

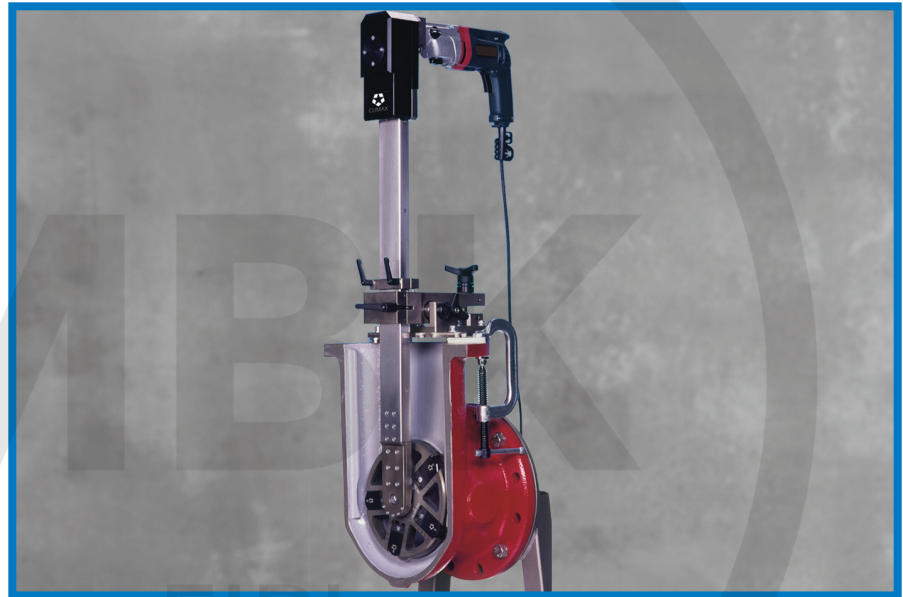
## Powerful, rigid design with easy set up and handling.

### Powerful

- Wide working range: nominal diameter of 1.5 - 48 inches (40 -1200 mm).
- Submersion depth up to 55 inches (1400 mm).
- Heavy duty drive chains provide minimum of 10,000 hours of service.

### Versatile

- Drive system uses a drive chain up to three sizes larger than the competition with a Mean Time Between Failure (MTBF) of approximately 10,000 hours. This minimizes the risk of breakage and costly downtime on the job.
- Five Planet Arms ensure no two discs are ever directly across from each other and carrying the entire work load. All of the discs are in contact with the work surface, eliminating development of high and low spots on valve seat.
- The adhesive on the media discs is specifically formulated to provide a firm hold while in use, but are easy to remove after use.
- High quality abrasives can help reduce grinding time by up to 50%.



### Rigid

- Rigid Planet Arms eliminate machine chatter and ensure a uniform finish.
- Planet Arm bearings are sealed, preloaded and preset to be within .000079 inches (.002 mm) of each other.

### Quick and Easy Setup

- Quickly change between electric and pneumatic by simply loosening a single clamping bolt.
- Quickly change from grinding to lapping operations by simply changing the discs.
- Factory sealed bearings for fast, easy grinding head change out.
- Planet Arms feature fast, one screw adjustment of diameter size.

447-3377

oficina@vendo.com.pe

# SPECIFICATIONS

		US	Metric
<b>Operating Ranges:</b>			
Working range diameter	Minimum	1.5 inches	40 mm
	Maximum (VM1350)	14 inches	350 mm
	Maximum (VM1500)	20 inches	500 mm
	Maximum (VM1600)	24 inches	600 mm
Submerging Depth	Maximum (VM1350)	24 nches	600 mm
	Maximum (VM1500)	31 inches	800 mm
	Maximum (VM1600)	39 inches	1000 mm
Power	Electric	1.3 Hp	1.0 kW
	Pneumatic	0.75 Hp	0.55 kW
Variable spindle speed	Electric	30 - 550 rpm	30 - 550 rpm
	Pneumatic	30 - 400 rpm	30 - 400 rpm
Spindle Torque	Permanent	19 ft-lbs	26 N•m
	Max	79 ft-lbs	108 N•m
<b>Weight</b>			
Model VM1350			
	Basic machine without tooling	22 lbs	10 kg
	Machine case	71 lbs	32 kg
	Accessory case	46 lbs	21 kg
Model VM1500			
	Basic machine without tooling	26.5 lbs	12 kg
	Machine case	75 lbs	34 kg
	Accessory Case	71 lbs	32 kg
Model VM1600			
	Basic machine without tooling	33 lbs	15 kg
	Machine case	99 lbs	45 kg
	Accessory Case	71 lbs	32 kg

