Metalworking Machines And Accessories

Bench Drills
Floor Drills
Variable Speed Drills
Gear Head Drills
Mill/Drill Machines
CNC Mills
Milling Machines
Lathes
CNC Lathes
Abrasive Belt Grinders
Drill Sharpener
Cold Saws & Blades
Support Stands
Digital Read Outs
Accessories
Vises

OPTIMUM - Discover The Difference
Quality at an Economical Price - OPTIMUM Metal Working Machines

Company Overview
Optimum has reached a leadership position in over 28 European countries and the UK over a very short period of time. Now, Optimum is bringing their innovation and competitively priced products to the US market. Headquartered in Germany where research, product design, and manufacturability are conducted. Machine tools designed by machinists bringing you innovative machines that provide real solutions and the best cost-to-performance value to the metal cutting industry.

We develop all of our own products to very demanding standards and manufacture them in our own factory in Yangzhou, China which has a German production manager and quality manager on site. All our component sources are chosen with the utmost selectivity to ensure that only the best designs, materials and production methods are used. All product development, design, testing and quality standards take place in Germany. More than 20 years of metalworking machine experience stands behind every piece of Optimum equipment, feature and innovation.

Products
Optimum metalworking machines have a rich heritage with innovation. Designed by machinists for machinists – developing machines with differentiated and meaningful features our products enjoy a reputation for exceptional quality, accuracy, sustainability and consistent value. If your applications include drilling, tapping, milling, turning, sawing, abrasive finishing or precision position measurements Optimum is your primary connection to better machining and productivity.

Engineering
It is no exaggeration to say that the design of an Optimum machine starts in a customer’s plant. That is because Optimum engineers base their thinking on what a machine must do when it is actually in use, and on what procedures an operator must follow for peak efficiency. The development work is solely performed using the most modern 3D CAD software creating a virtual machine model. This process also creates our manufacturing documentation and is used in our computer-aided manufacturing. Combined with our stringent engineering standards all Optimum machines are built to last. They are state-of-the-art in engineering, features, construction quality and performance.
Technical Service & Application Support
A worldwide organization of technical sales support people is available to help you with any and all requirements as it relates to any Optimum product. Our highly responsive technical support services are one result of our company’s unwavering dedication to quality and customer support. Optimum’s distributor sales and marketing team use their considerable experience in offering creative solutions to your metal removal applications.

Professional Manuals
Today operating instructions represent an essential and critical part of the product. All our manuals are professionally written for ease of use. They utilize our CAD exploded view drawings for easy part identification. Included with each manual are a parts breakdown listing, electrical drawings, installation and start up instructions and preventative maintenance information all of which provides the machinist the necessary information for a long and high performance service life.

Quality Assurance
A focus on quality is a constant at Optimum. Documented quality tests are used in all departments of the company. Employees trained in the fields of electrics, safety and application technology test all incoming goods against firmly defined standards as part of our quality assurance program.

Certification
All Optimum products are tested and put through a risk analysis procedure. Before being offered into the marketplace the machines are submitted and again tested by an independent testing institute with the results then being documented by a CE declaration of conformity and the CE label.

VARIO SELECT
Look for this symbol to identify our unique variable speed controlled machines. Vario-Select features brushless DC motors with permanent current control combined with the latest state-of-the-art variable speed inverter all specifically designed for use with our tools. You’ll benefit with the broadest range of speeds on the market today while delivering the power and torque for low speed applications and the speed and control required for high speed applications.
# Contents

## Drilling

<table>
<thead>
<tr>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step Pulley Drill Presses</td>
<td>6-7</td>
</tr>
<tr>
<td>B24H, B28H, B34H</td>
<td></td>
</tr>
<tr>
<td>Variable Speed Drill Presses</td>
<td>8-9</td>
</tr>
<tr>
<td>B28H VARIO, B34H VARIO</td>
<td></td>
</tr>
<tr>
<td>Variable Speed Drill Presses</td>
<td>10-11</td>
</tr>
<tr>
<td>B30BS VARIO</td>
<td></td>
</tr>
<tr>
<td>Variable Speed Gear Head Drill Presses</td>
<td>12-13</td>
</tr>
<tr>
<td>B30VGM</td>
<td></td>
</tr>
<tr>
<td>Upright Gear Head Drill Press</td>
<td>14-15</td>
</tr>
<tr>
<td>B50GSM</td>
<td></td>
</tr>
</tbody>
</table>

## Milling

<table>
<thead>
<tr>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>VARIO Mill/Drill Machines</td>
<td>16-17</td>
</tr>
<tr>
<td>BF20 VARIO</td>
<td></td>
</tr>
<tr>
<td>BF30 VARIO</td>
<td>18-19</td>
</tr>
<tr>
<td>BF46 VARIO</td>
<td>20-21</td>
</tr>
<tr>
<td>CNC Milling Machines</td>
<td></td>
</tr>
<tr>
<td>BF20 VARIO CNC</td>
<td>22</td>
</tr>
<tr>
<td>BF30 VARIO CNC</td>
<td>23</td>
</tr>
<tr>
<td>BF46 VARIO CNC</td>
<td>24</td>
</tr>
<tr>
<td>CNC Software</td>
<td>25</td>
</tr>
<tr>
<td>CNC Machine Enclosures</td>
<td>26</td>
</tr>
<tr>
<td>Bench Turret Mill</td>
<td></td>
</tr>
<tr>
<td>DM15</td>
<td>27</td>
</tr>
<tr>
<td>Vertical Turret Milling Machine</td>
<td>28-29</td>
</tr>
<tr>
<td>TMB200B-DPA</td>
<td></td>
</tr>
</tbody>
</table>

## Lathes

<table>
<thead>
<tr>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bench Lathes</td>
<td>30-31</td>
</tr>
<tr>
<td>D210 x 400</td>
<td></td>
</tr>
<tr>
<td>D240 x 500, D280 x 700 VARIO</td>
<td>32-33</td>
</tr>
<tr>
<td>Engine Lathes</td>
<td>34-35</td>
</tr>
<tr>
<td>D320 x 920</td>
<td></td>
</tr>
<tr>
<td>D330 x 1000</td>
<td>36-37</td>
</tr>
<tr>
<td>D360 x 1000</td>
<td>38-39</td>
</tr>
<tr>
<td>D420 x 1500</td>
<td>40-41</td>
</tr>
<tr>
<td>CNC Flat-bed Lathe</td>
<td>42</td>
</tr>
<tr>
<td>D280-CNC</td>
<td></td>
</tr>
<tr>
<td>CNC Machine Enclosure</td>
<td>43</td>
</tr>
<tr>
<td>For use with Flat-bed Lathe</td>
<td></td>
</tr>
</tbody>
</table>
Grinding

Abrasive Belt Grinders
BSM75, BSM150

Drill Sharpener
DG20

Sawing

Cold Saws
CS250, CS350

Support Stands / Digital Readouts

Roller Material Support Stands
MSR4, MSR7

Digital Readouts & Glass Scales
DPA 2000

Magnetic Digital Readout
MPA-3

Milling Accessories / Vises / Accessories

Accessories &

5-Axis Multi-Position Milling Work Stop

Milling Start-Up Tool Packages

Milling Vises

Palmgren Drill Press Vises

PROGRIP Vise

Prices, design and specifications are subject to change without notice. Due to transport issues, some machines may require some assembly.
Optimum premier line of step pulley drill presses have a wide range of speeds and are constructed throughout to form a solid base for heavy, accurate continuous use.

The pulleys are long wearing aluminum alloy, fully machined and balanced. Combined with a Gates 7M industrial V-ribbed V-belt that delivers better gripping and power with a service life of 10,000 hours. Speed changes are fast and easy – our exclusive quick change handle and motor spring plate provides consistent, proper tension from the motor to the belt and pulleys all the time. The fully enclosed machine tool spindle has a concentricity of .0005" at the spindle nose.

Other standard features include:
- Built in halogen work light
- Forward & reverse switch
- Drill depth stop
- Digital depth gauge
- Digital speed display
- T-slotted table and base
- Interlocking spindle safety guard
- Electric interlock on the pulley cover
- Magnetic overload protection
- Built in tool ejector (on all but the B24H)
- Chuck and arbor

These drills can be used to perform all hole making operations – drilling, tapping, reaming, boring, spot-facing, counter-boring and chamfering in any type.

See pages 54-58 for accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI B24H</th>
<th>OPTI B28HB</th>
<th>OPTI B28H</th>
<th>OPTI B34H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3020244</td>
<td>3020252</td>
<td>3020284</td>
<td>3020334</td>
</tr>
<tr>
<td>Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric supply</td>
<td>Motor</td>
<td>1HP / 115V / 1PH</td>
<td>1HP / 115V / 1PH</td>
<td>1HP / 115V / 1PH</td>
</tr>
<tr>
<td>Drilling capacity</td>
<td>Drilling capacity in steel</td>
<td>Ø 24 mm / .945&quot;</td>
<td>Ø 28 mm / 1.103&quot;</td>
<td>Ø 28 mm / 1.103&quot;</td>
</tr>
<tr>
<td></td>
<td>Working range</td>
<td>13&quot;</td>
<td>16&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td></td>
<td>Quill travel</td>
<td>85 mm / 3.347&quot;</td>
<td>105 mm / 4.134&quot;</td>
<td>105 mm / 4.134&quot;</td>
</tr>
<tr>
<td>Spindle holding fixture</td>
<td>Spindle holding fixture</td>
<td>MT 2</td>
<td>MT 3</td>
<td>MT 3</td>
</tr>
<tr>
<td>Speeds</td>
<td>Spindle speeds</td>
<td>420-4800 rpm</td>
<td>145-4800 rpm</td>
<td>145 - 4800 rpm</td>
</tr>
<tr>
<td></td>
<td>Number of pulley steps</td>
<td>7 steps</td>
<td>16 steps</td>
<td>16 steps</td>
</tr>
<tr>
<td>Drilling table</td>
<td>Table size Length x Width</td>
<td>280 x 300 mm / 11.024&quot; x 11.811&quot;</td>
<td>340 x 360 mm / 13.386&quot; x 14.173&quot;</td>
<td>340 x 360 mm / 13.386&quot; x 14.173&quot;</td>
</tr>
<tr>
<td></td>
<td>T-slot size</td>
<td>14 mm / .551&quot;</td>
<td>14 mm / .551&quot;</td>
<td>14 mm / .551&quot;</td>
</tr>
<tr>
<td></td>
<td>Distance spindle - table (max.)</td>
<td>515 mm / 20.276&quot;</td>
<td>685 mm / 26.968&quot;</td>
<td>680 mm / 33.859&quot;</td>
</tr>
<tr>
<td></td>
<td>Working surface base L x W</td>
<td>280 x 260 mm / 11.024&quot; x 10.236&quot;</td>
<td>320 x 320 mm / 12.598&quot; x 12.598&quot;</td>
<td>320 x 320 mm / 12.598&quot; x 12.598&quot;</td>
</tr>
<tr>
<td></td>
<td>Distance spindle - base (max.)</td>
<td>681 mm / 26.811&quot;</td>
<td>1275 mm / 50.197&quot;</td>
<td>1275 mm / 50.197&quot;</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Column diameter</td>
<td>80 mm / 3.150&quot;</td>
<td>92 mm / 3.622&quot;</td>
<td>92 mm / 3.622&quot;</td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td>665 mm / 26.181&quot;</td>
<td>698 mm / 27.480&quot;</td>
<td>698 mm / 27.480&quot;</td>
</tr>
<tr>
<td></td>
<td>Width</td>
<td>434 mm / 17.087&quot;</td>
<td>449 mm / 17.677&quot;</td>
<td>449 mm / 17.677&quot;</td>
</tr>
<tr>
<td></td>
<td>Height</td>
<td>998 mm / 39.292&quot;</td>
<td>533 mm / 20.92&quot;</td>
<td>1721 mm / 67.776&quot;</td>
</tr>
<tr>
<td></td>
<td>Net weight</td>
<td>130 kg / 287 lbs.</td>
<td>120 kg / 265 lbs.</td>
<td>140 kg / 309 lbs.</td>
</tr>
</tbody>
</table>
Vibration free
- Ground aluminum V-belt pulleys

Selector switch direction of rotation
- Clockwise/counterclockwise

Digital depth gauge
- Accuracy of the display 0.0004"  
- Switchable mm/inch

Safety spindle protection
- Best possible protection for the user  
- Height-adjustable  
- Micro switch with interlock

Spindle precision
- Less than 0.0006" measured at the spindle nose

Drilling spindle
- Internal taper  
- Precision ball bearings

Cast-iron column
- Thick-walled/ground  
- Drill head bolted to column for minimum deflection and greater stability

V-belt cover
- With interlock safety switch

Digital speed display
- 4-digit value  
- Easy-to-read

Quick-action clamping
- Easy tensioning of the V-belt for quick speed change

Drill depth stop
- Scale

Machine lamp
- Integrated in the drilling head  
- Halogen lamp 20 watts

Drilling table
- Largely dimensioned  
- Solid  
- Height-adjustable via rack and pinion  
- Precisely machined  
- Transversally running T-slots for easier fixture & vise mounting

Base plate
- Usable as a working surface for extra high workpieces by rotating the drilling table  
- Solid  
- Largely dimensioned  
- Precisely machined at the surface  
- Parallel running T-slots

Gates 7 M industrial V-ribbed V-belt
- Service life of the V-belts up to 10,000 operating hours

Built-in Tool Ejector
- Simple tool change

Model B34H
Optimum’s highest quality drilling machines are built using the latest drilling technology and operational features that stand up to production output and accuracy.

Built with the operator in mind these premier drills combine efficiency, safety and ergonomics giving them an edge over all competitive models. The unique combination of V-belt and variable speed inverter provides the broadest speed range available on the market today. This speed range delivers the power and torque for large hole drilling and the high speed and control for small hole applications - making it ideal for working in a great array of materials. The pulleys are long wearing aluminum alloy, fully machined and balanced and are driven by a Gates 7M industrial V-ribbed V-belt that delivers all the needed power to the spindle with a service life of 10,000 hours.

