

# Pulley Selection Guide

1. Locate pump RPM and horsepower required for the desired flow rate (GPM) and pressure (PSI) on the appropriate pump spec sheet.
2. It is important that motor pulley is of sufficient diameter and the belt of sufficient section to transmit the required horsepower to the pump. Therefore, from the list below, find the motor **pulley size** necessary to transmit the horsepower you chose from the spec sheet.

RECOMMENDED MOTOR PULLEY GUIDE					
**TO TRANSMIT:  HORSEPOWER	"A" SECTION BELT		"B" SECTION BELT		"C" SECTION BELT
	1 BELT Single Groove Pulley	2 BELTS Double Groove Pulley	1 BELT Single Groove Pulley	2 BELTS Double Groove Pulley	1 BELT Single Groove Pulley
1	2-1/2 DIA	-	-	-	-
1-1/2	3	-	-	-	-
2	3-1/4	-	-	-	-
3	3-3/4	3 DIA	4-14 DIA	3-1/2 DIA	-
5	5-1/4	3-1/2	5	5	-
7-1/2	-	4-1/4	6	-	-
10	-	5-1/4	8	5	8 DIA
15	-	7	10	6	9
20	-	9	-	7	10

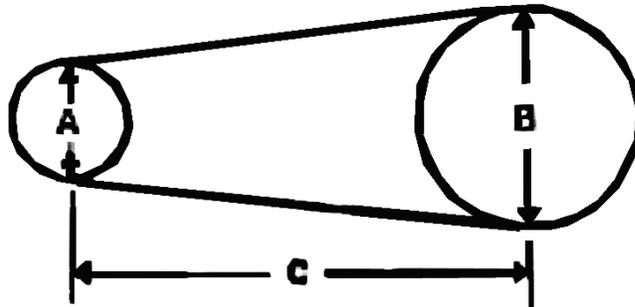
\*\* In other words, if the pump performance curve states that you need 7-1/2 HP for your desired GPM and PSI, then reading to the right of the 7-1/2 HP, you will find the minimum motor pulley size which in this case is 4-1/2" in diameter if you use a double-groove pulley with two "A" section belts or 6" if you use a single-groove pulley with one "B" section belt.

3. Now go to the Pump Pulley Speed Guide for 1725 RPM Motors (if not using 1725 motor, go to #5) and under diameter previously chosen for the motor pulley, find the desired pump RPM. The column to the left of the RPM is the proper pump pulley diameter. Please note that if you cannot find the proper RPM, you can use any motor pulley diameter larger than the minimum diameter you just selected.

# Pulley Selection Guide

4. Belt length can be calculated by using the following formula:

$$1.57 \times (\text{Motor Pulley Diameter} + \text{Pump Pulley Diameter}) + (2 \times \text{Shaft Spacing}) - 3 = \text{Belt Length}$$



**EXAMPLE:**

You have an application using a TS1021 pump (see spec sheet) to pump 4 GPM at 1500 PSI. You need to know what belts and pulleys to use and how much more horsepower it will take.

- A. On the pump spec sheet application graph, locate 4.0 GPM on the horizontal scale and 1500 PSI on the vertical scale. As you can see, the lines cross in the 5 HP area for electric motors (double for gas engine). Follow the vertical 4.0 GPM line down to the diagonal line in the lower chart, then left to 1036 RPM for the required pump RPM.
- B. Now that you know the pump must be driven at 1036 RPM with a 5 HP motor, go to the **Motor Pulley Guide**. There are four pulley columns to the right of 5 HP. You can use any of the four (for this example, we will use a double-groove 3-1/2" with "A" section belt pulley).
- C. Now go to the **Pulley Speed Guide** for 1725 HP motors. In the column marked motor pulley outside diameter, locate 3-1/2", and read down until you need a 5-3/4" pump pulley for your application. Please note the motor pulley sizes are the minimum; larger ones may be used in order to obtain the correct RPM.
- D. In order to determine belt length, find the center distance between shafts (assume in this case it is 8") and apply the formula shown in step 4.

$$\begin{aligned} \text{Belt Length} &= 1.57 (4.5 + 9) + (2 \times 18) - 3 \\ \text{Belt Length} &= 2.12 + 36 - 3 \\ \text{Belt Length} &= 54.2 \end{aligned}$$

Therefore, you would use a double-groove 4-1/2" OD motor pulley and double-groove 9" OD pump pulley with two 54 inch "A" section belts.

5. If you do not have a 1725 RPM motor, you can use the following formula to determine the pump pulley diameter once you have found the proper motor pulley diameter in Step 2:

$$\text{Motor Pulley Diameter} \times \text{Motor RPM} = \text{Pump Pulley Diameter} \times \text{Pump RPM}$$

**Example:** If you know from Step 2 above that you need a minimum motor pulley diameter of 3.5" and that the pump RPM must be 1036 and your motor is 1200 RPM, you can use the following formula to determine the pump pulley diameter:

$$\text{Motor RPM} \times \text{Motor Pulley Diameter} = \text{Pump RPM} \times \text{Pump Pulley Diameter}$$

$$\begin{aligned} 1200 \times 3.5 &= 1036 \times \text{Pump Pulley Diameter} \\ 4200 &= 1036 \times \text{Pump Pulley Diameter} \\ 4200 / 1036 &= 4" \text{ Pump Pulley Diameter} \end{aligned}$$