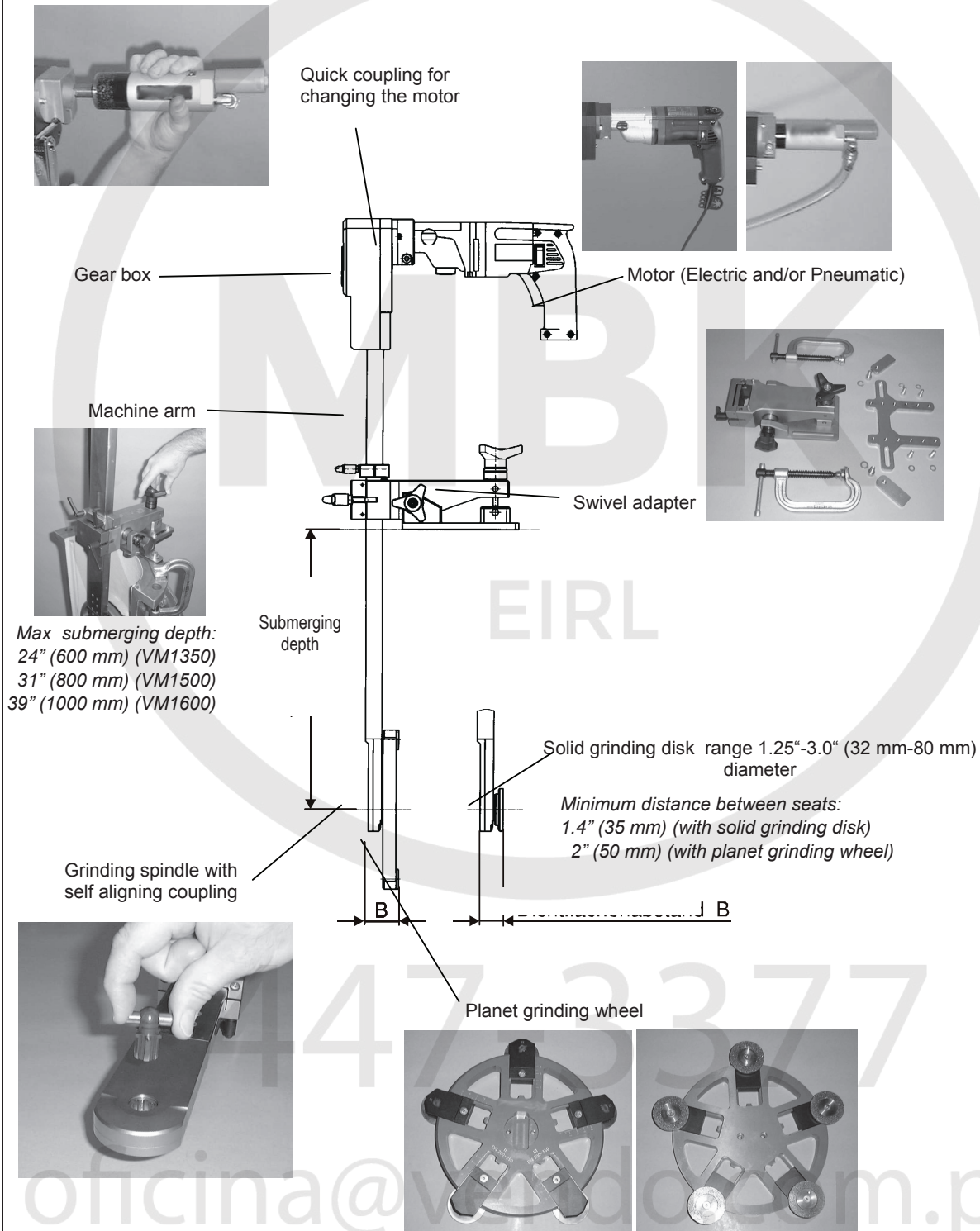
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All dimensions should be considered reference. Contact your Climax Representative for precision dimensions. Specifications are subject to change without notice. There are no systems or components on this machine that are capable of producing hazardous EMC, UV or other radiation hazards. The machine does not use lasers nor does it create hazardous materials such as gasses or dust.

