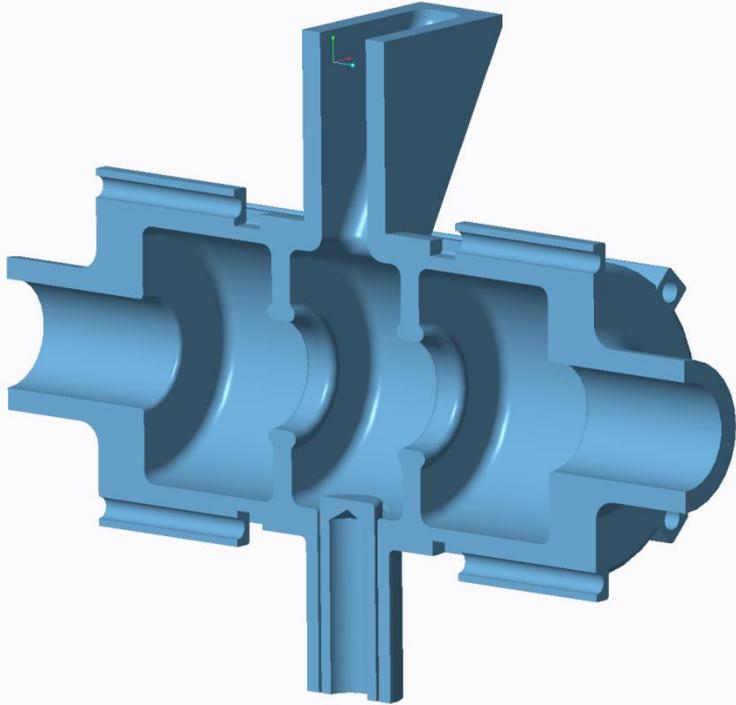


# No Coupling Slots Geometry



Component Manager

Components

Name	Type	Count
ALL_VOLUME_ELEMEN	Element	13236369
ALL_VOLUME_NODES	Node	17616650
FINER_MESH_AREAS	Area	13
FINE_MESH_AREAS	Area	22
RF_AREAS	Area	56
RF_WALL_NODES	Node	617926

H BODY AREAS: 0.0008 m

VOLUME: 0.005 m

CRITICAL AREAS: 0.0005 m

BODY AREAS: 0.0015 m

# RF Results for No Coupling Slots

ANSYS	Freq.	2.113121720 GHz
	U @ 250KV	0.015 J
	Est. Power Loss	<b>9475.42 W</b>
	Epk @ 250KV	4.67668 E6 V/m
	Hpk @ 250KV	0.7432 E4 A/m
	Q-factor	21025.9753

MODE	FREQUENCY (HERTZ)
1	2113121720.708

$$\begin{aligned} \text{Scaling Factor} &= \sqrt{U_{250k}/U_{\text{ansys}}} \\ &= 0.015/2 * 0.444308E-15 \\ &= 4108549.892 \end{aligned}$$

$$P_C = \frac{2\pi f U}{Q_0} = 9471.5 \text{ W}$$

```

SUM Command
File
SUM ALL THE ACTIVE ENTRIES IN THE ELEMENT TABLE
TABLE LABEL      TOTAL
UO1U             0.125341E-02
HSUM             9830.01
EFSUM            0.348700E+07
H_SQUARE         8.86528
E_SQUARE         0.136298E+07
UH_ELM          0.444308E-15
UE_ELM          0.444467E-15
    
```

```

powerh.out
File
SUMMARY OF POWER LOSS CALCULATION
Load step = 1. Substep = 1. Freq. = 0.2113E+10
Time average dielectric loss = 0 Watts.
Time average surface loss = 2.806671273E-10 Watts.
Total time average loss = 2.806671273E-10 Watts.
Parameter defined for power loss: PAUG.
Element table item for dielectric power loss density: PLOSSD.
    
```

