

Lapping Machines

Kemet's Advanced Lapping Technology

Kemet offers a comprehensive range of standard lapping and polishing systems for use across all industrial sectors. Special purpose machines can also be developed for specific applications.

Benefits:

- Faster polishing process
- One operation surface finish
- Faster material removal
- Pre set parameters
- Reduced rejections
- Semi skilled operation
- Significant reduction in lapping costs
- Reduced inspection requirements
- Optimum geometry and surface finish
- Better utilisation of machine time
- Cleaner environment conditions

Lapping Machine Options



Open Face

The open face machines are for use where work pieces are either large in size and can be lapped under their own weight or where pressure application by hand weights is sufficient.



Pneumatic Lift

The pneumatic lift machines will raise and lower the weights and also apply pressure where necessary. All are fitted with mandatory safety controls.

Kemet Lapping Machine Capacity Chart

Components per conditioning ring based on typical loading of approximately 60% ring surface area.

Machine Model (No of Rings)	Diameter of Parts (mm)																											
	6	7.5	9	10.5	12	13.5	15	18	22	26	30	34	38	42	46	50	54	60	70	80	90	100	110	120	130	140		
15 (3 Rings)	275	175	118	86	60	50	40	27	18	12	10	8	6	5	4	3	2	2	2	1	1	1	1	1	1	1	1	
20 (3 Rings)	-	-	-	-	150	114	90	63	39	33	21	17	14	10	9	7	6	5	3	3	2	2	1	1	1	1	1	
24 (3 Rings)	-	-	-	-	210	165	132	87	57	42	33	24	18	15	13	10	9	7	5	4	3	3	2	2	1	1	1	
24 (4 Rings)	-	-	-	-	150	114	90	63	39	33	21	17	14	10	9	7	6	5	3	3	2	2	1	1	1	1	1	
36 (3 Rings)	-	-	-	-	-	-	-	204	93	93	69	60	42	33	29	24	21	17	12	10	7	6	5	4	3	2	2	
36 (4 Rings)	-	-	-	-	-	-	-	156	72	72	54	39	33	25	33	20	15	12	10	8	5	5	3	2	2	2	2	
48 (4 Rings)	-	-	-	-	-	-	-	-	132	132	99	75	60	48	39	33	29	24	17	14	12	8	7	5	5	4	4	
56 (4 Rings)	-	-	-	-	-	-	-	-	204	204	150	117	100	76	62	52	44	35	26	20	16	12	10	8	8	6	6	
72 (4 Rings)	-	-	-	-	-	-	-	-	-	-	-	204	164	132	108	92	78	62	44	35	26	21	18	16	14	10	10	
84 (4 Rings)	-	-	-	-	-	-	-	-	-	-	-	-	-	185	152	129	109	88	63	47	38	30	24	20	17	15	15	

The above data is for using standard loading procedures. It is often possible to extend the capacity of a machine utilising special workholding arrangements and fixtures.

Conditioning Ring Spec		Machine Model							
		15	20	24	36	48	56	72	84
Inside Diameter (mm)	3 Rings	140	191	248	368	505	578	-	-
	4 Rings	-	-	209	322	432	530	692	813

Kemet 15/20 Models

The bench-mounted Kemet 15 and 20 Lapping Machines have a rigid metal construction with a height-adjustable worktable. The machines incorporate a digital Process Timer and a fully automatic Liquid Diamond Dispensing System.

Features & Benefits:

- Variable speed
- Bench mounted
- Produces optically flat surfaces with high precision surface finish
- Fully controllable Kemet Electronic Dispensing System accurately meters diamond abrasive onto the lapping plate - Reduces lapping costs
- Only small quantities of diamond abrasive and non-toxic fluids are used - Reduces waste
- Built in abrasive system for conditioning Kemet Composite Plates
- Easily transportable
- Electrical System complies with EN 60 204
- Easy to adapt for special lapping applications

Options:

- Lift off disc system on model 15"
- Fixed speed
- Pneumatic lift on model 20"

Other Versions:

- Col-K Chemical polishing version (see page 7)
- Clipper Blade sharpening machine



Recommended Accessories	Machine Model	
	15	20
Cast Iron Conditioning Rings - Solid - Set of 3	360204	360818
Cast Iron Conditioning Rings - Serrated - Set of 3	360203	361027
Zytel Roller Bearing Assemblies - Set of 6	360212	360212
O-rings for Zytel Bearings - Set of 6	360270	360270
Flatness Gauge	361304	