## Models VM1350, VM1500, VM1600 Overview

Seat Ranges: 1.5 - 24" (40 - 600 mm)





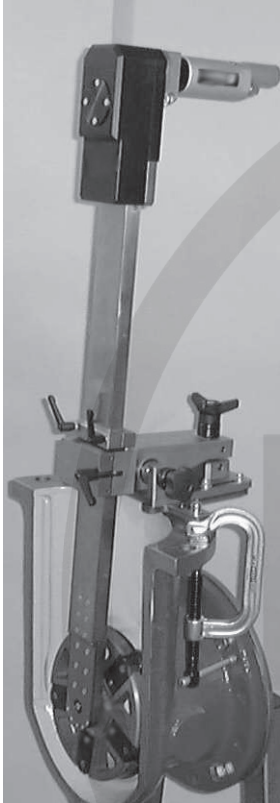
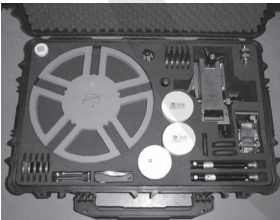
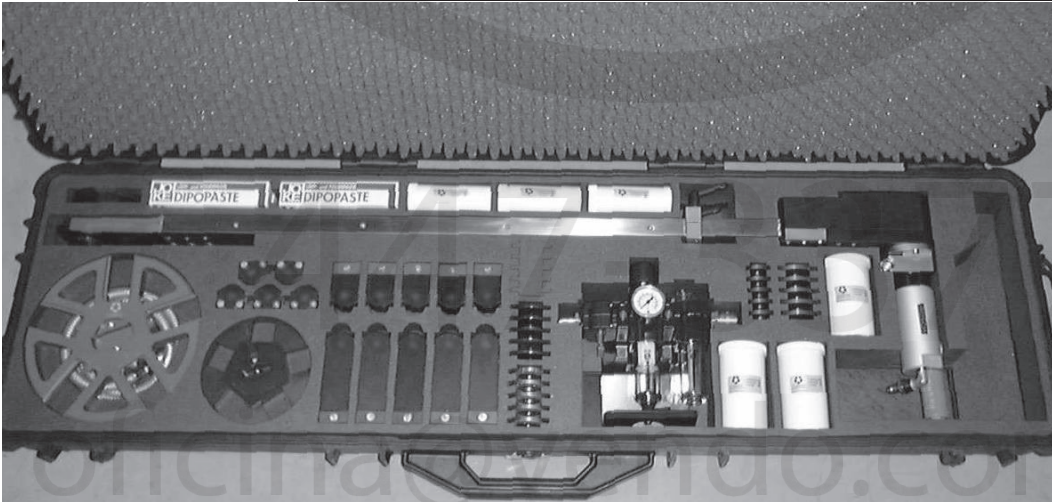
# TOOL CONFIGURATIONS

