COLUMN TYPE HIGH PRECISION 3-AXIS AUTOMATIC SURFACE GRINDER
1. Control power supply switches and indication lamps.
2. Provide left end / right end table parking selection.
3. Pilot lamp shows that fine grinding is performing.
4. L.E.D. digital screen shows "Y axis position"
5. "WHEEL LIFT UP TO" switch: Grinding wheel lifts up to start point or reference point after grinding cycle is finished.
6. Z-axis stroke can be set by using setting key.
7. Selections steps for wheel dressing interval.
8. "DRESSING OFFSET" provides the first dressing compensation percentage. The percentage is chosen according to operator's grinding experience. The percentage of dressing compensation will be performed right after dressing is complete.
9. Separate switch provides crossfeed increment for rough and fine grinding.

The balance will be compensated at next downfeed increment.

CONTROL PANEL

CONTROL STATION

1. Mode Selector
   Total removal amount can be set by pushing the "+" or "-" to increase or decrease each digit.

2. Total Removal Amount
ADII Series
XIS AUTOMATIC SURFACE GRINDER

CONTROL PANEL


4. Rough Grinding Increment Selector
   Rough grinding downfeed increment can be selected and the range is $0^\circ$ ~ $0.0099^\circ$ (0μm ~ 99μm).

5. Fine Grinding Increment Selector
   The fine grinding downfeed increment can be selected and the range is $0^\circ$ ~ $0.0002^\circ$ (0μm ~ 20μm).

6. Fine Grinding Start Point Selector
   The Start of line grinding can be selected and the range is $0^\circ$ ~ $0.0020^\circ$ (0μm ~ 40μm).

7. Crossfeed Reversal Point Setting
   To set crossfeed reversal points, move saddle to desired "in" reversal position & press stroke set and repeat afore mentioned steps to set desired "out" reversal position.

8. Increment (Z axis) Selectors
   A rough crossfeed increment is set for rough grinding, and fine increment is set for fine grinding. Each setting corresponds with rough and fine crossfeed increments.

9. Dress setting
   The operator can set the dress amount from 0.0002" ~ 0.0008" (0.005mm ~ 0.02mm), dressing passes across the wheel from 1 to 4, and dress frequency during rough and fine grinding. The wheelhead position is automatically compensated during AUTO dressing (optional).

Table (X axis) Speed Adjustment
   Table speed can be adjusted by table speed control lever from 16 ~ 82FPM (5 ~ 25m/min).
Programmable Controlled Precision Grinding Machine

The machine with micro-processor is programmed to perform rough grinding, fine grinding sparkout passes, automatic overwheel dressing and compensation for wheel dress amount. After grinding, table can be set to park either left end or right end. Spindle can be set to stop running or keep running and wheelhead can also be set to lift up to start point or reference point after grinding cycle finished. The machine is suitable for mass production.

Rigid Construction

All essential casting are made of high grade dense cast iron which has been stress relieved and ribbed with honeycomb ribs to enhance rigidity and increase stability thereby increasing cutting capability.

Crossfeed Stroke Setting

The crossfeed travel is set with push buttons on control panel. This new break through in design is more efficient and user friendly.

AC Servo Vertical Drive

The wheelhead, travelling on hardened and ground square ways coated with Turcite-B system is cooperated with hardened and ground leadscrew (20 series) and precision ball screw (24 series), and an AC servo motor to provide high torque, speed and accurate positioning with a minimum increment of 0.0001" (0.001mm). A manual pulse generator (MPG) is standard for easy operation.

Crossfeed Speed Control

Column continuous movement speed is controlled by a frequency converter for obtaining better grinding surface finish and better dressing result from table.
Spindle is supported by 5 pieces (6 pieces for 24 series) of class 7 (P4) super precision angular contact ball bearings which have been accurately measured, selected and preloaded, and then assembled in a temperature controlled clean room. Spindle is permanently lubricated and requires no maintenance. Large diameter spindle is precisely balanced to ensure accuracy.