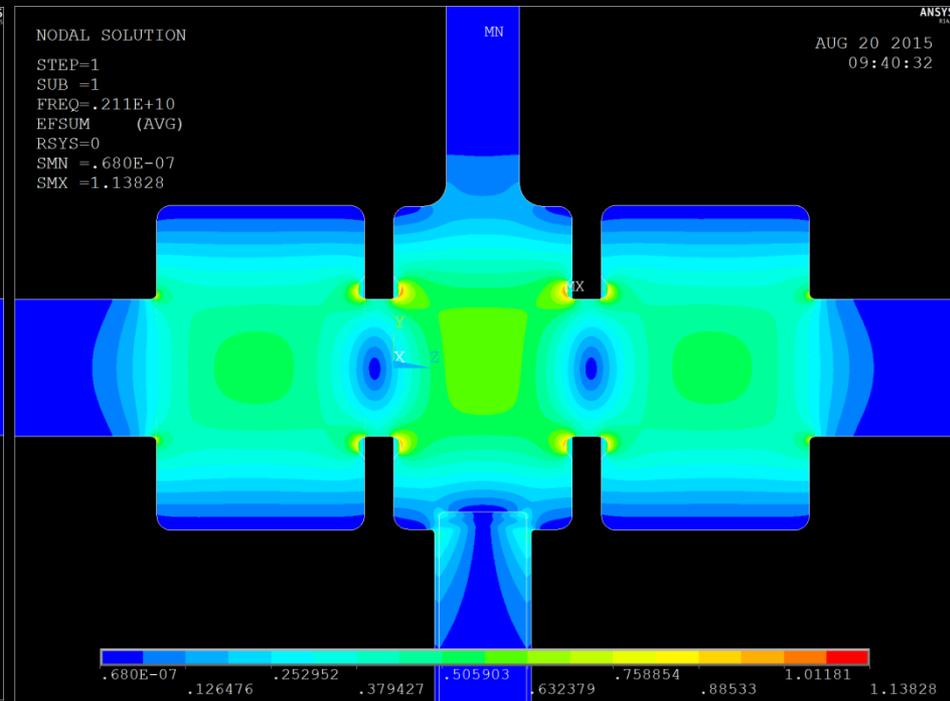
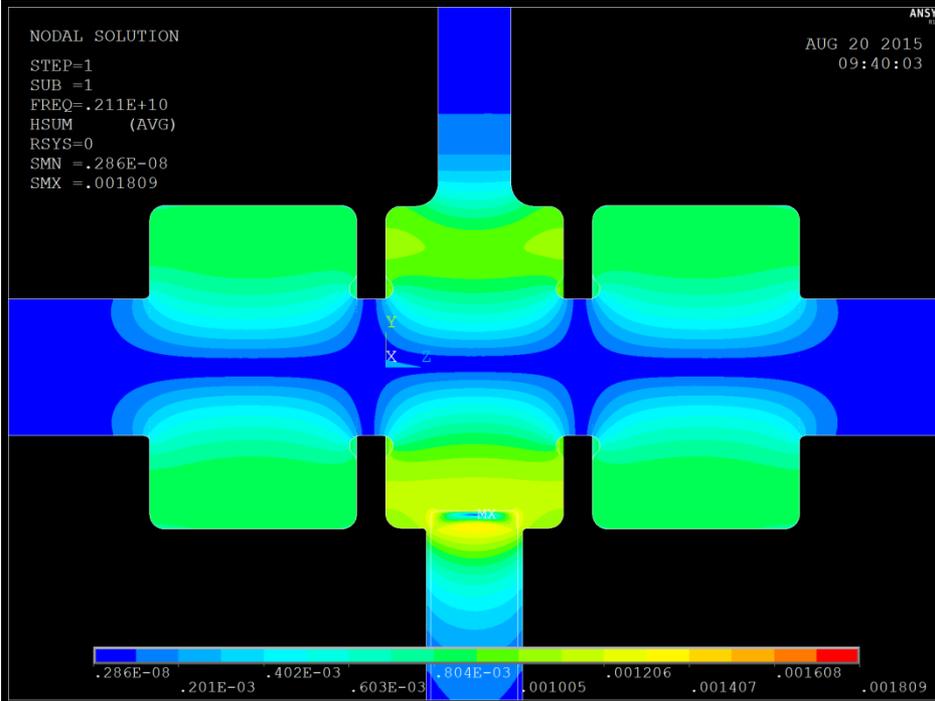
```

qfact.out
File
SUMMARY OF QUALITY FACTOR CALCULATION
Frequency: 2.113 <GHz>
Q-factor with dielectric loss: Qd = 0.
Q-factor with surface ohmic loss: Qc = 21025.9753.
Q-factor with dielectric and surface ohmic loss: Q = 21025.9753.
    
```