Recommended Consumables	Machine Model	
	15	20
Cast Iron Serrated Lapping Plate (Pre-lapped)	362400	362402
Cast Iron Solid Lapping Plate (Pre-lapped)	362401	362403
Kemet Copper Lapping Plate	351102	351103
Kemet Copper SP2 Lapping Plate	351159	351964
Kemet Iron Lapping Plate	351002	351081
Kemet PR3 Lapping Plate	351340	351374
Kemet Tin Lapping Plate	351305	351320
Kemet XL Lapping Plate	351356	351375
Kemet XP Lapping Plate	351202	351266

Huge range of other accessories and consumables available for the Kemet 15 & 20 Models

Machine Model	15	20
Lapping Plate outside Diameter	381 mm	508 mm
Lapping Plate Speed	70rpm	70rpm
No. of Conditioning Rings	3	3
Conditioning Ring inside Diameter	140 mm	191 mm
Max load per Conditioning ring	39Kg	53Kg
Height of Open Face Machine	670 mm	700 mm
Height of Pneumatic Lift Machine	N/A	965 mm
Working Height	310 mm	385 mm
Depth of Machine	620 mm	780 mm
Standard Electrical Supply	220v-1Ph-50Hz or 380v or 415v 3Ph-50Hz	
Main Drive Motor	0.37kW	0.75kW
Abrasive pump motor	0.18kW	0.18kW
Net Weight Open Face	116kg	245kg
Gross Weight Open Face	156kg	343kg
Net Weight Pneumatic	N/A	240kg
Gross Weight Pneumatic	N/A	385kg

Lift Off Disc System	Machine Model 15 Only
Kemet 15" Iron Lift Off Disc	351025
Kemet 15" Copper Lift Off Disc	351121
Kemet 15" XP Lift Off Disc	351226
Kemet 15" Tin Lift Off Disc	351314
15" Aluminium Lift Off Disc	361001
15" Aluminium Drive Plate	361002

Kemet 24/36 Models

Both Kemet 24 and 36 machines have rigid welded tubular section steel frames, supporting the gearbox, drive motor and worktable. With the option of a diamond dispensing system they also house an integral abrasive compound feed and waste tanks behind lift-off panels. The machines incorporate soft starting features, which smoothly accelerate the Kemet Composite or cast iron lapping plate from stand still to full speed.



Features & Benefits:

- Produces optically flat surfaces with high precision surface finish
- Fully controllable Kemet Electronic Dispensing System accurately meters diamond abrasive onto the Kemet Composite Lapping Plate, reducing lapping costs and waste
- Built in abrasive system for conditioning Kemet Composite Lapping Plates
- Suitable for large parts or large volume production
- Electrical System complies with EN 60 204

Options:

- Variable speed
- Temperature control
- 3 or 4 conditioning rings
- Col-K chemical polishing versions
- Light curtain or full Perspex guarding available

Option	Open Face		Pneumatic Lift	
Machine Model	24	36	24	36
Height	920 mm	960 mm	1925 mm	1960 mm
Working Height	-	-	1150 mm	1270 mm
Width	1100 mm	1350 mm	1240 mm	1490 mm
Depth	1350 mm	1640 mm	1350 mm	1640 mm
Approx. Weight	575kg	1100kg	700kg	1250kg
Lapping Plate outside Diameter	610 mm	914 mm	610 mm	914 mm
Lapping Plate Speed	58rpm	58rpm	58rpm	58rpm
N° of Conditioning Rings	3 or 4	3 or 4	3 or 4	3 or 4
Conditioning Ring inside Diameter	3 x 248 mm	3x 368 mm	3 x 248 mm	3x 368 mm
	4 x 210 mm	4 x322 mm	4 x 210 mm	4 x322 mm
Max load per Conditioning ring	3 ring 250Kg	3 ring 350Kg	3 ring 250Kg	3 ring 350Kg
	4 ring 200Kg	4 ring 300Kg	4 ring 200Kg	4 ring 300Kg
Main Drive Motor	1.5kW	4kW	1.5kW	4kW
Abrasive pump motor	0.18kW	0.18kW	0.18kW	0.18kW
Air Requirements	4 Bar min	4 Bar min	4 Bar min	4 Bar min
Standard Electrical Supply	220v or 380v or 415v 3Ph-50Hz			

Electronic Dispensing Equipment Standard on all above Models (see page 19)

Kemet 40 also available with Kemet Lapping Plate outside diameter 1016mm. Three cast iron serrated conditioning rings, inside diameter 406mm.