Model VM1350 (1.5 - 14" (40 - 350 mm) diameter range)		
	P/N	Description
		<b>Gate Valve Grinder VM1350S</b> Nominal working dia 1.5" to 14" (40 mm to 350 mm) Submerging depth 24" (600 mm). Included Components: <ul style="list-style-type: none"> <li>• Set of 3 solid grinding discs 2.2" (55 mm), 2.6" (65 mm), 3.4" (85 mm) diameters.</li> <li>• 3 sets (5 arms/set) of planet arms 1.2" (30 mm), 2.4" (60 mm), 4.5" (115 mm) in length.</li> <li>• A set of 3 planet wheels 3.9" (100 mm), 5.3" (135 mm), 8.7" (220 mm) in diameter.</li> <li>• 1 set (5) of grinding discs 2.0" (50 mm) in diameter.</li> <li>• 1 set of clamping equipment for mounting the machine on valves with and without top flange.</li> <li>• Start up set of abrasives grain 100 and 500.</li> <li>• 1 set (5) of CBN grinding disks 2.0" (50 mm) in diameter.</li> <li>• 1 set of tooling.</li> <li>• Carrying cases with foam inlet for the machine and the accessories.</li> </ul>
	440-00S-S12	VM1350S with electric motor 230 V / 50 Hz
	440-00S-S13	VM1350S with pneumatic motor
	440-00S-S14	VM1350S with electric motor 230V / 50 Hz and pneumatic motor
	440-00S-S15	VM1350S with electric motor 115 V / 60 Hz
	440-00S-S16	VM1350S with electric motor 115V / 60 Hz and pneumatic motor
		<b>Gate Valve Grinding and Lapping machine VM1350</b> Machine like VM1350S but with additional lapping equipment: <ul style="list-style-type: none"> <li>• 2 sets (5 discs/set) of lapping disks 1.2" (30 mm), and 2.0" (50 mm) in diameter.</li> <li>• Lapping paste 10 and 30 µm.</li> </ul>
	440-00S-S02	VM1350 with electric motor 230 V / 50 Hz
	440-00S-S03	VM1350 with pneumatic motor
	440-00S-S04	VM1350 with electric motor 230V / 50 Hz and pneumatic motor
	440-00S-S05	VM1350 with electric motor 115 V / 60 Hz
	440-00S-S06	VM1350 with electric motor 115V / 60 Hz and pneumatic motor
		

Pneumatically driven machines also require the accessory pneumatic motor maintenance kit

# TOOL CONFIGURATIONS

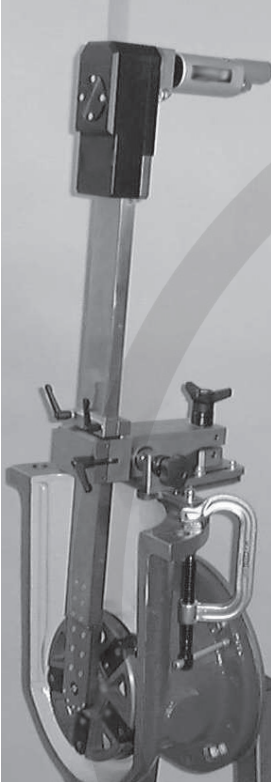
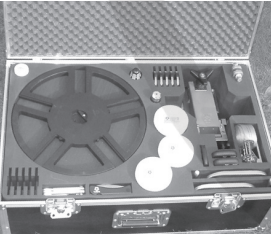