These drills use a brushless DC motor with permanent current control combined with the latest state of the art variable speed inverter designed and built exclusively for metalworking machine tools. The fully enclosed machine tool spindle has a concentricity of .0005” at the spindle nose.

Other standard features include:
- Built in halogen work light
- Forward and reverse switch
- Tapping mode
- Auto mode that activates the spindle by pulling down on the hand feed lever
- Coolant
- Digital depth gauge
- Digital spindle rpm readout
- Interlocking spindle safety guard
- Electric interlock on pulley cover
- Magnetic overload protection
- Built in tool ejector
- Chuck and arbor

These drills can be used to perform all hole making operations – drilling, tapping, reaming, boring, spot-facing, counter-boring and chamfering in any type of material.

See pages 54-58 for accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI B28H VARIO</th>
<th>OPTI B34H VARIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3020288 Floor</td>
<td>3020238 Floor</td>
</tr>
</tbody>
</table>

Features

**Electric supply**
- Motor: 2HP / 230V / 1PH
- Motor: 3HP / 230V / 1PH

**Drilling capacity**
- Drilling capacity in steel: Ø 28 mm / 1.104”
- Drilling capacity in steel: Ø 34 mm / 1.336”
- Working range: 16”
- Working range: 22”
- Quill travel: 105 mm / 4.134”
- Quill travel: 160 mm / 6.299”

**Spindle holding fixture**
- Spindle holding fixture: MT 3
- Spindle holding fixture: MT4

**Speeds**
- Spindle speeds: 35 - 5600 rpm
- Spindle speeds: 40 - 5100 rpm
- Number of pulley steps: 12 steps, continuously variable
- Number of pulley steps: 9 steps, continuously variable

**Drilling table**
- Table size Length x Width: 340 x 360 mm / 13.386” X 14.173”
- Table size Length x Width: 420 x 400 mm / 16.535” X 15.748”
- T-slot size: 14 mm / .551”
- T-slot size: 14 mm / .551”
- Distance spindle - table (max.): 860 mm / 33.858”
- Distance spindle - table (max.): 790 mm / 31.102”
- Working surface stand L x W: 320 x 320 mm / 12.598” X 12.598”
- Working surface stand L x W: 390 x 390 mm / 15.354” X 15.354”
- Distance spindle - stand (max.): 1275 mm / 50.197”
- Distance spindle - stand (max.): 1025 mm / 40.354”

**Dimensions**
- Column diameter: 92 mm / 3.622”
- Column diameter: 115 mm / 4.528”
- Length: 701 mm / 27.598”
- Length: 918 mm / 36.142”
- Width: 474 mm / 18.661”
- Width: 595 mm / 23.032”
- Height: 1755 mm / 69.094”
- Height: 1930 mm / 74.606”
- Net weight: 141 kg / 311 lbs.
- Net weight: 290 kg / 640 lbs.
Model B28H Vario

Vibration free
- Ground aluminum pulleys

Gates 7M industrial V-ribbed V-belt
- Service life of the V-belts up to 10,000 operating hours
- Increased flexibility reduces heat build-up
- More torque than common V-belts

Digital speed display
- 4-digit value
- Easy-to-read

Quick-action clamping
- Easy tensioning of the V-belt for quick speed changes

Operating mode (B34H Vario)
- “Threading”
- “Auto”

Machine lamp
- Integrated in the milling head
- Halogen lamp

Cast iron column
- Thick-walled/ground
- Drill head screwed to column for minimum deflection and greater stability

Drilling table
- Height-adjustable via rack and pinion
- Precisely machined
- Transversally running T-slots for easier fixture and vise mounting

Coolant system
- Supplied as standard
- Capacity of coolant tank .925 gal.

Base plate
- May be used for extra high workpieces by rotating the table
- Solid
- Largely dimensioned
- Precisely machined at the surface
- Parallel running T-slots

V-belt cover
- With safety interlock switch

Safety spindle protection
- Best possible protection for the user
- Height adjustable
- Micro-switch with interlock

Moel B34H Vario
This Optimum high quality drilling machine is built using the latest drilling technology and operational features that stand up to production output and accuracy.

Built with the operator in mind these premier drills combine efficiency, safety and ergonomics giving them a competitive edge over all competitive models. This positive power variable speed drill has one of the broadest speed ranges available on the market today. This speed range delivers the power and torque for large hole drilling and the and the high speed and control for small hole applications - making it ideal for working in a great array of materials. The pulleys are long wearing aluminum alloy, fully machined and balanced and are driven by a Gates 7M industrial V-ribbed V-belt that delivers all the needed power to the spindle with a service life of 10,000 hours. This drill uses a gear reduction on a brushless DC motor with permanent current control which is then combined with the latest state of the art variable speed inverter designed and built exclusively for metalworking machine tools. The fully enclosed machine tool spindle has a concentricity of .0005” at the spindle nose.

Other standard features include:
• Built in halogen work light
• Tapping mode
• Coolant
• Digital depth gauge
• Digital spindle rpm readout
• Electric interlock on pulley cover
• Built in tool ejector
• Forward and reverse switch
• Auto mode that activates the spindle by pulling down on the hand feed lever
• Interlocking spindle safety guard
• Magnetic overload protection

These drills can be used to perform all hole making operations – drilling, tapping, reaming, boring, spot-facing, counter-boring and chamfering in any type of material.

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI B30BS VARIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3021308</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td></td>
</tr>
<tr>
<td>Electric supply</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>3HP / 230V / 1PH</td>
</tr>
<tr>
<td>Motor coolant pump</td>
<td>40 W / .054 HP</td>
</tr>
<tr>
<td><strong>Drilling capacity</strong></td>
<td></td>
</tr>
<tr>
<td>Drilling capacity in steel</td>
<td>Ø 30 mm / 1.181&quot;</td>
</tr>
<tr>
<td>Threading in steel</td>
<td>M16</td>
</tr>
<tr>
<td>Working range</td>
<td>22”</td>
</tr>
<tr>
<td>Quill travel</td>
<td>125 mm / 4.923&quot;</td>
</tr>
<tr>
<td><strong>Spindle holding fixture</strong></td>
<td></td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT 3</td>
</tr>
<tr>
<td><strong>Speeds</strong></td>
<td></td>
</tr>
<tr>
<td>Spindle speeds</td>
<td>30 - 3900 rpm</td>
</tr>
<tr>
<td>Number of pulley steps</td>
<td>4 steps, continuously variable</td>
</tr>
<tr>
<td><strong>Drilling table</strong></td>
<td></td>
</tr>
<tr>
<td>Table size Length x Width</td>
<td>400 x 500 mm / 15.748” x 19.685”</td>
</tr>
<tr>
<td>T-slot size</td>
<td>14 mm / .551”</td>
</tr>
<tr>
<td>Drilling table swing around column</td>
<td>360°</td>
</tr>
<tr>
<td>Distance spindle - table (max.)</td>
<td>780 mm / 30.709”</td>
</tr>
<tr>
<td>Working surface stand Length x Width</td>
<td>270 x 390 mm / 10.630” x 15.354”</td>
</tr>
<tr>
<td>Distance spindle - stand (max.)</td>
<td>1230 mm / 48.425”</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Column diameter</td>
<td>115 mm / 4.528”</td>
</tr>
<tr>
<td>Length</td>
<td>643 mm / 25.315”</td>
</tr>
<tr>
<td>Width</td>
<td>534 mm / 21.026”</td>
</tr>
<tr>
<td>Height</td>
<td>1850 mm / 72.835”</td>
</tr>
<tr>
<td>Net weight</td>
<td>280 kg / 618 lbs.</td>
</tr>
</tbody>
</table>

Operating mode “auto”
• In the automatic mode, the spindle will start automatically upon lifting the lever and stops in the initial position. This way, it is not necessary to press the push button Start and Stop for repeated drilling tasks.

Operating mode “Threading”
• The spindle is being activated by moving the star grip downward. The turning direction is changed by pressing the end switch on the adjustable drilling depth stop.

Simple tool change due to built in tool ejector:
• Push the ejection device and then press the hand grip upwards - the taper mandrel will be pressed out of the drilling spindle.
Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/direction of rotation
- Potentiometer
- Coolant switch
- Switch machine lamp
- Digital depth gauge
  Accuracy of the display 0.0004"

Safety spindle protection
- Best possible protection for the user
- Height-adjustable
- Micro switch with interlock

Coolant hose
- Nozzle
- Control valve

Base plate
- May be used for extra high work by rotating the work table
- Solid
- T-slots
- Precisely machined at the surface

See pages 54-58 for accessories

- In order to optimize the drilling capacity an additional speed level is available
  - Equipped with Gates 7M V-ribbed V-belt
  - Increased flexibility reduces heat build-up providing more torque than standard V-belts
  - Vibration free ground aluminum V-belt pulleys

<table>
<thead>
<tr>
<th>Speed Range</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30 - 300 rpm</td>
<td>120 - 1200 rpm</td>
<td>240 - 2400 rpm</td>
<td>390 - 3900 rpm</td>
</tr>
</tbody>
</table>

Machine lamp
- Integrated in the drilling head
- Halogen lamp

Column
- Thick-walled/ground
- Drill head bolted to column for minimum deflection and greater stability

Height adjusting of table
- Via rack and pinion

Drilling table
- Largely dimensioned
- Solid
- Precisely machined
- Transversally running T-slots for easier mounting of vise
- Heavily ribbed at the backside
- Double clamping/locking

Coolant system
- Supplied as standard
- Coolant tank integrated in the base plate
- Capacity of coolant tank 1.190 gal.
Optimum’s gear head variable speed drilling machine is built using the latest drilling technology and operational features that stand up to production output and accuracy.

Built with the operator in mind this premier drill combines efficiency, safety and ergonomics giving it a competitive edge over all competitive models. The positive power variable speed has a broad speed range available. This speed range delivers the power and torque for large hole drilling and the and the high speed and control for small hole applications - making it ideal for working in a great array of materials. These drills use a brushless DC motor with permanent current control combined with the latest state of the art variable speed inverter designed and built exclusively for metalworking machine tools. The gear drive transmission delivers full power to the spindle at any speed. The fully enclosed machine tool spindle has a concentricity of .0005” at the spindle nose. The built-in spindle power feed has 3 feed rates and can be engaged or disengaged by pressing the button built into the three spoke hand feed lever.

**Other standard features include:**
- Built in halogen work light
- Forward and reverse switch
- Coolant
- Digital depth gauge
- Digital spindle rpm readout
- Interlocking spindle safety guard
- Magnetic overload protection
- Built in tool ejector

See pages 54-58 for accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI B30 VGM 3034308</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features of performance</td>
<td></td>
</tr>
<tr>
<td>Electrical connection</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>1.1HP / 115V / 1PH</td>
</tr>
<tr>
<td>Motor coolant pump</td>
<td>40 W / .054 HP</td>
</tr>
<tr>
<td>Drilling capacity</td>
<td></td>
</tr>
<tr>
<td>Drilling capacity in steel (St. 37)</td>
<td>Ø 30 mm / 1-3/16&quot;</td>
</tr>
<tr>
<td>Continuity drilling cap. in steel</td>
<td>Ø 24 mm / 1&quot;</td>
</tr>
<tr>
<td>Working range</td>
<td>285 mm / 22&quot;</td>
</tr>
<tr>
<td>Sleeve travel</td>
<td>125 mm / 4-15/16&quot;</td>
</tr>
<tr>
<td>Spindle holding fixture</td>
<td>MT 3</td>
</tr>
<tr>
<td>Spindle taper</td>
<td></td>
</tr>
<tr>
<td>Quill feed (St. 37)</td>
<td>.003&quot; / .006&quot; / .008&quot;</td>
</tr>
<tr>
<td>Speeds</td>
<td></td>
</tr>
<tr>
<td>Spindle speeds</td>
<td>80 - 3'000 rpm</td>
</tr>
<tr>
<td>Number of steps</td>
<td>3 steps, continuously variable</td>
</tr>
<tr>
<td>Drilling table</td>
<td></td>
</tr>
<tr>
<td>Table size Length x Width</td>
<td>400 x 500 mm / 15-3/4&quot; x 19-11/16&quot;</td>
</tr>
<tr>
<td>T-slot size</td>
<td>14 mm / 1/2&quot;</td>
</tr>
<tr>
<td>Distance spindle - table (max.)</td>
<td>780 mm / 30-3/4&quot;</td>
</tr>
<tr>
<td>Working surface base L x W</td>
<td>385 x 385 mm / 15-5/32&quot; x 15-5/3&quot;</td>
</tr>
<tr>
<td>Distance spindle - base (max.)</td>
<td>1'320 mm / 52&quot;</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Column diameter</td>
<td>115 mm / 3-1/2&quot;</td>
</tr>
<tr>
<td>Length x Width x Height</td>
<td>600 x 735 x 1'915 mm / 24&quot; x 29&quot; x 75.400&quot;</td>
</tr>
<tr>
<td>Net weight</td>
<td>305 kg / 675 lbs.</td>
</tr>
</tbody>
</table>
Digital speed display
- Easy-to-read
- 4 digit value

Built-in tool ejector
- Push in the ejection mechanism and then press the quill feed handle upward - the taper mandrel will be pressed out of the drill spindle.

Drilling table
- Largely dimensioned, solid and precisely machined
- Transversally running T-slots for easier mounting of vise
- Height-adjustable via rack and pinion
- Rotation of 360° around the column

Automatic spindle feed
- For deep drillings the automatic spindle sleeve feed can be engaged or disengaged at any time by actuating the push button switches

Machine lamp
- Built in

Safety spindle protection
- Best possible protection for the user
- Height-adjustable
- Micro switch with interlock

Cast-iron upright
- Thick-walled and ribbed

Coolant equipment
- Supplied as standard
- Coolant tank integrated in base plate

Base plate
- Solid with T-slots
- Precisely machined surface
- Usable as a working surface for large workpieces

Model B30VGM
This very rugged drill press is the ideal choice for medium – to heavy duty – large hole making production and is built with performance features to withstand continuous industrial use.