Column

The column is made of high grade dense iron which has been stress relieved and ribbed with honeycomb type ribs to enhance rigidity and increase stability thereby increasing grinding performance.
The wheelhead travelling on a preloaded hardened and ground guideway system is driven by a hardened and ground leadscrew and an AC servo motor providing high torque, speed and accurate positioning with minimum increment of 0.0001" (0.001mm). A manual pulse generator (MPG) is standard for easy operation.

Crossfeed Guideways

Double "V" guideways are ground and laminated with Turcite-B then precisely hand scraped. Continuous lubrication is provided to ensure smooth & precise crossfeed increments.

Longitudinal Stroke Adjustment Device

Table reversal is controlled by proximity switches which never make contact. It is simple for operator to adjust table reversal to minimum required stroke, thereby grinding less air and reducing grinding time. Stroke adjustment protection plate is designed to allow table stroke to be adjusted safely.

Crossfeed Transmission Mechanism

Enlarged precision leadscrew with backlash adjustment device is driven by an AC motor. The encoder type stroke setting key allows crossfeed reversal points to be set from operators control panel, thereby working efficiency is increased.

Elevating Transmission Mechanism

The wheelhead travelling on a preloaded hardened and ground guideway system is driven by a hardened and ground leadscrew and an AC servo motor providing high torque, speed and accurate positioning with minimum increment of 0.0001" (0.001mm). A manual pulse generator (MPG) is standard for easy operation.

Longitudinal Slide Way

One "V" and one flat table guideways are laminated with Turcite-B & precisely hand scraped to ensure high accuracies. Continuous lubrication is provided to assure smooth stick-slip free movement of the table & accurate positioning.
II Series

OMATIC SURFACE GRINDER
24 series

MACHINE CONSTRUCTION

- **Crossfeed Slideway**
  - Hardened and ground guideways are laminated with Turcite-B, then precisely hand scrapped. Continuous lubrication is provided to assure smooth stick-slip free movement of the table & accurate positioning.

- **Longitudinal Slideways**
  - With double "V" guideways, which are laminated with turcite-B anti-friction material, for smooth and stable longitudinal movement.
  - The table is full supported on the well designed front base of machine, Thus, the accuracy is greatly increased.

- **Spindle Counter Weights Balance System**
  - Hydraulic counter weights balance system is installed to eliminate backlash and wear of elevating screws.

---

Automatic Lubrication System
(20 & 24 series)

Equipped with a central continuous lubrication system. A warning light will illuminate if oil pressure drops below reset pressure.

- Elevating leadscrew
- Column guideways
- Cross guideways
- Table guideways
- Flow divider
- Lubricator

The column is made of high grade dense cast iron which has been stress relieved. With ribbed and computer-analyzed structure, the stability and rigidity is greatly increased. Spindle travels on hardened and ground square ways, and is driven by precision ballscrew and an AC servo motor for heavy grinding and smooth & accurate movement.

- **Longitudinal Slideways**
  - With double "V" guideways, which are laminated with turcite-B anti-friction material, for smooth and stable longitudinal movement.
  - The table is full supported on the well designed front base of machine, Thus, the accuracy is greatly increased.

---

Automatic Lubrication System
(20 & 24 series)

Equipped with a central continuous lubrication system. A warning light will illuminate if oil pressure drops below reset pressure.

- Elevating leadscrew
- Column guideways
- Cross guideways
- Table guideways
- Flow divider
- Lubricator
Note: Items marked with "•" are stored in the tool box.

**STANDARD ACCESSORIES**

Note: The items marked "•" with are stored in the tool box.

1. Tool box
2. Wheel flange
3. Grinding wheel
4. Locking nut
5. Wheel flange extractor
6. Balancing arbor
7. Hook spanners
8. Wrench
9. Fuse
10. Touch-up paint
11. Levelling pads
12. Levelling screws & nuts
13. Splash guard
14. Hydraulic temperature regulator (for 24 series)
15. Water baffle (for 24 series)

**OPT. ACCESSORIES (24 Series)**

- **ELECTROMAGNETIC CHUCK**
  - B09-0703
  - 24“x29 1/2”x2pcs (600x750mm x 2pcs)
  - Input Voltage: 110VDC