## **Model VM1500 (3 - 20" (80 - 500 mm) diameter range)**

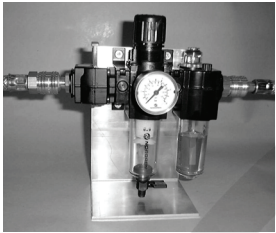
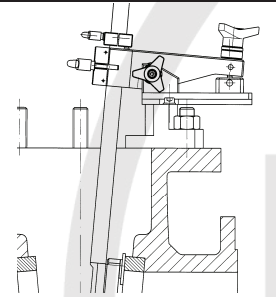
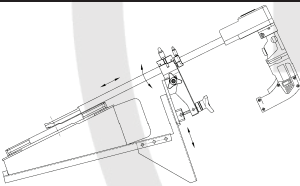
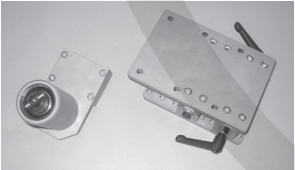
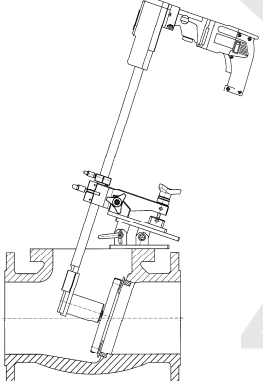
P/N	Description
	<b>Gate Valve Grinder VM1500S</b> Nominal working dia 3" to 20" (80 mm to 500 mm) Submerging depth 31"(800 mm). Included Components: <ul style="list-style-type: none"> <li>• 3 sets (5 arms/set) of planet arms 1.2" (30 mm), 2.4" (60 mm), 4.5" (115 mm) in length.</li> <li>• A set of 4 planet wheels 3.9"(100 mm), 5.3"(135 mm), 8.7"( 220 mm) 15.0"(380 mm) in diameter.</li> <li>• 2 sets (5 discs/set) of grinding discs 2.0"(50 mm) &amp; 3.2" (80 mm) in diameter.</li> <li>• 1 set of clamping equipment for mounting the machine on valves with and without top flange.</li> <li>• Start up set of abrasives grain 100 und 500.</li> <li>• 1 set (5) of CBN grinding disks 2.0"(50 mm) diameter.</li> <li>• 1 set of tooling.</li> <li>• Carrying cases with foam inlet for the machine and the accessories.</li> </ul>
	<b>440-00S-S32 VM1500S with electric motor 230 V / 50 Hz</b>
	<b>440-00S-S33 VM1500S with pneumatic motor</b>
	<b>440-00S-S34 VM1500S with electric 230V / 50 Hz and pneumatic motor</b>
	<b>440-00S-S35 VM1500S with electric motor 115 V / 60 Hz</b>
	<b>440-00S-S36 VM1500S with electric 115V / 60 Hz and pneumatic motor</b>
	<b>Gate Valve Grinding and Lapping machine VM1500</b> Machine like VM1500S but with additional lapping equipment: <ul style="list-style-type: none"> <li>• 3 sets (5 discs/set) of lapping disks 1.2" (30 mm), 2.0"(50 mm) &amp; 3.2"(80 mm) in diameter.</li> <li>• Lapping paste 10 and 30 µm.</li> </ul>
	<b>440-00S-S22 VM1500 with electric motor 230 V / 50 Hz</b>
	<b>440-00S-S23 VM1500 with pneumatic motor</b>
	<b>440-00S-S24 VM1500 with electric 230V / 50 Hz and pneumatic motor</b>
	<b>440-00S-S25 VM1500 with electric motor 115 V / 60 Hz</b>
	<b>440-00S-S26 VM1500 with electric 115V / 60 Hz and pneumatic motor</b>
	

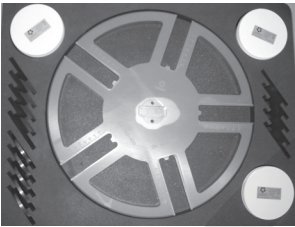
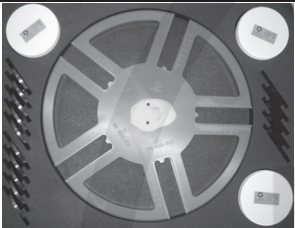

Pneumatically driven machines also require the accessory pneumatic motor maintenance kit






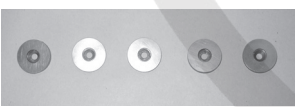
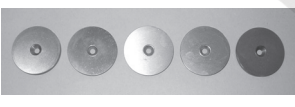