This drill is built to last even in the most adverse working conditions. Large heavy cast iron construction for maximum stability with all gear drive hardened and ground steel gears that operate in an oil bath with 18 speeds to choose from. Tempered, ground spindle with internal taper mounted in precision bearings for maximum accuracy, 6 spindle power feed rates with electromagnetic clutch, power feed is engaged by push button located in the three spoke hand feed lever.

**Other standard features include:**
- Tapping mode
- Built in halogen work light
- Hand wheel for fine feed of spindle
- Coolant system
- Electronic interlock spindle safety guard
- Automatic tool ejector

These drills can be used to perform all hole making operations – drilling, tapping, reaming, boring, spot-facing, counter-boring and chamfering in any type of material.

See pages 54-58 for accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI B50 GSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3034504</td>
</tr>
</tbody>
</table>

**Features**

**Electric supply**
- Motor 3HP/4HP / 230V / 3PH
- Motor coolant pump 40 W / .054 HP

**Drilling capacity**
- Drilling capacity in steel Ø 50 mm / 2"
- Threading in steel M 42 / 1-5/8"
- Drilling capacity in cast iron Ø 60 mm / 2-3/8"
- Threading in cast iron M 50 / 2"
- Working range 375 mm / 29.5"
- Sleeve travel 230 mm / 9"

**Spindle holding fixture**
- Spindle taper MT 4
- Autom. spindle sleeve feed 6 steps .002 / .012 in/rev

**Speeds**
- Spindle speeds 50 - 2090 rpm
- Number of steps 18 steps

**Drilling table**
- Working surface table Length x Width 600 x 600 mm / 23-5/8" x 23-5/8"
- T-slot size 18 mm / 3/4"
- Distance spindle - table (max.) 800 mm / 31-1/2"
- Working surface stand Length x Width 600 x 520 mm / 23-5/8" x 20-7/16"
- Distance spindle - stand (max.) 1300 mm / 51"

**Dimensions**
- Upright diameter 200 mm / 7-7/8"
- Length x Width x Height 1016 x 610 x 2454 mm / 40" x 24" x 97"
- Net weight 950 kg / 1950 lbs.
Model B50GSM

Drill depth stop
· Adjustable

Spindle sleeve fine infeed
· via handwheel

Drilling table
· Largely dimensioned
· Solid
· Precisely machined
· Transversally running T-slots for easier mounting of vise
· Heavily ribbed at the backside
· Rotation of 360° around the column
· Coolant trough

Base plate
· Usable as a working surface for large, high workpieces
· Parallel running T-slots
· Machined surface

Spindle sleeve feed
· Manual or power feed
· The feed is activated with the push buttons located in the quill feed handle

· Selector switch for spindle speeds

Safety spindle protection
· Best possible protection for the user
· Height-adjustable
· Micro switch with interlock

Cast-iron upright
· Thick-walled and ribbed

Coolant equipment
· Supplied as standard
· Coolant tank integrated in the base plate
· Tank capacity 1.3 gallons

· Automatic spindle feed with electromagnetic clutch
· For deep hole drilling the automatic spindle sleeve feed can be engaged or disengaged at any time by actuating the push button switches

· 9 selectable speeds via gear shifting lever at the front of the drill head combined with a two-stage motor provides 18 spindle speeds
Optimum's BF20 Vario deluxe mill/drill machine delivers the precision, power and versatility to handle a wide range of machining operations normally performed in much larger and more expensive milling machines.

The all gear drive transmission delivers full power at any speed driving tools at nearly 100% of the available horsepower. These mills are equipped with a high performance brushless DC motor with permanent current control and the latest technology variable speed inverter providing the broadest range of spindle speeds to fit any application. A rigid box column with hardened, ground and hand scraped dovetail ways provide accurate head positioning with minimum deflection and vibration. The milling head can be tilted right or left up to 90 degrees. Precision machine tools spindles equipped with taper roller bearings and a spindle concentricity of .0005” at the spindle nose. The cross slide table is precision ground with t-slots, adjustable limit stops, scale and three metal adjusting hand wheels.

**Standard features include:**
- Halogen work light
- Depth stop
- Digital speed read out
- Digital readout depth gauge
- Interlocking spindle safety guard
- Draw bar

This all purpose machine is ideal for milling, drilling, slotting, engraving, boring, tapping and angle machining operations in tool rooms, pattern shops, mold and die shops, job shops, fabrication shops and maintenance departments.

### Features of performance

**Electrical connection**
- Motor: 1.20HP / 115V / 1PH

**Drilling-milling capacity**
- Drilling capacity: max. Ø 16 mm / 5/8”
- Milling capacity cutter head: max. Ø 63 mm / 2”
- Milling capacity end mill cutter: max. Ø 20 mm / 3/4”
- Working range: 185 mm / 7.284”

**Spindle holding fixture**
- Spindle Taper: MT 2/M 10
- Quill travel: 50 mm / 1.969”

**Drill-mill head**
- Head tilts: ± 90°
- Gear stages: 2 stages, continuously variable
- Head travel*: 280 mm / 11.024”
- Maximum spindle to table: 13.196”

**Speeds**
- Gear stage low: 90 - 1480 rpm
- Gear stage fast: 150 - 3000 rpm

**Cross table**
- Table length: 500 mm / 19.685”
- Table width: 180 mm / 7.087”
- Y-axis travel*: 175 mm / 6.890”
- X-axis travel*: 280 mm / 11.023”

- T-slot size: 12 mm / .472”
- T-slot distance: 63 mm / 2.480”
- Load of cross table (max.): 55 kg / 121 lbs.

**Dimensions**
- Length x Width x Height: 670 mm x 550 mm x 860 mm /
  26.378” x 21.654” x 33.858”
- Net weight: 103 kg / 227 lbs.

### Accessories

- Collet chucks kit MT2/M10, 1/8” to 7/16” 3352159
- Holding arbor for cutter 16 mm MT2 3352102
- Collet chucks kit 3/32” - 5/8”, ER 25 3352157
- Arbor for drill chuck MT2/M10/33JT 3050671
- Cutter head for copy and surface milling MT2 3350212

### Heavy Duty Floor Stand

- Shelf and chip tray
- Easy access floor for tool storage
- L x W x H: 19-3/4” x 16-1/2” x 35-1/2”

### Digital Magnetic Measuring System

- MPA 3-S

See pages 51-58 for more accessories
Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
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- Adjustable

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- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
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- Halogen light

Safety guard

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- Reversible mm/inch

Machine lamp
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- Halogen light

Safety guard

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- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Motor
- Two-stage for powerful transmission of the torque to the spindle
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control on CNC model

Speeds
- Large, continuously adjustable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left-handed rotation

Spindle sleeve travel display
- Digital
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Machine lamp
- Integrated in the drill-mill head
- Halogen light

Safety guard

Taper roller bearings
- High concentricity precision
- Better than 0.0005" measured in the spindle sleeve

Box column & ways
- Greater rigidity and accuracy over longer travel
- Head tilts 90° left & right

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

Model BF20 Vario

Model BF20 Vario CNC
See page 22

Z-Column
- Rear side with hole, this way, it is easy to oil the trapezoid spindle or to grease the recirculating ball spindle

Y-axis
- 2 pockets are pre-milled
- You can easily mount the magnetic tape for the optional DRO

Z-Column and X-axis
- Prepared groove for the sub assembly of the magnetic tapes for the optional DRO
Optimum’s BF30 Vario deluxe mill/drill machine delivers the precision, power and versatility to handle a wide range of machining operations normally performed in much larger and more expensive milling machines.

The all gear drive transmission delivers full power at any speed driving tools at nearly 100% of the available horsepower. These mills are equipped with a high performance brushless DC motor with permanent current control and the latest technology variable speed inverter providing the broadest range of spindle speeds to fit any application. A rigid box column with hardened, ground and hand scraped dovetail ways provide accurate head positioning with minimum deflection and vibration. The milling head can be tilted right or left up to 90 degrees. Precision machine tools spindles equipped with taper roller bearings and a guaranteed spindle concentricity of .0005” at the spindle nose. The cross slide table is precision ground with t-slots, adjustable limit stops, scale and three metal adjusting hand wheels.

**Standard features include:**
- Halogen work light
- Depth stop
- Digital speed read out
- Digital readout depth gauge
- Interlocking spindle safety guard
- Draw bar

The BF30 also comes with tapping mode and an auto mode which allows the starting of the machine through the three spoke feed handle.

This all purpose machine is ideal for milling, drilling, slitting, engraving, boring, tapping and angle machining operations in tool rooms, pattern shops, mold and die shops, job shops, fabrication shops and maintenance departments.

### Features of performance

**Electrical connection**
- Motor: 3HP / 230V / 1PH

**Drilling-milling capacity**
- Drilling capacity in casting (max.): Ø 28 mm / 1”
- Drilling capacity in steel (max.): Ø 25 mm / 3/4”
- Milling capacity cutter head (max.): Ø 75 mm / 3”
- Milling capacity end mill cutter (max.): Ø 30 mm / 3/4”
- Working range: 220 mm / 8.661”

**Spindle holding fixture**
- Spindle taper: R8
- Quill travel: 90 mm / 3.543”
- Quill diameter: 70 mm / 2.756”
- Draw-in rod: M12

**Drill-mill head**
- Head rotation: +/- 90°
- Gear stages: 3 stages, continuously variable
- Head travel: 450 mm / 17.716”
- Maximum spindle to table: 470 mm / 18.503”

**Speeds**
- Gear stage low: 80 - 1100 rpm
- Gear stage medium: 160 - 1700 rpm
- Gear stage fast: 320 - 3100 rpm

**Cross table**
- Cross table length x Width: 750 x 210 mm / 29-1/2” x 8-1/4”
- X-axis travel: 450 mm / 17.716”
- Y-axis travel: 200 mm / 7.874”
- T-slot size / Distance: 12 mm / 63 mm / number 3 / 1/2” / 2.480” / number 3

**Dimensions**
- Length x Width x Height: 1073 x 792 x 1245 mm / 42-1/4” x 31” x 49”
- Net weight: 265 kg / 585 lbs.

### Model

<table>
<thead>
<tr>
<th>Item No</th>
<th>Features of performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3338438</td>
<td>OPTI BF30 Vario</td>
</tr>
</tbody>
</table>

### Optional heavy duty floor stand
- Solid for added stability
- Shelf and chip tray
- Easy access door for tool storage
- Dimensions L x W x H:
  - 37” x 25-1/2” x 31”

**Item No 3353004**

### Digital magnetic measuring system

**MPA 3-L**

**Item No 3383908**

### Optional coolant system

**Item No 3352002**

See pages 51-58 for more accessories
High Performance Vario drive
- DC motor with permanent current control

Spindle speeds
- Infinitely variable speed adjustment
- Spindle speeds from 80 up to 3100 rpm

Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/spindle rotating direction
- Potentiometer

Digital Depth gauge
- Accuracy of the display 0.01 mm / 0.0004"
- Reversible mm/inch

Cross table
- Compact, precise and largely dimensioned
- Precision machined surface
- T-slots
- Adjustable V-ledges
- Adjustable via 3 handwheels
- Included longitudinal measuring scale
- Adjustable limit stops

Operating mode “auto”
- In the automatic mode, the motor will start automatically when the hand lever is pulled down and stops at the initial “up” position. This way, it is not necessary to press the push button Start and Stop for repeated drilling tasks

Operating mode “Threading”
- The motor is activated by moving the star grip/handle downward. The spindle direction is changed by limit switches on the adjustable depth stop

Gear Box
- Three-step

Spindle sleeve feed handle
- Via star grip (drilling)
- Coupler to change from manual rough feed to manual fine feed

Box column
- Solid dovetail slideway
- Highest stability
- Optimum precision

Protective way cover
- Stainless steel

Model BF30 Vario
Optimum’s deluxe BF46 Vario mill/drill machine is the largest in the series and has the precision, power and versatility to handle a wide range of machining operations normally performed in more expensive milling machines.

The all gear drive transmission delivers full power at any speed driving tools at nearly 100% of the available horsepower. These mills are equipped with a high performance brushless DC motor with permanent current control and the latest technology variable speed inverter providing the broadest range of spindle speeds to fit any application. A rigid box column with hardened, ground and hand scraped dovetail ways provide accurate head positioning with minimum deflection and vibration. The milling head can be tilted right or left up to 90 degrees. Precision machine tools spindles equipped with taper roller bearings and a spindle concentricity of .0005” at the spindle nose. The cross slide table is precision ground with t-slots, adjustable limit stops, scale and three metal adjusting hand wheels.

### Features of performance

**Electrical connection**
- Motor: 3HP / 230V / 1PH

**Drilling-milling capacity**
- Drilling capacity in casting (max.): Ø 30 mm / 1-3/16”
- Drilling capacity in steel (max.): Ø 28 mm / 1”
- Milling capacity cutter head (max.): Ø 80 mm / 3”
- Milling capacity end mill cutter (max.): Ø 32 mm / 1-1/4”
- Working range: 260 mm / 10.236”

**Spindle holding fixture**
- Spindle taper: R8
- Quill travel: 115 mm / 4.528”
- Draw-in rod: M16

**Drill-mill head**
- Head rotation: ± 90°
- Gear stages: 3 stages, continuously variable
- Head travel: 541 mm / 21-19/64”
- Maximum spindle to table: 545 mm / 21-7/16”

**Speeds**
- Gear stage low: 115 - 600 rpm
- Gear stage medium: 270 - 1400 rpm
- Gear stage fast: 590 - 3100 rpm

**Cross table**
- Table length: 850 mm / 33.465”
- Table width: 240 mm / 9.448”
- Y-axis travel: 250 mm / 9.843”
- X-axis travel: 500 mm / 19.685”
- T-slot size: 18 mm / 3/4”
- T-slot distance/number: 80 mm/3 / 3.150”

**Dimensions**
- Length x Width x Height: 1230 948 x 1519 mm / 48-1/2” x 37-5/16” x 60”
- Net weight: 480 kg / 1059 lbs.

### Standard features include:
- Halogen work light
- Depth stop
- Digital speed read out
- Digital readout depth gauge
- Interlocking spindle safety guard
- Draw bar

The BF46 model also comes with tapping mode and an auto mode which allows the starting of the machine through the three spoke feed handle.

