

A.W. Miller PROPOSAL #:

Okamoto

Effective May 1, 2021

Okamoto Precision Internal Grinding Machine ----- Model IGM-2MB

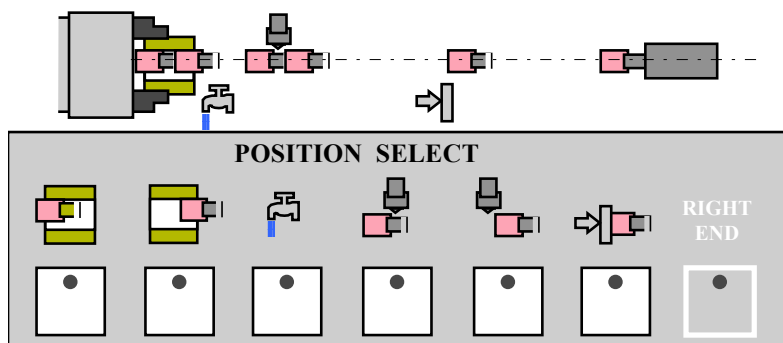
with MDI Control, Automatic Cycle, Automatic Dressing with Dress Compensation and Wheel Wear Compensation----- Internal Diameter to be ground is 8.0”

Standard Accessories

- Teach-Input Positioning System
- Okamoto User Friendly MDI Control
- Servo Driven Wheelhead
- Minimum Increment 0.00001” (DIA) Std.
- High Speed Table Reciprocation
- Table Stroke Fine Adjust (Increment: 0.020”)
- Coolant Nozzle at the Wheelhead
- Wheel Guard
- Color LCD Monitor
- Table enclosure with door interlock
- Chuck Guard
- Manual Pulse Generator
- Servo Driven Workhead
- Air Actuator for power chuck
- Spindle oil mist lubrication system
- Dressing Device w/Diamond
- Through Spindle Coolant
- Leveling Bolts with Plates
- Table position indicator
- Continuous and Intermittent Feed
- Necessary Tools with Toolbox
- Instruction Manual & Inspection Report

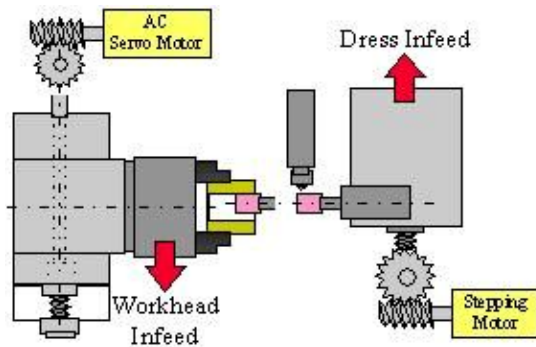
Machine Features

- **Table Positioning System** ... saves set-up time and boosts productivity. Operator simply moves the table manually to the six positions shown below, presses a position in put key at each position and the LSI Control remembers these locations.



There are no table “dogs” to adjust ... the grinding positions can be set in less than a minute and if desired each position can be “fine adjusted” in 0.020” increments while grinding.

- **User Friendly MDI Control** ... The MDI Controller is made by Okamoto and uses a unique Micro Processor control system that promotes Fast Easy Set-Up. Rough, Medium Grind, Dress and Fine Grind in one set-up.
- **Up to Ten Automatic Dress Cycles** ... per part with Automatic Dress Compensation and Wheel Wear Compensation.
- **The Wheelhead features Rigid Unit Type Spindles** ... AC Stepping Motor coupled to a Ball Screw for Dressing, 0.00001" (Dia.) Minimum Increment, and Linear Motion Guideways for Smooth Operation and Accuracy.
- **Workhead is of Cast Iron Construction** ... and Features an AC Servo Motor coupled to a Ball Screw with



0.00001" (Dia.) Minimum Increment as Standard, Variable Speed Spindle Motor, and Linear Motion Guideways

- **Table is of Cast Iron Construction and adopted Linear Slide Way system** ... is Driven by Ball Screw achieved for Table Speed from 20 to 600 IPM and Very precise Table Positions, especially effect for blind hole workpiece.
- **MDI Controls** ... Facilitate Set-Up and Editing Functions, High Speed Table Shortens Positioning Cycle Time and High Speed Table Reciprocation Reduces Grinding Cycle Time. The Okamoto IGM-2M Internal Grinder is Ideal for **Low to High Production of ONE (1) Diameter** Grind Applications.
- **36-Cycle Memory** ... 36 grinding cycles can be store together with grinding condition which selected manual switch for that process.
- **COLOR LCD MONITOR** ... User friendly Data input screen at Main operation monitor
- **NUMEROUS FUNCTION** ... Set two different table speed for Coarse grinding & Fine grinding, Intermittent infeed can be selectable for Right end, Left end or Both ends.
- **SAFETY & MIST CONTROL** ... Table Full enclosure with Door interlock system.