# TOOL CONFIGURATIONS



Model VM1600 (3 - 24" (80 - 600 mm) diameter range)		
	P/N	Description
		<b>Gate Valve Grinder VM1600S</b> Nominal working dia 3" to 24" (80 mm to 600 mm) Submerging depth 40" (1000 mm). Scope of supply: <ul style="list-style-type: none"> <li>• 4 sets (5 arms/set) of planet arms 1.2" (30 mm), 2.4" (60 mm), 4.5" (115 mm), 7.3" (185 mm) in length.</li> <li>• A set of 4 planet wheels 3.9" (100 mm), 5.3" (135 mm), 8.7" (220 mm) 15.0" (380 mm) in diameter.</li> <li>• 2 sets (5 discs/set) of grinding discs 2.0" (50 mm) &amp; 3.2" (80 mm) in diameter.</li> <li>• 1 set of clamping equipment for mounting the machine on valves with and without top flange.</li> <li>• Start up set of abrasives grain 100 und 500.</li> <li>• 1 set (5) of CBN grinding disks 2.0" (50 mm) diameter</li> <li>• 1 set of tooling.</li> <li>• Carrying cases with foam inlet for the machine and the accessories.</li> </ul>
	440-00S-S52	VM1600S with electric motor 230 V / 50 Hz
	440-00S-S53	VM1600S with pneumatic motor
	440-00S-S54	VM1600S with electric 230V / 50 Hz and pneumatic motor
	440-00S-S55	VM1600S with electric motor 115 V / 60 Hz
	440-00S-S56	VM1600S with electric 115V / 60 Hz and pneumatic motor
		<b>Gate Valve Grinding and Lapping machine VM1600</b> Machine like VM1600S but with additional lapping equipment: <ul style="list-style-type: none"> <li>• 3 sets (5 discs/set) of lapping disks 1.2" (30 mm), 2.0" (50 mm) &amp; 3.2" (80 mm) in diameter.</li> <li>• Lapping paste 10 and 30 µm.</li> </ul>
	440-00S-S42	VM1600 with electric motor 230 V / 50 Hz
	440-00S-S43	VM1600 with pneumatic motor
	440-00S-S44	VM1600 with electric 230V / 50 Hz and pneumatic motor
	440-00S-S45	VM1600 with electric motor 115 V / 60 Hz
	440-00S-S46	VM1600 with electric 115V / 60 Hz and pneumatic motor
		

Accessories		
	P/N	Description
	<b>240-13K-001</b>	<b>Maintenance unit for pneumatic motor</b> <b>Required for machines with pneumatic motor.</b> The maintenance unit is <b>not</b> included in the standard scope of supply with pneumatic driven machines. Includes: <ul style="list-style-type: none"> <li>• filter</li> <li>• oiler</li> <li>• pressure gauge</li> <li>• speed controller</li> </ul>
	<b>440-52T-008</b>	<b>Setup adapter for flanges with threaded studs (2 pcs.)</b> <ul style="list-style-type: none"> <li>• Enables the set up of the machine without removing the threaded studs of the flange.</li> <li>• Are used instead of the clamping pads.</li> <li>• The tilting adapter is mounted 2.8" (70 mm) above the flange.</li> <li>• The setup adapter can be screwed directly to the threaded stud (bore diameter 1.0" (25 mm) and 0.7" (17 mm)) or clamped between the studs by the c-clamps that belong to the scope of supply of the machine.</li> </ul>
	<b>440-56S-N01</b>	<b>Fixture for gate wedges</b> For grinding of gate wedges "on site" with the VM machines.
  	<b>440-00S-L03</b>	<b>Swing Check accessories</b> For grinding of swing check valves. Includes: <ul style="list-style-type: none"> <li>• swivel adapter for adaption of the machine on the valve</li> <li>• spindle extension for reaching the seat with the planet wheels.</li> </ul>

Accessories		
	P/N	Description
	<b>240-66S-N01</b>	<b>Extension Kit 20" (500 mm) for grinding</b> To extend the working range of the VM1350 to 20" (500 mm). 1 planet wheel 15.0" (380 mm) diameter. 1 set (5) grinding disk 3.2"(80 mm) diameter. 1 start up set abrasives 3.2"(80 mm) diameter: grain 100 and 500.
	<b>240-67S-N01</b>	<b>Extension Kit 20" (500 mm) for grinding and lapping</b> To extend the working range of the VM1350 to 20" (500 mm). 1 planet wheel 15.0" (380 mm) diameter. 1 set (5) grinding disk 3.2"(80 mm) diameter. 1 set (5) lapping disks 3.2"(80 mm) diameter. 1 start up set abrasives 3.2"(80 mm) diameter: grain 100 and 500.
	<b>110-24S-N01</b>	<b>Planet arm to extend seat range from 20" (500 mm) to 24" (600 mm) Each</b> <b>(A total of 5 are required)</b> A planet arm (7.5" (190 mm)), that extends the grinding range of the 15" (380 mm) diameter planet wheel up to 24" (600 mm).
		<b>Extension of submerging depth</b> Extension of submerging depth without changing the max. grinding dia. (Must be ordered with the machine. Can not be ordered after delivery of the machine. e.g... 440-00S-S05- <b>M01</b> )
	<b>-M01</b>	<b>Extension of submerging depth from 24" to 31" (600 mm to 800 mm)</b> <b>(only VM1350(S))</b> <ul style="list-style-type: none"> <li>• Extension of the machine arm.</li> <li>• Adaption of the machine case.</li> </ul>
	<b>-M02</b>	<b>Extension of submerging depth from 24" to 39" (600 mm to 1000 mm)</b> <b>(only VM1350(S))</b> <ul style="list-style-type: none"> <li>• Extension of the machine arm.</li> <li>• Adaption of mounting accessories.</li> <li>• Adaption of the machine case.</li> </ul>
	<b>-M03</b>	<b>Extension of submerging depth from 31" to 39" (800 mm to 1000 mm)</b> <b>(only VM1500(S))</b> <ul style="list-style-type: none"> <li>• Extension of the machine arm.</li> <li>• Adaption of mounting accessories.</li> <li>• Adaption of the machine case.</li> </ul>