This all purpose machine has the power and is ideal for milling, drilling, slotting, engraving, boring, tapping and angle machining operations in tool rooms, pattern shops, mold and die shops, job shops, fabrication shops and maintenance departments.
Operating mode “auto”
- In the automatic mode, the motor will start automatically when the hand lever is pulled down and stops at the initial “up” position. This way, it is not necessary to press the push button Start and Stop for repeated drilling tasks.

Operating mode “Threading”
- The motor is activated by moving the star grip/handle downward. The spindle direction is changed by limit switches on the adjustable depth stop.

Spindle speeds
- Infinitely variable speed adjustment
- Spindle speeds from 115 up to 3100 rpm

High Performance Vario drive
- DC motor with permanent current control

Digital Depth gauge
- Accuracy of the display 0.01 mm / 0.0004”
- Reversible mm/inch

Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/spindle rotating direction
- Potentiometer

Cross table
- Compact, precise and largely dimensioned
- Precision machined surface
- T-slots
- Adjustable V-ledges
- Included length measuring scale
- Adjustable limit stops

Spindle sleeve feed handle
- Via star grip (drilling)
- Coupler to change from manual rough feed to manual fine feed
- Handwheel for spindle sleeve fine feed

Spindle speeds
- Infinitely variable speed adjustment
- Spindle speeds from 115 up to 3100 rpm

Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/spindle rotating direction
- Potentiometer

Digital Depth gauge
- Accuracy of the display 0.01 mm / 0.0004”
- Reversible mm/inch

Cross table
- Compact, precise and largely dimensioned
- Precision machined surface
- T-slots
- Adjustable V-ledges
- Included length measuring scale
- Adjustable limit stops
Optimum’s CNC milling machines are available in three sizes and perform a wide range of applications with a high degree of machining flexibility, precision and power normally performed in much larger and more expensive milling machines.

The all gear drive transmission delivers full power and any speed driving tools at nearly 100% of the available horsepower. These mills are equipped with a high performance brushless DC motor and infinitely variable speed providing a very broad range of spindle speeds. The mills can be run manually or automatic. The head is mounted on a rigid box column and moves up/down on hardened, ground and hand scraped dovetail ways for accurate head positioning. The milling head can also be tilted right or left up to 90 degrees. The cross slide table is precision ground with t-slots, and travels on precision ball screws.

Standard features include:
- Halogen work light
- Depth stop
- Step motors
- Controller and Industry Controls conversational software

The MCG-1 and motion control boards are all made in the USA by Industry Controls. This software with the use of a standard lap-top (not supplied) converts to a fully 6 axis CNC controller. Allows direct import of DXF, BMP, JPG and HPGL files through Cad Cam, LazyCam, has visual G code display, fully customizable interface, customizable M-Codes and Macros using VBscript, spindle speed control, multiple relay control, manual pulse generation, video display of machine and full screen eligibility.

See pages 51-58 for accessories

---

Necessary Torque

**Torque**

**4.4 Nm / 3.3 Ft/lbs.**
on the spindle Z-axis

**Travel speed**
- max. 0.50"/sec. with trapezoidal spindle
- max. 1"/sec. with recirculating ball screw
- max. 0.55"/sec. with trapezoidal spindle
- max. 1"/sec. with recirculating ball screw
- position repeatability 0.02mm / .001"

**Torque**

**2.75 Nm / 2 Ft/lbs.**
on the spindle X- and Y-axis

**Travel speed**
- max. 0.55"/sec. with trapezoidal spindle
- max. 1"/sec. with recirculating ball screw
- position repeatability 0.02mm / .001"
**BF30 VARIO CNC**

Model BF30 Vario CNC  
Item No  3570052  
For machine specifications  
see pages 18-19  
See pages 51-58 for accessories

---

**Torque**  
11.6 Nm / 8.6 Ft/lbs.  
on the spindle Z-axis

**Travel speed**  
- max. 0.55"/sec. with trapezoidal spindle  
- max. 0.710"/sec. with recirculating ball screw  
- position repeatability 0.02mm / .001"

---

**Torque**  
11.6 Nm / 8.6 Ft/lbs.  
on the spindle X- and Y-axis

**Travel speed**  
- max. 0.629"/sec. with trapezoidal spindle  
- max. 0.787"/sec. with recirculating ball screw  
- position repeatability 0.02mm / .001"

---

*The indicated speeds demonstrate a nominal value which has been determined by the current OPTI BF30 Vario.*
The indicated speeds demonstrate a nominal value which has been determined by the current OPTI BF46 Vario.

### Torque
- **17.4 Nm / 12.8 Ft/lbs.** on the spindle Z-axis
- **17.4 Nm / 12.8 Ft/lbs.** on the spindle X- and Y-axis

### Travel speed*
- max. 0.629"/sec. with trapezoidal spindle
- max. 0.710"/sec. with recirculating ball screw
- position repeatability 0.02mm / .001"

---

Model BF46 Vario CNC
Item No 3570058
For machine specifications see pages 20-21
See pages 51-58 for accessories

---

*The indicated speeds demonstrate a nominal value which has been determined by the current OPTI BF46 Vario.
The Industry Controls software uses a true conversational format – real machinist’s language to prompt you for various movements and functions. You have more programming flexibility ranging from large CAM-generated programs to small daily functioning programs. It is powerful enough to handle any job and easy enough for anyone to operate.

The MDI screen (Manual Data Input) is used for a single movement or to execute a series of codes for testing or what ever short program you may want to do. This screen has buttons that will supply you with a list of G and M codes by simply clicking on them. The spindle can be manually operated from this screen and over ridden. Absolute and distance to go positions are displayed here.

Fill in the blanks and click post code. It will write the program for you or click preview and check what your part will look like before you have it write the code for you.

Offsets are used to establish a new zero position for programming a part. There are two basic types of offsets. They are work coordinates and height offsets. This screen displays machine coordinates and two tabs for work and height offsets.

This screen allows you to load programs in to the memory and then execute the program. Functions on this screen are edit, tool path graphics, single block, optional stop, Z axis inhibit, spindle and feed overrides, cycle start, feed hold and reset. Conversational functions are available from here as well along with the “distance to go” position.

You can tilt, pan, zoom and see your tool path before you run the part.

Software supplied with Optimum CNC Mills and CNC Flat Bed Lathe
Enclosed safety housings for drilling/milling machines OPTI BF20 VARIO, OPTI BF30 VARIO & OPTI BF46 VARIO

Optimum’s protective machine enclosure for use with our CNC milling machines enclose the machine protecting the operator while keeping the area surrounding the machine clean and safe. This enclosure meets all safety guidelines and requirements.

The enclosure allows clear, visible viewing from the front and each side with large clear safety glass windows. Two shelves in the base hold the controller and provide for extra storage. An attached shelf for a laptop computer mounts on the front for convenience and safety.

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3539081</td>
<td>For BF20 Vario</td>
</tr>
<tr>
<td>3539083</td>
<td>For BF30 Vario &amp; BF46 Vario</td>
</tr>
</tbody>
</table>

- Shelf for a laptop
- Opening for the cable connection from the computer to the CNC controller

Enclosure shown with optional machines and accessories
Each bench turret mill is manufactured and tested to assure that they meet the highest quality and accuracy standards found in much larger floor milling machines. These compact knee mills are an extraordinary value and a fine addition to any shop.

They feature a tilting head that tilts left or right 45 degrees and comes with a 9 speed step pulley drive. The ram also swivels up to 45 degrees right or left. The cross slide table is precision ground with t-slots, adjustable limit stops, and metal adjusting hand wheels. The table is mounted on a knee that moves up and down on precision ground, hardened and hand scraped dovetail ways which provide accurate positioning with minimum deflection. A precision R8 spindle equipped with Class 7 spindle bearings and a spindle concentricity of .0005” at the spindle nose.

**Standard features include:**
- Halogen work light
- Satin finish dials
- Fine down feed hand wheel
- Way cover
- Quick feed hand lever

A bench turret knee mill is ideal for milling, drilling, slotting, engraving, boring and angle machining operations in tool rooms, pattern shops, die shops, job shops, fabrication shops and maintenance departments.

See pages 51-58 for accessories

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**Features of performance**

**Electrical connection**
- Motor: 1.5HP / 115/230V / 1PH

**Drilling- milling capacity**
- Drilling capacity in casting: 1"
- Drilling capacity in steel: 3/4"

**Spindle holding fixture**
- Spindle taper: R8
- Quill travel: 3"
- Face milling cap: 3"
- End mill cap: 3/4"

**Drill-mill head**
- Inclination of spindle head, left/right: ± 45°
- Ram swivel angle, left/right: 45°
- Working range: 11"
- Head Travel: 2-1/2"
- Head Swivel: 90°
- Max. distance spindle to column: 5-1/2"
- Max. distance spindle to table: 12-1/2"

**Speeds**
- Spindle speed: variable, 9 speeds 200 - 2300 rpm

**Cross table**
- Table length: 660 mm / 26"
- Table width: 152 mm / 6-1/8"
- Cross table travel: 6"
- Vertical table travel: 14"
- Knee travel: 13-1/2"
- T-slot size: 3/8"
- T-slot width: 0.560"
- T-slot height: 5/8"

**Dimensions**
- Length x Width x Height: 1150 x 1080 x 1405 mm / 45.275”x42.520” x 55.315”
- Net weight: 265 kg / 585 lbs.
Quality, durability and value – three key reasons to buy a Optimum vertical turret milling machine. Every mill is manufactured and tested to assure that they meet the highest quality and accuracy standards.

Unequalled versatility and ease of operation with convenient variable speed controls that allow for quick, easy spindle speed adjustments without stopping the mill. Our vented air cooling system on the spindle head provides efficient heat dissipation, extends bearing life and prevents expansion without the need of an external fan. Solid one piece mehanite cast iron column and base construction, cast with added ribs help this mill to stand up to the toughest milling requirements. Dual tapper roller bearings provide maximum spindle rigidity in heavy cut applications. Flame hardened, ground and hand scrapped adjustable dovetail ways provide ideal lubrication coverage and retention on all way surfaces for less operating friction and greater accuracy. One shot lubrication system delivers metered oil to slideways and leadscrews for longer life and easier movement.

**Features of performance**

**Electrical connection**
- Motor: 3HP / 230V/460v / 3PH* 2HP / 115V/230V / 1PH*

**Drilling- milling capacity**
- Drilling capacity in casting: Ø 18 mm / 11/16" Ø 18 mm / 11/16"
- Drilling capacity in steel: Ø 16 mm / 5/8" Ø 16 mm / 5/8"
- Milling capacity cutter head: Ø 76 mm / 3" Ø 76 mm / 3"
- Milling capacity end mill cutter: Ø 18 mm / 3/4" Ø 18 mm / 3/4"

**Spindle holding fixture**
- Spindle taper: R8 R8
- Quill travel: 127 mm / 5" 127 mm / 5"

**Drill-mill head**
- Inclination of spindle head: ± 45° ±45°
- Working range: 213 - 533 mm / 8.386" - 20.984" 213 - 533 mm / 8.386" - 20.984"

**Spindle speed-variable**
- Spindle speed: 60-4200 rpm 60-4200 rpm

**Cross table**
- Table length: 1244 mm / 49" 1244 mm / 49"
- Table width: 230 mm / 9" 230 mm / 9"
- Load of cross table: 230 kg / 507 lbs. 230 kg / 507 lbs.
- Y-axis travel manual: 305 mm / 12" 305 mm / 12"
- X-axis travel automatic: 800 mm / 31.5" 800 mm / 31.5"
- Z-axis travel: 406 mm manual / 16" 406 mm manual / 16"
- T-slot size: 16 mm / 5/8" 16 mm / 5/8"
- T-slot distance (3 t-slots): 64 mm / 1.339" 64 mm / 1.339"
- Distance spindle - cross table: 57 - 463 mm / 2.244" - 18.228" 57 - 463 mm / 2.244" - 18.228"

**Dimensions**
- Length x Width x Height: 1400 x 1450 x 2150 mm /55" x 57" x 85" 1400 x 1450 x 2150 mm /55" x 57" x 85"
- Net weight: 950 kg / 2095 lbs. 950 kg / 2095 lbs.

*Prewired 230V

**Other standard equipment include:**
- Spindle brake
- Forward/reverse switch
- Fine down feed handwheel
- Quill power feed
- Way covers
- "x" & "y" axis table power feeds
- Three axis digital readout

These all-purpose mills are ideal for milling, slotting, boring, drilling, tapping and angle machining operations in tool rooms, pattern shops, mold shops, job shops, fabrications shops and maintenance departments.

See pages 51-58 for accessories
Precision ground table for accurate, square work surfaces

Heavy duty spindle brake for quick manual stops

Variable speed drive
  - Makes spindle speed selection easy
  - No speed compromises

X-axis/Y-axis
  - Automatic table feed supplied as standard
  - Infinitely variable speed control
  - Fast positioning
  - Right-/left-handed rotation

Turret rotates 360° and head rotates 90° either side of center

3 Axis DRO
  - Glass scales

Flame hardened ground and hand scraped ways
  - Ensure full bearing support
  - Maximum machine rigidity and vibration dampening

Quill power feed and drill depth stop
  - Adjustable automatic micrometer depth stop

Fine down feed hand wheel

One shot lubrication system

Optional coolant system

TMB200B-DPA

3 Axis DRO
Optimum’s 8” bench model engine lathe delivers the precision, power and versatility to handle a wide range of turning operations normally found in much larger machines.

Heavy cast construction, smooth power transmission with helical gears, hardened and ground ways all designed to give you years of trouble-free, precise turning. All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

<table>
<thead>
<tr>
<th>Model</th>
<th>D210 x 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3420322</td>
</tr>
</tbody>
</table>

**Features of performance**

**Electrical connection**

- Motor: 1HP / 115V / 1PH

**Machine data**

- Center height: 105 mm / 4.134”
- Center width: 400 mm / 15.748”
- Turning Ø via lathe bed: 210 mm / 8.268”
- Bed width: 125 mm / 5”
- Spindle speed: 180-2200 rpm
- Number of speeds: 6
- Spindle taper: MT 3
- Spindle hole: 21 mm / .827”
- Chuck size: 100 mm / 4”
- Top slide - travel: 70 mm / 2.756”
- Compound slide - travel: 110 mm / 4.331”
- Tailstock taper: MT 2
- Tailstock sleeve travel: 70 mm / 2.756”
- Longitudinal feed: .003” - .008”
- Pitch - Metric: 0.4 - 3.5 mm
- Pitch - Inch: 44 - 10 threads/”
- 4-Position Tool Post: 12.5 mm / .492”

**Dimensions**

- Length x Width x Height: 880 x 500 x 475 mm / 31.496” x 19.685” x 18.701”
- Net weight: 110 kg / 243 lbs.