Machine Specifications

IGM-2MB

Capacity:

Internal Grinding Range	0.24 - 8.0 inch Diameter
Grinding Stroke	0.00 - 8.0 inch
Swing Inside the Chuck Cover	14.0 inch
Swing Over the Table	24.0 inch

Table:

Maximum Travel	20.0 inch
Table Speed	20 - 800 IPM
High Speed Short Stroke	500 Reciprocations/min. (0.08" Stroke)

Workhead:

Spindle Speed	50 - 1200 RPM
Swivel Angle	-5° - +15°
Maximum Crossfeed Travel	9.4 inch
Minimum Incremental Infeed	0.00001 inch (0.00003 inch/option)
Automatic Feed Rate	
Rough & Medium (Intermittent)	0 - .0040 inch (12 Selections)
Rough & Medium (Continuous)	0 - 0.1600 inch/min. (12 Selections)
Fine (Intermittent)	0 - 0.0040 inch (12 Selections)
Fine (Continuous)	0 - 0.0800 inch/min. (12 Selections)
Manual Feed per Graduation	(X1)0.00001, (X10) 0.0001 inch
Manual Feed per Revolution	(X1)0.001, (X10) 0.01 inch

Motors:

Work head	2.0 HP
Grinding Wheel Spindle	5.0 HP
Crossfeed Servo	0.26 HP
Table longitudinal feed	1.0 HP

Power Supply:

Desired Power Supply including Coolant System

16 KVA

Floor Space (L x W x H):

95 "x 78" x 69"

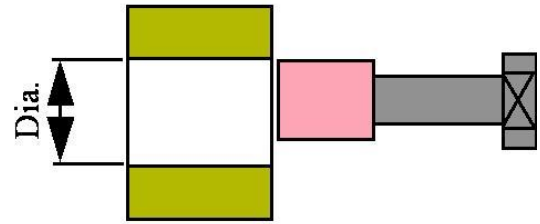
Net Weight:

6,160 lbs.

Wheelhead - Optional Spindles

Wheel spindle selection recommendation

Spindle Type	RPM	Min. Dia.	Max. Dia.
OH-10M	10,000	2.36"	8.00"
OH-15M	15,000	1.36"	2.36"
OH-20M	20,000	0.70"	1.45"
OH-30M	30,000	0.55"	0.78"
OH-40M	40,000	0.32"	0.70"
OH-60M	60,000	0.24"	0.43"



* All spindle is OPTION

Machine Installation and Operator Training

Please provide the following preparations before our engineer arrives at the customer:

- 1) Wheel Spindle Oil is Mobile DTE #24 1 Gallon (Approx.)
- 2) Coolant fluid -----Water Soluble Type 1 Gallon (Approx.)
- 3) Power Supply (Includes Coolant System) 16 KVA
Machine has a built in transformer for either 230/460 V (Normally wired 460 V)
- 4) Clean shop air supply must be provided to the machine for air/oil mist system.

Note:

- Warranty: One (1) year on Labor and Parts per our warranty statement.
- F.O.B.: Shipping Point (Vernon Hills, IL or Los Angeles, CA)
- Delivery: Check Availability, Subject to Prior Sale.
- Terms: All orders are subject to Okamoto **Standard Terms and Conditions** as attached
- Payment: 20% upon acceptance of Purchase Order, Balance due within thirty (30) days of delivery or upon acceptance at Buyer site, whichever is sooner.