Binping:

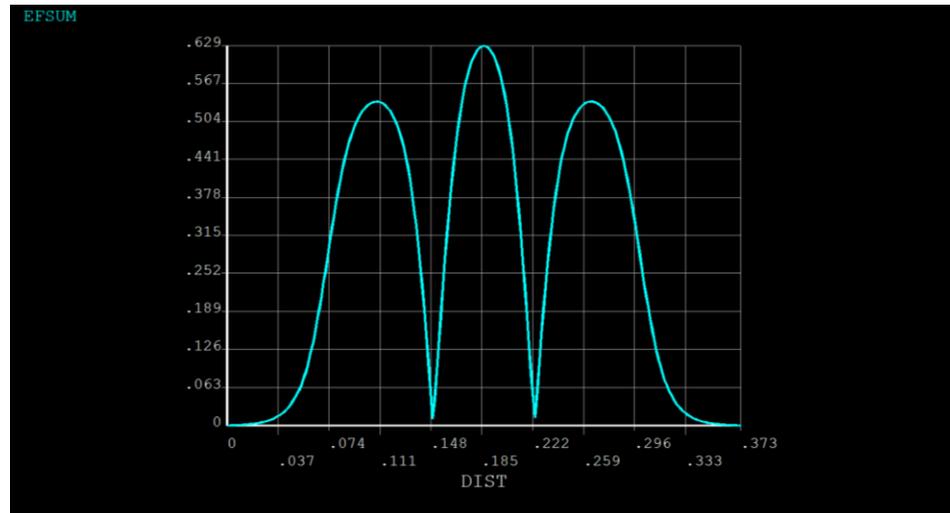
For the nominal position, the power on the cavity (including tuner) should be around 9350W (88W on tuner), and for the Lt=6mm, it should be **9704W** (278W on tuner).

