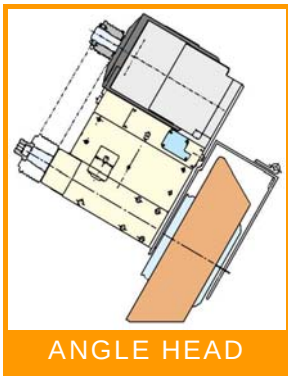
Okuma America Corporation

Productivity Proposal

GA-36FII

CNC EXTERNAL GRINDER - Base Kit

350, 650, 1000, 1500 beds



ANGLE HEAD

Appearance may vary based on final specification

Machine	Distance between Centers				Wheel Diameter
GA-36FII	350 mm (13.78 ins)	650 mm (25.59 ins)	1000 mm (39.37 ins)	1500 mm (59.05 ins)	610 mm (24 ins)

SUBJECT TO CHANGE WITHOUT NOTICE - **PROPOSAL BASED ON 17.10 STANDARD**

CAPACITY

GA-36FII

General

The Okuma GA-36F**II** CNC O.D. Grinding Machine can perform the following grinding applications.

- Center work and optional chuck work operations.
- Straight plunge, multi-plunge, cylindrical traverse, face plunge and tapered traverse grinding operations.
- Taper, arc and complicated form grinding.

The GA-36F**II** is controlled by the Okuma OSP control and is capable of simultaneous two-axis control. This model is extremely flexible in handling a wide variety of workpiece shapes in a simple data setting. Addition of automation accessories will make sure that the Okuma GA-36F**II** CNC O.D. Grinder is an excellent part of the most up to date Flexible Manufacturing System.

Accuracy Assurance

- The bed is designed to be thermally symmetric. In addition, coolant is directly disposed of from the grinding point to the rear of the machine using a duct to minimize thermal displacement of the machine.
- Decreased friction on the table and wheelhead guide ways ensures accurate infeed of sub microns. Furthermore, brushless AC servo motors developed on the basis of OKUMA's sophisticated CNC technology have a precision of 0.1 micron least command increment at a feedrate of 16 m/min. (52.5 ft/min.). Incorporation of this high technology results in high accuracy profile dressing and profile grinding.
- Wheelhead, table feed and the endwise face locator positioning is performed by entering the corresponding program data.

Wheel Spindle

The wheel spindle is rigidly supported by an Okuma hydrodynamic bearing (also called a non-concentric sliding bearing) on both the wheel side and wheel pulley side of the spindle. Wedge-shaped oil films give rigid support for the spindle for true-center rotation with a minimum of axis displacement.

The high load carrying capacity with excellent vibration dampening characteristics of the Okuma wheel spindle permits faster and heavier stock removal and shorter spark out times.

Temperature rise of the wheel spindle is maintained at "room temperature + 6.5^{o}C" through a variety of improvements. Furthermore, it is designed to minimize the displacement of the spindle center due to thermal deformation.

Axis Servo Drives

- Both X and Z axes are driven by the ultra-precise ball screws and pre-loaded.
- Ball screw nuts, center mounted between the ways for optimum drive conditions.
- The ∅40mm (1.57 in.) X-axis ball screw is implemented along a Turcite flat and V way.
- The ∅45mm (1.77 in.) Z-axis ball screw is implemented along a Turcite flat and V way.