Recommended Accessories	Machine Model	
	24	36
Cast Iron Conditioning Rings - Solid for 3 Ring Machine - Set of 3	360679	360186
Cast Iron Conditioning Rings - Serrated for 3 Ring Machine - Set of 3	360208	360278
Cast Iron Conditioning Rings - Solid for 4 Ring Machine - Set of 4	360680	360681
Cast Iron Conditioning Rings - Serrated for 4 Ring Machine - Set of 4	360274	360682
Zytel Roller Bearing Assemblies - Set of 6	360214	-
O-rings for Zytel Bearings - Set of 6	360672	360270
Roller Bearing Assemblies - Set of 6	360213	360259
O-rings for Roller Bearings - Set of 24	-	360659
Flatness Gauge	361304	

Recommended Consumables	Machine Model	
	24	36
Cast Iron Serrated Lapping Plate (Pre-lapped)	362404	362406
Cast Iron Solid Lapping Plate (Pre-lapped)	362405	362407
Kemet Copper Lapping Plate	351106	351124
Kemet Copper SP2 Lapping Plate	351177	351965
Kemet Iron Lapping Plate	351006	351010
Kemet PR3 Lapping Plate	351357	351343
Kemet Tin Lapping Plate	351306	351315
Kemet XL Lapping Plate	351376	351377
Kemet XP Lapping Plate	351206	351227

Huge range of other accessories and consumables available for the Kemet 24 & 36 Models

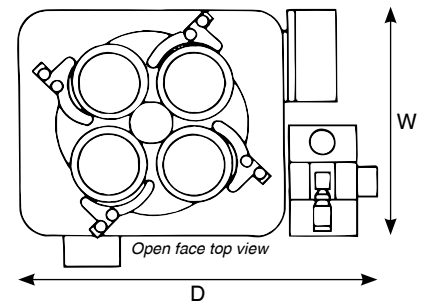
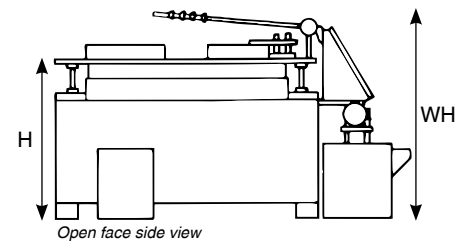
Kemet 48/56 Models

These Precision Diamond Flat Lapping & Polishing Machines, are available as open face and pneumatic lift with a diamond dispensing system. Equipped with a serrated lapping plate consisting of 16 segments for the Kemet 48 and 24 segments for the Kemet 56, the individual cast iron segments are faced with Kemet Composite material bolted to a support plate.

Features & Benefits:

- Higher capacity
- 3 or 4 conditioning rings
- Heavier and larger parts (up to 505 mm for Kemet 48 and 578 mm for Kemet 56)
- Water cooling option available

Option	Open Face		Pneumatic Lift	
Machine Model	48	56	48	56
Height (H)	1010 mm	1030mm	2350 mm	2260 mm
Working Height (WH)	-	-	1390 mm	1400 mm
Width (W)	1510 mm	1700 mm	1510 mm	1700 mm
Depth (D)	2000 mm	2020 mm	2520 mm	2520 mm
Approx. Weight	3400kg	4100kg	4000kg	5000kg
Lapping Plate outside Diameter	1219 mm	1422 mm	1219 mm	1422 mm
Lapping Plate Speed	48 rpm	48 rpm	48 rpm	48 rpm
Conditioning Ring inside Diameter	3 x 505 mm	3 x 578 mm	3 x 505 mm	3 x 578 mm
	4 x 432 mm	4 x 530 mm	4 x 432 mm	4 x 530 mm
Max load per Conditioning ring	3 ring 375Kg	3 ring 400Kg	3 ring 375Kg	3 ring 400Kg
	4 ring 325Kg	4 ring 350Kg	4 ring 325Kg	4 ring 350Kg
Main Drive Motor	7.5kW	11kW	7.5kW	11kW
Abrasive pump motor	0.18kW	0.18kW	0.18kW	0.18kW
Abrasive Tank capacity	115 Litres	115 Litres	115 Litres	115 Litres
Waste tank capacity	37 Litres	37 Litres	37 Litres	37 Litres
Standard Electrical Supply	220V or 380V or 415V 3 Ph 50Hz			