# RF Results for No Coupling Slots

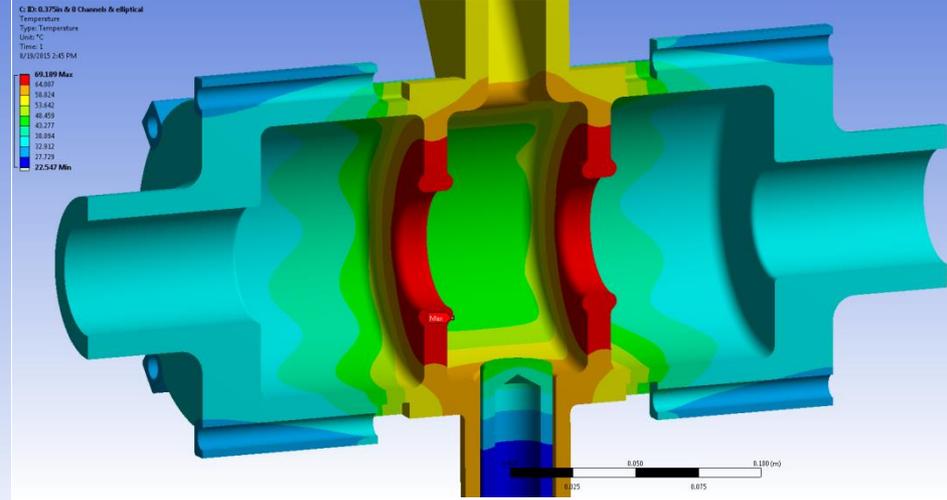
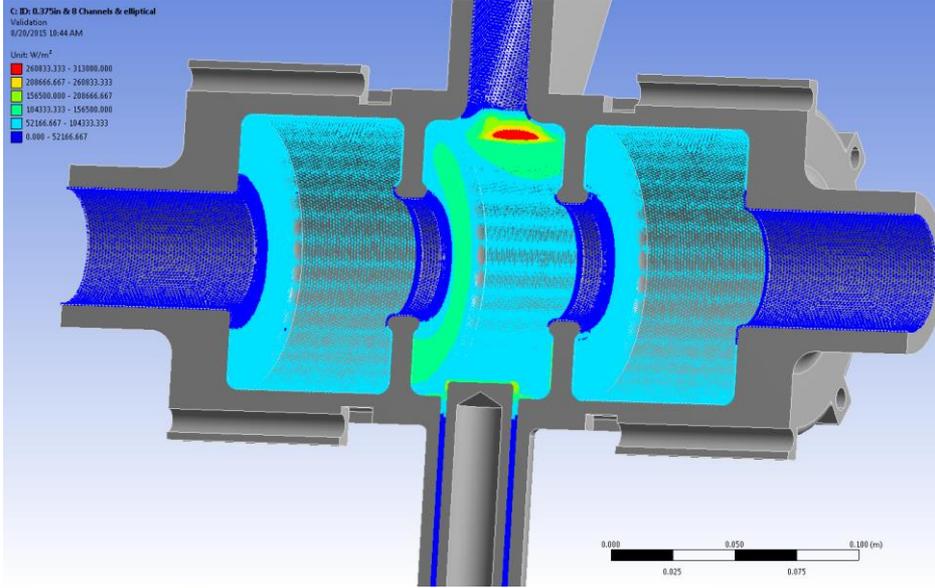


Nodal EFSUM : 1.13828  
Element EFSUM: 2.05883

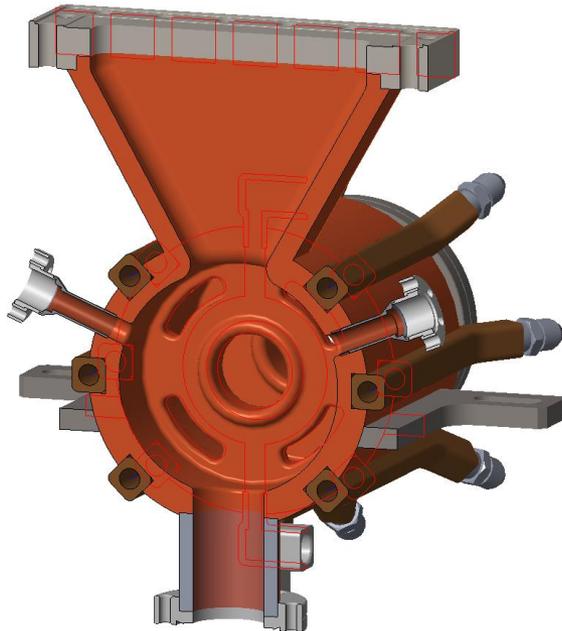
Nodal HSUM: 0.001809  
Elem HSUM: 0.00251