- **AUTO OVER THE WHEEL DRESSER with AUTO DRESSING COMPENSATION**
  - B13-0708
  - Suitable for 16” (406mm) grinding wheel
  - Max. OD: 16” (406mm)
  - Mini OD: 9.3” (236mm)
  - Max. Length: 3” (76mm)

- **COOLANT SYSTEM WITH AUTO PAPER FEEDING DEVICE**
  - B17-0701
  - Volume: 250L
  - Pump: 1/2HP
  - Coolant Capacity: 120L/min
  - Space: 63”x43” (1600x1100mm)
  - Height: 29 1/2” (750mm)

- **COOLANT SYSTEM WITH AUTO PAPER FEEDING DEVICE & MAGNETIC SEPARATOR**
  - B17-0702
  - Volume: 250L
  - Pump: 1/2HP
  - Coolant Capacity: 120L/min
  - Space: 63”x43” (1600x1100mm)
  - Height: 29 1/2” (750mm)

- **CHUCK CONTROLLER**
  - B23-0705
  - Input Voltage: 135VAC
  - Output Voltage: 110VDC
  - 10A, with variable holding power, auto demagnetization

- **GRINDING WHEEL**
  - 5122-10411630
  - Ø16”x3”xØ5” (406x75x127mm)
  - Double recessed

  - 5122-10412030
  - Ø20”x3”xØ5” (508x75x127mm)
  - Double recessed

- **OPT. ACCESSORIES (24 Series)**
  - 1. Tool box
  - 2. Wheel flange
  - 3. Grinding wheel
  - 4. Locking nut
  - 5. Wheel flange extractor
  - 6. Balancing arbor
  - 7. Hook spanners
  - 8. Wrench
  - 9. Fuse
  - 10. Touch-up paint
  - 11. Levelling pads
  - 12. Levelling screws & nuts
  - 13. Splash guard
  - 14. Hydraulic temperature regulator (for 24 series)
  - 15. Water baffle (for 24 series)
### Dimensional Drawings

<table>
<thead>
<tr>
<th>Description</th>
<th>2040ADII</th>
<th>2060ADII</th>
<th>2440ADII</th>
<th>2460ADII</th>
<th>2480ADII</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>133 7/8&quot; (3400mm)</td>
<td>181 1/8&quot; (4600mm)</td>
<td>137 3/4&quot; (3500mm)</td>
<td>177 1/4&quot; (4500mm)</td>
<td>236 1/4&quot; (6000mm)</td>
</tr>
<tr>
<td>B</td>
<td>70 7/8&quot; (1800mm)</td>
<td>110 1/4&quot; (2800mm)</td>
<td>82 3/4&quot; (2100mm)</td>
<td>122&quot; (3100mm)</td>
<td>161 3/8&quot; (4100mm)</td>
</tr>
<tr>
<td>C</td>
<td>150&quot; (3810mm)</td>
<td>195&quot; (4953mm)</td>
<td>152 3/8&quot; (3870mm)</td>
<td>191 3/4&quot; (4870mm)</td>
<td>241&quot; (6120mm)</td>
</tr>
<tr>
<td>D</td>
<td>107&quot; (2719mm)</td>
<td>109 3/8&quot; (2780mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>85 5/8&quot; (2250mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>110 5/8&quot; (2810mm)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>11 &quot; (280mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>9 7/8&quot; (250mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>6 5/16&quot; (160mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>28 3/4&quot; (730mm)</td>
<td>Max. 33 1/2&quot; (850mm), Min. 6 3/4&quot; (170mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>91&quot; (2310mm)</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>39&quot; (990mm)</td>
<td></td>
<td></td>
<td>34 11/16&quot; (880mm)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>3 3/4&quot; (95mm)</td>
<td></td>
<td></td>
<td>4 5/16&quot; (110mm)</td>
<td></td>
</tr>
</tbody>
</table>

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OPT. ACCESSORIES (20 Series)

Note: Items marked with • are recommended to be factory installed.

