

The Midwest Faceter



Oct 1999
Volume 19 Number 5

The Midwest Faceter

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Southfield, MI 48076-1216

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2001

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The Midwest Faceter

Volume 19 Number 3

Oct 1999

Editor

Linda
Badger

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Send all Articles to:

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Deadline:

Six weeks prior to the MWFG Meeting

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* ORGANIZED JULY 14, 1979

* PURPOSES:

- * To promote education and recreation
- * To develop the art of faceting
- * To exchange information related to faceting
- * To provide meeting for those of like interests
- * To promote the achievement of individuals

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Ray Becker, Membership Chairman

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Seminar 1999 Tom Gibbs
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P R E S I D E N T ' S M E S S A G E

It seems that it was only yesterday that I sat down to pen the President's Message, and now it is time to do it again. Time certainly waits for no one.

The Faceter's Seminar is now history. We didn't have as many attend as we had wished. However, it was a huge success and everything went off like clock work. This was because it was well organized. Tom Gibbs was chairman and had several committee meetings throughout the year and the committee was apprized of everything. The food was excellent. Tom and Happy Gibbs were good team mates and every thing worked well. We owe both of them a vote of thanks for a job well done. We also need to thank all of the instructors. As everyone knows, no one from the Guild is paid - all time is donated. Many instructors gave of their time unselfishly so others attending at various levels would gain further knowledge of the hobby.

The speaker for the Seminar was Richard Homer, who spoke on Pricing Your Cut Stones For Selling and How To Cut and Polish Kunzite. Those who were not in attendance missed an excellent program.

Tom Gibbs said he would chair the Seminar for two years - and his time is up. Your Pres, "Arizona" will relieve tom and will chair next years Seminar.

Don Sahr is moving right along with the Show - which will be held in November at the Gibraltar Trade Center in Taylor Township. There will be a report at the Annual Meeting to be held on October 16th at the City Tavern, which is located in Dearborn, Michigan. We will need lots of volunteers for the show, so be ready to sign up.

Don Sahrs has said this will be his last year as chairman of the show, so your President has appointed Glenn Swain as the Chairman for next year. Glenn will hold several meetings next year and will need committee members to work on the committee, so be ready to say yes when Glenn approaches you.

It has been enjoyable serving as your President for the past three years. At our Annual Meeting on October 16th, we will have a new President. Please set this date aside and plan to attend, as it is a very important one for the Guild.

Your Pres.,

Harold "ARIZONA" Rice

We Need Your Support and Participation

With every club there are a few people that
always take care of whatever needs done
and are always there.

We have been extremely fortunate to have many such people,
but as our lives change they need someone else
to take on some of that responsibility.

Bill Horton is putting together a list for next year's Club Officers.
ELECTIONS AT OUR OCTOBER MEETING.

If you can give your time and energy,
PLEASE GIVE HIM A CALL 517-546-2159
Volunteer to be an Officer or Committee Chairman.

Don Sahr needs workers for our show at Gibraltar Trade Center.
Call him at 810-465-3622.

People to cover tables, setup display cases on Thurs, Nov 11.
Workers needed all weekend to manage club table
and sell raffle tickets.

Carmen Eiche is collecting donations to be raffled at show,
we presently have hardly any prizes donated.
If you would like to donate contact her at 419-382-4862.

NOVEMBER

12

13

14

'99



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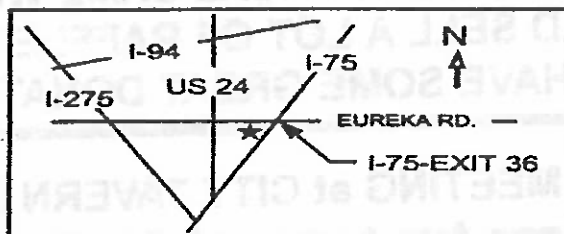
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Bernie Bush and Arizona Rice at last year's show...

**REMINDER OUR FALL SHOW IS COMING UP NOV 14-16 AT
THE GIBRALTAR TRADE CENTER IN TAYLOR, MI...WE STILL
NEED DONATIONS TO BE AUCTIONED . PLEASE BRING
THEM TO OCTOBER MEETING
CARMEN EICHE IS COLLECTING THEM.
THE ANTIQUE SHOW IS THERE SAME WEEKEND, SO
WE COULD SELL A LOT OF RAFFLE TICKETS
IF WE HAVE SOME GREAT DONATIONS.**

**OCTOBER 15TH MEETING at CITY TAVERN in Dearborn, MI.
Take M39 to Michigan Ave, turn east. Approx 1.5 miles east on
Michigan Ave, past Greenfield on North side of road.**

These next two articles are from our very special speaker at the August Faceting Seminars in Flint; Richard Homer is a REAL GEM and Wonderful Guest Speaker. He not only entertained us, but he "FACET-NATED" us with his stories and made us feel he was just one of us.....We could have listened all night.

Gems By Design, Inc.

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Designer and Ideal Makes: An Evaluation Technique

To help you estimate the "value" of designer cut or precisionally faceted colored gemstones, it is easiest to use the pricing base with which we are all familiar i.e. the native value based on the quality of color and the gem's carat weight. It is not realistic, though, to compare a designer or precisionally cut gem cut in the United States to the jamb peg produced native goods cut overseas. The major considerations of weight retention and labor costs must be taken into account as well as any appropriate premiums.

