LEE Electric Preforming Attachment

115V, 60HZ, 4RPM Continuous duty Gearmotor

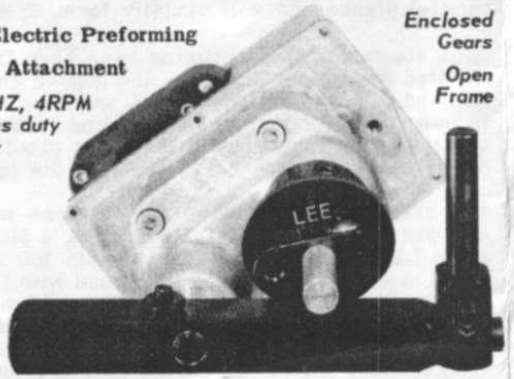
On/off Switch

3 wire Cord

AC Only

Enclosed Gears

Open Frame

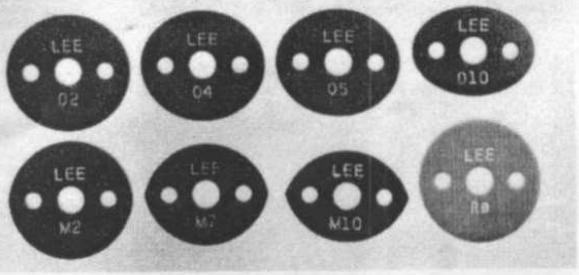


Both models include the Spring, Collar, Hex Keys and Aligning Guage as illustrated with Hand model and attach to the mast of the LEE Facet Head via the LEE Table Polisher (optional extra) thus utilizing existing features such as the Micro Collar of the mast to adjust preform size, etc. #O2 Oval Cam and 1 Dop included.

One advantage of the Electric Model is that it may be allowed to run by itself, forming a shape or cutting 8 main facets for a round brilliant (with appropriate, optional cams) while the operator is utilizing his time otherwise. One of the most significant variables in usual faceting, *human pressure*, is omitted. This type of facet cutting should be done with comparatively coarse, free cutting laps but simplifies making accurate prepolish cuts which should be done by returning the dopped gem to the facet head and going over the facets with a finer lap and finishing as required.

***NEW Optional PROTRACTOR** adapts by slipping hole in L shape piece over 5/16" shank of adapter arm of Preformer before inserting in Table Polisher. Insert snugly to retain L upright but not to prevent turning to align with Protractor which is pushed over main arm in reverse as compared to Facet Head so degree lines adjoin line on L shape indicator. At 90 degree reading, dop should be horizontal in chuck. Remove Protractor after adjusting to required angle. Indicator stays in place for any required further adjustments. Please RETAIN these INSTRUCTIONS for reference.*

LEE Hand Operated Preforming Attachment



Cams accurately machined of Fabric Base Industrial Phenolic Laminate. Ovals # O2, O3, O4, O5, O6, O7, O8, O9, O10 produce true isometric elipses with millimeter differences in lengths and widths as per their numbers, for example O2 can produce 12x10, 10x8, etc., O4 can produce 16x12, 14x10, etc., O5 can produce 20x15, 18x13, etc. Infinite size variations within a broad range can be made from oval cams with consistent length-width differences. Marquise # M2, M3, M4, M5, M6, M7, M8, M9, M10 and Pearshape P2, P3, P4, P5, P6, P7, P8, P9, P10 produce a slightly decreasing length-width difference with decrease in size of preform made from these cam numbers.

Round (RD) also Equilateral Polygons with number of equal sides indicated by their identifying marks: F5, F6, F8, F10, F12, F15, F16 produce preforms of consistent proportions with infinite size capability as do Equilateral Polygons with bowed or convex sides: B3, B4, B5, B6, B8, B10, B15, B16 also Bowed Diamond BD and Shield CH. Emerald Cut shape EE (equal width, length), E2, E4, E5, Antique Cushion AA, A2, A4, A5, Brilliant Heart RH and Triangular Heart 3H are of more limited size capabilities since cuttoff or rounded corners become more pointed as preform is made much smaller or if much less than actual sizes of cams.

Prices as APRIL 1985. May change without notice.