Recommended Accessories	Machine Model	
	48	56
Cast Iron Conditioning Rings - Solid for 4 Ring Machine - Set of 4	360235	360749
Cast Iron Conditioning Rings - Solid for 3 Ring Machine - Set of 3	360662	
Cast Iron Conditioning Rings - Serrated for 4 Ring Machine - Set of 4	360642	
Cast Iron Conditioning Rings - Serrated for 3 Ring Machine - Set of 3	360833	360910
Roller Bar Bearing Assembly	360729	360869
Flatness Gauge	361304	

Recommended Consumables	Machine Model	
	48	56
Cast Iron Segments for 3 Rings - Set of 16	360265	361860
Cast Iron Segments for 4 Rings - Set of 16	360776	362216

Huge range of other accessories and consumables available for the Kemet 48 & 56 Models

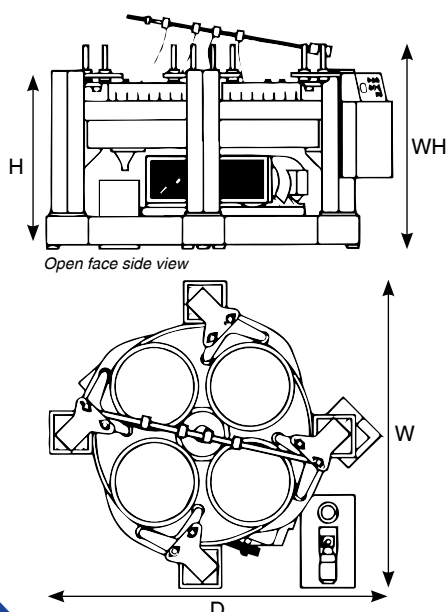


Kemet 72/84/120 Models

For larger lapping applications Kemet offer machines with a 72", 84" or 120" plate.

Features & Benefits:

- Set within a mesh guard, a side mounted motor transmits the drive via multiple v-belts to a mechanical reduction gearbox at the centre of a cruciform shaped steel structure.
- Four stations, the roller yokes mounted on hollow section upright columns at the end of each arm, which also support the trough around the lap plate.
- Electronic soft start to smooth accelerate the lap plate to full speed is time adjustable to suit individual process conditions.
- Suitable for use with conventional abrasive slurries or Kemet Diamond slurries.
- Free-standing conventional abrasive reservoir/stirrer/pump supplies four individually adjustable feeds to each of the stations.
- Electronic diamond dispenser and stirrer unit provides fully controlled metering of liquid diamond and lubricating fluid to each station, via dispensing bars and spray heads, to ensure even distribution and minimise consumable costs and waste.
- Water cooling option available



Option	Open Face			Pneumatic Lift		
Machine Model	72	84	120	72	84	120
Approx. Height (H)	1350 mm	1500 mm	*	2764 mm	*	*
Working Height (WH)	-	-	-	*	*	*
Approx. Width (W)	3026 mm	2600 mm	*	3026 mm	2600 mm	*
Approx. Depth (D)	3073 mm	2600 mm	*	3073 mm	2600 mm	*
Approx. Weight	6000 kg	9000 kg	*	10000 kg	12000 kg	*
Lapping Plate outside Ø	1829 mm	2134 mm	3000 mm	1829 mm	2134 mm	3000 mm
Approx. Lapping Plate Speed	30 rpm	20 rpm	18 rpm	36 rpm	20 rpm	18 rpm
No. of Conditioning Rings	4	4	4	4	4	4
Conditioning Ring inside Ø	692 mm	813 mm	1025 mm	692 mm	813 mm	1025 mm
Max load per Conditioning ring	2000Kg	2250Kg	*	2000Kg	2250Kg	*
Main Drive Motor	15kW	30kW	*	15kW	30kW	*
Abrasive pump motor	0.18kW	0.18kW	0.18kW	0.18kW	0.18kW	0.18kW
Abrasive Tank capacity	117 Litres	117 Litres	132 Litres	117 Litres	117 Litres	132 Litres
Waste tank capacity	37 Litres	37 Litres	57 Litres	37 Litres	37 Litres	57 Litres
Standard Electrical Supply	220V or 380V or 415V 3 Ph 50Hz					

* Designed to customer specification

Kemet Spherical Lapping Machine

The Kemet Spherical Lapping Machine laps and polishes pre-machined spherical balls and cups to a mirror finish with roundness usually better than 3 microns.