SPECIFICATION

GA-36FII Standard Specifications

Item	Unit	Specifications			
MODEL		**GA-34FII**			
		350	**650**	**1000**	**1500**
CAPACITY:					
Swing over table	mm (in.)	∅330 (12.99)			
Distance between centers	Mm (in.)	**350 (13.8)**	**650 (25.59)**	**1000 (39.37)**	**1500 (59.05)**
Max. grinding dia.	mm (in.)	∅300 (∅11.81)			
Max. workpiece weight (centers)	kg (lb)	150 (330)			
Max weight -Chucking with Dead/Live workhead	kg x mm (lb x in)	40 x 200 (88 x 7.87)			
WHEEL SPINDLE:					
Wheel size(OD x W x ID)	mm (in.)	∅610 (24) x 135 (5.31) x 254 (10.00)			
Maximum peripheral speed	m/min. (fpm)	2,700 (8859)			
Max. wheel width for standard wheel flange.	mm (in.)	85 (3.35)			
Wheel speeds	rpm	Variable through inverter control			
WHEEL SLIDE (X AXIS):					
Setting angle (in reference to the Z axis)	degree	60			
Overall travel	mm (in.)	370 (14.57)			
Travel per pulse handle revolution	mm (in.)	∅0.1, 1.0, 5.0(0.01, 0.1, 0.5)			
Travel per pulse handle graduation	mm (in.)	∅0.001, 0.01, 0.05 (0.0001, 0.001, 0.005)			
Auto-infeed speed	mm/min.(ipm)	∅0.0012 -6,000 (0.00005 -236)			
Positioning speed	mm/min.(ipm)	16,000 (629)			
TABLE (Z AXIS):					
Overall travel	mm (in.)	**550 (21.65)**	**850 (33.46)**	**1200 (47.24)**	**1850 (72.83)**
Travel per pulse handle revolution	mm (in.)	∅0.1, 1.0, 5.0 (0.01, 0.1, 0.5)			
Travel per pulse handle graduation	mm (in.)	∅0.001, 0.01, 0.05 (0.0001, 0.001, 0.005)			
Auto-infeed speed	mm/min (ipm)	0.0006 - 6,000 (0.00002 - 236)			
Positioning speed	mm/min.(ipm)	16,000 (629)			

SPECIFICATION

GA-36FII Standard Specifications

Item		Unit	Specifications			
MODEL			**GA-36FII**			
			350	**650**	**1000**	**1500**
WORK SPINDLE (C AXIS)						
Center Hole			MT #5			
Spindle speed range		rpm	25~600			
FOOTSTOCK:						
Center taper (type size)			MT # 5			
Taper Adjustment Amount (manual)		mm (in.)	+/-0.08 (0.0031)			
Quill travel (hydraulic)		mm (in.)	70 (2.76)			
MOTORS:						
Wheel spindle motor		kW (hp)	15 (20) Option: 22 (30)			
Wheel slide (X axis) motor		kW (hp)	2.9 (3.9) BL motor			
Wheel slide (Z axis) motor		kW (hp)	2.9 (3.9) BL motor			
Work spindle motor		kW (hp)	3.6 (4.8) BL motor			
Hydraulic pump motor		kW (hp)	0.75 (1)			
Coolant pump motor		kW (hp)	0.4 (0.53)			
TANK CAPACITY:						
Coolant Tank		liter (gal)	200 (52.8)			
Wheel spindle lube tank		liter (gal)	20 (5.3)			
Table way lube tank		liter (gal)	4.2 (1.1)			
Hydraulic oil tank		liter (gal)	35 (9.2)			
MACHINE HEIGHT:		mm (in.)	2,000 (78.7)			
REQUIRED FLOOR SPACE - W x D *			(maintenance space not included)			
	350	mm (in.)	2,300 x 3,026 (90.55 x 119.13)			
	650	mm (in.)	2,995 x 3,026 (117.91x 119.13)			
	1000	mm (in.)	3,695 x 3,026 (145.47 x 119.13)			
	1500	mm (in.)	5,610 x 3,084 (220.86 x 121.42)			
MACHINE WEIGHT						
	350	Kg (lbs.)	6,600 (14,520)			
	650	Kg (lbs.)	7,300 (16,060)			
	1000	Kg (lbs.)	8,000 (17,600)			
	1500	Kg (lbs.)	9,000 (19,800)			

