Current Belt Speed	30 ft/min =	.34 mph
5711 min spd	35 ft/min =	.4 mph

2.2 cu in motor	30 ft/min	35 ft/min
Revs 6" pulley	20	22.3
usage	.19 gpm	.21 gpm
@ 6 motors	1.14 gpm	1.27 gpm

Max spd	176 ft/min	2 mph
Revs 6" pulley	112 rpm	
usage	1.07 gpm	
@ 6 motors	6.4	

How Does motor rpm effect torque output?
Will I Have Same amount of torque at lower Speed?

2.5 cu in Motor Danfoss 275040A1010AAAAAS
torque: 607 in-lbs WG 275 series
psi: 2000

.4 mph	Usage .24 gpm	6 Motors	1.44 gal/min
1 mph	usage .6 gpm	6 Motor	3.6 gal/min

3.9 – 4.8 gal/min
(Blade) pump 1 ~~3.9 – 4.8 gal/min~~
(Belt) pump 2 3.6 – 4 gal/min
GPM x Psi x .0007 = Hp required
(Pump 1) 5 gpm • 1500 psi • .0007 = 5.25 hp
(pump 2) 4 gpm • 2000 psi • .0007 = 5.6 hp

Displ	Make	Weight	Hp	Max rpm
896 cc	Briggs	150 lbs	31 Hp	
993 cc		150 lbs	35 Hp	3600
570 cc	Vanguard	87 lbs	18 Hp	
688 cc	Honda	110 lbs	20 Hp	
747 cc	Kohler	108 lbs	27 Hp	3600 rpm

engine rpm	volume	Displ	psi
3600	5 gpm	.385	@ 2000
~~2500~~	5 gpm	.462	@ 2000
2000	5 gpm	.577	
2000	~~5 gpm~~ 6.3 gpm	.73	

4 gpm @ 2000 rpm

.66 @ 2000 rpm 5.31 gpm

5 x 231 1155 cu in/min

~~2500~~ rpm .462

5.31 gpm x 2610 psi x .0007 9.7 hp x 2

19 hp 2 pumps

* .66 cu in Dynamic ~~GPF10108PA~~ GPF10108PC

2000 rpm 3000 rpm Max

5.31 gpm 7.97 max

~~CCW~~

Square tube weight $40.8\ lbs \times \frac{ft^2}{144\ in} \times 1'' \times .283\ lbs/in^3$ (12/12)

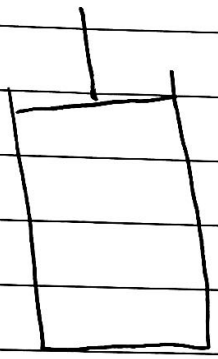
$13.6 \times [(\text{long side} + \text{short side}) - \text{wall thickness}] \times \text{wall thickness}$

$13.6 \times \frac{2+1}{2} - .125 \times .125$

$6\ in^2 \times .125\ in = .75\ in^3 \times 144\ in\ 108\ in^3 (.283\ lbs/in^3)$

one Rail	30.56 lbs
two Rails	61.128 lbs
motor +	5 lbs
+	66.128
Belt/pulley est	30 lbs
	96.128 lbs / picking Heavy
	≈ 100 lbs
	12 ft

100 lbs F



$P = F/SA$

$\frac{2000\ psi}{1} = \frac{100\ lb}{SA}$

$\frac{2000\ psi\ (SA)}{100\ lb} = \frac{100\ lb}{100\ lb}$

$20\ in^2 = SA$

$\frac{\pi r^2}{\pi} = \frac{20\ in^2}{\pi}$

$\sqrt{r^2} = \sqrt{6.37}$

Greater than needed 2.5 in Bore SA

$= \frac{300\ lb}{SA}$

Self adjusting Cylinders

* Needed;
- 12-14in adjustable travel
- 3 Cylinders, one for each picking Head
- .75 ft/sec movement
- powered from pony motor and electro Hydraulic Valves

2.5 in Bore

Belt motor ports SAE10
Case Drain SAE4

Blade Motor ports SAE o-ring 9/16-18
manifold In SAE10 out SAE 12 work SAE8
Cylinder Row 3/8 NPT
Cylinder lift SAE6

					JIC
ccw	pump 1+2	in SAE 12	out SAE 10		Female
ccw	pump 3	in SAE 16	out SAE 12	SAE 6	9.04 - 5
12 FJIC6	6JIC4	4JIC10		Pipe 7.68	Male 6.74 - 3
6 FJIC8	2JIC12	2JIC12			

6 JIC6	3/8 Hose for all cylinders	3/8	100'	1,317
6 JIC6	3/8 Hose for Blade Motors	1/2	~~150~~ 100'	550.38
6 JIC8	1/2 Hose for Belt Motor	1/4	100'	648.78
6 JIC4	1/4 Hose for Belt Motor Case Drain	3/4	~~50~~ 50'	482.80
2 JIC12	3/4 Hose for Pump 3			
4 JIC10	1/2 Hose for pump 1+2			
2 JIC12	3/4 Hose for manifold return			2638

Head lift cylinders

Needed:

- lift 300 lbs
- 2 cylinders - one each side
- work together
- 3 ft travel at Head end Furthest point 3 ft from jig to m
- Powered off tractor remote

$P = F/SA$

$2000 = \frac{500}{SA}$

$\frac{2000}{500} SA = \frac{500}{500}$ $SA = 4$ in Bore

6 ft lbs to spin 96" B-Belt without load

72 in-lbs minimum

estamate ≈ 950/96 = 4.68 x 8 ftlbs = 37.5 (12) = 450 in lbs 450" Belt

450 in-lbs min motor

Blade Motor .1026 ci 8 (3000) 307.8 1.3 gpm - 1.6

(1.3 - 1.6) 3 = 3.9 - 4.8 gpm for 3 Blades / 231

torque: 487 in/lbs

Belt spd 30 ft/min .34 mph 35 ft/min

2.2 cu/in / rev 20 (2.2) = 44 cu/in/min / 231 cu in .19 gpm / motor

363 in/min .19 gpm (6) 11.14 gpm 6 motor

6" pulley 18.84" 19.2 rev/min 20 rev/min 6" pulley

.4 mph 420 ft/min / 18.84 = 22.3 rpm (2.2) 49.04 / 231 .2123 gpm/motor 1.27 gpm 6 motor