

Intermediate Boring Alfing AT200 Machine



Table of contents	Page
ALFING Intermediate boring AT200	2
1.1 Machining volume	2
1.2 Basic machine.....	2
1.2.1 Machine	2
1.2.2 Electric Controls	4
1.2.3 Coolant supply inside the machine	4
1.2.4 Hydraulic System	5
1.2.5 Pneumatic System	5
1.2.6 Lubrication System.....	5
1.2.7 Machine color.....	5
1.3 Accessories	5
1.3.2 Tool Breakage Control	5
1.4 Peripheral Equipment.....	6
1.5 Other Comments.....	6
1.6 Layout & Picture.....	6

ALFING Intermediate boring AT200

1.1 Machining volume

Intermediate boring with 1 machine for the following machining task:

- Intermediate boring crank bore
- Mill and chamfer lock notch
- V-Shape mill

Production data 1st

Number of components per clamping position	1 Clamping plates, each 4 clamping nests
Machine run time	20 sec (approx. 850.00 Parts per year)
Number of machines for required production	1 AT200
Process cooling	Emulsion

Suited for exhaust of emulsion mist.

Pre-separation of rough dirt particles by bump and expansion chamber.

Simple filter exchange by quick clamping equipment.

Cleaning degree at:

- particle size $\geq 0,3 \mu\text{m}$
- separation degree 99.997%
- exhaust power 1200 Nm³

1.2 Basic machine

1.2.1 Machine

1 1.000.0052 Intermediate boring machine AT200

Highly productive versatile machine for various machining operations with small workpieces, e.g. the intermediate machining of conrods after cracking and assembly, prior to fine boring.

- Faster and less complex than a comparable machining center
- 4 tools per spindle
- No risk of chips between tool flange and spindle
- Many components and features shared with fine boring machine AF 400

The machine features high flexibility for machining of a wide part range. Component loading and unloading manually or automatically according to choice. Component machining is realized fully automatic. The machine will be completely installed and commissioned on Alfing site

Connected load	approx. 100 kVA
Machine weight incl. chip conveyor, without coolant plant, hydrostatic supply and chillers	approx. 22 t

Max. workpiece dimensions:

The following dimensions describe the work envelope of the machine. To make full use of this work envelope, fixtures and tools may be necessary in addition to those quoted.

- Overall length: 295 mm
- Centre distance: max. 200 mm
min. 130 mm
- Diameter Crankbore: max. 80 mm
- Diameter Pinbore: max. 40 mm
- Thickness: max. 35 mm

1 1.201.0130 Z Axis

The horizontal Z axis features a directly driven ball screw spindle and roller guideways.

Z-axis with:

- Stroke: 800 mm
- rapid traverse: 40 m/min
- Smallest programmable increment: 0,001 mm
- absolute and directly effecting glass scale with air seal

1 1.202.0116 X-Axis

The horizontal X axis features a directly driven ball screw spindle and roller guideways.

X-axis with:

- Stroke approx. 300 mm
- rapid traverse: 50 m/min
- absolute and directly effecting glass scale with air seal
- Smallest programmable increment: 0,001 mm

1 1.202.0200 Column unit for Y-axis

The vertical Y-axis features double axis drives in gantry configuration with directly driven ball screw spindles and roller guideways.

Y-axis with:

- Stroke: 300 mm
- rapid traverse: 30 m/min
- absolute and directly effecting glass scales with air seal
- Smallest programmable increment: .001 mm

1 1.206.0300 A axis

The fixture tombstone is mounted at the horizontal rotary A axis. The A axis offers the optimum fixture position both for loading/unloading and for machining. Rotation of the A axis helps to dump chips and coolant at the chip conveyor.

The A axis is a direct drive design. A synchronous torque motor drives the axis without any gear or coupling. Position feedback is realized via a precision angular measuring system with absolute encoding. The smallest programmable increment is .001 degrees.

This design features high long-term precision without backlash and high acceleration.

The A axis is mounted to a vertical slide (axes Y1 and Y2) at each end. This symmetric design offers maximum accuracy of the machine.

1 1.301.0021 Clamped control via oil flow measurement

Equipment for control of component clamping by measurement of oil flow during movement of clamping claw in loading position.

Designed for monitoring of up to 4 components per fixture.

2 **2.401.0250** *Turret (Revolver Head) for 4 boring spindles*

Turret heads with the following specifications (for each head):

Number of positions (=tool spindles): 4

Tool shank: HSK-C 63

Spindle horsepower: 20 kW

Spindle torque: 250 Nm

Spindle speed: max. 6000 RPM

Spindle pitch between heads: 400 mm

Coolant through the spindle: yes

2*2 **2.401.0280** *Boring spindles for the turret*

Boring spindle useable in the turret with

- HSK-C 63

1.2.2 Electric Controls

1 **1.750.0050** *Machine control Siemens 840 D sl*

Electric control consisting of:

- NC control Siemens Sinumerik 840D sl NCU with integrated PLC S7-317,
- Functionally Safety via Profinet/Profisafe and Safety Integrated.

Control Cabinet and Voltage supply

Supply voltage according to country of operation and/or net of operation:

- 3 x 440V 50 Hz

1.2.3 Coolant supply inside the machine

1 **1.731.0460** *Coolant equipment inside the machine*

Comprises piping, switch devices for connection and operation of coolant supply within the machine as well as the rotary supplies for the main spindles.

1 **1.106.0055** *Chip Conveyor with Pumpback Station*

1 chip conveyor with chute at the rear of the machine, realized as scraper conveyor.

Chip discharge height approx. 1200 mm.

1 endless scraper conveyor, consisting of 2 chains connected by transport rails, continuously transports the material on the tank bottom to the discharge position. The scraper conveyor is driven by a three-phase gear motor with overload protection.

1 return pump which transports the dirty coolant into an adjacent coolant system or into the central return. The pump is turned on and off by float switch.

1.2.4 Hydraulic System

1 1.741.0610 Hydraulic unit

Hydraulic compact unit according to DIN 24339, form A for installation in customer's floor pan including accumulator and oil pan with one pump

- Total connected load: 2,2 kW
- System pressure: 140 bar
- Tank contents: 40 l

1.2.5 Pneumatic System

1 1.701.0600 Pneumatic maintenance unit

Pneumatic maintenance unit, consisting of:

- Connection to customer's net G1"
 - Air connection for supply line
 - Electr. shut-off valve
 - Pressure switch
-
- System pressure - customer side: min 5 bar
 - Air consumption: approx. 20 m³/h

1.2.6 Lubrication System

1 1.710.0600 Lubrication

Automatically operating single-line central lubrication system in stub line system. Pressure control by 2 pressure switches.

- Supply tank: contents 6 l
- System pressure: 30 bar
- Oil consumption: approx. 0,30 cm³/h

1.2.7 Machine color

1 1.071.0003 Machine color

Machine colour according to Alfining standard:

- Machine: RAL 7035 light grey
- Front: RAL 7021 black grey

Tool Breakage Control

1 1.755.0011 Tool Breakage Control for diameter greater than ø5 (Artis)

Extension of operating panel PC by a module make Artis genior. Suited for maintime-parallel monitoring of tool breakage via the effective power or the current of up to 4 spindle drive motors. 1 motor does not drive more than 2 spindles simultaneously. Operation via main operating panel of machine. Condition is the selection of the option „operating panel PC PCU 50“.

1.4 Peripheral Equipment

1.5 Other Comments

- No fixtures included
- No cover plates included
- No tooling included
- No Coolant unit
- No Automation

1.6 Layout & Pictures



