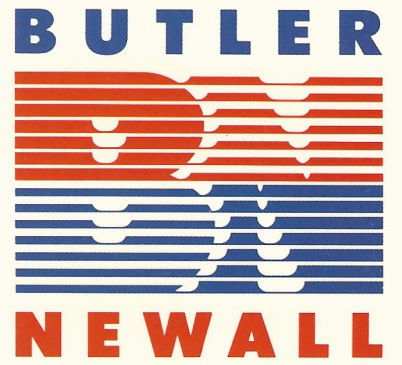


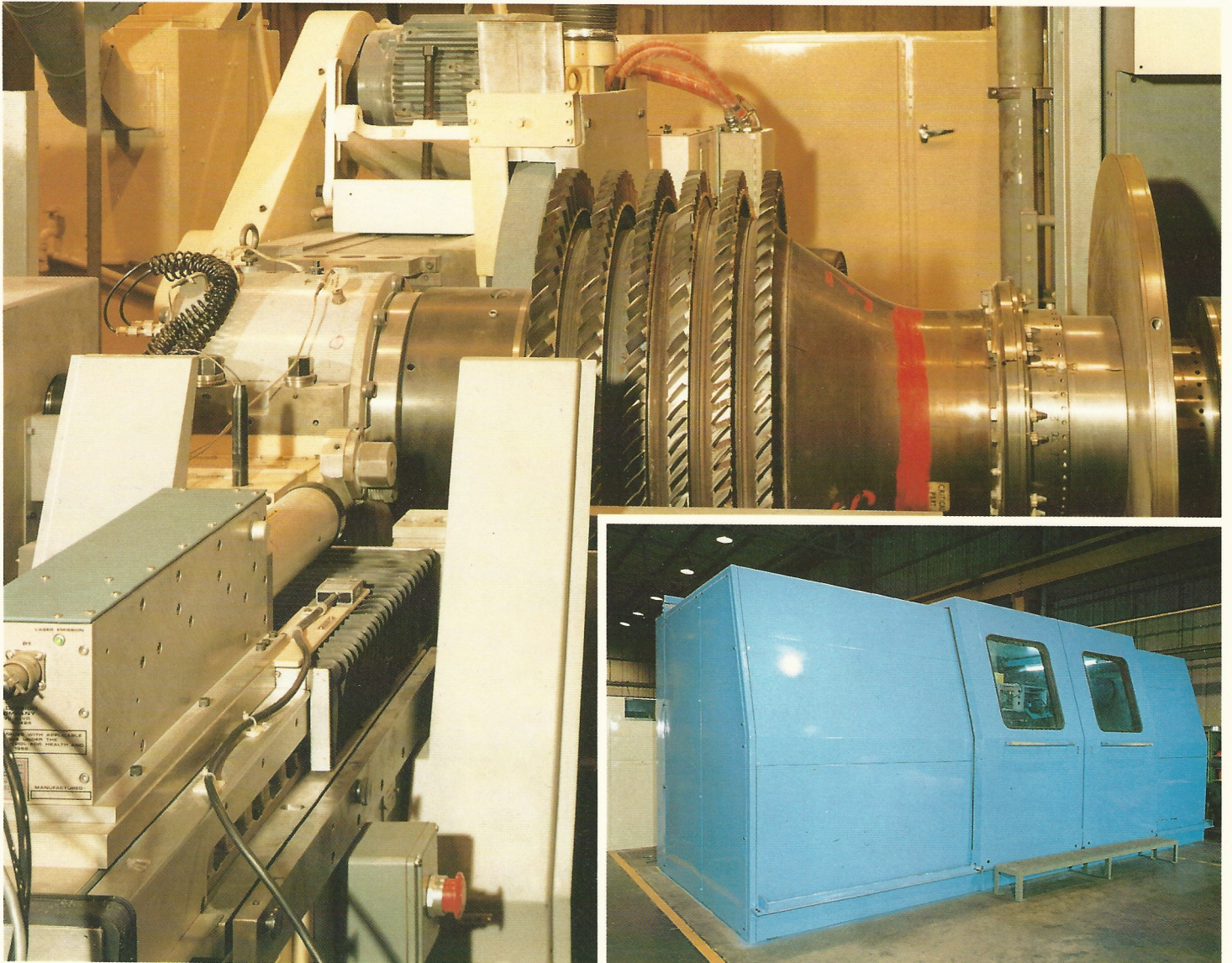
The Butler Newall Blade Tip Grinding machine has been specifically designed to meet the OEM and airline operators requirements to grind the rotor blade tips of modern jet engines.

Whether in a final assembly or an overhaul environment, the accuracies demanded require a high speed grinding process: One that ensures that all the blades are properly seated and flexed throughout the grinding and measuring cycles.

With over 20 installations worldwide, backed by the experience of grinding all the major commercial rotors, Butler Newall's tip grinding capability is beyond question. Specifically designed for the task and evolving to meet new requirements, the Butler Newall blade tip grinding machine is the means to control your stator to tip clearances.



