

# Cause and Corrective Actions

## Summary of Recent Errors on B Castings

### Gear Damage

**Cause:**

Face mill was chattering because the quill of the machine was extended deep into the inner cavity of the part. The quill length could be shortened by moving the V axis inward toward the part and retracting the Z axis (quill). The operator made these changes to improve the cutting conditions, but in doing so miscalculated an offset by 1.0" and failed to verify the offset prior to continuing.

**Corrective Action:**

Machine operators are expected to suggest and/or make changes as necessary to improve the efficiency of the process. Many times changes to the NC program occur after the change has been made and tested at the machine by the operator. Two actions have occurred:

1. Changes have been made to the NC program to eliminate the chatter condition.
2. The procedure to verify offsets was reviewed with the operator by the team leader.

### Mis-drilled Holes (NC20449)

**Cause:**

The operator was establishing the X,Y,Z offset for his setup using a Ø .5" edge finder (the use of edge finders for this application is the preferred method). After establishing the location, the operator added .25" to the Y offset rather than subtracting .25". It is expected that after establishing the coordinate system that operators recheck the pick up before proceeding. In this case, the operator again failed to perform this verification.

**Corrective Action:**

Due to the close proximity of this error to the previous error, the operator was disciplined with 3 days off without pay.

### Lead Pad Location (NC20475)

**Cause:**

There are multiple setup sheets used for this operation. When creating these setup sheets the programmer was not consistent in calling out which part axis the rotation angle was established from. The angle for the Lead Pad setup was 44.243°. This angle is very close to 45°, therefore it was not obvious to the operators when the setup was made from the part axis 90° from the axis called out on the program setup sheet.

**Corrective Action:**

Setup sheet has been changed to be consistent with the others used on this operation.

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### Shearing of Head Bolts

**Cause:**

The bolts are breaking when they are being loosened for the head adjustment. An inconsistent amount of torque is being applied when the bolts are tightened and during operation these bolts tend to tighten even more.

**Corrective Action:**

A torque wrench has been purchased and dedicated to this head. Applying a consistent amount torque should either correct the problem or eliminate at least on variable that may be a contributor to the failures.