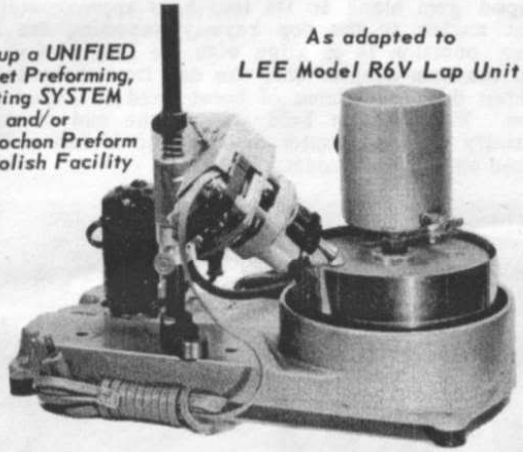
Model EPR Electric Preforming Attachment	$127.00
Model HPR Hand Preforming Attachment	49.95
Round Cam for Preformers	2.40
(For any size round preform from same cam)	
Cams other than Round, Per Cam	3.00
(53 different. Various size preforms from each cam. Adjust knurled collar on mast to raise or lower Preformer. Each click raises or lowers practically 1/40th mm (.025 mm).	
Diamond Disc 6x7/16x½" hole. 260 mesh (medium)	77.00
As above but 180 coarse for larger preforms	85.00
Aluminum Lap Spacer 2 1/8x3/8x½" hole	4.50
(Elevate Lap or disc for small preforms)	
LEE Table Polisher (5/8" mast hole, 5/16 dop hole)	18.90
(Required for adapting preformers to mast of facet head)	
Extra Adapter Arm (same as on Preformers)	9.00
(5/16 shank & hole to fit each other, dops, etc.)	
Extra Cam Adapter (same as on Preformers)	6.00
LEE Mast & Elev. Sleeve (same as w/ Facet Head)	31.80
NEW: PROTRACTOR as on Facet Head clips on any LEE Preformer; simplifies forming to specific angles	19.50

LEE

3 DIMENSIONAL ELECTRIC PREFORMING ATTACHMENT

Set up a UNIFIED Facet Preforming, Cutting SYSTEM and/or Cabochon Preform & Polish Facility

As adapted to LEE Model R6V Lap Unit



PREFORMER ALSO IN HAND OPERATED MODEL.

ADAPT ECONOMICALLY TO LEE FACET UNITS.

GRIND FACET PREFORMS, CABOCHON PREFORMS.

USE LEE STANDARD 5/16" KEYED FACET DOPS.

PREFORM SHAPE KEYS TO FACET HEAD INDEX.

NUMEROUS CAM SHAPES, PROPORTIONS.

INFINITE SIZES FROM INDIVIDUAL CAMS.

FORM PAVILIONS TO ANY ANGLES OR STEPPED.

CONSTANT ANGLE AROUND ANY SHAPE, SIZE.

USE STANDARD DIAMOND FACETING LAPS.

If you think others do nearly as much, LOOK CLOSER.

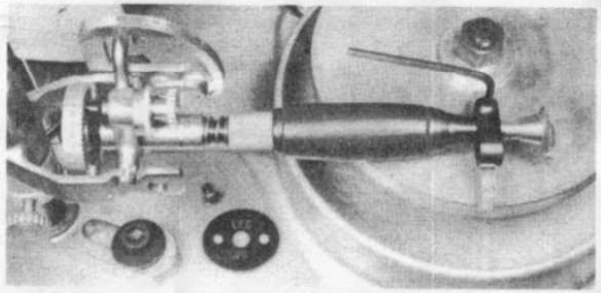
Form PR4-85

LEE LAPIDARIES, INC.
Facet Equipment Mfr. since 1940
3425 West 117th St.
Cleveland, Ohio 44111
Phone (216) 941-7458

3 DIMENSIONAL PREFORMING with LEE Equipment

Preformer attachments are supplied assembled with one cam and dop in place. Examine the preformer and study these instructions before removing the dop, cam and cam adapter. When ready to proceed, remove the dop from chuck, the cam from adapter, adapter from dop. Reassembly is in reverse order.

Using an oval shape as an example, dop the rough shaped gem blank so its length is approximately at right angles to the dop keyway assuming the zero index position is to align with the length of shape. Slip the cam adapter onto the dop from the rear and tighten dop into chuck of facet head in keyed position. With adapter held against the end of chuck, partially tighten adapter onto dop so it can still be turned on dop with moderate effort.



By use of the parallel aligning block placed on the lap surface and with the facet head in its bracket at 90 degrees align the adapter onto the edge of the aligning guide (as illustrated above) while adapter is carefully tightened. Remove dop from facet head and secure required cam in place. Before securing in hand preformer, be sure to replace the round phenolic spacer on the dop shank and apply a bit of vaseline or grease to its surface to enable smooth rotation after securing in chuck without endplay. In reference to the electric preformer, no spacer comes with it and the dop is merely inserted in the chuck as far as it can go before securing with the hex key.

After removing the facet head and bracket from the mast, the table polisher with preforming attachment is placed on mast. Adjust position of mast so dop extends over edge of lap as far as possible and aims toward lap center. Cam may ride in position nearest the table polisher or farthest from it. Slip the spring and collar on the mast after table polisher, compressing the spring about ½" before tightening collar so as to provide positive adjustment down as well as upward with elevating collar supplied with the mast.

Adapter shank of preformer should be greased and not completely tightened in table polisher so as to enable final adjustments without use of the hex key. The same concept applies to the main arm of the preformer so that angular adjustments can easily be made as required. Normally the table polisher would be kept free enough on mast to enable adjustments for sizing the gem as well as to permit swinging to distribute wear on the lap as widely as possible.