*** Prices are subject to change without notice.

Machine Base Price**Model IGM-2MB**

Okamoto Precision Internal Grinding Machine \$ **136,290.00**
 Internal Diameter to be Ground 0.240" / 8.0" @
 Spindles are an option *Machine does NOT include spindles*
 POE Charge \$ 1,000.00

Optional Accessories

Option No.	Description	Price
12-IGM-INST	Machine Installation/Training Charge (Okamoto Standard Workpiece 1-kind) (net price)	\$ 7,500.00
2M-3	Coolant System with Magnetic Separator and Paper Filter	\$ 8,150.00
2M-4	Coolant System with Magnetic Separator	\$ 5,900.00
2M-0	Coolant System with Paper Filter	\$ 5,650.00
2M-7	Coolant System w/ Paper Filter, Magnetic Separator and Temperature Regulator	\$ 22,600.00
B710-1-K	6" Power Chuck (Nikko) with Adapter Plate	\$ 5,250.00
B710-2-K	8" Power Chuck (Nikko) with Adapter Plate	\$ 6,200.00
B710-4-K	6" Power Chuck (Buck) with Adapter Plate	\$ 4,400.00
B710-5-K	8" Power Chuck (Buck) with Adapter Plate	\$ 5,900.00
B711-3-K	6" 3-Jaw Scroll Chuck with Adapter Plate	\$ 4,300.00
B711-4-K	7" 3-Jaw Scroll Chuck with Adapter Plate	\$ 4,300.00
B711-5-K	9" 3-Jaw Scroll Chuck with Adapter Plate	\$ 4,450.00
B712-1-K	6" 4-Jaw Independent Chuck with Adapter Plate	\$ 4,200.00
B712-2-K	8" 4-Jaw Independent Chuck with Adapter Plate	\$ 4,250.00
C5898-KIT	5C Collett Chuck Manual w/ Adaptor Plate	\$ 3,000.00
2M-5-1-KIT	OH-60M 60,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 7,600.00
2M-5-2-KIT	OH-40M 40,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 6,800.00
2M-5-3-KIT	OH-30M 30,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 7,000.00
2M-5-4-KIT	OH-20M 20,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 6,400.00
2M-5-5-KIT	OH-15M 15,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 7,800.00
2M-5-6-KIT	OH-10M 10,000 RPM Grinding Wheel Spindle (Oil Mist)	\$ 8,000.00
2M-14-KIT	E-500 Mist Collector w/ 6' 6" Tall Pedestal **	\$ 6,000.00
DOOR-INTER	Door Interlock for IGM	\$ 1,800.00

Note: **Customer is responsible for installation of pedestal.

Optional Accessories IGM-2MB continued

2M-18	Sine-Bar Attachment*	Consult Okamoto
METRIC	Metric conversion kit*	Consult Okamoto
DTE24-5	Mobil DTE 24- 5 Gallon Pail (drop shipped from vendor)	\$ 205.00

Note : * Marked items: Factory installed only

**OKAMOTO TERMS AND
CONDITIONS**

QUOTATIONS AND PRICES:

Prices are in U.S. Funds and are subject to change without notice, and orders calling for future delivery will be billed according to the price in effect at the time of delivery. Written quotations automatically expire 30 calendar days from the date issued and are subject to termination by notice within that period. All prices are F.O.B. the manufacturer's plant or warehouse.

ACCEPTANCE:

This quotation is not a firm offer and may be changed or revoked at any time. The acceptance of this quotation by a customer is expressly limited to the exact terms contained herein, and any attempt to alter or omit any such terms shall be deemed a rejection and counter-offer. Final approval and acceptance by Seller of customer order(s) shall be by written Order Acknowledgement. After acceptance by Seller, the terms and conditions herein shall be controlling.

DELAYS:

The Seller will not be liable for any delay in the performance of orders or contracts or partial performance thereof, or on the delivery of partial delivery or shipment of goods, or for any damages suffered by the Buyer by reason of said delay, when such delay, directly or indirectly, is caused by or in any manner arises from fires, floods, accidents, civil unrest, acts of God, war, detrimental interference or embargoes, strikes, labor difficulties, shortage of labor, fuel, power, materials or supplies, transportation delays, or any other cause or causes (whether or not similar in nature to any of these hereinbefore specified) beyond its control. In addition, thereto, Seller shall not be liable in any event for any special, indirect or consequential damages on account of failure or delay in performance, regardless of the cause. The Seller shall have the additional right, in the event of the happening of any of the above contingencies, at its option, to cancel this contract or any part thereof without any resulting liability to the Seller.

CLAIMS:

Claims for defective merchandise, shortages, delays, or failure in shipment or delivery, or for any other cause, shall be deemed waived and released by the Buyer, unless made in writing 10 days after arrival of the merchandise.

