

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	240	6,960	225	6,530	255	7,400	220	6,380
Ring D 120	915	26,550	940	27,250	925	26,800	905	26,250
Punch No. 1								
Ring C 70	1,050	30,500	1,050	30,600	1,025	29,700	1,075	31,200
Ring D 130	2,520	73,000	2,520	73,000	2,480	71,900	2,640	76,500
Punch No. 2								
Ring B 0+	70	2,030	60	1,740	65	1,885	65	1,885
Ring C 65	1,125	32,625	1,130	32,770	1,090	31,610	1,100	31,900
Ring D 135	2,640	76,560	2,605	75,545	2,585	74,965	2,630	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:

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

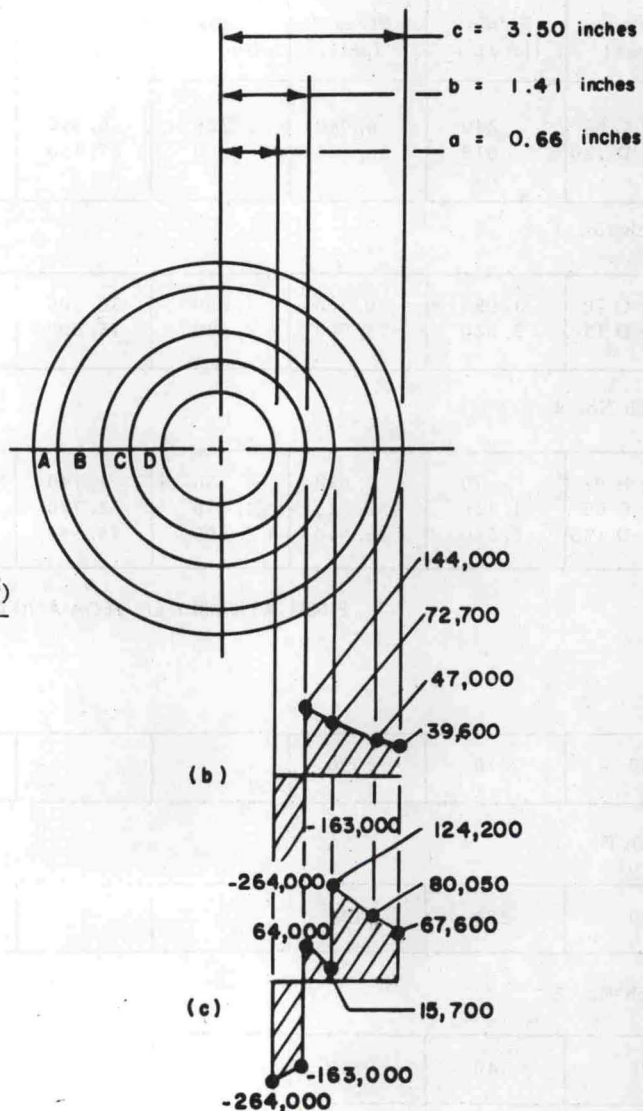


Figure A-3 STRESS DISTRIBUTION DURING INSTALLATION OF RING D INTO A, B AND C