 min1.6 S300 z.2 zfin-3 num5 a60



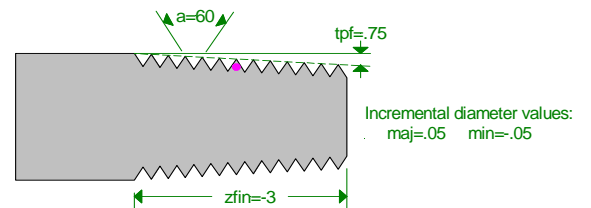
Major and minor OD slightly past the thread ends:

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 x1.85 z-1.5
 THREAD maj.05 tpi8 min-.05 S300 z.2 zfin-3 num5 a60



● Blueprint reference point