TITLE AND RISK OF LOSS:

Title to products shall pass only upon payment of the full purchase price. Notwithstanding the foregoing, all risk of loss shall be borne by Buyer from the time of delivery of the product by Seller to public carrier or other manner of transportation. Unless otherwise specified, all products are to be shipped by such carrier as Seller may select.

PAYMENT:

A finance charge of 2% per month (24% per annum) will be charged for each month or fraction of a month computed on the outstanding balance until paid in full; provided however, that such late charges shall not exceed the maximum amount allowed by law. Buyer shall reimburse Seller for any attorney fees, paralegal fees, costs and expenses incurred in collecting unpaid balances. The foregoing shall not be construed as limiting, in any manner, any of the rights and remedies available to Seller in the event of default of Buyer and Buyer shall be responsible for all attorney fees, paralegal fees and costs incurred by Seller for said default.

A Payment Schedule shall apply to products with a total purchase price up to \$300,000.

-20% upon acceptance of Purchase Order

-Balance due within thirty (30) days of delivery or upon acceptance at Buyer site, whichever is sooner.

A progress Payment Schedule shall apply to products with a total purchase price exceeding \$300,000.

-20% upon acceptance of Purchase Order

-70% upon completion of final assembly of basic machine or for stock machines, payment prior to shipment from port

-10% upon installation and acceptance at Buyer site, not to exceed sixty (30) days from date of delivery

WARRANTIES:

Okamoto standard warranty covers 1 year parts and labor, detailed described in the Warranty Statement.

DELEGATION, ASSIGNMENT:

Buyer shall not delegate or assign any duties or claims under this sales order without the Seller's prior written consent. Any such delegation or assignment attempted without the previous written consent of the Seller shall affect, at the option of the Seller, a cancellation of all the Seller's obligations hereunder. All claims for monies due or to become due from the Buyer shall be subject to deduction by the Seller, or any set off or counterclaim arising out of this or any other of Buyer's orders with Seller, whether said set off or counterclaim arose before or after any such assignment by the Buyer.

RETURNED PRODUCTS:

In no case are goods or products to be returned without first obtaining written permission of the Seller. Only products currently manufactured by the Seller, which has been invoiced to the Buyer within 90 days, will be considered for return. Material or products accepted for credit are subject to a minimum service charge of 15% plus all transportation charges. Products built to order are not subject to the returns for credit under any circumstances. All products must be securely packaged to reach us without damage.

PRODUCTION STUDY AND MACHINE PERFORMANCE:

Production studies are estimates only and do not constitute a production or finish guarantee. A runoff for final acceptance before shipment requires all necessary gages be furnished by Buyer at time of demonstration.

Piece parts to cover two (2) hours of production estimates, in machined condition for the run-off operation, must be furnished, pre-paid, at least thirty (30) days prior to scheduled shipped date.

Seller accepts no responsibility for parts or tooling used or scrapped during demonstration.

DELAY IN DELIVERY:

In the event delivery to Buyer is delayed at the request of the Buyer, Seller shall have the option to hold such machine for later delivery to Buyer and Buyer agrees to pay to Seller the prevailing price for such machine at time of actual delivery or Buyer shall pay the full sales price outstanding within 30 days and pay to Seller customary storage charges assessed.

CONTROLLING PROVISION:

These terms and conditions shall supersede any prior provisions, terms, and conditions contained on any confirmation order, or other writing the Buyer may give or receive, and the rights of the parties shall be governed exclusively by the provisions, term, and conditions hereof. The Seller makes no representations no warranties concerning this quotation except such as are expressly contained herein, and this quotation may not be changed or modified orally.

CANCELLATION:

Once accepted by Seller, Buyer's purchase order may not be cancelled, in whole or in part, without the written consent of Seller. In any case where cancellation may be acceptable to Seller, such cancellation will be subject to payment by Buyer of cancellation charges as determined under the following schedule.

- Cancellation of standard machines less than ninety (90) days before scheduled shipping date, will be subject to a charge payable by Buyer of 10% of the gross sale price.

- Cancellation of standard attachments and service parts ordered separately from a machine less than sixty (60) days before scheduled shipping date, will be subject to a charge payable by Buyer of 15% of the gross sale price.

- Cancellation of special machines, attachments, and service parts at any time will be subject to a charge payable by Buyer of 100% of the gross sales price.