Native cut goods are almost always bulged to add unnecessary weight to the finished gem. Designer or precisionally cut gems are rarely bulged as optical considerations and beauty are foremost in the cutter's mind. On average, designer or precisionally cut goods weigh approximately 30% less than native cut gems of similar dimensions. For the sake of comparative analysis, this is a reasonable approximation. Additionally, native labor costs are basically inconsequential compared to the value of the finished gem. This is not true of the highly time consuming and technologically superior products of U. S. designer and precision cutters. By making note of the following 3 graphs, one can easily determine the approximate wholesale U.S. based labor cost for Designer cut goods cut by the artists themselves. The wholesale labor fee for precisionally cut gems of published designs by others (or their minor modifications) is 25% less than the values noted on the aforementioned graphs. Finally, there are a number of premiums which are also applicable. Matching pairs or cutting ensembles requires a 25% premium due to the added labor and weight losses involved. Finally, some gem materials are more time consuming to cut or require special expertise in order to maximize both beauty and value in respect to international markets. A 50% premium in labor costs is applicable to those materials noted on the graphs' sidebar.

So...designer gem value = (actual weight)(1.30) + labor fee on graph + applicable premiums

Precisionally cut gem value = (actual weight) (1.30) + (labor fee on graph)(75%) + applicable premiums

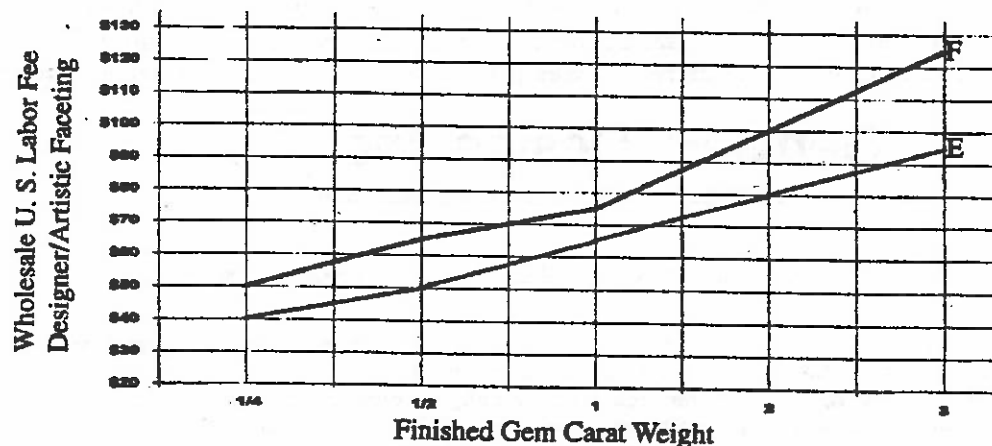
The following examples will serve to illustrate the pricing technique:

A designer cut, 10ct hexagonal Amethyst.

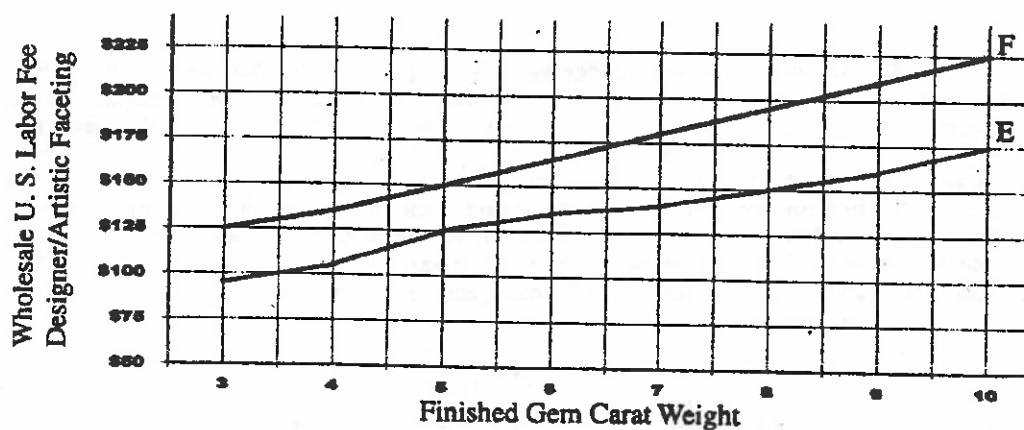
- 1) Had it been native cut, the gem probably would have weighed (10ct)(1.3) = 13ct
- 2) Let's say the color quality was such that, as a 13ct native stone, you know you could have purchased it at a wholesale price of \$18/ct. So base price = (\$18/ct)(13ct) = \$234
- 3) Add in U.S. designer quality labor costs. A hexagon is an equi-dimensional shape, so, a 10ct stone would cost approx. \$175 in labor to produce.
- 4) Designer value = \$234 + \$175 = \$409

A matched pair of oval brilliant cut Aquamarines weighing 3ct each.

