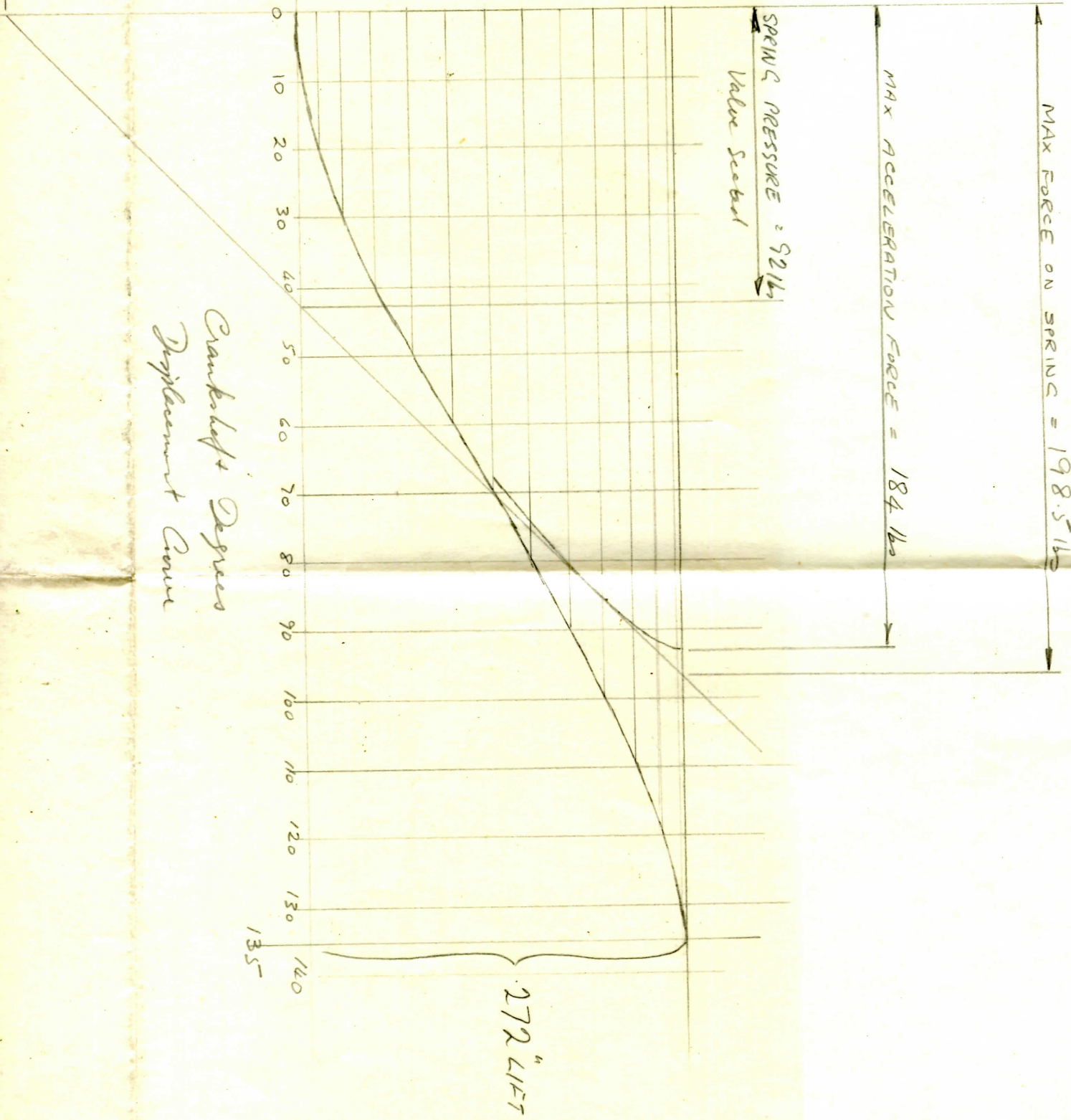


Total deflection of spring = 486

Initial Deflection = 214  
Valve seated.