B T G B L A D E T I P G R I N D E R





GENERAL DESCRIPTION

The machine has a two piece dovetail bed on which are mounted the worktable and wheelhead assembly.

The work table traverses on vee and flat slideways driven by an a.c. servo motor through a precision ballscrew. Mounted on the work table are the work fixture pedestal assemblies.

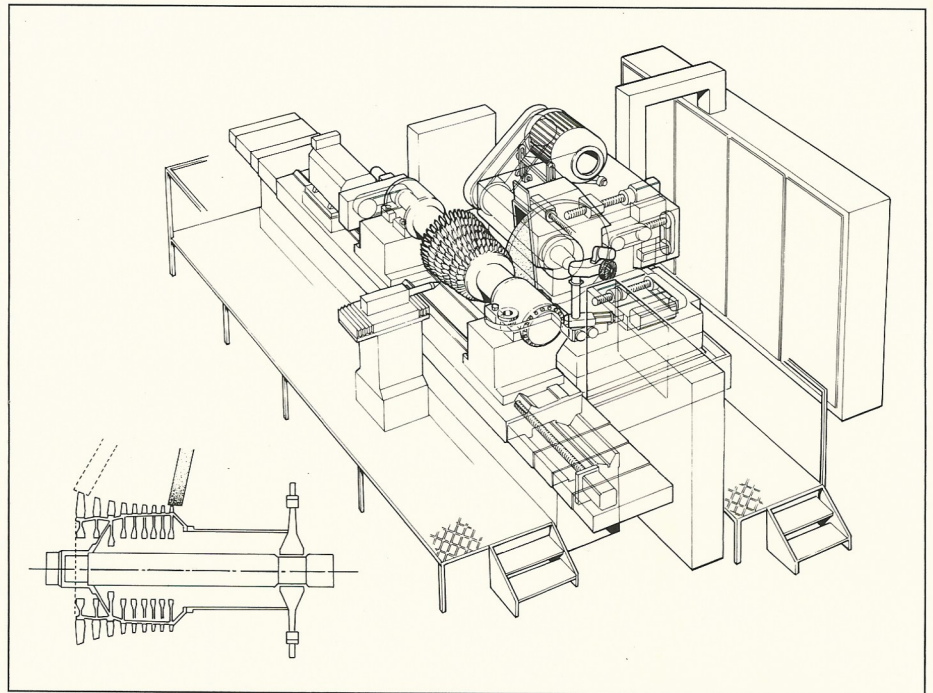
The wheelhead assembly traverses towards the rotor on vee and flat slideways driven by an a.c. servo motor through a precision ballscrew. Mounted on the feed slide is a swivel slide which rotates the wheelhead assembly, about a vertical roller bearing pivot point tangential to the grinding wheel face. Mounted above the swivel slide is the wheelhead compensation slide. This corrects for the positioning of the wheel to compensate for wheelwear during grinding and dressing.

The wheelhead spindle is of cartridge construction, incorporating grease-packed SKF bearings which allow the wheel spindle to be changed quickly.

Wheel dressing is performed by a diamond roller dresser attached to the rear of the wheelhead and advanced by a ballscrew. The work drive is mounted onto the work table, having a d.c. variable speed drive and coupling arrangement to suit the particular application. Precision chucks hold the rotor during grind and are seated in two grease packed spindle bearing assemblies. The rotor can be loaded by utilising either a floor or table mounted loading fixture.

An impregnated nylon brush is attached to the wheelhead and allows the machine to carry out a fully automatic deburr cycle once grinding is complete.

A laser gauge is fitted as standard to the machine and allows for in-process and post-process gauging. The gauge can provide a printout indicating maximum, minimum, average and individual blade measurement. Used in conjunction with the machine control, Fanuc 150M, the dimensions can be used to create a production system database.

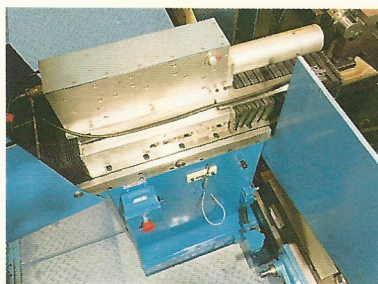


SPECIFICATION

Typical specifications are as follows:-

| | Metric (mm) | Imperial (inch) |
|----------------------------|-----------------|--------------------------|
| Capacity | | |
| Height of work centre line | 635 | 25 |
| Maximum ground diameter | 1000 | 39 |
| Maximum ground length | 1500 | 59 |
| Maximum centre distance | 2000 | 78.7 |
| Maximum installed power | 100 kva | |
| Wheelhead | | |
| Grinding wheel | 762 x * x 304.8 | 30 x * x 12 |
| Wheel speed | 33 m/s | 6500 sfm |
| Plunge feed rates | | programmable |
| Maximum speed per minute | 5000 | 200 |
| Maximum angle movement | | -1 degree to +20 degrees |
| Work spindle speed | | maximum 6000 |
| Machine Control system | | |
| Fanuc 150 M | | |

*Dependent upon blade widths.



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