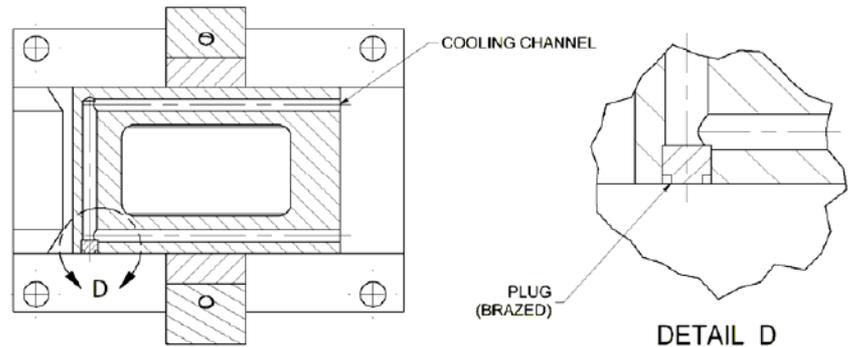
# Thermal Results for No Coupling Slots



69.2 C

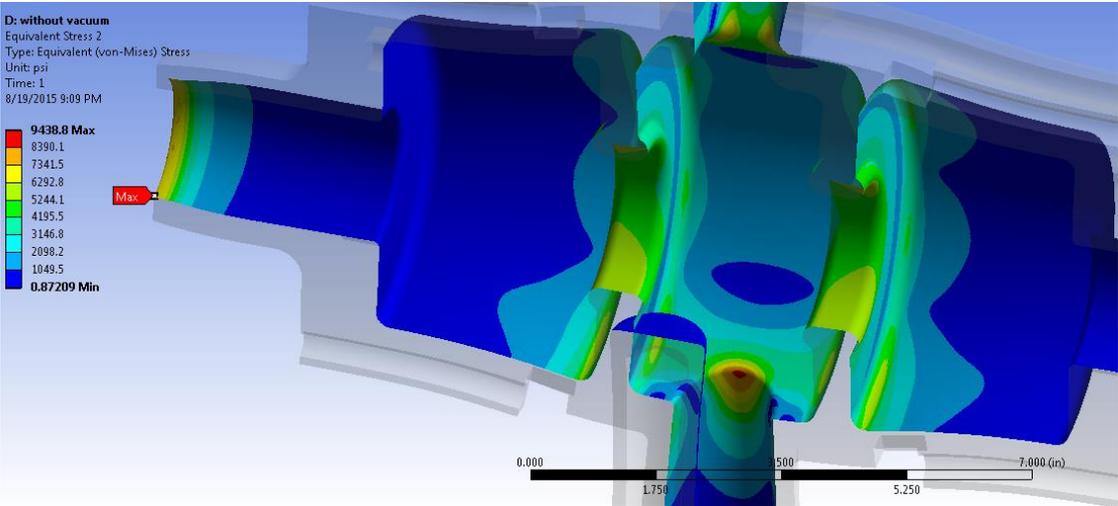
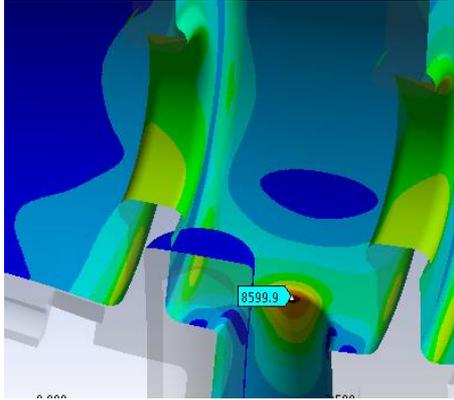
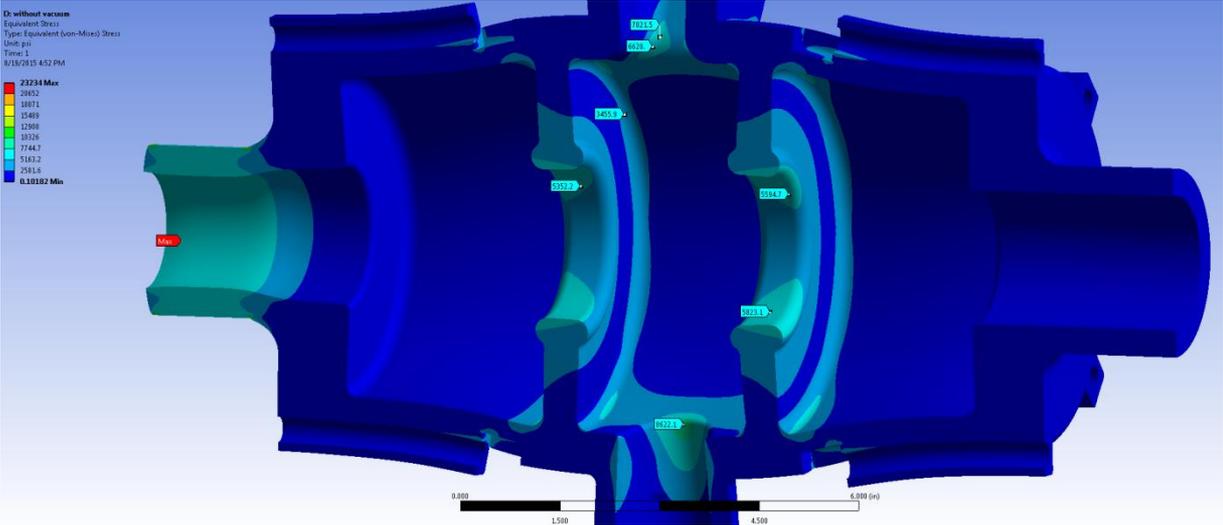