- 1) Had they been native cut, the gems would have weighed (3ct + 3ct)(1.30) = 7.80ct total weight
- 2) Let's say that the color quality of the comparative native goods was \$45/ct;
Base price = (7.8ct)(45/ct) = \$351
- 3) U.S. labor = fancy shape at the 3ct level = \$125 each or \$250/pr. but as designer goods
precision labor fee = \$250 (.75) = \$187.50 PLUS a 25% premium for matching
precision labor fee = \$187.50 (1.25) = \$234 (rounded to nearest dollar).
- 4) Precision cut gem value = \$351 + \$234 = \$585.00 as a matched pair

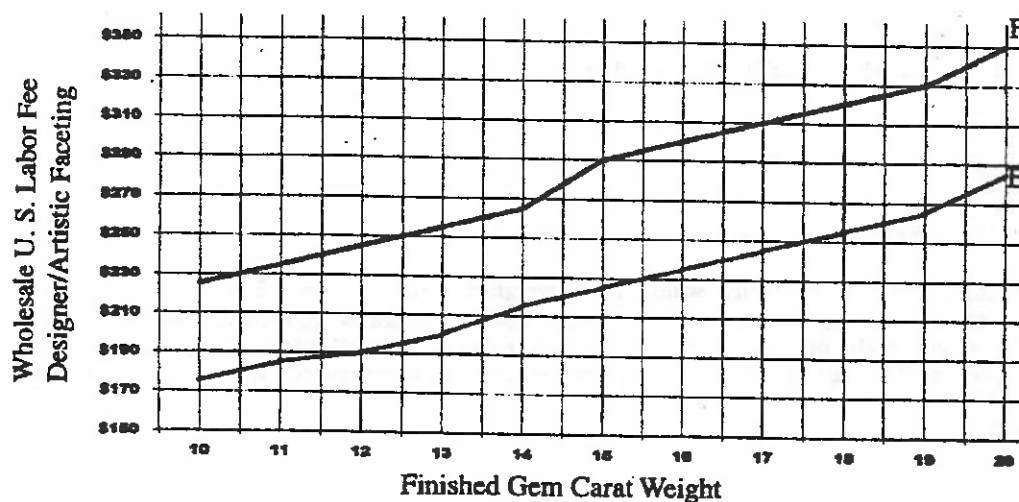


These charts reflect the approximate labor fees for Designer Gem Cuts cut by the Artists themselves.



Equi-dimensional Shapes (E)

Round
Square
Square Cushion
Square Emerald
Triangle
Triangle Cushion
Hexagon
Octagon
"Emerald"
Etc...



Fancy Shapes (F)

Marquise
Pear
Oval
Heart
Etc.

Deduct 25% for the precision faceting of published designs by others.

A 50% premium is applicable to the cutting of the following gem materials: Ruby and Sapphire Corundum, Emerald Beryl, Alexandrite Chrysoberyl, and Kunzite Spodumene.

A 25% premium is applicable to the cutting of matched pairs or ensembles.

NOTE: The above material is copyrighted by Gems By Design, Inc. We assume no liability with respect to any action that may be taken on the basis of this information.

Designer and Precision Cut Gem Price Evaluation Quiz

- 1) Evaluate a designer trillion cut blue zircon weighing 5.48ct and having a native color quality of \$50/ct.
- 2) Evaluate a designer cut matching pair of heart shaped kunzites with a total weight of 16ct and a native color quality of \$40/ct.
- 3) Evaluate a precision faceted, emerald step cut Afghan tourmaline weighing 5.85ct with a native color quality of \$120/ct.
- 4) Evaluate a precision faceted, kite shaped barion cut blue Sapphire weighing 2.50ct with a native color quality of \$250/ct.

Gem Evaluation Quiz Answers

- 1) native base weight = $(5.48\text{ct} (1.30 \text{ bulge}) = 7.12\text{ct}$
native base price = $(7.12\text{ct}) (\$50/\text{ct}) = \356

A trillion shape is equidimensional
U.S. designer labor to cut a 5.48ct gem = \$130
Net designer price = $\$356 + 130 = \486

Comparative per carat price:
native cut = \$50/ct designer cut = \$89/ct $(\$486/5.48\text{ct})$

- 2) native base weight = $(16\text{ct} (1.30 \text{ bulge}) = 20.8\text{ct}$
native base price = $(20.8\text{ct}) (\$40/\text{ct}) = \936

A heart shape is a fancy shape
U.S. labor to cut an 8ct fancy shaped designer gem = \$190 each or \$380/pr
Premiums on labor:
25% for matching; $(\$380) (.25) = \95
50% for material; $(\$380) (.50) = \190
Total U.S. labor = $\$380 + 95 + 190 = \665
Net designer price = $\$936 + 665 = \$1,601$

Comparative per carat price:
native cut = \$40/ct designer cut = \$100/ct $(\$1601/16\text{ct})$

- 3) native base weight = $(5.85\text{ct} (1.30 \text{ bulge}) = 7.61\text{ct}$
native base price = $(7.61\text{ct}) (\$120/\text{ct}) = \913

An emerald shape cuts as easily as an equidimensional!
U.S. labor to precision cut a 5.85ct equidimensional gem = $\$135 (75\%) = \101
Net precision cut gem price = $\$913 + 101 = \1014

Comparative per carat price:
native cut = \$120/ct precision cut = \$173/ct $(\$1014/5.85\text{ct})$

- 4) native base weight = $(2.50\text{ct} (1.30 \text{ bulge}) = 3.25\text{ct}$
native base price = $(3.25\text{ct}) (\$250/\text{ct}) = \812

A kite is a fancy shape.
U.S. labor to precision cut a 2.50ct fancy shape = $\$112 (75\%) = \84

Premium on labor: 50% for material
 $(\$84) (.50) = \42
Total U.S. labor = $\$84 + 42 = \126

Net precision cut gem price = $\$812 + 126 = \938

Comparative per carat price:
native cut = \$250/ct precision cut = \$375/ct $(\$938/2.50\text{ct})$

Faceting Kunzite

Physical and Optical Properties:

Refractive Index: 1.660 - 1.676

A good mid-range gem material which will allow complex facet designs.