Features & Benefits:

- 6 motors all with independent variable speed to provide complete control
- Size: 1600 (W) x 820 (D) x 2500 (H) mm
- Lapping and polishing pressures applied pneumatically
- Simple change from ball to cup polishing action
- Average process time less than 5 mins
- Manual and jog facility provided for setting up
- Fully guarded with auto lifting door access
- Comes complete with initial tooling set
- Full manual and training provided
- Low running costs
- Dual process timers
- Single button process start
- Lighting provided
- Smooth and silent running
- CE marked
- Electrical supply 230V single phase-50Hz
- Air: 3 bar max



KemCol 15 Super Finishing Machine

The KemCol 15 Super Finishing machine is based on the popular Kemet 15 lapping and polishing machine, but incorporates stainless steel elements in place of painted components for longer life, and contamination free polishing. It comes as standard with an integrated Kemet aKu-Disp fully programmable peristaltic pump system, and either ceramic faced, or stainless steel conditioning rings. The machine is ideal for chemo mechanical polishing and Cerium Oxide based polishing applications.



Technical Specifications

Height	400 mm
Working Height	310 mm
Width	800 mm
Depth	650 mm
Nett Weight	90Kgs
Polishing Pad Diameter	380 mm
No of conditioning rings	3
Inside diameter of conditioning rings	140 mm
Main Motor	0.37kW
Product code	359876



Mirror Finish

Features & Benefits:

- Stainless steel worktable surrounding polishing pad
- Polished stainless steel yokes for easier cleaning
- Stainless steel drive plate
- Aluminium lift off disc system optional
- Ceramic faced or stainless steel conditioning rings for contamination free polishing
- aKu-Disp fully programmable peristaltic pump unit fitted as standard
- Suitable for Kemet magnetic polishing pad system for easy pad change

KemCol 15 Recommended Accessories



aKu-Disp	Code
Spare Peristaltic Head Unit with Tube	362520
aKu-Disp Feedarm	362514
Spare Tubing (1 meter)	363109

The aKu-Disp is designed to work in conjunction with the lapping machine. It links to the machines main timer system and the stirrer function operates as soon as power is on the unit and has manually operated variable speed controls for both the pump and stirrer.

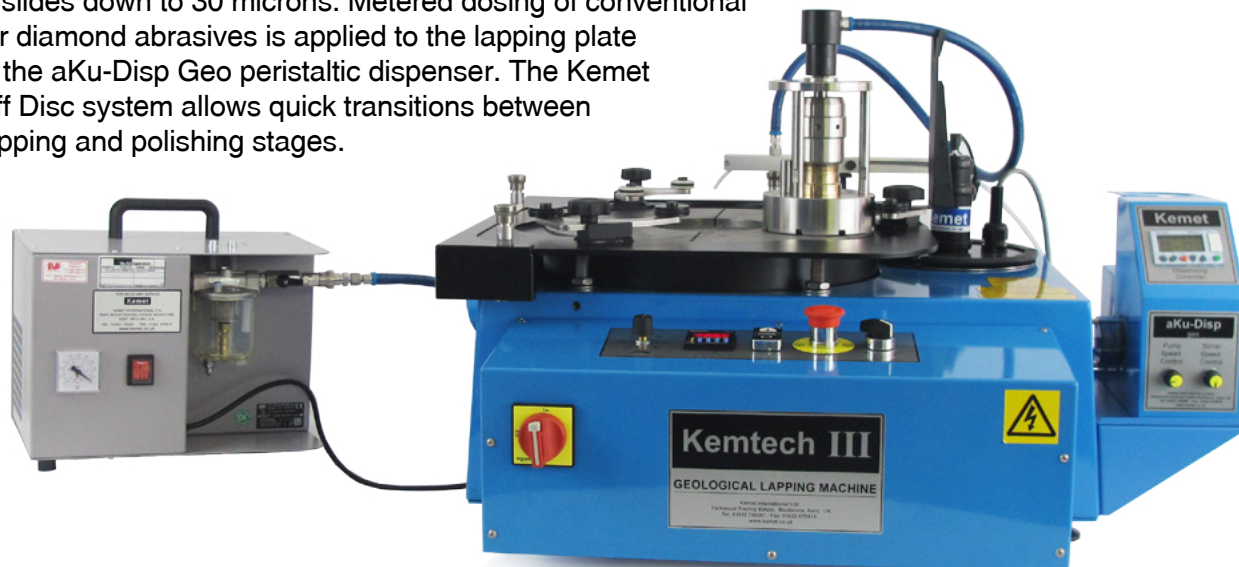
Description	Code
Set of 3 Ceramic Faced Conditioning Rings	361522
Stainless Steel Plastic Faced Conditioning Rings	362235
380 mm Stainless Steel Support Plate (For Polishing Pads)	362033
380 mm Aluminium Lift Off Disc	361001
380 mm Aluminium Drive Plate	361002
380 mm Thin Metal Disc (For use with magnetic system)	345563
380 mm Magnetic Disc	345773

