

Application Report: Rotary Surface Grind / Acoustic Emission Repeatability

MACHINE: Accura 1210RSG

WORKPIECE: Bearing (inner)

OPERATION: Face grind

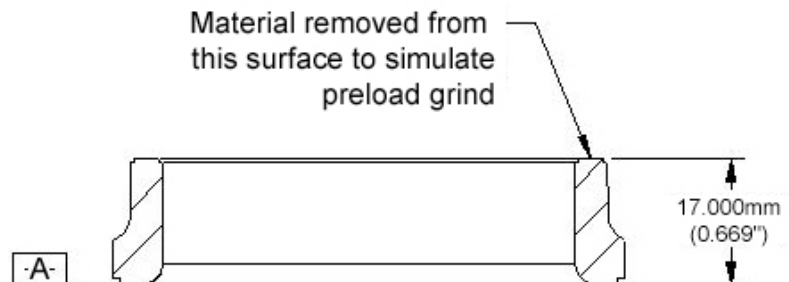
MATERIAL: 52100 (hardened)



OBJECTIVE: Utilize 1210RSG's acoustic emission (AE) option to achieve under ± 0.0025 mm sensing the surface of a rotary ground workpiece.

($\pm 0.0001''$) repeatability on

DESCRIPTION: The 1210RSG, while monitoring a high-speed signal from the AE unit, auto-cycled a face grind procedure by plunging the grinding wheel (-Z direction) toward the workpiece. The high speed AE signal was used by the control system to instantaneously stop infeed motion momentarily after the wheel contacted the part. The small amount of stock removed during this process was quantified with an independent gage. Prior to each grind the gage was zeroed on the part's surface to be ground. After grind, the amount of stock removal was determined by again measuring the height of the part with the (zeroed) gage.



RESULTS

STOCK REMOVAL DEVIATION (6σ):	± 0.00084 mm ($\pm 0.000033''$)
STOCK REMOVED (avg.):	0.0019 mm (0.000076'')
SPC ANALYSIS:	2.97 CPK based on ± 0.0025 ($\pm 0.0001''$) tolerance
NUMBER OF SAMPLES:	29
CYCLE TIME (typ.):	40 seconds
FIXTURE:	Magnetic chuck (permanent)
WHEEL TRUING / DRESSING:	Diamond nib