**MACHINE LAMP**
- **B01-0903**
  - (12V, 50W)

**DIAMOND DRESSER**
- **B03-0401**
  - (1.0 Carat)

**WHEEL FLANGE**
- **B05-0401**
  - Suitable for 14”x5”x2” (55x127x50mm) grinding wheel Clamping width: 7/8”~11/2” (22~38mm)

**ELECTROMAGNETIC CHUCK**
- **B09-1001 (2040)**
  - 19 5/8”x39 3/4” (500x1000mm)
  - B09-1004 (2060)
  - 19 5/8”x29 1/2”x2pcs (500x750mm x 2pcs)
  - (Voltage: 110VDC)
  - *To order B23-0705 chuck control is required.

**WHEELHEAD MOUNTED AUTOMATIC ROTARY DIAMOND DRESSER WITH AUTO WHEEL DRESSING COMPENSATION**
- **B13-1003**
  - 1750rpm (60Hz), 1450rpm (50Hz)
  - 1/2HP
  - Max. OD: 14” (355mm)
  - Mini OD: 9.3” (235mm)
  - Max. Length: 2.4” (60mm)
  - *Diamond roller is not included.

**WATER BAFFLE**
- **B19-1001 (2040)**
- **B19-1002 (2060)**

**COOLANT SYSTEM WITH AUTO PAPER FEEDING DEVICE (With 1 Roll of Paper)**
- **B17-0301**
  - Volume: 120L
  - Paper feeding motor: 25W
  - Pump: 1/8HP
  - Coolant Capacity: 20L/min
  - Space: 57”x24 3/8” (1450x620mm)
  - Height: 30” (760mm)

**COOLANT SYSTEM WITH AUTO PAPER FEEDING DEVICE & MAGNETIC SEPARATOR (With 1 Roll of Paper)**
- **B17-0302**
  - Volume: 120L
  - Paper feeding motor: 25W
  - Pump: 1/8HP
  - Coolant Capacity: 20L/min
  - Space: 57”x24 3/8” (1450x620mm)
  - Height: 30” (760mm)

**CHUCK CONTROLLER**
- **B23-0705**
  - Input Voltage: 135VAC
  - Output Voltage: 110VDC 10A
  - *With variable holding power, auto demagnetization
  - *Must be ordered with electromagnetic chuck
SPINDLE MOTOR
- B31-1001
  (10HP, 4P) (2040)
- B31-1003
  7.5HP, 6P for 20" (508mm) wheel

CROSSFEED BALLSCREW
- B37-1001 (metric)
- B37-1002 (inch)

HYDRAULIC TEMPERATURE REGULATOR
- B42-1001
  Cooling capacity: 1000 kcal/hr

FREQUENCY CONVERTER
- B48-1001
  (7.5HP) (Voltage: 200V-230V) (2040)
- B48-1002
  (7.5HP+Transformer) (Voltage: 480V-575V, 240V, 346V) (2040)
- B48-1003
  (10HP) (Voltage: 200V-230V) (2060)
- B48-1004
  (10HP+Transformer) (Voltage: 480V-575V, 240V, 346V) (2060)
- B48-1005
  (7.5HP) (Voltage: 380V-415V, 440V, 460V) (2040)
- B48-1006
  (10HP) (Voltage: 380V, 415V, 440V, 460V) (2060)

OPT. ACCESSORIES (20 Series)

Note: Items marked with • are recommended to be factory installed

MACHINE LAMP
B01-0701
(24V, 50W)

WHEEL FLANGE
B05-0701
Bore size: Ø5" (127mm)
Clamping width: 1.7" 2" (43 50mm)

GRINDING WHEEL DYNAMIC BALANCER
• B44-0701

HYDRAULIC TEMPERATURE REGULATOR for SPINDLE
• B42-0801
  Volume: 50L

DIAMOND DRESSER
B03-0701
(1.0 Carat)

ROLLER BALANCING STAND
B15-0701
Max. Wheel Dia.: 20" (508mm)

SPINDLE MOTOR
- B31-0701
  25HP/4p, 1700rpm/60cy, 1400rpm/50cy
- B31-0705
  15HP/6p, 1200rpm/60cy, 1000rpm/50cy for ø20" (ø508mm) wheel
- B31-0706
  25HP/6p, 1200rpm/60cy, 1000rpm/50cy for ø20" (ø508mm) wheel