Recommended Consumables	Code
380 mm CHEM-H Polyurethane Polishing Pad	341865
380 mm PSU-M Chemo-Textile Cloth for Cerium	341011
380 mm MRE Short Napped Final Polishing Pad	341715

Col-K Polishing Media	5 litres	10 litres	20 litres
Col-K	600212	600238	600204
Col-K (NC)	600199	600239	600202

Kemtech III Geological Lapping Machine

The Kemtech III Geological lapping machine is able to accurately lap and polish thin sections mounted on glass slides down to 30 microns. Metered dosing of conventional and/or diamond abrasives is applied to the lapping plate using the aKu-Disp Geo peristaltic dispenser. The Kemet Lift Off Disc system allows quick transitions between the lapping and polishing stages.



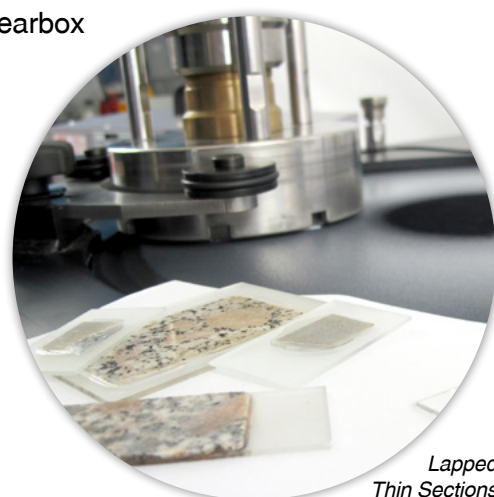
Technical Specifications

Height	400 mm
Working Height	310 mm
Width	800 mm
Depth	650 mm
Nett Weight	90Kgs
No of jig stations	3
Main Motor	0.37kW
Product code	359975

Also available in 20" with driven rings as an option.

Features & Benefits:

- aKu-Disp Geo accurate peristaltic dispensing system for metered dosing
- Capacity for up to 3 vacuum jigs with diamond faced stoppers
- Electronic digital timer with variable time ranges
- Sealed maintenance free reduction gearbox
- Integrated abrasive tank with stirrer
- Cast iron Serrated Lift Off Disc or Aluminium Lift Off Disc
- Variable Speed up to 70 rpm
- Water Trap and Filter
- Stand-alone vacuum pump



Kemtech III Recommended Accessories

Description	Code
Set of 3 Cast Iron Serrated Conditioning Rings	360203
Set of 3 Plastic Faced Conditioning Rings	361521
380 mm Cast Iron Serrated Lift Off Plate	362433
380 mm Aluminium Lift Off Disc	361001
380 mm Aluminium Drive Plate	361002
380 mm Thin Metal Disc (For use with magnetic system)	345563
380 mm Magnetic Disc	345773