Ideal Proportions: pavilion angle of 43° with a crown angle between 35° and 40°

pavilion angle may be as low as 39° to 41° but preferably only in small culet facets

Hardness: 6.5 to 7 on the moh's scale but has a strong grain....very definite soft and hard facet directions

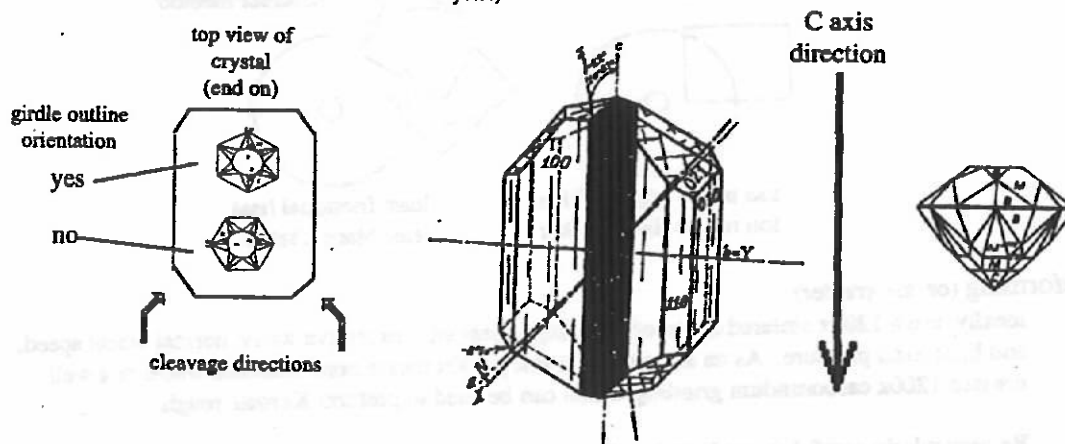
Color: lavender to lilac to deep pink; tones running from very light to medium dark

complex facet patterns that create a 70% to 100% total depth are advisable to maximize depth of color

Cleavage: 2 perfect directions (and I mean perfect!) running at 87° and 93° to each other

very heat sensitive; very, very pressure sensitive

Pleochroism: usually strong trichroism; best to orient table perpendicular to C axis (table to culet direction in your gem oriented down the C axis of the crystal)



Fortunately, orienting the table perpendicular to the C axis also makes it easier to orient the gem so that none of the facets are parallel or too closely parallel to either one of the two cleavage planes.

Overcoming the Cleavage Problem

Sawing: use a high speed, faceters trim saw

Blades: NEVER USE A NOTCH RIM BLADE

using a sintered copper/bronze or continuous rim steel blade is a must
no thicker than .012; thin blades of .004 to .006 preferable
blade should be run at 3000 to 5000 sfpm (surface feet per minute)

blade diameter	3000sfpm	4000sfpm	5000sfpm
4"	2865 rpm	3820 rpm	4775 rpm
5"	2292 rpm	3056 rpm	3183 rpm
6"	1910 rpm	2546 rpm	3183 rpm

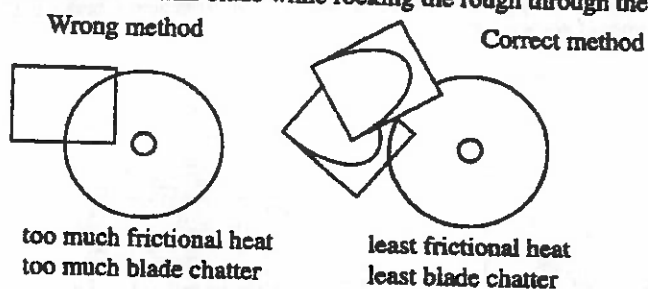
The thinner the blade, the higher the sfpm should be used

The thinner the blade, the bigger the hub diameter should be to keep the thin blade stiff.

Lubrication: use either water-base or oil-base coolant, but, use lots of it!

Normally, the saw's coolant reservoir is filled to cover approx. 1/4" of the bottom of the trim saw blade....for Kunzite, fill the reservoir to cover the blade to a depth of at least 1/2" and keep refilling it as liquid is lost in the trimming process.

Positioning: always trim Kunzite by hand...do not use a guided vise
do not "force feed" the gem through the blade...let it saw at its own slow pace
using a new, sharp blade is always advisable
use a rocking motion when guiding the gem rough through the blade
be careful to not kink the thin blade while rocking the rough through the blade



Preforming (on the grinder)

ideally, use a 1200x sintered diamond grinding wheel with excessive water, normal wheel speed, and light hand pressure. As an alternative, a sharp 600x nickle bond diamond wheel or a well dressed 1200x carborundum grinding wheel can be used to preform Kunzite rough.