Each lathe comes standard with:

- 3 jaw lathe chuck
- Safety chuck and tool post guards
- 4 way tool post
- Centers
- Chip tray
- Precision thrust and ball bearings in the head stock

An optional steel floor stand is available for all the bench models.

The bench lathe is the right choice for turning small metal parts and is used in prototype shops, home machinists, jewelry manufacturing, tool rooms, fabrication shops and maintenance shops.

**Accessories**

- Digital measuring system MPA 3-S
  - Item No 3383907
- Heavy duty steel floor stand
  - Item No 3440408
**Prismatic bed**
- Solid, aged prismatic bed made of grey cast iron, matured at least six months
- Inductively hardened (HRC 42-52)
- Precision ground

**Optional machine floor stand with shelves and doors for tool storage**
- L x W x H: 47" x 15" x 30".
- Item No 3440408

**Change gear kit**
- For threading
- Easy and fast speed change via V-belts

**Taper roller bearings**
- Two pieces
- P5 quality

**Trapezoid spindles**
- Taper roller bearings

**Chip protection**
- At the top

**Slide**
- Precision machined
- Handwheels with adjustable precision scaling of 0.002 / 0.0004".
- 4-way tool post holder
- All guides adjustable via V-ledges

**Tailstock**
- Adjustable for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scale of 0.02 mm / 0.0008"

**Thrust bearing**

**Lead screw spindle**
- Running on two porous bearings

**Taper roller bearings**
- Two pieces
- P5 quality

**Option for floor stand**

**Model D210 x 400**
on optional floor stand
Optimum’s 9” and 11” bench model engine lathes deliver the precision, power and versatility to handle a wide range of turning operations normally found in much larger machines.

Heavy cast construction, smooth power transmission with helical gears, hardened and ground ways all designed to give you years of trouble-free, precise turning. All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

Each lathe comes standard with:
- Lathe chuck
- Safety chuck and tool post guards
- 4 way tool post
- Centers
- Splash guard and chip tray
- Precision thrust and ball bearings in the head stock

The 11” x 27” model is infinitely variable speed with a high performance brushless DC motor with permanent current control.
An optional steel floor stand is available for all the bench models.

The bench lathe is the right choice for turning small metal parts and is used in proto type shops, home machinists, jewelry manufacturing, tool rooms, fabrication shops and maintenance shops.

The D280 x 700DC VARIO is available also as a CNC model. See page 42.

<table>
<thead>
<tr>
<th>Model</th>
<th>D240 x 500 G</th>
<th>D280 x 700 DC Vario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3425007</td>
<td>3427007</td>
</tr>
<tr>
<td><strong>Features of performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electrical connection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>1HP / 115V / 1PH</td>
<td>-</td>
</tr>
<tr>
<td>Motor Vario machine</td>
<td>-</td>
<td>1.5HP / 115V / 1PH</td>
</tr>
<tr>
<td><strong>Machine data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center height</td>
<td>125 mm / 4.922”</td>
<td>140 mm / 5.512”</td>
</tr>
<tr>
<td>Center width</td>
<td>550 mm / 21.654”</td>
<td>700 mm / 27.559”</td>
</tr>
<tr>
<td>Turning Ø over lathe bed</td>
<td>250 mm / 9.843”</td>
<td>266 mm / 10.472”</td>
</tr>
<tr>
<td>Bed width</td>
<td>135 mm / 5.315”</td>
<td>180 mm / 7.087”</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>150-2400 rpm</td>
<td></td>
</tr>
<tr>
<td>Number of speeds</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Spindle speed DC Vario machines</td>
<td>-</td>
<td>30 - 4000 rpm</td>
</tr>
<tr>
<td>Number of steps DC Vario machines</td>
<td>-</td>
<td>4 steps, infinitely variable</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT4</td>
<td>MT4</td>
</tr>
<tr>
<td>Spindle hole</td>
<td>26 mm / 1.024”</td>
<td>26 mm / 1.024”</td>
</tr>
<tr>
<td>Chuck size</td>
<td>125 mm / 5”</td>
<td>125 mm / 5”</td>
</tr>
<tr>
<td>Top slide - travel</td>
<td>70 mm / 2.756”</td>
<td>60 mm / 2.362”</td>
</tr>
<tr>
<td>Compound slide - travel</td>
<td>110 mm / 4.331”</td>
<td>160 mm / 6.299”</td>
</tr>
<tr>
<td>Tailstock holding fixture</td>
<td>MT2</td>
<td>MT2</td>
</tr>
<tr>
<td>Tailstock sleeve travel</td>
<td>65 mm / 2.560”</td>
<td>85 mm / 3.347”</td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>.002” - .012”</td>
<td>.008” - .016”</td>
</tr>
<tr>
<td>Pitch - Metric</td>
<td>0.2 - 4.0 mm</td>
<td>0.2 - 4.0 mm</td>
</tr>
<tr>
<td>Pitch - Inch</td>
<td>56 - 8 threads/1”</td>
<td>56 - 8 threads/1”</td>
</tr>
<tr>
<td>4-Position tool post holder seat height</td>
<td>(max.) 13 mm / 1/2”</td>
<td>(max.) 13.5 mm / .532”</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length x Width x Height</td>
<td>1250 x 585 x 475 mm / 49.213” x 23” x 18.701”</td>
<td>-</td>
</tr>
<tr>
<td>Length x Width x Height DC Vario</td>
<td>1370 x 780 x 535 mm / 53.937” x 30.709” x 21.063”</td>
<td>-</td>
</tr>
<tr>
<td>Net weight</td>
<td>125 kg / 276 lbs.</td>
<td>180 kg / 397 lbs.</td>
</tr>
</tbody>
</table>
Optional accessories
- Digital magnetic measuring system MPA 3-S
  Item No 338 3902

Main spindle
- Hardened and bedded in adjustable precision taper roller bearings
- Two taper roller bearings of P5 quality
- Short taper, hardened spindle nose with a spindle holder of 26 mm

Speed change
- Easy and rapid via V-belts
- Vario machines easy via potentiometers

Digital speed display
- For Vario machines

Feed gear
- Smooth running
- Helical gears
- Running in a oil quench

Optional accessories
Machine floor stand with shelves and doors for tool storage
- L x W x H: 47" x 15" x 30"
  Item No 3440408

Slide
- 4 way tool post holder
- All guides adjustable to zero clearance due to V-ledges
- Rolled trapezoid spindles
- Chip protection at the top slide

Tailstock
- Adjustable by ± 5 mm / 0.197" for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.02 mm / 0.0008"
- Rapid and easy adjustment of the tailstock via clamping lever

Model D240 x 500 G
with optional floor stand

Model D280 x 700 DC Vario
Also available as CNC model
See page 42
Optimum’s 12” model engine lathe delivers the precision, power and versatility to handle a wide range of turning operations normally found in much larger machines.

Heavy cast construction, smooth power transmission with helical gears, hardened and ground ways all designed to give you years of trouble-free, precise turning. All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

Lathe comes standard with:
- 3 jaw and 4 jaw lathe chuck
- Safety chuck and tool post guards
- Steady rest
- Follow rest
- 4 way tool post
- Centers
- Halogen work light
- Heavy duty steel floor stand
- Splash guard and chip tray
- Precision thrust and ball bearings in the head stock

The bench lathe is the right choice for turning small metal parts and is used in proto type shops, home machinists, jewelry manufacturing, tool rooms, fabrication shops and maintenance shops.

<table>
<thead>
<tr>
<th>Model</th>
<th>D320 x 920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3400928</td>
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</tbody>
</table>

**Features of performance**

**Electrical connection**

Motor power 2HP / 115V / 1PH

**Machine data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center height</td>
<td>160 mm / 6.299”</td>
</tr>
<tr>
<td>Center width</td>
<td>920 mm / 36.220”</td>
</tr>
<tr>
<td>Turning Ø over lathe bed</td>
<td>320 mm / 12.598”</td>
</tr>
<tr>
<td>Turning Ø over cross slide</td>
<td>190 mm / 7.480”</td>
</tr>
<tr>
<td>Turning Ø without bed bridge</td>
<td>430 mm / 16.929”</td>
</tr>
<tr>
<td>Length of bed bridge</td>
<td>230 mm / 9.055”</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>65-1800 rpm</td>
</tr>
<tr>
<td>Number of speeds</td>
<td>18</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT5</td>
</tr>
<tr>
<td>Spindle holding fixture</td>
<td>Camlock ASA D1 - 4”</td>
</tr>
<tr>
<td>Spindle hole</td>
<td>38 mm / 1.497”</td>
</tr>
<tr>
<td>Chuck size</td>
<td>160 mm / 6”</td>
</tr>
<tr>
<td>Bed width</td>
<td>181 mm / 7.125”</td>
</tr>
<tr>
<td>Top slide - travel</td>
<td>85 mm / 3.346”</td>
</tr>
<tr>
<td>Compound slide - travel</td>
<td>162 mm / 6.378”</td>
</tr>
<tr>
<td>Tailstock holding fixture</td>
<td>MT3</td>
</tr>
<tr>
<td>Tailstock sleeve travel</td>
<td>100 mm / 3.937”</td>
</tr>
<tr>
<td>Longitudinal feed (32 feeds)</td>
<td>.002” - .055”</td>
</tr>
<tr>
<td>Crossfeed (32 feeds)</td>
<td>.0007” - .019”</td>
</tr>
<tr>
<td>Pitch - Metric (26 pitches)</td>
<td>0.4 - 7 mm</td>
</tr>
<tr>
<td>Pitch - Inch (34 pitches)</td>
<td>56 - 4 threads/1”</td>
</tr>
<tr>
<td>4-Position tool post holder seat height</td>
<td>(max.) 16 mm / 0.629”</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x Width x Height</td>
</tr>
<tr>
<td>Net weight</td>
</tr>
</tbody>
</table>
Main spindle
- Hardened and ground
- Running in oil quench
- Run on 2 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground
- Enclosed fast acting feed gear

Bed bridge
- Removable gap

Slide
- Precisely machined
- Top slide rotatable by 360°
- Handwheels with adjustable precision scaling
- 4 position tool post holder
- Right-/left-handed rotation at the slide switchable via indexing spindle

Guide
- All guides adjustable via V-ledges

Halogen machine lamp
- Covered articulated arm
- High positioning stability

Prismatic bed
- Heavily ribbed
- Inductively hardened
- Precision ground

Tailstock
- Adjustable by +/- 10 mm / 0.393" for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scale of 0.025 mm / 0.010"

Base
- Not mounted
- Lockable doors

Model D320 x 920
Optimum’s 13” engine lathes have the power to deal with heavy metal removal and the accuracy and control to handle precision fine tolerance turning.

Each machine comes standard with a DRO and glass scales for added operator convenience and accuracy. The headstock is designed to provide maximum power for roughing cuts and smooth, quiet power for fine finishing. All the gears are helical precision cut, hardened and ground running in a continual bath of oil. The main spindle is made of high alloy steel and mounted in precision taper roller bearings. The control panel is easy to use and is designed for operator convenience. The wide bed ways are made of stabilized cast iron, ground and hardened for a lifetime of use. The universal gear box delivers a broad range of feed and thread selections and each machine can do both inch and metric threads. All the gears are hardened and the shafts turn on anti-friction bearings.

### Each lathe comes with:
- 3 jaw and 4 jaw lathe chuck
- Chuck and tool post safety guards
- Steady rest
- Follow rest
- Centers
- Halogen work light
- Spindle brake
- Thread dial indicator
- Splash guard

All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

These all purpose lathes are ideal for turning applications requiring heavy metal removal or fine tolerance finishing applications and are used in tool rooms, die and mold shops, fabrication shops and maintenance departments.

