ARTER

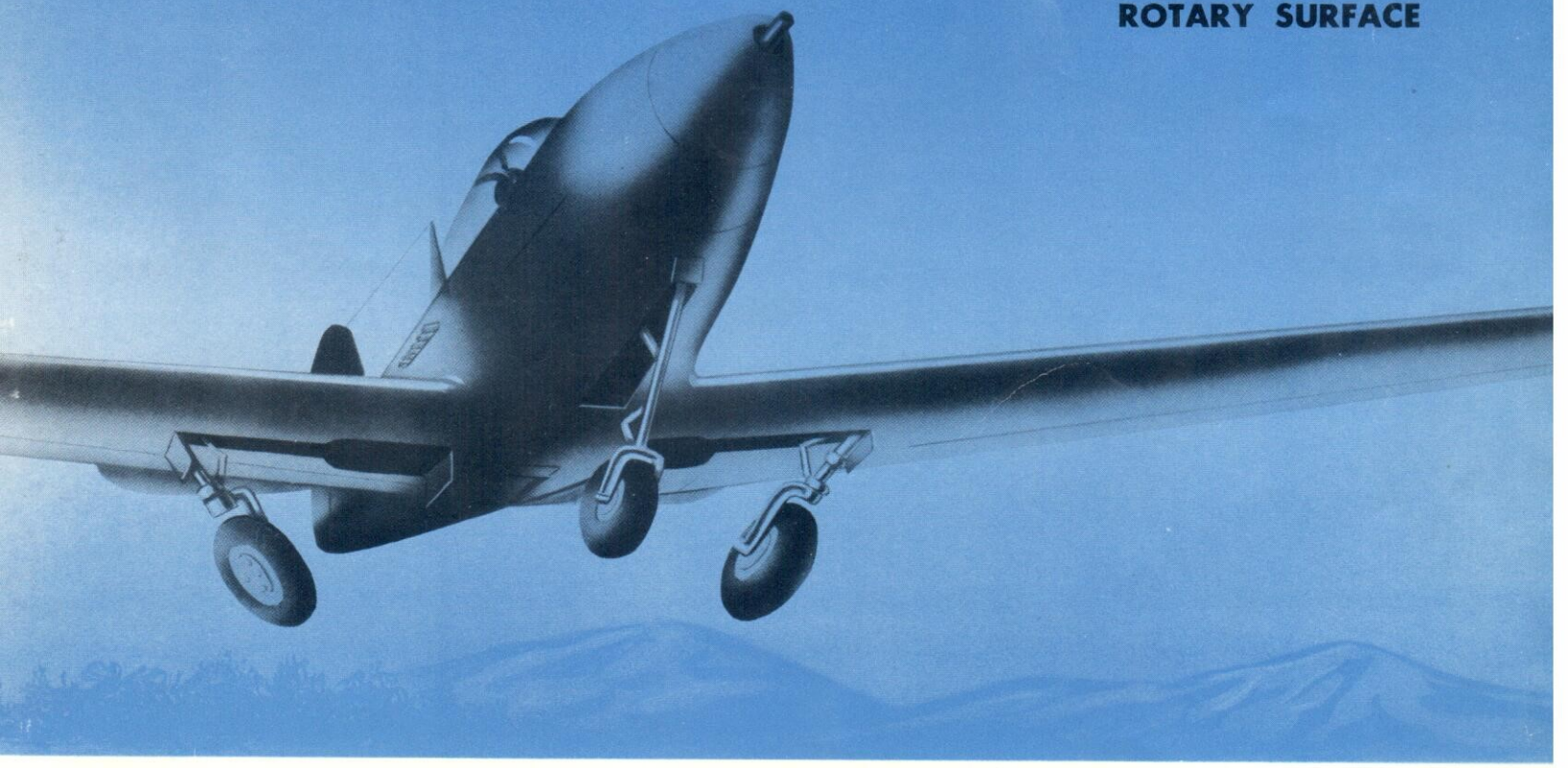
PRECISION GRINDING MACHINES

AUTOMATIC CYLINDRICAL

CARBIDE TOOL GRINDER

EXTERNAL - INTERNAL

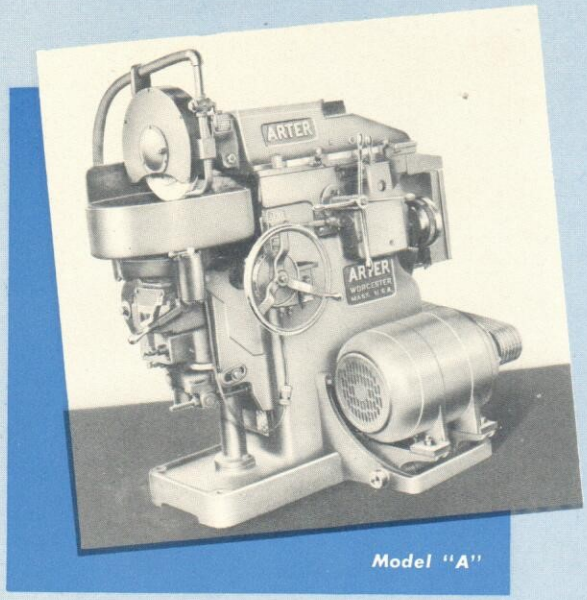