Be particularly careful to use light hand pressure when grinding on the hard grain. Most cutters become impatient with the slow progress on the hard grain and push harder... to the gem's detriment. Key point...do not push harder on the hard grain. push lighter!

Overcoming the Cleavage (continued)

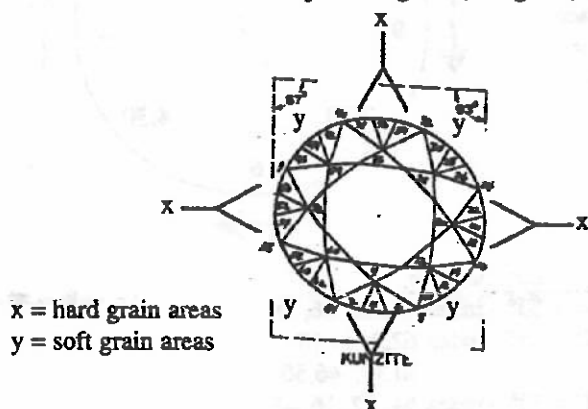
Faceting: Kunzite cuts with difficulty but polishes easily (comparatively speaking)

Laying in of facets: use a new 600x nickle bond diamond lap OR
a 1200x well trued, sintered diamond lap OR
a hand charged copper lap with 400 or 600x diamond powder
(this lap has the advantage of being able to recharge it as necessary)

run any of the above laps at a normal speed but with plenty of water

Be patient and don't be cheap...if the lap is dull just get used to the idea that its going to take longer or use a new lap. Do not force the issue.

Grain relationships: hard grain (end grain) leaves shiny facets; soft grain leaves satiny facets

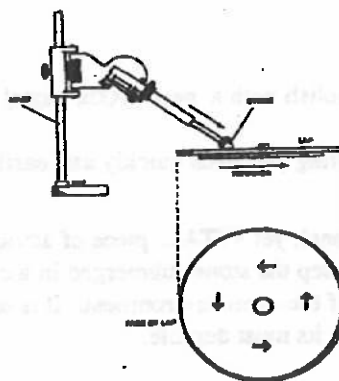


Generally speaking, if a facet has a satiny appearance, that facet is oriented 3 dimensionally at some oblique angle to both cleavage directions in the Kunzite and that is a very nice thing....such facets are the least problematic. As you cut successive facets in rotation on the gem, they become shinier and shinier and that is not a nice thing...such facets approach the end grain which means the downward pressure you are applying in cutting that facet is parallel to the soft grain and thereby the most susceptible to splitting...like taking a hatchet and splitting a piece of hardwood through the end grain.

Additionally, the facet that is oriented right on the hard end grain is, at the same time, cutting along the soft grain of the other cleavage direction! Such a facet has a strong fish scale appearance. "Bearding" and crenulated facet junctions are common occurrences in this area. Ouch!

The goal of successful Kunzite faceting is to make all of the facets appear satiny. So, as you approach the end grain and the facets begin to get shiny...change the position of the gem on the lap by 90° i.e. if you are using a left handed machine and are cutting satiny facets in the 9 O'clock position then, as facets begin to appear shiny, move the gem to the 6 or 12 O'clock position on the lap.

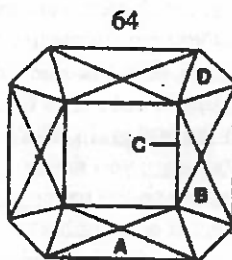
Be particularly careful with "fish scale" facets. If you are cutting at the 9 O'clock position, you must move to either 6 or 12 O'clock...you won't know which until you gently test.



Overcoming the Cleavage (continued)

Again, the "fish scale" appearance of a facet means that the facet is being cut along the direction of the soft grain of the other cleavage direction. It is like cutting along the edge lines of a tablet of paper and the pages are lightly feathered apart. The solution is to cut the facet at a 90° position on the lap. If you are cutting at the 9 O'clock position, you must change to either the 6 or the 12 O'clock position. But note, the cutting direction of the wheel at 6 O'clock is opposite that at the 12 O'clock position. So, one position will keep the grain open —leaving the facet with a fish scale appearance and the other will "close the grain" leaving a nice satiny appearance.

So, the trick is to facet Kunzite with each facet at the ideal position on the lap. Obviously, you MUST make note of that position for each facet that is being cut so that you can also safely pre-polish and polish at the same unique position.