<table>
<thead>
<tr>
<th>Model</th>
<th>D330 x 1000 DPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3401007DPA / 3401008DPA</td>
</tr>
</tbody>
</table>

#### Features of performance

##### Electrical connection

**Motor power**
- 2HP / 115/230V / 1PH
- 2HP / 230/460V / 3PH

##### Machine data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center height</td>
<td>165 mm / 6.506&quot;</td>
</tr>
<tr>
<td>Center width</td>
<td>1000 mm / 39.370&quot;</td>
</tr>
<tr>
<td>Turning Ø over lathe bed</td>
<td>330 mm / 12.992&quot;</td>
</tr>
<tr>
<td>Turning Ø over compound slide</td>
<td>198 mm / 7.795&quot;</td>
</tr>
<tr>
<td>Turning Ø without bed bridge</td>
<td>476 mm / 18.740&quot;</td>
</tr>
<tr>
<td>Length of bed bridge</td>
<td>210 mm / 8.267&quot;</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>70 - 2000 rpm</td>
</tr>
<tr>
<td>Number of speeds</td>
<td>8</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT5</td>
</tr>
<tr>
<td>Spindle holding fixture</td>
<td>Camlock ASA D1 - 4&quot;</td>
</tr>
<tr>
<td>Spindle hole</td>
<td>38 mm / 1.5&quot;</td>
</tr>
<tr>
<td>Chuck size</td>
<td>160 mm / 6&quot;</td>
</tr>
<tr>
<td>Bed width</td>
<td>187 mm / 7.362&quot;</td>
</tr>
<tr>
<td>Top slide - travel</td>
<td>95 mm / 3.720&quot;</td>
</tr>
<tr>
<td>Compound slide - travel</td>
<td>170 mm / 6.693&quot;</td>
</tr>
<tr>
<td>Tailstock holding fixture</td>
<td>MT3</td>
</tr>
<tr>
<td>Tailstock sleeve travel</td>
<td>100 mm / 3.937&quot;</td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>.003&quot; - .107&quot;</td>
</tr>
<tr>
<td>Crossfeed</td>
<td>.0008&quot; - .026&quot;</td>
</tr>
<tr>
<td>Pitch - Metric</td>
<td>0.4 - 7 mm</td>
</tr>
<tr>
<td>Pitch - Inch</td>
<td>56 - 4 threads/1&quot;</td>
</tr>
<tr>
<td>Diometrical threads</td>
<td>120 - 8</td>
</tr>
<tr>
<td>Modular threads</td>
<td>0.2 - 3.5</td>
</tr>
<tr>
<td>4-Position tool post holder</td>
<td></td>
</tr>
<tr>
<td>seat height (max.)</td>
<td>16 mm / .629&quot;</td>
</tr>
</tbody>
</table>

#### Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x Width x Height</td>
<td>1930 x 760 x 1470 mm / 76&quot; x 30&quot; x 58&quot;</td>
</tr>
<tr>
<td>Net weight</td>
<td>550 kg / 1213 lbs.</td>
</tr>
</tbody>
</table>

Standard with D330 x 1000-DPA
- Digital position display DPA 2000
- Glass scales
Model D330 x 1000

Main spindle
- Running in a oil quench

Main spindle gearwheels
- Smooth running, hardened and ground
- Enclosed fast acting feed gear

Slide
- Precisely machined
- Top slide rotatable by 360°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm / 0.002" / 0.0008"
- 4 position tool post holder
- Chip protection at the top slide

Guides
- All guides adjustable via V-edges

Bed bridge
- Removable gap

Foot brake

Prismatic bed
- Heavily ribbed
- Grey cast iron
- Inductively hardened and precision ground

Halogen machine lamp
- Covered articulated arm
- High positioning stability

Tailstock
- Adjustable by +/- 10 mm / 0.393" for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm / 0.010"

Base
- Mounted standard
- Tool box
- Lockable doors
- Removable chip tray

Foot brake
The Ultimate in turning machines Optimum’s 14” engine lathe has the power to deal with heavy metal removal and the accuracy and control to handle precision fine tolerance turning.

Each machine comes standard with a DRO and glass scales for added operator convenience and accuracy. The headstock is designed to provide maximum power for roughing cuts and smooth, quiet power for fine finishing. All the gears are helical precision cut, hardened and ground running in a continual bath of oil. The main spindle is made of high alloy steel and mounted in precision taper roller bearings. The control panel is easy to use and is designed for operator convenience. The wide bed ways are made of stabilized cast iron, ground and hardened for a lifetime of use. The universal gear box delivers a broad range of feed and thread selections and each machine can do both inch and metric threads. All the gears are hardened and the shafts turn on anti-friction bearings.

Each lathe comes with:
- 3 jaw and 4 jaw lathe chuck
- Chuck and tool post safety guards
- Steady rest
- Follow rest
- Centers
- Halogen work light
- Spindle brake
- Thread dial indicator
- Splash guard
- Flood coolant system

All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

These all purpose lathes are ideal for turning applications requiring heavy metal removal or fine tolerance finishing applications and are used in tool rooms, die and mold shops, fabrication shops and maintenance departments.

### Features of performance

**Electrical connection**
- Main motor power, 2 stages: 2/3HP / 230V / 3PH
- Coolant equipment: 40 W / .054HP

**Machine data**
- Center height: 180 mm / 7.087"
- Center width: 1000 mm / 39.370"
- Turning Ø over lathe bed: 356 mm / 14.016"
- Turning Ø over compound slide: 220 mm / 8.661"
- Turning Ø without bed bridge: 516 mm / 20.315"
- Length of bed bridge: 240 mm / 9.449"
- Spindle speed: 45-1800 rpm
- Number of speeds: 16
- Spindle taper: MT5
- Spindle holding fixture: Camlock ASA D1 - 4"
- Spindle hole: 38 mm / 1.496"
- Chuck size: 160 mm / 6"
- Bed width: 205 mm / 8.071"
- Top slide - travel: 95 mm / 3.740"
- Compound slide - travel: 180 mm / 7.087"
- Tailstock holding fixture: MT3
- Tailstock sleeve travel: 120 mm / 4.724"
- Longitudinal feed (40 feeds): .0012' - .029"
- Crossfeed (40 feeds): .0005' - .009"
- Pitch - Metric (22 pitches): 0.45 - 7.5 mm
- Pitch - Inch (28 pitches): 112 - 4 threads/1"
- 4-Position tool post holder seat height (max.): 16 mm / .629"

**Dimensions**
- Length x Width x Height: 1930 x 760 x 1580 mm / 76" x 30" x 62"
- Net weight: 850 kg / 1875 lbs.
**Main spindle**
- Running in an oil quench
- Hardened and ground
- Running on 2 adjustable precision taper roller bearings

**Main spindle gearwheels**
- Smooth running, hardened and ground
- Enclosed fast acting feed gear

**Slide**
- Precisely machined
- Top slide rotatable by 360°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm / 0.002" / 0.0008"
- 4 position tool post holder
- All guides adjustable via V-ledges
- Chip protection at the top slide

**Halogen machine lamp**
- Covered articulated arm
- High positioning stability

**Coolant equipment**
- Variable hose of individual plastic elements
- Adjustable flow valve

**Tailstock**
- Adjustable for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm / 0.010"

**Prismatic bed**
- Heavily ribbed
- Grey cast iron
- Inductively hardened
- Precision ground

**Foot brake**

**Model D360 x 1000**
The Ultimate in turning machines Optimum’s 16” engine lathes has the power to deal with heavy metal removal and the accuracy and control to handle precision fine tolerance turning.

Each machine comes standard with a DRO and glass scales for added operator convenience and accuracy. The headstock is designed to provide maximum power for roughing cuts and smooth, quiet power for fine finishing. All the gears are helical precision cut, hardened and ground running in a continual bath of oil. The main spindle is made of high alloy steel and mounted in precision taper roller bearings. The control panel is easy to use and is designed for operator convenience. The wide bed ways are made of stabilized cast iron, ground and hardened for a lifetime of use. The universal gear box delivers a broad range of feed and thread selections and each machine can do both inch and metric threads. All the gears are hardened and the shafts turn on anti-friction bearings.

<table>
<thead>
<tr>
<th>Model</th>
<th>D420 x 1500-DPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3401167DPA</td>
</tr>
</tbody>
</table>

**Features of performance**

**Electrical connection**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor power</td>
<td>6HP / 230/460V / 3PH</td>
</tr>
<tr>
<td>Coolant equipment</td>
<td>90 W / .120HP</td>
</tr>
</tbody>
</table>

**Machine data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center height</td>
<td>210 mm / 8.268”</td>
</tr>
<tr>
<td>Center width</td>
<td>1500 mm / 59.055”</td>
</tr>
<tr>
<td>Turning Ø over lathe bed</td>
<td>420 mm / 16.535”</td>
</tr>
<tr>
<td>Turning Ø over compound slide</td>
<td>250 mm / 9.843”</td>
</tr>
<tr>
<td>Turning Ø without bed bridge</td>
<td>590 mm / 23.228”</td>
</tr>
<tr>
<td>Length of bed bridge</td>
<td>260 mm / 10.236”</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>45 - 1800 rpm</td>
</tr>
<tr>
<td>Number of speeds</td>
<td>16</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT6</td>
</tr>
<tr>
<td>Spindle holding fixture</td>
<td>Camlock ASA D1 - 6”</td>
</tr>
<tr>
<td>Spindle hole</td>
<td>52 mm / 2.047”</td>
</tr>
<tr>
<td>Chuck size</td>
<td>200 mm / 8”</td>
</tr>
<tr>
<td>Bed width</td>
<td>250 mm / 9.843”</td>
</tr>
<tr>
<td>Top slide - travel</td>
<td>140 mm / 5.512</td>
</tr>
<tr>
<td>Compound slide - travel</td>
<td>230 mm / 9.056”</td>
</tr>
<tr>
<td>Tailstock holding fixture</td>
<td>MT4</td>
</tr>
<tr>
<td>Tailstock sleeve travel</td>
<td>120 mm / 4.724”</td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>.002” - .067”</td>
</tr>
<tr>
<td>Crossfeed</td>
<td>.0009” - .035”</td>
</tr>
<tr>
<td>Pitch - Metric (42 pitches)</td>
<td>0.2 - 14 mm</td>
</tr>
<tr>
<td>Pitch - Inch (45 pitches)</td>
<td>72 - 2 threads/1”</td>
</tr>
<tr>
<td>Diometrical thread (21 threads)</td>
<td>8 - 44</td>
</tr>
<tr>
<td>Modular thread (18 threads)</td>
<td>0.3 - 3.5</td>
</tr>
<tr>
<td>4-position tool post holder seat height (max.)</td>
<td>20 mm / .788”</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x Width x Height</td>
<td>2450 mm x 910 x 1350 mm / 97” x 36” x 53”</td>
</tr>
<tr>
<td>Net weight</td>
<td>1800 kg / 3969 lbs.</td>
</tr>
</tbody>
</table>

**Each lathe comes with:**

- 3 jaw and 4 jaw lathe chuck
- Chuck and tool post safety guards
- Steady rest
- Follow rest
- Centers
- Halogen work light
- Spindle brake
- Thread dial indicator
- Turret limit stop with fine adjustment
- Splash guard
- Flood coolant system
- Base is a one piece Meehanite casting which provides maximum stability and vibration absorption

All Optimum lathes are built and inspected to the DIN 8606 toolmakers precision lathe standard assuring accuracy and consistent performance.

These all purpose lathes are ideal for turning applications requiring heavy metal removal or fine tolerance finishing applications and are used in tool rooms, die and mold shops, fabrication shops and maintenance departments.
Main spindle
- Hardened and ground
- Running in a oil quench
- Running on 2 adjustable precision taper roller bearings

Main spindle gears
- Smooth running, hardened and ground

Fast acting feed gear
- Enclosed type
- Gears and shafts hardened and ground
- Running oil-quenched on precision bearings

Slide
- Precisely machined
- Top slide rotatable by 360°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm / 0.002" / 0.0008"
- 4 position tool post holder
- All guides adjustable via V-ledges
- Chip protection at the top slide

Tailstock
- Adjustable by +/- 13 mm / 0.511" for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling

Base and motor plate
- Meehanite casting
- One-piece casting

Foot brake

Turret
- With fine adjustment acting as limit stop of lathe slide

Model D420 x 1500
Optimum’s CNC flat-bed lathe performs a wide range of applications with a high degree of machining flexibility and precision turning with a swing over the bed of 11”.

Full threading and turning capability through a precision spindle and highly accurate ball screws. Heavy cast construction, hardened and ground ways, helical gears and a brushless DC motor with infinitely variable speed all built to give you years of trouble-free, precision turning. This CNC lathe is built and inspected to the DIN 86016 toolmakers precision lathe standard assuring accuracy and consistent performance and can be run manually or automatic.

Lathe comes standard with:
• 3 jaw and 4 jaw lathe chuck
• 4 way tool post
• Centers
• Step motors
• Controller and Industry Controls conversational software

The MCB-1 and motion control boards are all made in the USA by Industry Controls. This software with the use of a standard lap-top (not supplied) converts to a fully 6 axis CNC controller. Allows direct import of DXF, BMP, JPG and HPGL files through Cad Cam, LazyCam, has visual G code display, fully customizable interface, customizable M-Codes and Macros using VB script, spindle speed control, multiple relay control, manual pulse generation, video display of machine and full screen eligibility.

Model D280-CNC with recirculating ball screw

For machine specifications
See page 32-33

For software information
See page 25

Torque
2.2 Nm / 1.6 Ft/lbs.
on the spindle X-axis

Travel speed*
• max. 0.394”/sec.
• position repeatability 0.02mm / .001”

Torque
6.4 Nm / 4.7 Ft/lbs.
on the spindle Z-axis

Travel speed*
• max. 0.473”/sec.
• position repeatability 0.02mm / .001”

*The indicated speeds demonstrate a nominal value which has been determined by the current OPTI D280.
Optimum’s protective machine enclosure for use with our CNC flat-bed lathe encloses the machine protecting the operator while keeping the area surrounding the machine clean and safe. This enclosure meets all safety guidelines and requirements.

The lathe enclosure allows clear, visible viewing through the front opening. Front and rear access for easier set-ups and cleaning. A built-in chip drawer mounted on telescoping rails aids in fast, safe chip removal. Large hinged door in the base for extra storage.

Chip tray
- Extendable tray
- Telescopic guide rail
- Coolant discharge

Acess doors
- Lateral access doors to the headstock and tailstock

Item No 3539086
Optimum’s abrasive belt grinders are fully flexible, quite and efficient and are fully capable of incredibly fast stock removal rates. They are ideal for shaping, forming, snagging, deburring, chamfering and finishing operations. These belt grinders can be quickly converted from heavy stock removal and grinding, to finishing operations by simply changing the belt. The machines come with a large serrated contact tire for removing heavy stock or cleaning up work pieces and a large graphite covered platen for the shaping and finishing of flat pieces.