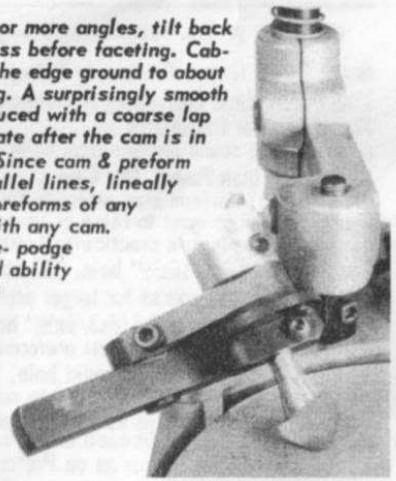
Preformer Splash Guard has small notch for close fit while grinding preform shape. Large opening is available by inverting guard. Left photo shows gem outline formed and ready to cone. Note variation in width at this stage.

The hand preformer is operated by rotating the knurled knob (chuck) in alternate directions, concentrating on areas that may require heaviest grinding to begin with. Moderate pressure may be exerted on the swinging arm as required. The electric preformer will rotate in a counter clockwise direction when turned on and should not be forced or overloaded in any way; its own weight is sufficient for average size preforms; slight pressure may be put on the uppermost corner of the switchbox with a finger when grinding very large sizes.

Adjust the elevation on the mast while grinding the outline of gem to finished size, then tilt to about 45 degrees and cone the bottom, leaving the crown portion extra thick to allow for material to be removed in cutting the facets. After coning the pavillion, it is adviseable to tilt back to the first position and go over the outline again now that the edge will be of uniform width all around whereas at the beginning the grinding action may be less uniform and accurate depending on the amount of variation in width.

After coning to one or more angles, tilt back to 90° for a final pass before faceting. Cabachons could have the edge ground to about 85° for bezel setting. A surprisingly smooth surface can be produced with a coarse lap by continuing to rotate after the cam is in contact all around. Since cam & preform follow straight, parallel lines, lineally true 3 dimensional preforms of any size can be made with any cam. Why settle for hodge- podge equipment of limited ability when you can own a LEE UNITIZED SYSTEM for such a low price ?

Perfect forming; a major step in perfect faceting.



The cone will adjoin the outline shape in a parallel plane to the table providing an accurate reference for facet cuts. If a stepped cone is ground with any cam, marquise, pear, heart, etc. all steps will adjoin in parallel planes and will simplify faceting step cuts.

After the coning and outlining have been finished to required proportions and size, the dopped gem may be removed from the preformer, cam and adapter since it is now ready for cutting the pavilion facets and the shape will be aligned with the index plate when the dop is secured in the keyed chuck of the facet head.

The example used for these illustrations was quartz and was finished to 18/13 oval using a No. O5 cam and a LEE 6" copper lap charged with 100 mesh diamond. Smaller preforms may be ground with finer mesh such as 200, 325, etc. but not so fine as to prevent a free cutting action without excessive pressure, sacrifice of controlled accuracy and longevity of diamond charge. Since the outline of the gem is ground in the area extending about 1" in from the edge of the lap, other operations such as coning, initial cutting of large facets, etc. can be done mostly on the inner area so as to distribute the wear overall. It is not necessary to use special laps with LEE preformers but fine mesh sizes such as 600, 1200, etc. such as used for prepolish facet cuts may tend to become glazed over if used for grinding convex surfaces. Such mesh sizes may perform satisfactorily after the form has been accurately ground with a freer cutting grade so as to require a minimum of further stock removal.

It is preferable to use 6" laps for preforming on LEE units since a smaller, loose fitting splash guard is adaptable (optional extra) to allow extending the dop further over the lap. On R6 series units it replaces the regular guard during preforming. On OV series it is placed on 2 wood strips ¾" thick (optional extras).

Cabochons may be formed with the same cams and laps and domed in a series of steps ready for finishing in the same machine by sanding and polishing with optional extra accessories from LEE Faceting and Cabochon Accessories list at very moderate cost.

Dopped material can be sawn at compound angle in an OVMD equipped for preforming if an Extra Adapter Arm and a 2 1/8" Spacer are purchased. A 5" thin diamond blade is recommended. Spacer serves as upper flange. Extra adapter arm replaces main arm and holds dop.

The first LEE preforming machine was made in 1946 and produced standard size (3 dimensional) cabochons for the commercial market. Improvements were thereafter made so subsequent preforming and faceting units could function as components of one system when so required. Dopped gems could go from chuck to chuck accurately, without loss of reference. This system has proved its effectiveness and versatility in producing countless thousands of faceted gems in various quantities as well as individually. The preformers used in the LEE plant have been far too costly heretofore to sell to individuals but after years of development are now of such efficient design as to enable marketing at very reasonable prices although very well made.