CROWN VIEW

If the crown is cut according to:

A = 53° - index 64, 32, 16, 48

B = 36° - index 62,2; 14,18

30,34; 46,50

C = 20° - index 64, 32, 16, 48

D = 48° - index 8, 24, 40, 56

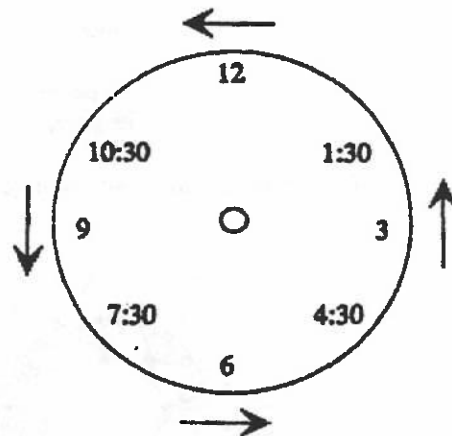
Make note of the facet positions on the lap (for example):

A facets: 64@7:30 ; 16@10:30; 32@7:30; 48@10:30

B facets: 62,2@6:00; 14,18@12:00; 30,34@6:00; 46,50@12:00

C facets: 64@7:30; 16@10:30; 32@7:30; 48@10:30

D facets: 8@9:00, 24@3:00; 40@9:00; 56@3:00



Pre-polish with a new 3000x nickel bond lap or a hand charged copper lap with 3000x powder.

Polishing proceeds quickly and easily with 50,000 diamond powder on a tin lap or Linde A on a tin lap.

One final, yet VITAL, piece of advice: If you are not cutting and polishing the entire gem in one sitting, then keep the stone submerged in a cup of water! The open grain of Kunzite must be kept out of the hazards of the open environment. It is only when the entire gem is polished that all the grain is closed and the gem at its most durable.

The "Compear" Pears

by Robert W. Strickland



Compear 1:1.25



Compear 1:1.33



Compear 1:1.40



Compear 1:1.5

I designed the "Compear" series of pear-shaped designs to fit the commercially available calibrated settings. The cutting instructions are on pages 30-33. The "Compear" designs have round ends to be as simple to cut as possible. Compare these designs to any other brilliant-type pear designs and I think you will find the "Compears" easier to cut. The length-to-width ratios of 1.25, 1.33, 1.4, and 1.5 are a good match to the commercial settings made by companies such as Tripps in New Mexico. The pavilions are as shallow as possible without loss of brilliance. Other uses include cutting a replacement stone for an existing mounting and to preserve as much valuable rough as possible.

All four designs have the same general pattern and number of facets and have round ends. The designs with the 1.33 and 1.4 aspect ratios are the most attractive to my eye. The designs are similar in concept to the "Lazy Pear" designs

by Long and Steele (05.035-037) but are even "lazier" in that they have fewer pavilion facets, and require fewer changes in mast height. Also, the "Compears" are available in more length-to-width ratios.

As with many designs, dopping is a very crucial step. If you dop the stone so the axis of the dop is at the center of the round end, you can cut several facets at the same angle and mast height, so the round end is as easy as a round stone. This will make the meet point of the step 1 facets right on the axis of the dop. If this is not the case, the mast height for all of the step 1 facets will be different.

The pavilions are simple, but the stones have good scintillation despite the relatively small number of facets. Each facet on the round end reflects a facet on the pointy end, so the facets don't line up across the stone. This increases the scintillation as compared to a round stone. The angles are good for any material quartz or higher, although you might want to raise the crown for materials of higher refractive index.

For large stones of high refractive index, (1.7 or higher) you can add a set of mains on the round end and use the step 1 facets as break facets. The angle of these optional main facets is 1.5° less than the pavilion step 1 angle. Cut them at the same index settings of the step 1 crown mains. Here is the 1:1.4 design with the modified pavilion:



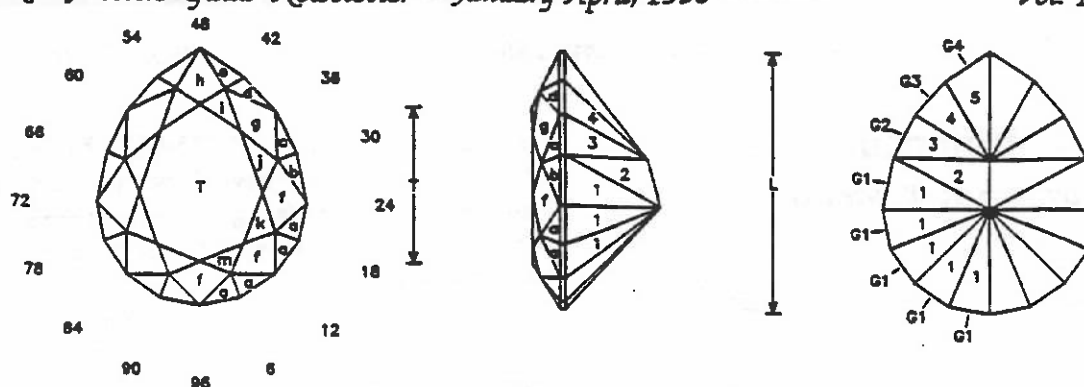
Extra Pavilion Mains

The extra mains won't help in quartz since they will be below the critical angle for quartz. You might be tempted to raise the pavilion angles for quartz to allow you to put in tier of mains above the critical angle. You will find that this causes light to leak near the edges of the crown.

I think you will find that a "Compear" pear is easier to cut than any other pear-shaped design and will result in a bright stone.