- Generous spark box delivers added operator safety
- Advanced belt tracking design makes belt tracking safe and easy while eliminating belt walk-off
- Belt enclosure prevents dust from escaping by effectively ventilating the contact tire, drive wheel and belt with air circulation from the machine
- Eye shield ensures user safety
- Motor overload protection with conveniently positioned emergency on/off switch
- Dual dust collection ports located on the front and back of the machine
- Adjustable height of the contact tire provides ergonomic, safe positioning for operator ease and comfort

<table>
<thead>
<tr>
<th>Model</th>
<th>Electrical connection</th>
<th>Technical data</th>
<th>Sanding belt</th>
<th>Dimensions</th>
<th>Standard accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model BSM75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item No 3321074</td>
<td>OPTI BSM75</td>
<td>4HP / 230V / 3PH</td>
<td>75 x 2000 mm / 3&quot; x 78.74&quot;</td>
<td>2.244&quot; Sanding belt grain 60 Wrench</td>
<td></td>
</tr>
<tr>
<td>Model BSM150</td>
<td>OPTI BSM150</td>
<td>5HP / 230V / 3PH</td>
<td>150 x 2000 mm / 6&quot; x 78.74&quot;</td>
<td>2.244&quot; Sanding belt grain 60 Wrench</td>
<td></td>
</tr>
</tbody>
</table>
Spark protection
- Reduces flying of sparks

Platten grinding surface
- End-to-end and opened at the rear
- Ideal to machine long workpieces

Emergency-stop button

Advanced belt adjustment
- Without tools - easily adjust via knurled screw

Workpiece support
- Adjustable inclination
- Allows grinding at an proper angle

Dual dust collection ports
- Front and rear for connection to dust collection system

Contact wheels
- Rubberized
- Smooth running
- No slipping of the belt

High belt speed
- 33 m/sec. / 6494 sfpm
- Rapid material removal

Model BSM150
For drill sharpening the Optimum DG20 is designed for precision, efficient easy operation and has the flexibility required to sharpen the largest range of dull or broken drill including split points and masonry bits from 1/8” to 3/4”.

Easy to use the drill bits are securely held in a prismatic vise for precise centering of the bit to the grinding wheel and very exact repeat accuracy. This design lets you grind a wide range of drill point variations – you can even customize point angles and clearances to achieve the most efficient feed rates to match your specific applications. Sharpens high speed steel, carbide, cobalt, TIN-coated and masonry bits with a drill bit capacity of 7/64” to 13/16”, with an angle range of 90 to 150 degrees and relief angles of 0 to 20 degrees and drill point concentricity of .001” lip to lip. The unit is constructed of cast iron and steel providing a rugged vibration free foundation and comes standard with cup grinding wheel, built in diamond wheel dresser, powerful 800W motor, broad infinitely variable speed range, magnetic switch with lockable emergency stop button and quench pot.

This unit is used to sharpen dull and broken drill bits extending their useful life and improving their performance.

<table>
<thead>
<tr>
<th>Model</th>
<th>OPTI DG20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>3100028</td>
</tr>
</tbody>
</table>

**Features of performance**

**Electrical connection**

- Motor power: 600W / .80HP / 115V / 1PH

**Technical data**

- Speed infinitely variable: 1680 - 9120 rpm
- Grinding speed: 3148 sfpm
- Grinding capacity drill: 3 - 20 mm / 1/8” to 3/4”
- Angle of the head sharpening: 90° - 150°

**Cup wheel**

- Outside Ø: 40 mm / 1.575”
- Inside Ø: 26 mm / 1.024”
- Thread Ø: M 10 / .3425”
- Depth of the cup wheel: 22 mm / .866”

**Dimensions**

- Length: 225 mm / 8.858”
- Width: 490 mm / 19.291”
- Height: 240 mm / 9.449”
- Net weight: 26 kg / 58 lbs.
- Standard equipment: Cooling water tray, Cup wheel

**Accessories**

- Replacement cup wheel
  - Item No 310 7120

**Safety switch**

- Easy-to-operate
- Protective with low-voltage release
- Emergency-stop button
- Rubber cap for protection against dust and water
Optimum’s cold saws are ideal for very precise, burr free cuts in low and high carbon steels and medium gauge tubes and profiles.

The pivot head design allows for fast, accurate miter cuts and is ideally suited for low to medium volume production cutting applications. Advanced gear box design utilizing hardened and ground gears with a high quality bronze worm gear running in an oil bath. Built in coolant system lubricates the blade for smooth mill cut finish. A centrally tensioning anti-burr vises securely clamps the work piece on both sides of the blade with equal clamping force and holds the work piece in-between 4 jaw faces. The adjustment of the saw head for miter cutting is fast and easy with the saw head pivoting both to the right and left of center.

The CS250 bench model can use either a 9”/225mm or 10”/250mm blade.

CS250 Metal circular saw blade HSS 225 & 250 mm: inside Ø 32 mm x 2.5
- 9” / 225 mm / 100T 3357432
- 9” / 225 mm / 120T 3357431
- 9” / 225 mm / 180T 3357438
- 10” / 250 mm / 100T 3357437
- 10” / 250 mm / 78T 3357436

CS350 Metal circular saw blade HSS 350 mm: inside Ø 32 mm x 2.5
- 14” / 350 mm / 280T 3357473
- 14” / 350 mm / 100T 3357472
- 14” / 350 mm / 120T 3357471
- 14” / 350 mm / 60T 3357470

The CS350 is a floor model with a heavy duty steel base with door and shelf for added tool storage. It is equipped with a built-in clutch to protect the gear box and blade from breakage.

These saws are used for cutting off, straight can angle cuts in solids, tubes and profiles where high accuracy and burr free smooth finishes are required.
Optimum’s height adjustable roller material support stands aid in supporting and moving large to heavy work pieces for fastening applications or into or out of a band saw or other machine tool.

These are heavy duty stands designed to handle loads up to 1544 pounds. Each leg adjusts from 25-1/2” to 37-3/8” and is equipped with 4 independently adjustable leveling pads. The tables can be bolted together to extend to the necessary length to fit your specific application. Large precision machined steel rollers with long lasting roller ball bearings make movement of the work piece fast and easy.

The optional PVC roller set includes three PVC coated rollers and a handy storage tray that be set on a shelf or mounted on the wall. The rollers fit into predrilled and tapped holes on the stands and are height adjustable. They are adjusted up when the work piece is light for easier movement and can be adjusted down to the same height as the steel rollers when heavier work pieces are being moved or they can just be removed. This exclusive design makes our support stands ideal for every type and size of material needing movement.

These tables can be used to move larger heavier work pieces from one location to another for assembly, fastening, welding or as an in-feed or out-feed for machine tools.

<table>
<thead>
<tr>
<th>Model</th>
<th>MSR4</th>
<th>MSR7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No</td>
<td>335 7610</td>
<td>335 7611</td>
</tr>
</tbody>
</table>

**Technical data**
- Diameter of support rollers: 60 mm / 2.362”
- Width of support rollers: 360 mm / 14.173”
- Static table load: 500 kg / 1103 lbs.

**Dimensions**
- Length: 1000 mm / 39.370”
- Width: 440 mm / 17.323”
- Height: 650 - 950 mm / 25.590” - 37.402”
- Net weight: 30 kg / 66 lbs.

**Accessories**
- PVC rolls 3 pieces
  - Item No: 335 7609

**Frame**
- Solid steel construction
- Rigid special profile

**Support rollers**
- Steel
- Ball-bearing at both sides

**Optional PVC Rollers**
- Easily mountable
- Coated with non-slip PVC
- The rollers quickly mount in the existing frame

**Supporting height**
- Variably adjustable from 25” to 37”

**PVC Rolls**
in a handy wall unit
The Optimum digital readout is a simple, cost effective positioning display solution for manual machine tool applications.

The unit features a LED display screen and versatile software to accommodate milling, turning or grinding applications. The housing is die cast aluminum and the unit is capable of reading 1, 2, or 3 axis movements reading from precision glass scales. Helping the operator to work smarter and faster the DRO functions include instant inch/mm conversion, bolt hole pattern calculations (full & partial circles, liner patterns), linear error compensation, tool position memory, 4 function calculator/trig calculator, absolute/incremental display, zero reset capability, feed rate display, reference point, speed display, and self-diagnostics.

The digital readout is commonly fitted to mills, lathes and grinders allowing the operator to work faster with greater accuracy. The unit works in conjunction with glass scales which can be mounted in the “X”, “Y” or “Z” axis.

Possible functions
- Reference point
- Calculator
- Absolute/Incremental operation
- Coupling of axis (sum Z)
- Sub D connector bushing
- Conversion inch/metric thread
- Pitch circle calculator (incremental dimension)
- Full and partial circles and linear patterns (graduated circle)
- Bolt hole pattern function
- Permanent memory also in case of power failure
- Reversible measured values radius/diameter

Technical data
- Three evaluable measuring inputs with seven correction memories each for tools
- Electrical connection 115V ~60 Hz
- Dimensions L x W x H: 11” x 2-3/4” x 7-1/4”
- Weight: 6 lbs.

Glass Scales
Optimum’s precision glass scales withstand the elements of contamination found in even the harshest machine shop environments while maintaining very high accuracy measurements.

Our precision glass scales resist changes in size, shape and density due to temperature and humidity variations and are enclosed in a protective aluminum enclosure. This stability provides exceptional accuracy down to +/- 1.5 um (.00006”) resulting in tighter work piece tolerances. Optimum glass scales are available in travel lengths from 3” to 118”.

Glass scales are commonly fitted to mills, lathes, grinders and CNC machines allowing the operator to work faster and more accurate. Glass scales can be mounted on any axis of movement that needs to be measured.

- Totally enclosed odometry system with high-precision glass scale
- Accuracy +/-1.5 mm
- Scanning carriage guided by miniature ball bearings and connected to the mounting base via coupling
- Rubber sealing lips protect against dust, chips and splash water
- Mounting brackets

<table>
<thead>
<tr>
<th>Item No</th>
<th>Glass Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>338 4110</td>
<td>ML 100 mm / 3.937“</td>
</tr>
<tr>
<td>338 4117</td>
<td>ML 170 mm / 6.693“</td>
</tr>
<tr>
<td>338 4122</td>
<td>ML 220 mm / 8.681“</td>
</tr>
<tr>
<td>338 4127</td>
<td>ML 270 mm / 10.630“</td>
</tr>
<tr>
<td>338 4132</td>
<td>ML 320 mm / 12.598“</td>
</tr>
<tr>
<td>338 4142</td>
<td>ML 420 mm / 16.535“</td>
</tr>
<tr>
<td>338 4182</td>
<td>ML 820 mm / 32.283“</td>
</tr>
<tr>
<td>338 4187</td>
<td>ML 870 mm / 34.252“</td>
</tr>
<tr>
<td>338 4192</td>
<td>ML 920 mm / 36.220“</td>
</tr>
<tr>
<td>338 4197</td>
<td>ML 970 mm / 38.189“</td>
</tr>
<tr>
<td>338 4202</td>
<td>ML 1020 mm / 40.157“</td>
</tr>
<tr>
<td>338 4252</td>
<td>ML 1520 mm / 59.84“</td>
</tr>
<tr>
<td>338 4294</td>
<td>ML 1940 mm / 76.378“</td>
</tr>
<tr>
<td>338 4295</td>
<td>ML 2010 mm / 79.134“</td>
</tr>
</tbody>
</table>

*Additional sizes available upon request
The Optimum magnetic digital readout kits are a simple, low cost positioning display solution for smaller manual machine tools.

The unit features a LED display screen that measures the travel positions of 1, 2 or 3 axis movements from magnetic tape. Helping the operator work faster and more accurate the magnetic DRO functions include 3 incremental inputs that are individually programmable for scaling factors, offset and reference values. The magnetic DRO kits contains 3 axis display, mounting bracket, power supply unit, three magnetic sensors and self-adhesive magnetic tape in either 39” length or 78” length.

The magnetic digital readout is commonly fitted to mill/drills and small lathes or grinders.

**Extent of supply**
- Compact, digital 3-axes position display for milling machines (X - Y - Z) and for lathes (X, Z, Z₀)
- Magnetic display
- Electrical connection 115V
- Power supply unit VDC 24 V
- Measuring tape incl. three magnetic sensors MS100/1
- Display accuracy 0.005 mm / 0.0002"
- Special steel covering, self-adhesive

**Digital measuring system MPA 3 kit S** Item No 3383907
- E.g. for BF20(L) Vario, D210, D240, D250, D280
- Length of measuring tape 1100 mm / 39.37"

**Digital measuring system MPA 3 kit - L Item No 3383908**
- E.g. for D320, BF30 Vario, BF46 Vario, DM15
- Length of measuring tape 2000 mm / 78.74"

**Individual components of the kit**
1. **Measuring display unit**
   - Compact, digital 3-axes position display
2. **Magnetic sensor**
   - Display accuracy 0.005 mm
3. **Magnetic tape**
   - Magnetic & steel tape
4. **Power supply unit VDC 24 V**
**Clamping Kit**

69 piece clamp kit is ideal to secure the vise, workpiece or tooling to the table. The kit contains a variety of t-slot nuts, studs, step blocks, clamp arms and two self-adjusting u-clamps with a metal storage rack.

<table>
<thead>
<tr>
<th>No. of Pieces</th>
<th>T-Slots</th>
<th>For Use With</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>9/16 and 5/8</td>
<td>9/16&quot; and 5/8&quot; T-Slots</td>
<td>38950</td>
</tr>
</tbody>
</table>

**R8 Collet Set & Rotating Holder - Item #31547**

Palmgren’s R8 rotating collet holder can be mounted on any flat surface or the machine for storage and easy access and comes with eleven R8 collets 1/8" - 3/4" x 1/16". The holder is molded of long lasting ABS plastic and rotates for easy selection of collet sizes. Collets are seated firmly in an angular pockets staying firmly in place during holder rotation and are easily removed by the operator by lifting from the selected pocket.

**5-Axis Multi-Position Milling Work Stop**

Palmgren’s #15150 milling work stop has 5-axis adjustment moves that allow you to set the stop at any position that your job may require. The 1/4" stop rod can be modified, replaced or extended with a longer piece of bar stock. The locking lever can be positioned anywhere within 360° to avoid interference. The t-nut fits all 5/8" table slots. This deluxe stop delivers quick, accurate set-ups on all repetitive jobs.
Palmgren’s start-up milling tooling packages includes all the basic items needed to operate your mill/drill or milling machine that has an R8 spindle. There are two packages to choose from – a basic kit (38960) and a deluxe kit (38961).

