ABOUT PREFORMS

The design featured on page 1 was originally published without a preform (as a meetpoint cutting sequence). No real problem with that, if one is not concerned with the actual final dimensions. Finding that elusive meetpoint (2-1-2-G1-G2) is not all that easy because at that point in the cutting sequence only the PCP (Permanent Center Point) determined by all the P1 facets coming together is actually located. Where to cut G1, G2, and P2 is still a question. But the instant G1 is cut, size of the stone is uniquely fixed by the distance the G1-G1 intersection is from the PCP. This is the classic geometric problem of determining distance from a line to a point. Easy on paper (or in GemCad), but on small object like a real stone this distance is not easy to measure and in this case it is only part of the "length" measurement anyway.

With a CAM preform the stone size problem is much easier because we can use the controls on the faceting machine to determine where the girdle has to go. The meetpoint that will be the target for P2 is exactly the point where PF1, G1, and G2 meet. As it happens this is also a place where the "width" can be directly measured on the preform. This can be very important if you are striving for a calibrated size such as replacement stone for an existing mounting or to meet a size limit specified for a competition stone.

The flip side of using a preform is that it does take a little more time. In this case even to extent that extra preform facets are cut and recut. Some people think it somehow wastes material also, but this is false. Since all of the angles in a pavilion CAM preform are **lower than the corresponding final angles used for cutting** and the TCP can coincide with the PCP, there is no material lost by cutting a preform. In fact it is a pretty good test, because if you do not have enough material to cut a preform you do not have enough material to cut a stone either. Finding this out early has to be considered very important information.

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PREFORM CUTTING INSTRUCTIONS

Step/Angle		Bearing Index	Comments
PF1	31.6	05-24-40-59	Cut to TCP. See note [1] .
PF2	35.0	24-40	Recut temporary facets. Meet PF1 at TCP
PF3	36.0	03-61	Meet (PF1-PF2) at TCP
PF4	38.6	01-63	Meet (PF1-PF2-PF3) at TCP
G1	90.0	24-40	Fix size width
G2	90.0	05-59	Level false girdle
G3	90.0	03-61	Level false girdle
G4	90.0	01-63	Level false girdle, Verify length.

CROWN CUTTING INSTRUCTIONS

Step/Angle		Bearing Index	Comment
a	37.0	24-40	Fix girdle width
b	43.0	05-59	Meet (a-G1-G2) and Level girdle
c	.43.0	03-61	Meet (b-G2-G3) and Level girdle
d	43.0	01-63	Meet (c-G3-G4) and Level girdle
e	37.0	02-62	Meet (c-G3-G4-d)
f	20.1	14-50	Meet (a-b-G1-G2)
g	21.5	64	Meet (e-d-d-e)
h	19.3	04-60	Meet (e-c-b-f)
T	0.0	Any	Table. Meet (g-e-h)
j	19.0	23-41	Meet (T-h-f). See note [2]
k	27.0	24-40	Meet (j-f-a)
m	18.0	25-39	Meet (T-j-k)
n	22.5	32	Meet (a-G1-G1-a)
			Polish all facets on crown including the girdle.

Notes:

[1] 24 and 40 are temporary facets to locate TCP. They will be recut in the next step. This can only be done if the recut elevation angle is steeper.

[2] Location of this facet is one of the tricky features of this design. If the Table has not been cut by the time this facet is started you will have to "guesstimate" the "j facet" position.