Accessories		
	P/N	Description
		<b>Grinding adapter</b> For using the tooling of the VM1000 series on stationary drill presses. The grinding pressure is made by an application of springs. The scale for the grinding pressure is divided into two ranges: One for high rate of removal of material and the other for high precision surfaces.
	<b>185-00S-S22</b>	<b>Grinding adapter MT2</b> For using on stationary drill presses with morse taper #2.
	<b>185-00S-S23</b>	<b>Grinding adapter MT3</b> For using on stationary drill presses with morse taper #3.
	<b>110-33S-N01</b>	<b>CBN grinding disks 2" (50 mm) diameter. (each)</b> <b>(A total of 5 required)</b> Required for rough grinding of heavily damaged seats (1 set is included in each component package).
	<b>110-34S-N01</b>	<b>CBN grinding disks 3.2" (80 mm) diameter. (each)</b> <b>(A total of 5 required)</b> Required for rough grinding of heavily damaged seats.
	<b>110-41S-N01</b>	<b>Lapping disks 1.2" (30 mm) diameter (each)</b> <b>(A total of 5 required)</b>
	<b>110-42S-N01</b>	<b>Lapping disks 2" (50 mm) diameter (each)</b> <b>(A total of 5 required)</b>
	<b>110-43S-N01</b>	<b>Lapping disks 3.2" (80 mm) diameter (each)</b> <b>(A total of 5 required)</b>

Accessories		
	P/N	Description
		<b>Planet Arms 3 degree</b> The spindles of these arms are designed with a 3 degree offset. These arms are made to rework the 3 degree relief angle in gate valves
	<b>110-51S-N01</b>	<b>Planet arm #II 3 degrees (2.4" (60 mm) length) (each)</b> <b>(A total of five required)</b> Outside grinding diameter 6.3"-13.0" (160-330 mm) (diameter depends on selected planet wheel)
	<b>110-52S-N01</b>	<b>Planet arm #III 3 degrees (4.5" (115 mm) length) (each)</b> <b>(A total of five required)</b> Outside grinding diameter 13.0"-21.7" (330-550 mm) (diameter depends on selected planet wheel)
	<b>110-50S-L01</b>	<b>3 degree Planet Arm Set</b> Includes : <ul style="list-style-type: none"> <li>Planet arm #II 3 degree (5 pieces)</li> <li>Planet arm #III 3 degree (5 pieces)</li> </ul>
		<b>Planet Arms 5 degree</b> The spindles of these arms are designed with a 5 degree offset. These arms are made to rework the 5 degree relief angle in gate valves
	<b>110-61S-N01</b>	<b>Planet arm #II 5 degrees (2.4" (60 mm) length) (each)</b> <b>(A total of five required)</b> Outside grinding diameter 6.3"-13.0" (160-330 mm) (diameter depends on selected planet wheel)
	<b>110-62S-N01</b>	<b>Planet arm #III 5 degrees (4.5" (115 mm) length) (each)</b> <b>(A total of five required)</b> Outside grinding diameter 13.0"-21.7" (330-550 mm) (diameter depends on selected planet wheel)
	<b>110-60S-L01</b>	<b>5 degree Planet Arm Set</b> Includes : <ul style="list-style-type: none"> <li>Planet arm #II 5 degree (5 pieces)</li> <li>Planet arm #III 5 degree (5 pieces)</li> </ul>

CLIMAX is committed to product improvement. The machine you receive may vary slightly from what is shown.