Recommended Consumables	Code
Green Silicon Carbide Powder F600 1Kg	361513
380 mm PSU-M Chemo-Textile Cloth	341011
380 mm MRE Short Napped Final Polishing Pad	341715
9WM diamond suspension (Water based mono diamond)	219009
6WM diamond suspension (Water based mono diamond)	219008
3WM diamond suspension (Water based mono diamond)	219006
1WM diamond suspension (Water based mono diamond)	219004

aKu-Disp	Code
Spare Peristaltic Head Unit with Tube	362520
aKu-Disp Feedarm	362514
Spare Tubing (1 meter)	363109

Vacuum Jigs (to suit slides)	Code
4 x (76 x 26 mm) or 2 x (76 x 51 mm)	362072A
6 x (52 x 26 mm)	362072B
1 x (100 x 100 mm)	362072C
6 x (48 x 28 mm)	362072D
3 x (45 x 60 mm)	362072E
Rotaid rotation assist post	362895
Setting stand	361986
Cast iron setting test block (127 mm diameter)	361773

The Kemet Vacuum Jig is a precision workholding and sizing fixture. The Jig is suitable for accurately sizing Geological thin sections, wafers, crystals and any precision parts where parallelism and precision finish are required.



Lapped Thin Sections

Kemet 300L Models

The Kemet 300L are fitted with a serrated cast iron or Kemet Composite Plate to suit the application. A single control ring is located in a ring style holder and runs between 3 rollers. This is adjustable for both height and position.



Technical Specifications	
Lapping Plate outside Diameter	300 mm
Lapping Plate Speed	0 - 130 rpm
Conditioning Ring inside Diameter	125 mm
Conditioning Ring Outside Diameter	140 mm
Standard Electrical Supply	Electrical 220V-1 Phase-50Hz
Main Drive Motor	High Torque Motor (1 HP) 0.75kW
Dimensions	420 x 730 x 350 mm
Weight	37kg
Product code	345459

Recommended Accessories	
Hand weight	345450
Serrated Cast Iron Conditioning Ring	345434

Kemet 300 LVAC Polishing Machine

The Kemet 300 LVAC special purpose polishing machine is a smaller alternative to the Kemtech 15 geological lapping machine for polishing geological mounted samples.



The basic machine has a 300mm diameter plate. All drive elements are mounted on a heavy duty aluminium alloy casting, giving vibration free operation and silent running. Water inlet with control valve are standard features. The control panel has a process timer, variable speed control and forward / reverse control switch and it's own vacuum pump and connectors to suit Kemet vacuum jigs, which are available as an optional extra (see page 8).

Technical Specifications	
Lapping Plate outside Diameter	300 mm
Lapping Plate Speed	0 - 130 rpm
Conditioning Ring inside Diameter	125 mm
Conditioning Ring Outside Diameter	140 mm
Standard Electrical Supply	Electrical 220V-1 Phase-50Hz
Main Drive Motor	High Torque Motor (1 HP) 0.75kW
Dimensions	420 x 730 x 350 mm
Weight	37kg
Product code	345467

Kemet Internal Lapping Machine

The Internal Lapping Machine has been designed to accurately lap internal valve faces. This version of the reliable Kemet 15 lapping machine will process internal faces up to 300mm (3" to 16") in diameter, producing a flatness of 0.001mm. Depending on the material and the tooling, anything from a standard matt finish to a high mirror polish can be obtained.

The Kemet Internal Lapping Machine can quickly be changed to a standard lapping machine, allowing the flatness of the laps, which generate the flatness of the recessed internal face, to be maintained on the same machine. This means that a single machine can produce the required flatness on the lap tooling and then generate the same flatness on the internal faces, a bonus in terms of cost and footprint.

Features & Benefits:

- Bespoke holding plate designed to customer/component requirements
- Includes full set of laps to suit application
- Variable Speed up to 70 rpm
- Yoke arm which can apply additional pressure when required
- Capable of processing valves from 3" - 16"
- Short Process times
- Easy to use
- Integrally mounted high torque drive unit with 0.37kW (0.5HP) motor
- Sealed maintenance free reduction gearbox
- Electronic digital timer with variable time ranges
- Electrical: 230V-single phase-50Hz
- Product code: 359706



Special Purpose & Bespoke Machines

As well as these standard flat, spherical and internal lapping machines, Kemet also offer a bespoke machine manufacturing service for applications where an off the shelf system is not available. This can be as basic as converting a hand finishing operation to an automated process, or as complex as a conveyor fed single piece lapping system capable of producing a finished part every 9 seconds. No application is too small for consideration.