Basic kit – (38960) contains the following items:
- R8 collet set with rack – set contains 11 R9 collets 1/8" to 3/4" by 1/16ths. The rack can be easily mounted anywhere.
- Boring head set with R8 arbor, size 2 boring head accepts up to 1/2" boring bar
- 5/8" drill chuck, key and R8 arbor
- 2" face mill with R8 arbor
- 5 axis multi-position work stop

Deluxe kit – (38961) contains the follow items:
- R8 collet set with rack – set contains 11 R9 collets 1/8" to 3/4" by 1/16ths. The rack can be easily mounted anywhere.
- Boring head set with R8 arbor, size 2 boring head accepts up to 1/2" boring bar
- 5/8" drill chuck, key and R8 arbor
- 2" face mill with R8 arbor
- 5 axis multi-position work stop
- 69 piece clamp kit allows for securely anchoring large or oddly shaped workpieces on your machine
- 4" standard milling machine vise
Precision Modular Vises

Palmgren’s low profile modular vises represent a major advancement in precision clamping and are ideal for use in running one part or production parts where datum’s, flatness and parallelism is important.

These vises are manufactured out of high alloyed steel, precision ground and hardened and will maintain their accuracy even under the most severe operating conditions. Key features include high clamping pressure with no jaw lift, low profile design for easier mounting on any type of machine, vises mount horizontally or vertically, all vises are matched for ease of mounting several vises on one machine, each vise comes standard with a removable swivel base.

These vises can be used on basic machine tools such as knee type mills, mill/drills, drilling machines, grinders and CNC machining centers. It improves work holding operations for today’s high precision – high production CNC machines.

<table>
<thead>
<tr>
<th>Model</th>
<th>Item No.</th>
<th>PNM100</th>
<th>PNM125</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3355551</td>
<td>3355553</td>
</tr>
<tr>
<td>Jaw Width</td>
<td>4”</td>
<td>5”</td>
<td></td>
</tr>
<tr>
<td>Jaw Opening</td>
<td>3-3/4”</td>
<td>5-7/8”</td>
<td></td>
</tr>
<tr>
<td>Throat Depth</td>
<td>1-3/16”</td>
<td>1-1/2”</td>
<td></td>
</tr>
<tr>
<td>Overall Length</td>
<td>10.711”</td>
<td>13.583”</td>
<td></td>
</tr>
<tr>
<td>Overall Height</td>
<td>3.347”</td>
<td>4.055”</td>
<td></td>
</tr>
<tr>
<td>Max. Travel</td>
<td>3-3/4”</td>
<td>5-7/8”</td>
<td></td>
</tr>
</tbody>
</table>

Precision Hydraulic Machine Vises

Palmgren’s low profile hydraulic machine vise is ideal for use in running one part or production parts where datum’s, flatness and parallelism is important and the machining operation requires added clamping pressure.

This vise provides a solid structured base and is manufactured of high alloy special steel hardened and ground to maintain its accuracy even under the most severe operating conditions. Fast, easy high clamping pressure with no jaw lift is obtained through a built in hydraulic booster system which engages when the moveable vise jaw meets with resistance from the work piece being clamped and requires no added manual pressure from the operator. The hydraulic assist delivers secure, uniform clamping and is ideal for high speed machining applications. The low profile design with a jaw opening of over 6” makes the mounting and use of this vise ideal for any type of machine. The vise can be mounted and used horizontally or vertically.

This vise can be used on basic machine tools such as knee type mills, universal mills, mill/drills, large drilling machines, grinders, and CNC machining centers. They improve work holding operations for today’s high precision – high production CNC machines.

<table>
<thead>
<tr>
<th>Model</th>
<th>Item No.</th>
<th>HCV105</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3536210</td>
</tr>
<tr>
<td>Jaw Width</td>
<td>4”</td>
<td></td>
</tr>
<tr>
<td>Jaw Opening</td>
<td>6-11/16”</td>
<td></td>
</tr>
<tr>
<td>Throat Depth</td>
<td>1-3/8”</td>
<td></td>
</tr>
<tr>
<td>Overall Length</td>
<td>17.323</td>
<td></td>
</tr>
<tr>
<td>Overall Height</td>
<td>3.937”</td>
<td></td>
</tr>
<tr>
<td>Max. Travel</td>
<td>6-11/16”</td>
<td></td>
</tr>
<tr>
<td>Clamping Force</td>
<td>5525</td>
<td></td>
</tr>
</tbody>
</table>
**Standard Milling Vises**

An economical, robust vise for a variety of milling and other demanding machine applications.
- Base and bed parallel to 0.002"
- 360° swivel base
- Hardened moveable jaw plates are square to 0.0015"

**Precision Milling Vise**

Designed for precision part clamping this vise is ideal for use in running production parts where flatness and parallelism is important. You can precision mill, bore, drill, grind or finish with high accuracy. The moveable jaw delivers 1/2 pound of downward force for every pound of horizontal pressure. This design assures that the moveable jaw will not lift.
- Base and bed parallel to 0.002"
- 360° swivel base
- Hardened vise bed and jaw plates
- Opens to a full 8-3/4"
- Can be used with or without swivel base

<table>
<thead>
<tr>
<th>Description</th>
<th>Jaw Width (In.)</th>
<th>Jaw Opening (In.)</th>
<th>Throat Depth (In.)</th>
<th>Jaw Deflection</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Milling Vise</td>
<td>4</td>
<td>4</td>
<td>1-1/2</td>
<td>0.002&quot; @ 4000 lbs.</td>
<td>25404</td>
</tr>
<tr>
<td>Standard Milling Vise</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>0.002&quot; @ 4000 lbs.</td>
<td>26603</td>
</tr>
<tr>
<td>Precision Milling Vise</td>
<td>6</td>
<td>8-3/4</td>
<td>1-3/4</td>
<td>0.001&quot; @ 4000 lbs.</td>
<td>26604</td>
</tr>
</tbody>
</table>
Traditional Drill Press Vises
These versatile, general purpose drill press vises are just what you need for drilling, tapping, reaming, etc. They can be used turned on either side or end.
- Center of base is open for holding work through body of vise
- Base and bed parallel to 0.001"

Quick Release Vises
Quick-action mechanism for repetitive operations where the workpiece must be secured and released rapidly.
- Center of base is open for holding work through body of vise
- Jaw plates are parallel to 0.004" with recessed steps

Low-Profile Vises
Incredibly tough, compact vises with low overall height for tight-clearance applications.
- Four slots for secure mounting to machine table
- Base and bed parallel to 0.001"

Cradle Angle Vise
These vises are indispensable on work that frequently requires angle set-ups. The quickest way to get your work from 0° to 90°.
- Pin stops every 15° for quick angle set-ups
- Base and bed parallel to 0.004"
- Jaw surface is square to 0.002"

<table>
<thead>
<tr>
<th>Description</th>
<th>Jaw Width (In.)</th>
<th>Jaw Opening (In.)</th>
<th>Throat Depth (In.)</th>
<th>Jaw Deflection</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Drill Press Vise</td>
<td>4</td>
<td>4-1/2</td>
<td>1-1/2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>12352</td>
</tr>
<tr>
<td>Traditional Drill Press Vise</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>12603</td>
</tr>
<tr>
<td>Low Profile Vise</td>
<td>4</td>
<td>4</td>
<td>1-3/4</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>12403</td>
</tr>
<tr>
<td>Low Profile Vise</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>12601</td>
</tr>
<tr>
<td>Low Profile Vise</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>12801</td>
</tr>
<tr>
<td>Quick Release Vise</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>12321</td>
</tr>
<tr>
<td>Quick Release Vise</td>
<td>4</td>
<td>4</td>
<td>1-3/8</td>
<td>-</td>
<td>12421</td>
</tr>
<tr>
<td>Quick Release Vise</td>
<td>6</td>
<td>6</td>
<td>1-7/8</td>
<td>-</td>
<td>12621</td>
</tr>
<tr>
<td>Quick Release Vise</td>
<td>8</td>
<td>8</td>
<td>1-5/8</td>
<td>-</td>
<td>12821</td>
</tr>
<tr>
<td>Cradle Angle Vise w/Trunnion Base</td>
<td>4</td>
<td>4</td>
<td>1-3/4</td>
<td>-</td>
<td>11351</td>
</tr>
</tbody>
</table>
Plamgren Self-Centering Vise

Palmgren's self-centering low profile machine vise is ideal for use with drilling and milling machines where quick, accurate centering of the work piece is required. This vise body is constructed of close grained, high tensile strength alloy castings. The moveable jaws are mounted on precision ground and hardened guide rails with opposite threads on the spindle that turn in a bronze bearing for quick, accurate centering jobs automatically. Each vise come with three sets of 4" jaws, 1 pair of steel hardened, 1 pair of steel soft and 1 pair of steel step jaws.

<table>
<thead>
<tr>
<th>Model</th>
<th>Jaw Width</th>
<th>Jaw Opening</th>
<th>Throat Depth</th>
<th>Overall Length</th>
<th>Overall Height</th>
<th>Max. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>15404</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>3/4&quot;</td>
<td>11.417</td>
<td>3.346&quot;</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

Industrial Angle Vises

Really robust vises for demanding angular applications.
- Angle hinge is graduated in 1° increments from 0° to 90°
- 360° swivel base
- Base and bed parallel to 0.004”
- Jaw surface is square to 0.002”

Cross Slide Vises

A cross-slide table and vise built into one that accurately moves the work two directions.
Makes workpiece positioning fast, easy and accurate.
- Provides quick and precise positioning along the X and Y axes
- Dials are graduated in 0.001” increments
- Cross Slide travel is 3-1/2” x 4”

<table>
<thead>
<tr>
<th>Description</th>
<th>Jaw Width (In.)</th>
<th>Jaw Opening (In.)</th>
<th>Throat Depth (In.)</th>
<th>Jaw Deflection</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Angle Vise w/Swivel Base</td>
<td>4</td>
<td>4</td>
<td>1-3/4</td>
<td>0.004&quot; @ 4000 lbs.</td>
<td>11405</td>
</tr>
<tr>
<td>Industrial Angle Vise w/Swivel Base</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>0.004&quot; @ 4000 lbs.</td>
<td>11602</td>
</tr>
<tr>
<td>Cross Slide Vise</td>
<td>3</td>
<td>3</td>
<td>1-3/8</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>30303</td>
</tr>
<tr>
<td>Cross Slide Vise</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>30601</td>
</tr>
<tr>
<td>Cross Slide Vise</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>0.002&quot; @ 2000 lbs.</td>
<td>30801</td>
</tr>
</tbody>
</table>
**PROGRIP Bench Vise**

PROGRIP is Palmgren’s multi-purpose bench vise that delivers a gripping system that has the features to handle any workholding application as well as bending, shearing and forming applications on all types and styles of materials.

**Standard Design Features**
- Can be mounted and used as a conventional bench vise
- Foot pedal option can be mounted and used for hands free pre-clamping of the work piece or added leverage for bending applications. The height of the foot pedal can be easily adjusted to fit the operator height and comfort.
- Moveable jaw moves on precision machined dovetail way with adjustable gibbs which ensures maximum parallelism and easy movement.
- 4 styles of interchangeable jaws the are easily changed with the push of a button – (1 pair steel serrated jaws, 1 pair of steel smooth jaws, 1 pair of steel grooved jaws and 1 pair of smooth aluminum no mar jaws)
- Built in pipe jaws
- Integrated scale for moveable jaw measurement
- Heavy duty high tensile strength cast iron construction
- Patented

<table>
<thead>
<tr>
<th>Model No.</th>
<th>WBS135 3000513</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaw width</td>
<td>5-5/16&quot;</td>
</tr>
<tr>
<td>Jaw depth to top of spindle</td>
<td>2-3/8&quot;</td>
</tr>
<tr>
<td>Jaw depth to side of spindle</td>
<td>4&quot;</td>
</tr>
<tr>
<td>Jaw opening</td>
<td>7-5/8&quot;</td>
</tr>
<tr>
<td>Jaw movement with foot pedal</td>
<td>1-3/4&quot;</td>
</tr>
<tr>
<td>Weight</td>
<td>58 lbs.</td>
</tr>
</tbody>
</table>

**Metal Crafting Jaw Kit – Item # 3000518**

This accessory kit comes complete with 4 different jaw options that allow you to clamp vertically, shear, bend and form miscellaneous parts. Designed for use only with WBS 135 bench vise.

1. Pair of extended grooved steel jaws that allow trouble-free clamping of bars and pipes vertically.
2. Wire, pipe & tube bender jaw kit that allows bending of round solid material up to 3/16" or wire, copper pipe and aluminum tube from 7/32" to 7/16". Graduated for accurate angle bending.
3. Plate shear jaw kit will cut material with either the foot pedal or the hand operated spindle handle up to 1/8" or 30 gauge.
4. Bending jaw kit will bend material up to 1/8" or 30 gauge up to a width of 7-3/4".
PROGRIP Optional Accessories

Pan & Box Brake Attachment – Item # 3244028

For box, pan and reverse bending of sheet metal applications. Designed for use with a bench vise the bending jaw lever handle delivers safe, easy movement. The unit is equipped with easily removable fingers that permit angle, channel, box and other complex bending operations.

Will fit and can be used in any bench vise with 4” / 5” / 6” / 8” wide jaws.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>3244028</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum material width</td>
<td>12-1/2”</td>
</tr>
<tr>
<td>Maximum sheet thickness</td>
<td>1”</td>
</tr>
<tr>
<td>Removable finger widths</td>
<td>5-7/8”, 2-7/8”, 2”, 1”</td>
</tr>
<tr>
<td>Weight</td>
<td>22 lbs.</td>
</tr>
</tbody>
</table>

Slip Roll Attachment – Item # 3244030

Slip roll machine designed for use with a bench vise will roll sheet metal and wire. Three precision turned steel rollers that are ground and polished with large adjusting screws with scales for positioning and lifting the rollers for different material thickness.

Will fit and can be used in any bench vise with 4” / 5” / 6” / 8” wide jaws.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>3244030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bending and rolling of wires</td>
<td>1/32” to 3/16”</td>
</tr>
<tr>
<td>Maximum material width</td>
<td>12”</td>
</tr>
<tr>
<td>Bending minimum</td>
<td>1-3/8”</td>
</tr>
<tr>
<td>Bending maximum</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Weight</td>
<td>22 lbs.</td>
</tr>
</tbody>
</table>
OPTIMUM USA Agent
Colovos Company
4444 W. Ohio Street
Chicago, IL 60624
773-533-4444

All Optimum products are sold exclusively through Grainger.
For more information or to order today go to www.grainger.com.

Catalog 2011