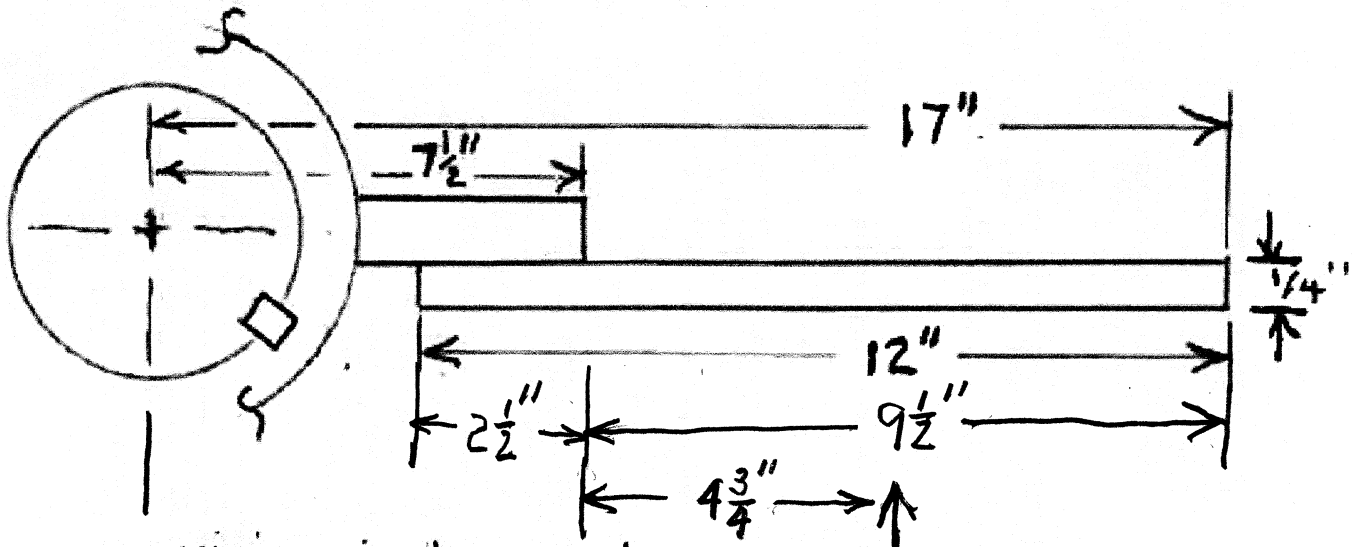
60 hp motor (15 hp/blade)

4" ϕ shaft

84 RPM

NTS



1 of 4 blades shown

All 316 SS

6" wide blades

Hub is ~ 5" wide

Ears are ~ 4" wide

12¼"

554 lb.

℄

Blade Cross Section
$6'' \times \frac{1}{4}''$

$$S = \frac{(6)(0.25)^2}{6}$$

$$S = 0.0625\ in^3$$

316 SS $\quad f_y = 42.1$ KSI

When One Blade Yields:

$$42{,}100 = \frac{M}{0.0625} \qquad M = 2630\ in\text{-}lb$$

$$2630 = 4.75\ P \qquad P = 554\ lb$$

$$\text{Torque} = (554)\left(\frac{12.25}{12}\right) = 566\ ft\text{-}lb$$

For Four Blades — Failure

$$\text{Total Torque} = (4)(566) = 2260\ ft\text{-}lb$$

Gear Reducer $\quad \frac{1800\ RPM}{84\ RPM} = 21.4:1$

Efficency : 70%

Baldor (Reliance) Model EM2547T

60 Hp, 1800 RPM, L-R Torque 314 ft-lb

$$\text{Available Torque} : (314)(21.4)(0.7) = 4700\ ft\text{-}lb$$