ROTARY SURFACE



ARTER

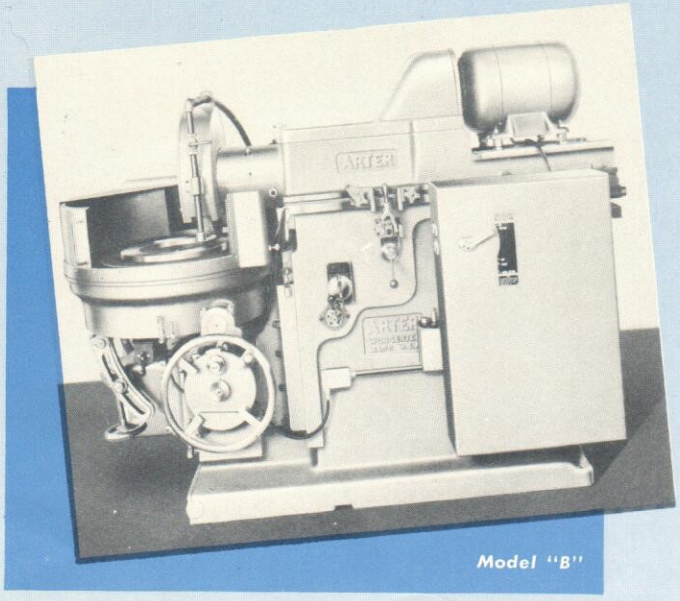
ARTER GRINDING MACHINE COMPANY-WORCESTER, MASS.

PRECISION GRIN



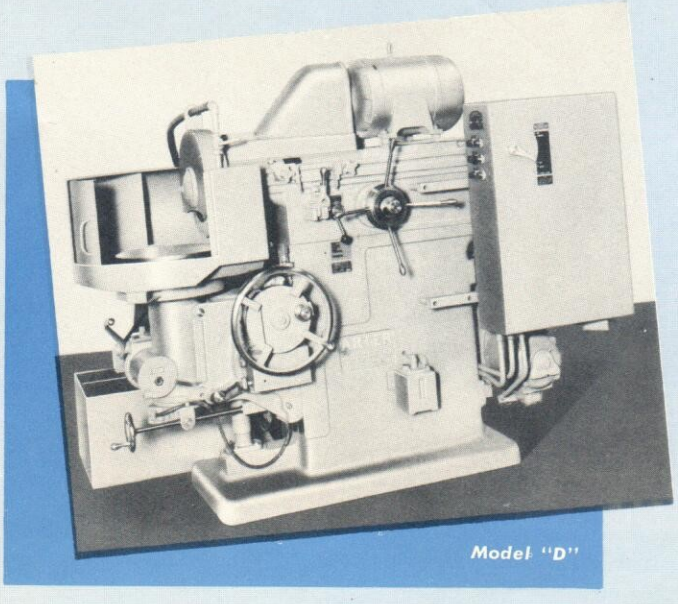
Model "A"

