Tools Required for
MILL ALIGNMENT & SETUP

CHECKLIST

☑ Ball Micrometer

Verifies the thickness of material being introduced to the mill. Also checks the thinning of the solder strips placed on the top of the material before each driven breakdown station, validating the pressure settings of the driven passes in the breakdown section.

☐ OD Micrometers

Checks the size of the tube out of each station during the setup. The micrometer is sized according to mill size. For example, if a mill is running a 2.000” O.D. tube, a 2.000-3.000” micrometer would be required.

☐ Depth Micrometer

Checks the offset, or parallel of driven and side rolls. For example, if a pair of driven sizing rolls are not parallel because the shaft shoulder is off, the depth micrometer determines the amount of offset so it can be corrected.

☐ Dial Calipers

Checks the strip width of the material before it is fed into the mill. Also measures the profile out of each side pass station, primarily in the breakdown and fin section, and compares it to the setup chart parameters. This tool is sized according to mill size.

☐ 6” Machinist Rule

Centers the strip before going into the first breakdown in conjunction with a straight edge. Also validates the centering of the side pass rolls with a straight edge off the driven passes, as well as validates the centering of the driven and side pass stations when using piano wire.

☐ Machinist Level

Verifies the level of mill bases, bottom and top driven shafts. Also levels side roll box units.

☐ Short Straight Edge

Verifies parallel of driven and side rolls. Often referred as a tool worth its weight in gold, many operators will not run a tube mill without it. Offers one of the most accurate mechanical ways to check setup and alignment. This tool is sized according to mill size.

☐ Long Straight Edge

Verifies the shoulder alignment of multiple driven stands. It’s recommended to place the straight edge across at least three driven stands (three breakdown stands, three fin stands, and/or three sizing stands). This tool is sized according to mill size.

☐ Cross Test Level

Verifies the level and plumb of rolls. Also useful as a mini straight edge to check parallel of driven and side rolls close to the rim clearance.

☐ Telescoping Gauges

Sets and records the wide rim clearances found in the side passes in the breakdown section of most mills. They also check the bore of tooling and bearing sleeves of the outboard stand, etc.

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☐ Diameter Tape

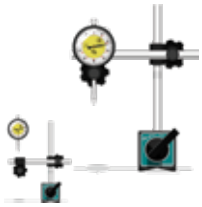
Primarily checks outside measurement (OSP) of the formation out of the fin passes and compares them to the figures outlined on the setup chart.
Also known as pie tape.

☐ Shoulder Alignment Tool (SAT)

Verifies the alignment of the driven shaft's shoulders. This tool is sized accordingto mill size.

☐ Magnetic Base with Dial Indicator

Checks parallel of driven shafts. Also checks for bent shafts, run out on tooling, etc. Can also be configured to serve as a height gage.



☐ Feeler Gauges

Sets and records rim clearances in the driven and side roll passes.

☐ Measuring Tape

Measures various areas on the mill and most commonly checks the length of tube or pipe coming off the mill.

☐ Digital RPM Tachometer

Coordinates the motor drives of mills that are equipped with two and three motor drives. Also verifies and matches ratios between transmissions and tooling, primarily in the breakdown section.

☐ Piano Wire Winch

Verifies alignment of the entry table, driven passes, side passes, weld box, Turks head and cut off section of the mill. Also validates the metal line of the same.

☐ Shim Assortment

Serves as a temporary "fix" to compensate for misalignment of shaft shoulders on driven passes. These are sized for the mill kit.

☐ Pen Light

Checks for gaps when verifying parallel of driven or side rolls. Used in conjunction with the straight edge.

☐ Small Calculator

Calculates the RPM formula for those mills that have two and three motor drives. Also determines shim thickness under bottom shaft from tooling that has been reworked on those mills equipped with universal stands.

☐ 0-1.000" Sheet Metal Micrometer

Measures for thinning of strip after each breakdown pass to ensure the breakdowns are not adjusted too tightly. Also measures incoming strip thickness.