FREQUENCY CONVERTER
- B48-0705
  (25HP) (Voltage: 380V-460V)
- B48-0707
  (25HP) (Voltage: 200V-230V)
- B48-0709
  (25HP) (Voltage: 240V, 346V, 480V, 575V)
- B48-0710
  (15HP) (Voltage: 200-230V)
- B48-0711
  (15HP) (Voltage: 240V, 346V, 480V, 575V)
- B48-0712
  (15HP) (Voltage: 380V-460V)
# GENERAL SPECIFICATION

<table>
<thead>
<tr>
<th>Description</th>
<th>FSG-2040ADII</th>
<th>FSG-2060ADII</th>
<th>FSG-2440ADII</th>
<th>FSG-2460ADII</th>
<th>FSG-2480ADII</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table Size</strong></td>
<td>19 5/8&quot;x39/8&quot; (500x1000mm)</td>
<td>19 5/8&quot;x59&quot; (500x1500mm)</td>
<td>24&quot;x39 3/8&quot; (610x1000mm)</td>
<td>24&quot;x59&quot; (610x2000mm)</td>
<td>24&quot;x78 3/4&quot; (610x2000mm)</td>
</tr>
<tr>
<td><strong>Max. Grinding Length</strong></td>
<td>40&quot;(1000mm)</td>
<td>60&quot;(1500mm)</td>
<td>40&quot;(1000mm)</td>
<td>60&quot;(1500mm)</td>
<td>80&quot;(2000mm)</td>
</tr>
<tr>
<td><strong>Max. Grinding width</strong> Crosswise</td>
<td>19 5/8&quot;(500mm)</td>
<td>24&quot;x78 3/4&quot; (610x2000mm)</td>
<td>24&quot;x78 3/4&quot; (610x2000mm)</td>
<td>24&quot;x78 3/4&quot; (610x2000mm)</td>
<td>24&quot;x78 3/4&quot; (610x2000mm)</td>
</tr>
<tr>
<td><strong>Max. Travel</strong> X Axis</td>
<td>43 1/4&quot;(1100mm)</td>
<td>63&quot;(1600mm)</td>
<td>43 1/4 &quot;(1100mm)</td>
<td>63&quot;(1600mm)</td>
<td>82 5/8&quot;(2100mm)</td>
</tr>
<tr>
<td>Z Axis</td>
<td>22&quot;(560mm)</td>
<td></td>
<td>22&quot;(560mm)</td>
<td></td>
<td>27 1/5&quot;(690mm)</td>
</tr>
<tr>
<td><strong>Max. Distance from Table Surface to Spindle Centerline</strong></td>
<td>28 5/8&quot;(730mm)</td>
<td>33 9/16&quot;(850mm)</td>
<td>33 9/16&quot;(850mm)</td>
<td>33 9/16&quot;(850mm)</td>
<td>33 9/16&quot;(850mm)</td>
</tr>
<tr>
<td><strong>Dimension of T-slot x Quantity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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---

## PERMISSIBLE LOAD OF MACHINE

The total suggested maximum loads of working table are shown as follows

<table>
<thead>
<tr>
<th>A = Workpiece</th>
<th>B = Magnetic chuck</th>
<th>C = A + B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODEL</strong></td>
<td>2040ADII</td>
<td>2060ADII</td>
</tr>
<tr>
<td>A lbs</td>
<td>1980</td>
<td>2420</td>
</tr>
<tr>
<td>(kg)</td>
<td>(900)</td>
<td>(1100)</td>
</tr>
<tr>
<td>B lbs</td>
<td>524</td>
<td>968</td>
</tr>
<tr>
<td>(kg)</td>
<td>(270)</td>
<td>(440)</td>
</tr>
<tr>
<td>C lbs</td>
<td>2574</td>
<td>3388</td>
</tr>
</tbody>
</table>

**Grinding with Electromagnetic Chuck**

**Grinding without Electromagnetic Chuck**