Model "A" Rotary Surface Grinders have been built by Arter for 35 years. Grinding is done on the periphery of the wheel, the work being held by a rotating chuck. Two sizes are offered, one with an 8" diameter electric magnetic chuck, the other with a 12" chuck. This model has three chuck speeds and for each speed, three wheel slide traverse speeds are available. The drives to the chuck and to the slide are primarily by a flat belt running over three step pulleys. The wheel spindle is mounted in straight-holed, split, adjustable bronze bearings. End thrust is taken on a collar running between bronze discs. Bearings are positively oiled by throwers positioned in the reservoirs adjacent to each bearing. The work table is hung in a slide, mounted on dovetailed ways. The table can be tilted for grinding external tapers or bevels and internal tapers or reliefs. The chuck spindle runs in a self-centering, conical bearing at the top and a straight-holed, adjustable bronze bearing at the bottom.



Model "B"

Model "B" Rotary Surface Grinders are built in four chuck capacities 20", 24", 30" and 40". The machines are mainly hydraulically operated, the wheel slide being moved by a piston, the chuck is driven primarily by an hydraulic motor, and hydraulic means are employed for automatic, work table elevating feed. Vickers motor, pumps and valves are used. The magnetic chuck runs on a flat circular track bearing, thus providing rigid support for the work, regardless of the weight, position on the chuck, or wheel pressure. The work table can be tilted for grinding internal or external tapering surfaces. The oil tank for the hydraulic system is positioned on the floor behind the machine. The wheel spindle is mounted at the front in a steel-backed, babbit-lined bearing, 3" in diameter by 12" long. The rear bearing is a precision double row ball bearing. The spindle pulley is driven by multiple vee belts from a 10 h.p. motor. As extra equipment, a motor driven arrangement can be supplied for raising and lowering the work table.

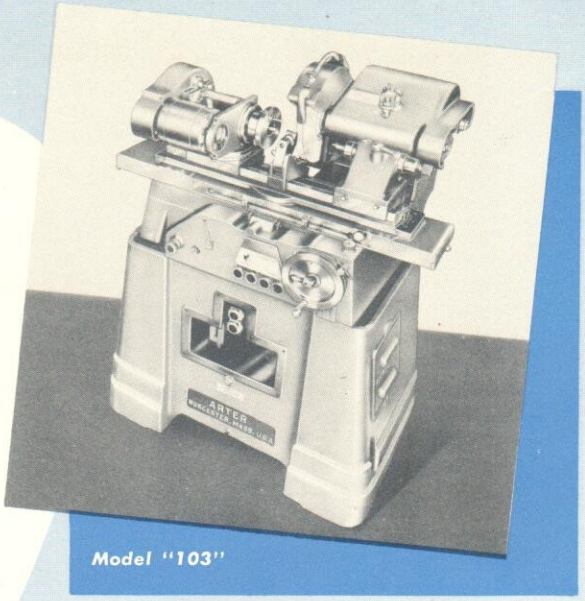


Model "D"

Model "D" Rotary Surface Grinders are built in two chuck capacities, 12" and 16". A 7½ h.p. motor, precision balanced, mounted on the wheel slide delivers full power by multiple vee belts, to the wheel spindle. The wheel slide is moved hydraulically on wide flat and vee ways, automatically lubricated and which extend forward of the front wall of the base. The piston rod and the wheel spindle axis are in the same horizontal plane as the ways. This construction gives greater support and stability to the wheel slide, particularly when extended over the work. The wheel spindle is mounted at the front in a long steel-backed babbit-lined bearing, and at the rear in a double row precision ball bearing. The work table slide has widely spaced dovetailed ways, automatically lubricated. Hand and automatic feeds are provided. The work spindle is mounted, top and bottom in double row precision ball bearings. The primary drive to the spindle is a U. S. Electric Vari-Drive unit mounted on the end of the machine and giving stepless speeds from 60 to 250 r.p.m. The hydraulic oil tank is hung on the rear wall of the machine, a gear pump providing power pressure.