A cooling channel is added to the waveguide port:



# Structural Results for No Coupling Slots

Without vacuum & displacement on one end

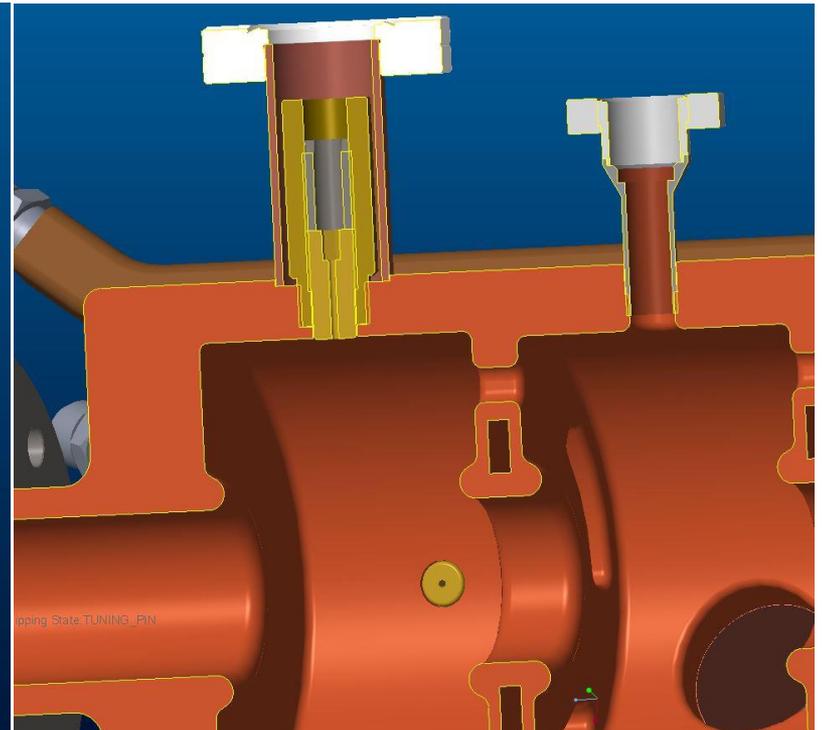
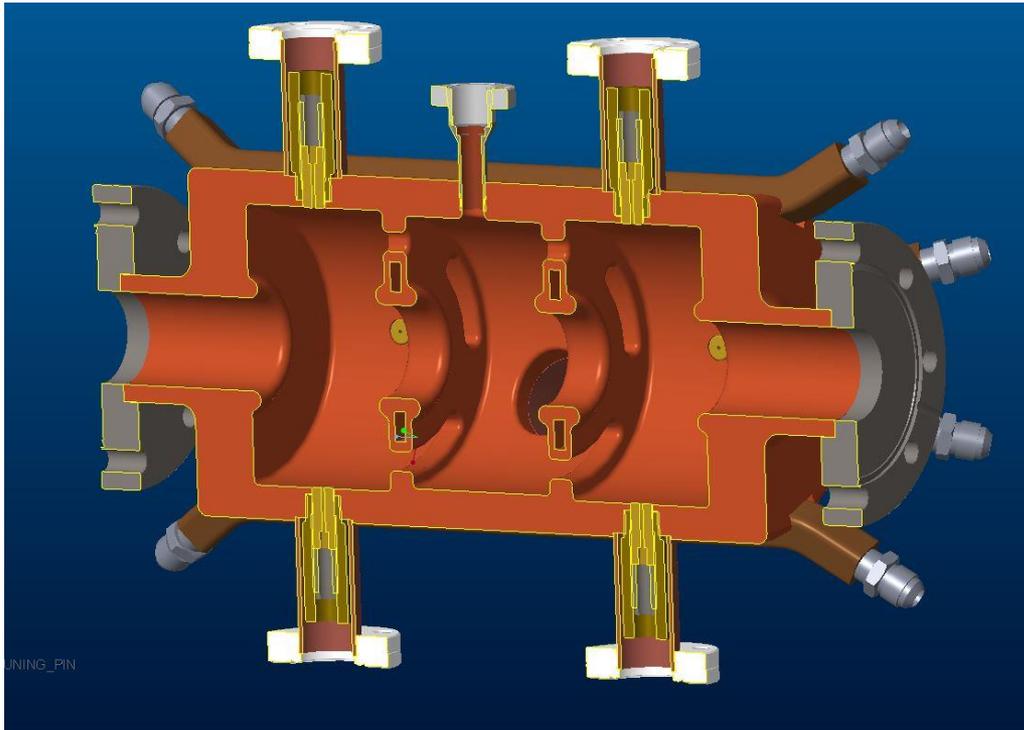
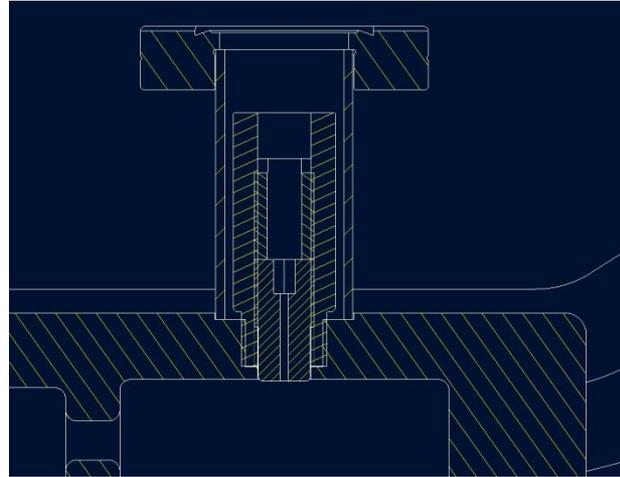


9438.8 psi

# RF Windows

- 1) the drawing package for the windows so that I can ask Omley for a quote on the windows? **See enclosed drawings**
  - 2) the design details on the mating knife-edge rectangular flanges for the half-height waveguide **See enclosed drawings**
  - 3) the design details on the adapter from special waveguide 530 to the standard waveguide. **See enclosed drawings**
  - 4) the highest power that JLab test the windows to? What condition (standing wave or traveling wave)? **The power levels are in the range of 15 kW and can be tested in both TW and SW.**
  - 5) Can the windows be baked? And what temperature can we go to? **Routinely the maximum temperature is about 100 deg C**
- 
- HyeKyoung will be the technical contact for this project.
  - Might be available during the weeks beginning 8/24 and 8/31.
  - schedule a telecon before your visit to answer any questions you may have.

# Fix Tuners



# Bench Test Prototype

