Machinist Operator 2

Setup Information:

Production Order

- Check the production order to make sure the material is the correct size, color quantity. Look for the tool kit number or any special instructions and make sure all prior operations are complete and sighed off.

Program

- Check the program header to ensure that the part number matches the print and that the program number matches the item number on the work order. Find all the setup information that pertains to that operation including tools to use and their location.

Blueprint

- Match the program header to ensure that the part number matches the print and that the program number matches the item number on the work order. Find all the setup information that pertains to that operation including tools to use and their location.

Quality:

GD&T (Geometric Dimensioning & Tolerancing)

- The NC2 operator must recognize GD&T symbols, and they must know how to find out what the symbols stand for.

Quality Alert and QA Verification Process

- The NC2 operator must recognize when a QA Alert step is present and notify their Supervisor/Team Leader before proceeding. The first part of the run is inspected against prints, inspection reports, and the QA note. If the part passes, the Supervisor/Team Leader will clock out the QA step. If it fails, it will be rejected and documented through QF 05 Non-Conformance Report.

PPAP (Product Part Approval Process)

- The NC2 operator must know when a PPAP is required and know to notify their supervisor for instruction when working an order that requires a PPAP to be done. The purpose of a PPAP is to determine that the manufacturing process has the potential to produce product consistently during an actual production run at the quote rate.
  - PPAP example
  - PPAP Rev.4

GD&T

SYMBOL	GEOMETRIC CHARACTERISTIC	TYPE OF TOLERANCE	PRIMARY CONTROL
▱	FLATNESS	Form No relation between features	Controls form (shape) of size and non-size features. Datum reference is not allowed
—	STRAIGHTNESS		
⌭	CYLINDRICITY		Controls form (shape) of size features Datum reference is not allowed
○	CIRCULARITY (ROUNDNESS)		
⊥	PERPENDICULARITY	Orientation No relation between features	Controls orientation (tilt) of surfaces, axes, or median planes for size and non-size features Datum reference required *Optional: Angularity symbol may be used for all orientation controls*
//	PARALLELISM		
∠	ANGULARITY		
⌖	POSITION	Location	Locates center points, axes and median planes for size features. Can also control orientation.
⌓	PROFILE OF A SURFACE		Locates surfaces Can also be used to control size, form, and orientation of surfaces based on datum reference
⌒	PROFILE OF A LINE		
⌰	TOTAL RUNOUT	Runout	Controls surface coaxiality Can also control form and orientation of surfaces.
↗	CIRCULAR RUNOUT		
◎	CONCENTRICITY	Location of derived median points.	Locates derived median points of a feature *Not common, consider position, runout, or profile.*
⌯	SYMMETRY		

Measuring Tools:

Height Gauge

- Understands how to zero the height gauge. Use the different attachments. Know how to use the height gauge to make measurements in English and Metric.

Surface Tester

- Know how to calibrate the surface tester. Check surface finish in English or Metric. Understands the different surface call out used on the blueprint.

Comparator

- Able to use the Comparator to make linear measurements, angles, and contours. Proper way to use the controls to prevent damage to the Comparator.

Measuring Tools cont.:

Micrometers

- Can use conventional measuring tools such as micrometers, bore gauges and groove micrometers.

Calipers

- Know how to calibrate the surface tester. Check surface finish in English or Metric. Understands the different surface call out used on the blueprint.

Miscellaneous Gauges

- Must understand the use of other gauges used to inspect parts such as radius, thread, pin, and job specific gauges.

KOMO Setup

ALWAYS VERIFY THE SETUP, PROGRAM OR CHANGES TO THE PROGRAM BY SINGLE BLOCKING THROUGH THE PROGRAM.

IF A MACHINE CRASHES YOU ARE RESPONSIBLE!

Tooling

- Must understand the various used for routing operations, this includes the Ag Head and Flouting Head. Understands how to setup the tools in the machine. Can set the tool length and radius comp for each tool. Can set the head spacing required for each setup.

KOMO Operation

- Must know how to properly deck a spoil board and be able to construct L's for running cut to size parts. Know how and when to use the different gasket materials used on routing.

Setting X and Y

- Knowhow to set the X and Y location on the spoil board for the most efficient setup and adjust these setting as needed.

Trouble Shooting

- Make offsets to bring the part within tolerances called out on the print. Understand how to correct common problems encountered during router operation, such as edge finish, chipping, or vacuum issues.

Lathe Setup

ALWAYS VERIFY THE SETUP, PROGRAM OR CHANGES TO THE PROGRAM BY SINGLE BLOCKING THROUGH THE PROGRAM.

IF A MACHINE CRASHES YOU ARE RESPONSIBLE!

Tooling

- Understanding of the various tools used for turning operations. Setup the tools in the machine for the best results. Can set the X and Z offsets, radius comp, and tool type for each tool. Indicate in tools for alignment and centering.

Jaws

- Understand which jaws to use for each application. Know what jaw pressure should be used for each application. How to bore jaws that need reconditioned.

Zero set

- Understand how to set the Z on the machine for the best results. Know how far the part should be from the jaws for different applications and knows how to adjust the zero.

Trouble Shooting

- Be able to make offsets to bring the part within tolerances called out on the print. Have an understanding on how to correct common problems encountered during lathing operation, such as wrap-up, chattering, or tool defection.

Lathe Bar Feeder:

Liners

- Understand the correct liners to use for the stock and know how to change out the liner.

Loading

- The proper way and length to cut the stock for use in the bar feeder. Know how to properly load the stock into the bar feeder.

Settings

- Understanding how to set the function and stock diameter, part length, and top cut on the Bar Feeder control.

Lathe Bar Feeder cont.:

Operation

- How to activate the controls so that the bar feeder runs in automatic. Knowing the program command that operates the bare feeder.

Trouble Shooting

- Capable of running the bar feeder manually and restart.

Mill Setup

ALWAYS VERIFY THE SETUP, PROGRAM OR CHANGES TO THE PROGRAM BY SINGLE BLOCKING THROUGH THE PROGRAM.

IF A MACHINE CRASHES YOU ARE RESPONSIBLE!

Tooling

- Understanding of the various tools used for milling operations. Knowing how to setup the tools in the machine for the best results. Can set the tool length and radius comp for each tool.

Zero Set

- Know how to set the X, Y, and Z locations for one or more fixtures. Make adjustment to fixture offset as needed.

Trouble Shooting

- Make offsets to bring the part within tolerances called out on the print. Understanding of how to correct common problems encountered during milling operations, such as chipping, chattering, or part movement.

Mill Fixtures:

Vices

- How are vises used to hold the part. Determine the depth the part being machine must be in the vise. Know the different methods of locating a part in the vise and how to set the X, Y, and Z for each fixture.

Vacuum Fixtures

- Must be able to assemble, deck, and finish a vacuum fixture. Know how to set X, Y, and Z location and how to gasket the fixture to hold the part properly. Know how to use L's with vacuum Fixtures.

Special Fixtures

- Know where to find and how to use job specific fixtures. Also be able to make special holding fixtures, such as plex jaws, pocket fixtures, and angle plates.

Indicating Fixtures

- Using a dial indicator to align vises, tombstones, or other fixtures.