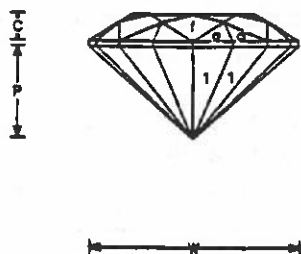
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Compear 1:1.25 (CPEAR125.GEM)
by Robert W. Strickland 4/9/96

Angles for R.I. = 1.54
51 facets + 16 facets on girdle = 67
1-fold, mirror-image symmetry
96 index
 $L/W = 1.250$ $T/W = 0.768$ $T/L = 0.615$
 $P/W = 0.448$ $C/W = 0.130$
 $H/W = (P+C)/W + 0.02 = 0.598$
 $P/H = 0.749$ $C/H = 0.217$
 $Vol./W^3 = 0.245$



PAVILION

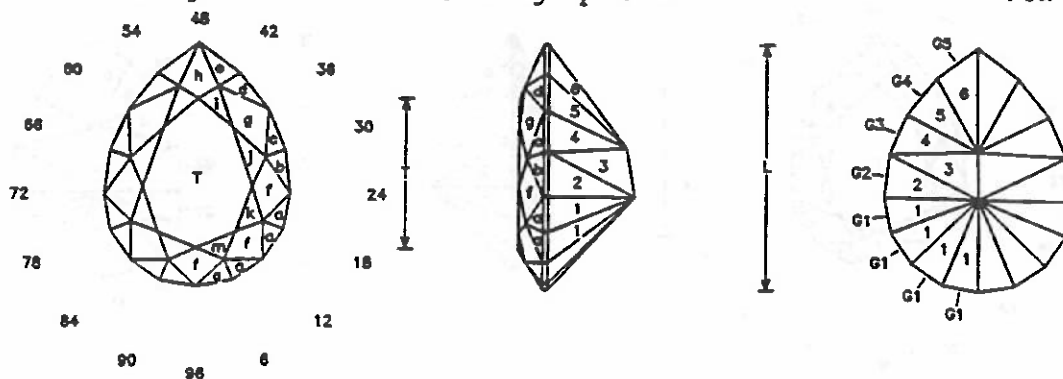
1	42.4	03-93, 09-87, 15-81, 21-75, 27-69	Meet center point
2	41.5	29-67	Meet center point
G1	90.0	03-93, 09-87, 15-81, 21-75, 27-69	Level girdle
G2	90.0	31-65	Meet 1-2-G1
3	42.9	31-65	Meet 1-2-G1-G2
4	43.2	35-61	Meet 1-2-3
5	41.5	39-57	Meet 1-2-3
G3	90.0	35-61	Level girdle
G4	90.0	39-57	Level girdle

CROWN

a	38.5	03-93, 09-87, 15-81, 21-75
b	42.3	27-69
c	41.5	31-65
d	41.5	35-61
e	43.7	39-57
f	32.0	96, 12-84, 24-72
g	34.5	33-63
h	25.3	48
i	15.9	39-57
j	20.6	29-67
k	17.6	19-77
m	18.8	06-90
T	0.0	Table

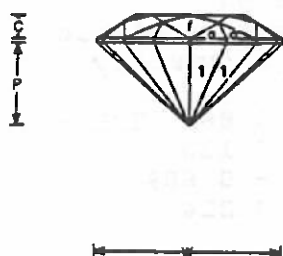


Dop so the center of the round end is at the center of the dop.



Compear 1:1.33 (CPEAR133.GEM)
by Robert W. Strickland 4/9/96

Angles for R.I. = 1.54
51 facets + 16 facets on girdle = 67
1-fold, mirror-image symmetry
96 index
L/W = 1.334 T/W = 0.817 T/L = 0.613
P/W = 0.448 C/W = 0.130
H/W = (P+C)/W+0.02 = 0.597
P/H = 0.747 C/H = 0.217
Vol./W³ = 0.264



PAVILION

1	42.4	03-93,09-87, 15-81,21-75	Meet center point
2	42.1	26-70	Meet center point
3	41.5	27-69	Meet center point
G1	90.0	03-93,09-87, 15-81,21-75	Level girdle
G2	90.0	26-70	Level girdle
G3	90.0	30-66	Meet 2-3-G2
4	43.5	30-66	Meet 2-3-G2-G3
5	43.8	34-62	Meet 3-3-4-4
6	41.6	38-58	Meet 3-4-5
G4	90.0	34-62	Level girdle
G5	90.0	38-58	Level girdle

CROWN

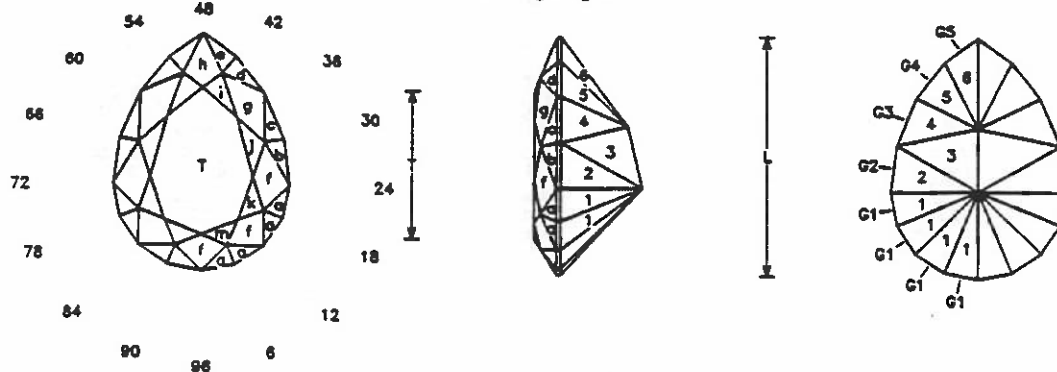
a	38.5	03-93, 09-87, 15-81, 21-75
b	37.9	26-70
c	37.1	30-66
d	36.8	34-62
e	38.4	38-58
f	32.0	96, 12-84, 24-72
g	30.9	32-64
h	22.7	48
i	13.1	37-59
j	20.4	29-67
k	17.7	19-77
m	18.7	06-90
T	0.0	Table



Dop so the center of round end is at the center of dop.