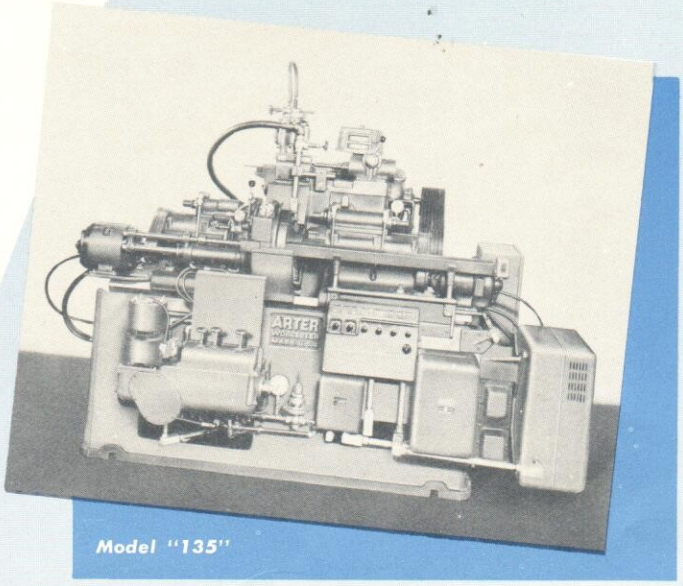
DING MACHINES

Model "103" is a dual purpose external cylindrical and internal grinding machine. It can be purchased as an external grinder only, or as an internal grinder only. Convertible equipment can be purchased at any time. The machine has hydraulic table movement and hydraulic means for automatic infeed of the wheelhead through worm and worm wheel and a screw. The work table, wheelhead and headstock can be swivelled for grinding angular work. Face grinding also is possible. Separate wheelhead units are furnished for internal and external grinding. The machine is self contained, the coolant tank and pump as well as the hydraulic oil tank and pump being within the base. Various work holding accessories can be provided for work common to toolrooms or for precision production grinding, external or internal. The internal wheelhead is bored 3" to take spindle assemblies of either 15000 or 32000 RPM. Spindles are mounted in ball bearings and have sealed-in grease lubrication. The cross feed will operate automatically at either or both ends of the worktable stroke even with both dogs at the minimum setting. A graduated knob controls the table speed. Maximum feed is .005", minimum is .0001" at each table reverse. Hand feed is by means of a wheel, graduations being .001". A separate hand knob gives feeds of .0001" on work diameter. The table is reversed by dogs operating a micro switch and solonoid valve. Reversals can be made within less than 1/8" table movement and the reversal positively and repeatedly made within a distance of .005" on the work.



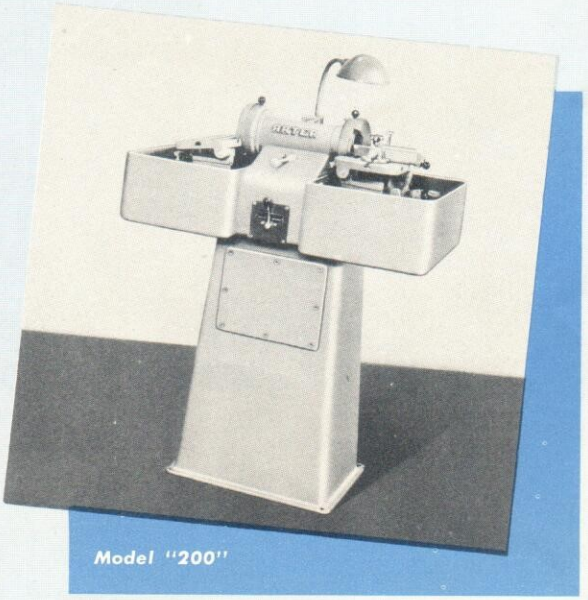
Model "103"

No. 135 Automatic Cylindrical Grinder — Grinds by the straight-in or plunge-cut feed method, straight or tapered diameters such as are presented on roller bearings, valve stem guides, tappets, pistons, piston pins, bushings, shafts and similar work which can be held on centering devices. It cannot be arranged to grind shoulders at the same time as diameters. A work turret or carrier having a plurality of holes is used. Work is loaded into the turret by hand. As the turret indexes to the grinding position the live centers, or collets automatically pick up and drive the work. A section of the turret is cut away so that the wheel, which moves in automatically, can contact the work and grind it to size. Successive indexing movements bring the work to a chute onto which it is automatically discharged. All movements are synchronized and easily and accurately timed.