* Note. Floor space to be confirmed with detail machine specification

GA-36FII Standard Equipment and Accesories

ITEM	DESCRIPTION	TOTAL
Grinding System	A. Plunge (oscillation available) B. Multi-plunge (oscillation available) C. Simultaneous plunge (End face or OD & end face) D. Horizontal traverse E. Taper traverse & Profile grinding	1 set
End face	A. Plunge	
SIZING SYSTEM	Indirect sizing (w/program data)	1
BED	With machine lifting fixtures, jack screws, foundation washers	1
WORKHEAD	Dead Center	1
WHEELHEAD (X)	V and Flat ways. Wheel spindle lube: force feed w/ pressure check	1 set
Wheel guard	∅610 (24) x 135 (5.31), open /close and easy install/remove type.	1 set
NC WORK LOCATOR	Marposs. Measuring head; wheelhead mounted; hydraulic swivel drive type with confirmation.	1 set

BASE MACHINE SPECIFICATION

OKUMA GA-36FII

CNC Angle Head Grinder
with OSP-P300GA Control

GA-36FII USA Standard Specifications		350	650	1000	1500
1	Inch spec	1 set	1 set	1 set	1 set
2	Plate： English	1 set	1 set	1 set	1 set
3	Color： 2011 STD	1 set	1 set	1 set	1 set
4	Dead center workhead MT5	1 set	1 set	1 set	1 set
5	Tailstock quill stroke： 70 mm	1 set	1 set	1 set	1 set
6	Wheel spindle motor： 15 kW	1 set	1 set	1 set	1 set
7	Grinding wheel speed： 45 m/sec	1 set	1 set	1 set	1 set
8	Coolant tank 200L and separator SMF8	1 set	1 set	1 set	1 set
9	Wheel dressing device	1 set	1 set	1 set	1 set
10	Diamond tool： D5	1 set	1 set	1 set	1 set
11	Coolant nozzle	1 set	1 set	1 set	1 set
12	Wheel flange: width 35 - 85mm	1 set	1 set	1 set	1 set
13	Carbide-tipped center： MT No.5	2 sets	2 sets	2 sets	2 sets
14	Hydraulic oil-lube tank	1 set	1 set	1 set	1 set
15	Full-enclosure shielding	1 set	1 set	1 set	1 set
16	Preparation of Amplifier for process control (Marposs, P5)	1 set	1 set	1 set	1 set
17	Wheelhead attachment Marposs, T25G	1 set	1 set	1 set	1 set
18	Door interlock	1 set	1 set	1 set	1 set
19	IEC standard	1 set	1 set	1 set	1 set
22	UL prep spec	1 set	1 set	1 set	1 set
21	Transformer 220-480V	1 set	1 set	1 set	1 set
22	Spare parts： A rank	1 set	1 set	1 set	1 set
23	Balancing arbor	1 set	1 set	1 set	1 set
24	Lifting tool	1 set	1 set	1 set	1 set
25	Manuals (1set of book style and 1set of CD)	2 sets	2 sets	2 sets	2 sets
26	Pulley cover for auto wheel balancer	1 set	1 set	1 set	1 set

OSP-P300GA Base specification See OSP-P300GA General Proposal					
	Plus following additional specifications				
1	TFT color	1 set	1 set	1 set	1 set
2	OSP-P300GA I-GAP-D kit	1 set	1 set	1 set	1 set
3	I-GAP+	1 set	1 set	1 set	1 set
4	User task 2	1 set	1 set	1 set	1 set
5	Programmable message function	1 set	1 set	1 set	1 set
6	Real 3D simulation	1 set	1 set	1 set	1 set
7	3-step status indicator lamp： Type C	1 set	1 set	1 set	1 set
8	NC operation monitor	1 set	1 set	1 set	1 set
9	Displays wheel change indication	1 set	1 set	1 set	1 set
10	Displays wheel change warning	1 set	1 set	1 set	1 set
11	Auto grinding wheel straightening	1 set	1 set	1 set	1 set
12	Cycle time reduction	1 set	1 set	1 set	1 set
13	Inch / metric switchable	1 set	1 set	1 set	1 set
14	RS232C 1ch	1 set	1 set	1 set	1 set
15	MTconnect	1 set	1 set	1 set	1 set
16	API Library	1 set	1 set	1 set	1 set
17	AC100V power supply (yojitsu#12405)	1 set	1 set	1 set	1 set