Crankshaft Degrees Displacement Curve

SPRING PRESSURE = 921 lb  
Valve Seated

MAX ACCELERATION FORCE = 184 lbs

MAX FORCE ON SPRING = 198.5 lbs

272  
" LIFT

Exhaust  
lift

Inlet  
lift

Opens  
85° Before  
B.D.C.

Opens  
45° Before  
TDC

80 1.5  
 70 12  
 60 26.6  
 50 49  
 40 44  
 30 105  
 20 137.3  
 10 170  
 BDC 201.6  
 10 232  
 20 254  
 30 277  
 40 249.2  
 50 306  
 60 313  
 70 314.6  
 80 314.5  
 90 310.8  
 80 301.2  
 70 286  
 60 269  
 50 248  
 40 224.4  
 30 198.5  
 20 166  
 10 137.4  
 TDC 106.7  
 10 48.5  
 20 53.0  
 30 34  
 40 19  
 50 8  
 60 2.2  
 68 closed

2942

400 1.2  
 30 4.9  
 20 19  
 10 36  
 TDC 56  
 10 81  
 20 109.5  
 30 141.6  
 40 169.8  
 50 193  
 60 214.7  
 40 232.7  
 80 243.8  
 90 252.5  
 80 257.8  
 70 262.5  
 60 265.3  
 50 262.5  
 40 251.7  
 30 236  
 20 211.7  
 10 182.8  
 BDC 151  
 10 121.5  
 20 91.5  
 30 64  
 40 41.5  
 50 25.5  
 60 12  
 40 3.1  
 46 closed





COMPRESSOR TYPE ATS 115

15-9-72

PISTON PART N° 8585

CYLINDER PART N° 8586

STROKE = 3.5"

|                     |                  |
|---------------------|------------------|
| PISTON WEIGHT       | 6 LBS 1oz        |
| CON ROD (SMALL END) | 1 LB 7oz         |
| TOTAL               | <u>7 LBS 8oz</u> |

SPEED 1500 R.P.M.

$$ACCELERATION = \frac{N^2 L}{2189} \left\{ \cos \theta + \frac{\cos 2\theta}{n} \right\}$$

(n = ratio of con. rod to crank rad) (L = stroke in inches) ( $\theta$  = crank angle from T.D.C in deg)

$$Inertia\ Force\ F = \frac{W a}{g}$$

$$SIDE\ THRUST\ ON\ PISTON = F \tan \phi$$

WITH LENGTH OF CON ROD  $2\frac{1}{4}$  TIMES STROKE :-

| CRANK ANGLE | OBLIQUITY OF CON ROD | $\cos \theta + \frac{\cos 2\theta}{n}$ | $\frac{N^2 L}{2189}$ | a     | F        | SIDE THRUST |
|-------------|----------------------|--|----------------------|-------|----------|-------------|
| T.D.C       |                      |  | 2189                 |       |          |             |
| 0°          | 0°                   | +1.2222                                | 3597                 | 4396  | 1024 lbs | 0 lbs       |
| 30°         | 6° 23'               | +0.9771                                |                      | 3515  | 818      | 91.5        |
| 60°         | 11° 6'               | +0.3888                                |                      | 1399  | 326      | 63.96       |
| 78° 15'     | 12° 34'              | 0                                      |                      | 0     | 0        | 0           |
| 90°         | 12° 50'              | -0.2222                                |                      | -798  | -186     | -42.37      |
| 120°        | 11° 6'               | -0.6111                                |                      | -2198 | -512     | -100.45     |
| 150°        | 6° 23'               | -0.7449                                |                      | -2679 | -624     | -69.81      |
| 180°        | 0°                   | -0.7777                                |                      | -2797 | -651     | 0           |
| B.D.C.      |                      |  |                      |       |          |             |