Model "135"

The Arter Imperia Carbide Tool Grinder Model 200 offers something new in a method of grinding carbide tools. The work table, with the tool held by hand or in a holder is moved across the face of the grinding wheel. Tool feed is accurately controlled by screw feed to the work table. In the same machine the chip breaker grind can be made by moving the wheel up and down. The work table can be tilted to the angle required and the protractor type tool holder locates the tool in the correct angular relation to the wheel. By this method, tools are repeatedly ground to the specified angles, which have become so very important in obtaining satisfactory performance and longer tool life between grinds. Contrast this method with sliding tools along a work table and feeding by hand pressure where if the shank is rough and not straight, or if the table is worn out of flat, the cutting face of the tool will not be straight. Hand pressure feed cannot be uniform and this with tools loosely held, can cause cracks in the tool surface and possible damage to an expensive diamond wheel.



Model "200"

SPECIFICATIONS

MODEL "A" ROTARY SURFACE GRINDERS

	8"	12"
Surface Diameter of Magnetic Chuck	8½"	13"
Greatest Swing Inside Water Pan	11"	16"
Vertical Capacity—Full Diameter Wheel	9"	9"
Tilt of Work Table for Convex Grinding	10°	12°
Tilt of Work for Concave Grinding	10°	8°
Diameter of Grinding Wheel—1" wide, 8" hole	14"	14"
Chuck Spindle Speeds	86-156 283	53-86-174
Main Shaft R.P.M.	500	500

	8"	12"
Wheel Spindle R.P.M.	1500	1500
Main Drive Motor 1800-1500 R.P.M.	5 HP	5 HP
Coolant Tank Capacity	24 Gals.	24 Gals.
Net Weight	3400	3600
Crated Weight	3800	4000
Boxed Weight (Cubic feet 8"-168, 12"-168)	4300	4600
Floor Space Occupied	70"x70"	72"x70"

MODEL "B" ROTARY SURFACE GRINDERS

	20"	24"	30"	40"
Surface Diameter of Magnetic Chuck	21"	25"	31"	40"
Greatest Swing Inside Water Pan	26"	30"	38"	44"
Vertical Capacity Full Diameter Wheel	8"	8"	8"	6¼"
Tilt of Work Table for Convex Grinding	10°	10°	10°	10°
Tilt of Work Table for Concave Grinding	10°	10°	10°	3°
Diameter of Grinding Wheel, 12" hole	20"	20"	20"	20"
Width of Grinding Wheel	2"	2"	2"	2"
Main Shaft RPM	420	420	420	420
Wheel Spindle RPM	950	950	950	950

	20"	24"	30"	40"
Wheel Spindle Drive Motor 1800-1500 RPM	10 HP	10 HP	10 HP	10 HP
Hydraulic Drive Motor 1800-1500 RPM	7½ HP	7½ HP	7½ HP	10 HP
Coolant Tank Capacity	55 Gals.	55 Gals.	55 Gals.	55 Gals.
Hydraulic Tank Capacity	50 Gals.	50 Gals.	50 Gals.	50 Gals.
Net Weight	9000	9500	10000	10700
Crated Weight	9500	10000	10700	11600
Boxed Weight	10600	11300	12000	13000
Cubic Feet, Boxed	300	310	333	376
Floor Space, Occupied	94"x87"	96"x87"	100"x87"	120"x87"

MODEL "D" ROTARY SURFACE GRINDERS

	12"	16"
Surface Diameter of Magnetic Chuck	13"	17"
Greatest Swing Inside Water Pan	25"	25"
Vertical Capacity-Full Diameter Wheel	9"	9"
Tilt of Work Table, Concave	10°	10°
Tilt of Work Table, Convex	20°	20°
Diameter of Grinding Wheel (1½" wide, 8" hole)	16"	16"
Chuck Spindle Speeds (Stepless)	60 to 250	60 to 250
Wheel Spindle Speed	1400	1400
Wheel Spindle Drive Motor (10 H. P. optional)	7½ HP	7½ HP
Chuck Spindle Drive Motor (U. S. Electric Vari-drive)	2 HP	2 HP

	12"	16"
Hydraulic System Motor	2 HP	2 HP
Coolant Pump Motor	¼ HP	¼ HP
Hydraulic Tank Capacity	14 Gals.	14 Gals.
Coolant Tank Capacity	55 Gals.	55 Gals.
Net Weight	6000	6200
Crated Weight	6800	7000
Boxed Weight for Export	7800	8000
Cubic Feet	233	233
Floor Space Occupied	84x60	84x60

