

TABLE A-1
RECORDED STRAIN AND STRESSES

Die	Gage No. 1		Gage No. 2		Gage No. 3		Gage No. 4	
Load (tons)	Strain (μ in/in)	Stress (psi)	Strain (μ in/in)	Stress (psi)	Strain (μ in/in)	Stress (psi)	Strain (μ in/in)	Stress (psi)
Ring C 36 Ring D 120	240 915	6,960 26,550	225 940	6,530 27,250	255 925	7,400 26,800	220 905	6,380 26,250
Punch No. 1								
Ring C 70 Ring D 130	1,050 2,520	30,500 73,000	1,050 2,520	30,600 73,000	1,025 2,480	29,700 71,900	1,075 2,640	31,200 76,500
Punch No. 2								
Ring B 04 Ring C 65 Ring D 135	70 1,125 2,640	2,030 32,625 76,560	60 1,130 2,605	1,740 32,770 75,545	65 1,090 2,585	1,885 31,610 74,965	65 1,100 2,630	1,885 31,900 76,270

FINAL ASSEMBLY OF VEGA AND CENTERPIECE

Die								
60	210	6090				180	5220	
Punch No. 1								
79	280	8120				280	8120	
Punch No. 2								
70	340	9860	340	9860	320	9280	280	8120

B. INSTALLATION OF RING
D INTO A, B, AND C
(Figure A-3(a))

Total interference between Ring D and combination rings A, B, C is equal to existing interference (Table A-II) before assembly plus deflection due to radial displacement of i.d. of ring C during its installation into combination rings A, B. (Figure A-2)

$$\delta_{\text{total}} = 0.011 + 0.0038 = 0.0148 \text{ inch}$$

Therefore

$$P = \frac{E \delta (b^2 - a^2) (c^2 - b^2)}{b (2b^2) (c^2 - a^2)} \quad (a)$$

$$= \frac{29 \times 10^6 (0.0148) (1.41^2 - 0.66^2) (3.50^2 - 1.41^2)}{1.41 \times 2 \times 1.41^2 (3.50^2 - 0.66^2)}$$

$$= 103,000 \text{ psi}$$

1. Stresses

At o.d. of Ring A:

$$f_c = \frac{b^2 p}{c^2 - b^2} \left(1 + \frac{c^2}{r^2} \right) = \frac{1.41^2 (103,000)}{3.50^2 - 1.41^2}$$

$$\left(1 + \frac{3.50^2}{3.50^2} \right) = 19800 (2) = 39,600 \text{ psi}$$

At A-B Interface:

$$f_t = 19800 \left(1 + \frac{3.50^2}{3.0^2} \right) = 47,000 \text{ psi}$$

At B-C Interface:

$$f_t = 19800 \left(1 + \frac{3.50^2}{2.15^2} \right) = 72,700 \text{ psi}$$

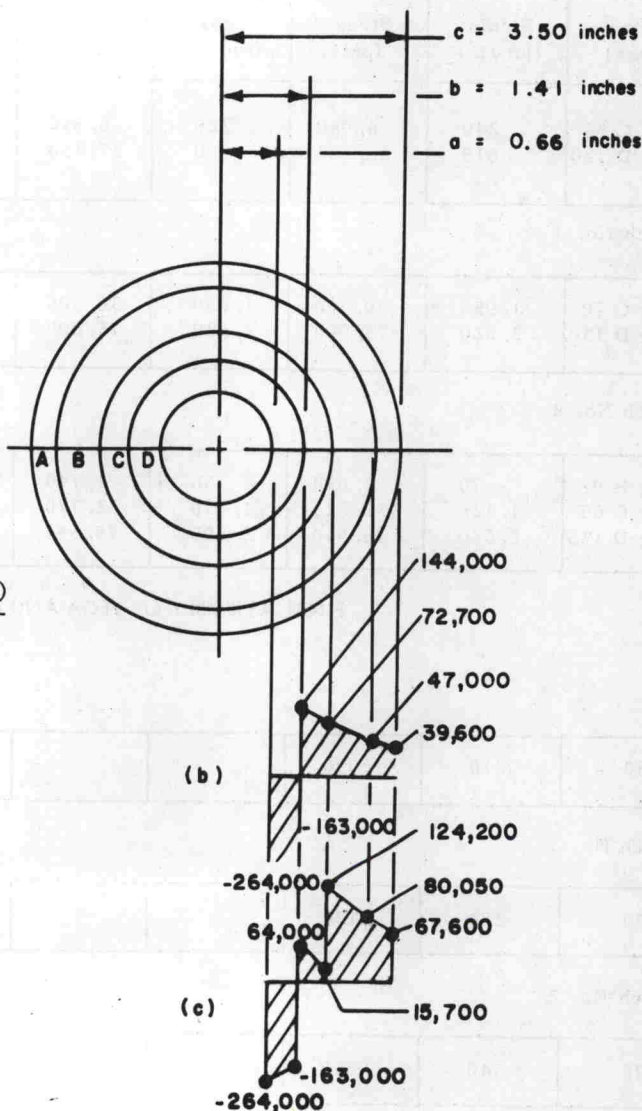


Figure A-3 STRESS DISTRIBUTION DURING INSTALLATION OF RING D INTO A, B AND C