447-3377

oficina@vendo.com.pe

# CLIMAX TRAINING AND SUPPORT

CLIMAX has been teaching the fundamentals and fine points of portable machine tool operation for practically as long as we've been inventing and building the tools.

We offer several training facilities across the United States - the Global Learning Center, situated in our corporate headquarters near Portland, Oregon and Houston, Texas Training Facility. All facilities offer training for machine tool operators on safety and machine setup and operation. Trainees also receive technical tips and tools to improve operational efficiencies, with the vast majority of every program devoted to hands-on activities and skill development.

The CLIMAX instructional team includes specialists in shipbuilding, power generation, civil engineering, bridge re-building, petrochemical and other industries.

Whether it's a regularly scheduled course at one of our training facilities, or custom curriculum conducted at your facility, your machinists will benefit from courses developed by some of the most respected authorities in the business.

Call us today to register for a regularly scheduled class, or talk to us about how we can customize a training program for your specialized application.



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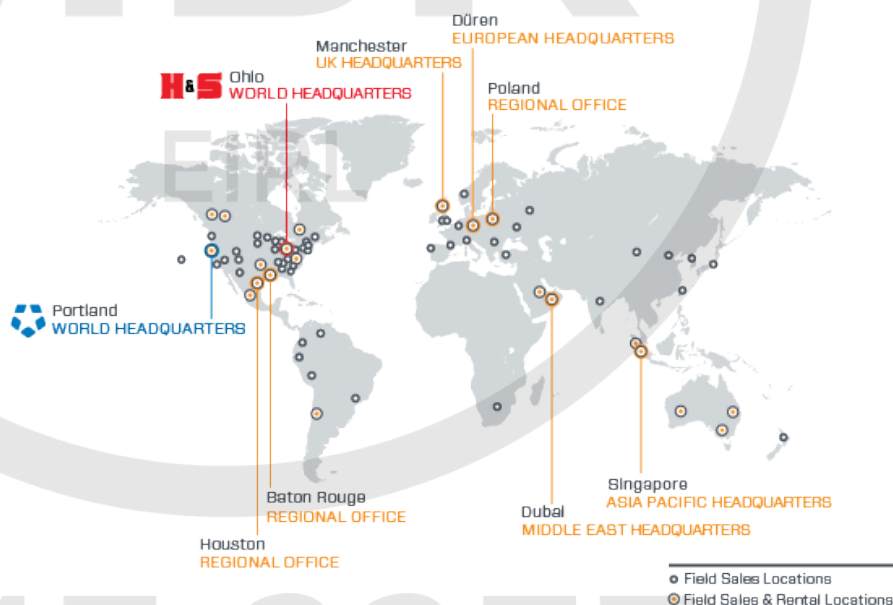
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### World Headquarters

2712 E. Second Street  
Newberg, Oregon  
97132 USA  
Tel: +1 503 538 2185  
N. America Toll-Free:  
1 800 333 8311  
Fax: +1 503 538 7600  
Email: info@cpmt.com

### Asia Pacific

316 Tanglin Road #02-01  
Singapore 247978  
Tel: +65 9647 2289  
Fax: +65 6801 0699  
Email: info@cpmt.com

### European

Am Langen Graben 8  
52353 Dürren, Germany  
Tel: (+49) (0) 2421 9177 0  
Fax: (+49) (0) 2421 9177 29  
Email: info@cpmt.de

### Middle East

Warehouse #5,  
Plot: 369 272  
Um Sequim Road  
Dubai, UAE  
Tel: +971 4 321 0328  
Email: info@cpmt.com

### United Kingdom

Unit 7 Castlehill Industrial  
Estate  
Bredbury Industrial Park  
Horsfield Way  
Stockport SK6 2SU  
Tel: +44 (0) 161 406 1720  
Email: info@cpmt.com