MODEL EG-103 EXTERNAL CYLINDRICAL AND MODEL IG-103 INTERNAL GRINDERS

	(EG)	(IG)
Capacity, diameter, maximum	3" O.D.	3" I.D.
Capacity, between centers	8½"	—
Capacity, depth of hole	—	4"
Swing, over table	9" Dia.	9" Dia.
Table travel	9½"	9½"
Table speeds, hydraulic	4" to 100" F.P.M.	4" to 100" F.P.M.
Table swivel, in or out	5°	5°
Wheelhead travel, total	3"	3"
Wheelhead feed, automatic, maximum	.0005"	.0005"
Wheelhead feed, automatic, minimum	.0001"	.0001"
Wheelhead feed, graduations, hand knob	.0001"	.0001"
Wheelhead swivel, right or left	15°	15°
Wheel Spindle speeds, by belt change	2320 or 2880 RPM	—
Wheel Spindle speeds, as selected	—	15000 or 32000 RPM
Wheel, grinding, standard	10"x¾"x1¼" hole	none
Workhead speeds, by belt change	224-475-600 RPM	224-475-600 RPM

	(EG)	(IG)
Workhead swivels (graduated 45° R and L)	90°	90°
Workhead—Takes 5C collet	1" maximum	1" maximum
Workhead—Takes step chuck	3" maximum	3" maximum
Workhead—Takes face plate	8" maximum	8" maximum
Workhead—Takes jaw chucks	4" maximum	4" maximum
*Motors, Wheelhead, 3450 RPM	¾ HP	¾ HP
*Motors, Workhead, 1725 RPM	⅛ HP	⅛ HP
*Motors, Hydraulic Pump, 1725 RPM	¼ HP	¼ HP
*Motors, Coolant Pump	⅛ HP	⅛ HP
Tank, coolant capacity	12 Gals.	12 Gals.
Tank, hydraulic capacity	3 Gals.	3 Gals.
Floor space required	45"x32"	45"x32"
Weight—Net	2000	2000
Weight—Crated	2200	2200
Weight—Boxed	2600	2600
Cubic Feet, boxed	83	83

*Note—Motors of 220 volts, 3 phase, 60 cycles only are standard equipment. If factory power differs from above, a transformer mounted on the machine can be supplied, as an extra.

MODEL 135 AUTOMATIC CYLINDRICAL GRINDER

Work capacity diameter	5"
Work capacity length one grind	5"
Maximum distance between centers	18"
Grinding wheel diameter (12" hole, width as required)	20"
Wheel head motor (20-25 optional)	15 HP
Hydraulic system motor	2 HP
Wheel head adjustment motor	¼ HP
Wheel spindle reciprocating motor	¼ HP

Work spindle drive motors (2)	½ HP
Valve shaft motor	¼ HP
Coolant pump motor	¼ HP
Floor space occupied	116"x84"
Net weight	8000
Gross weight, crated	9100
Gross weight, boxed	9600
Cubic feet	390

MODEL 200 CARBIDE TOOL GRINDER

Type of Grinding Wheel (Diamond)	D6WHC
Diameter of Grinding Wheel	6"
Rim Width of Grinding Wheel	¾"
Hole size of Grinding Wheel	1¼"
Back thickness of Grinding Wheel	7/16"
Speed of Grinding Wheel	6000 FPM
Largest size of tool shank held, width	1½"
Largest size of tool shank held, height	1½"
Dimensions of Work Table	16⅜"x7¾"
Horizontal travel of Work Table, total	2⅛"
In-feed of Work Table	030"

Size of tee slots	¾x¼x⅜x½
Length of Machine, over frame	36"
Width of Machine, total	27"
Vertical movement of Grinding Wheel	13¾"
Horse Power of Motor 3 phase, 3600 RPM	¾
Height of Work Table from ground	42
Height of Machine, total	48"
Tilt of Work Table, down	20"
Tilt of Work Table, up	7"
Dimensions of Machine Base on floor	22x16"
Net weight	600

ARTER GRINDING MACHINE COMPANY

15 SAGAMORE ROAD WORCESTER, MASSACHUSETTS

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