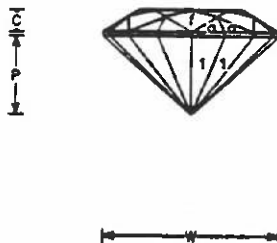
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Compear 1:1.40 (CPEAR140.GEM)
by Robert W. Strickland 4/9/96

Angles for R.I. = 1.54
51 facets + 16 facets on girdle = 67
1-fold, mirror-image symmetry
96 index
L/W = 1.400 T/W = 0.865 T/L = 0.618
P/W = 0.459 C/W = 0.130
H/W = (P+C)/W+0.02 = 0.609
P/H = 0.753 C/H = 0.214
Vol./W³ = 0.283



PAVILION

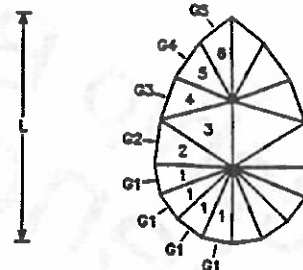
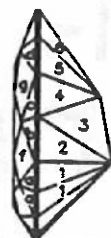
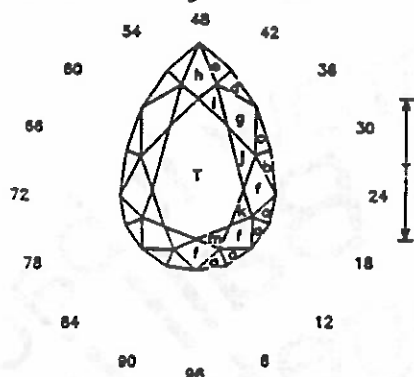
1	43.1	03-93,09-87, 15-81,21-75	Meet center point
2	42.8	26-70	Meet center point
3	41.5	28-68	Meet center point
G1	90.0	03-93,09-87, 15-81,21-75	Level girdle
G2	90.0	26-70	Level girdle
G3	90.0	30-66	Meet 2-3-G2
4	43.7	30-66	Meet 2-3-G2-G3
5	44.1	34-62	Meet 3-3-4-4
6	41.6	38-58	Meet 3-4-5
G4	90.0	34-62	Level girdle
G5	90.0	38-58	Level girdle

CROWN

a	38.5	03-93,09-87,15-81,21-75
b	39.4	26-70
c	39.9	30-66
d	38.0	34-62
e	37.5	38-58
f	32.0	96,12-84,24-72
g	32.2	32-64
h	21.6	48
i	13.9	37-59
j	19.1	28-68
k	17.7	19-77
m	18.7	06-90
T	0.0	Table



Dop so the center of the round end is at the center of the dop.



Compear 1:1.50 (CPEAR150.GEM)
by Robert W. Strickland 4/9/96

Angles for R.I. = 1.54

51 facets + 16 facets on girdle = 67

1-fold, mirror-image symmetry

96 index

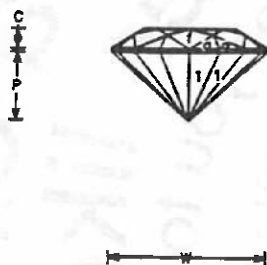
L/W = 1.498 T/W = 0.926 T/L = 0.619

P/W = 0.452 C/W = 0.129

H/W = (P+C)/W+0.02 = 0.601

P/H = 0.751 C/H = 0.215

Vol./W³ = 0.301



PAVILION

1	42.7	03-93,09-87, 15-81,21-75	Meet center point
2	42.3	26-70	Meet center point
3	41.5	27-69	Meet center point
G1	90.0	03-93,09-87, 15-81,21-75	Level girdle
G2	90.0	26-70	Level girdle
G3	90.0	29-67	Meet 2-3-G2
4	43.8	29-67	Meet 2-3-G2-G3
5	44.4	33-63	Meet 3-3-4-4
6	41.5	37-59	Meet 3-4-5
G4	90.0	33-63	Level girdle
G5	90.0	37-59	Level girdle

CROWN

a	38.5	03-93,09-87,15-81,21-75
b	40.1	26-70
c	39.2	29-67
d	36.7	33-63
e	36.3	37-59
f	32.0	96,12-84,24-72
g	30.5	31-65
h	19.5	48
i	13.1	36-60
j	20.1	28-68
k	17.7	19-77
m	18.7	06-90
T	0.0	Table



Dop so the center of the round end is at the center of the dop.

[illegible]

Quote received from Suzi Collins
not sure who passed it to her.
Let's pass it on...