The scheduled shipping date is that stated on the order acknowledgement. Seller shall have the absolute right to cancel an order if at any time all Terms and Conditions governing the order are not strictly complied with by the Buyer or if at any time Buyer becomes bankrupt or insolvent. In the event of such a cancellation, Seller shall have the right to recover from the Buyer all costs as outlined in the Cancellation Schedule.

INDEMNIFICATION:

Buyer shall use and shall require its employees to use all safety devices, guards and proper and safe operating procedures as set forth in manuals and instruction sheets furnished by Seller. If Buyer fails to comply with the obligations set forth in this paragraph, Buyer agrees to indemnify, defend and save Seller harmless from any liability or obligation incurred by Seller to persons injured directly or indirectly in connection with the operation of the Seller's products and any attorney fees, paralegal fees, costs and expenses incurred by Seller in defense of any such claims.

SELLER'S RIGHT TO POSSESSION:

The Seller shall have the right, in addition to all others it may possess, at any time, for credit reasons or because of the Buyer's default or defaults to withhold shipments, in whole or in part, and to recall goods in transit, retake same, and repossess all goods which may be stored with the Seller on the Buyer's account, without the necessity of taking any other proceedings, and the Buyer consents that all the merchandise so

recalled, retaken or repossessed shall become the absolute property of the Seller, provided that the Buyer is given full credit therefore, less any cancellation charges. The foregoing shall not be construed as limiting in any manner, any of the rights or remedies available to the Seller because of any default of the Buyer under the Uniform Commercial Code as in force and effect on the date of the signing of this agreement, less any cancellation charges. Buyer shall reimburse Seller for all costs, expenses, attorneys fees, and paralegal fees incurred by Seller herewith.

SPECIAL ORDERS:

If any material or product shall be manufactured and/or sold by the Seller to meet the Buyer's particular specifications or requirements and is not part of the Seller's standard line the Buyer agrees to defend, protect, and save harmless the Seller against all suits at law or in equity and from all damages, claims and demands for actual or alleged infringement of any United States or foreign patent, and to defend any suit or action which may be brought against the Seller for any alleged infringement because of the manufacture and/or sale of the material or product covered thereby and to reimburse Seller for all costs, expenses, attorney fees and paralegal fees incurred by Seller.

MODIFICATION:

Seller shall have the right to make, from time to time, and without notice to any sureties or assignees, changes as to packing, testing, destinations, specifications, designs, and delivery schedule. Seller shall immediately notify Buyer of any increases or decreases in cost caused by such changes and an equitable adjustment of prices or other terms hereof shall be agreed upon in a written amendment to this order.

PURCHASE ORDER:

If this quotation is accepted and the Buyer's order form is used for the purpose, it is expressly understood and agreed that the terms and conditions herein set forth shall prevail insofar as the same may in any way conflict with the terms and conditions set forth in such order form, and the issuance of such order by the Buyer shall be deemed to note the Buyer's consent to the foregoing.

GOVERNING LAW:

These terms of sale and acceptance thereof shall be deemed a contract made within the State of Illinois. The terms and conditions herein shall be governed in accordance with the internal laws of the State of Illinois without regard to conflict of laws.

CONDITIONS:

All orders of contracts are accepted with the understanding that they are subject to the Seller's ability to obtain the necessary raw materials, and all orders or contracts, as well as shipments applicable thereto are subject to the Seller's current manufacturing schedules, and government regulations, orders, directive, and restrictions that may be in effect from time to time.

SALES REPRESENTATIONS:

That the terms and conditions contained herein are in lieu of any and all other representations or advice.

CONSENT TO JURISDICTION AND VENUE:

Buyer and Seller agree that any legal or equitable action for claims, debts or obligations arising out of, or to enforce the terms hereof, or that in any way relate to any machines, products, parts, accessories and other items sold hereunder by Seller to Buyer may be brought only in the State of Illinois, County of Cook and Seller and Buyer consent to the exclusive jurisdiction of the State of Illinois and the venue in the County of Cook for all such purposes. Buyer waives any and all rights to commence any action whether by complain, counterclaim or otherwise against Seller in any jurisdiction other than in the State of Illinois and in the County of Cook. Notwithstanding the foregoing, nothing shall prevent Seller from commencing any action against Buyer for repossession of any machine, products, parts, accessories or items sold hereunder in any jurisdiction where such tangible property is located.