



PULLEY A DIAMETER X RPM = PULLEY B DIAMETER X RPM

WITH THE ABOVE STATEMENT IN MIND, IT BECOMES RELATIVELY SIMPLE TO COMPUTE DESIRED PULLEY SIZE, OR RPM PROVIDED THE 3 OTHER VALUES ARE KNOWN.

EXAMPLE: THIS WAS AN ANTIQUE ENGINE DRIVING A SMALL HAMMERMILL. I WAS ABLE TO CHECK ENGINE RPM WITH MY SHAFT TACHOMETER BUT HAD TO COMPUTE THE HAMMERMILL RPM.

$$8.5" \times 750 \text{ RPM} = 6375$$

$$6375 / 3.5" = 1821 \text{ RPM}$$

SUPPOSE YOU DESIRE TO REDUCE THE HAMMERMILL TO 1600 RPM:

$$6375 / 1600 \text{ RPM} = 3.98" \text{ CHANGE PULLEY B TO } 4"$$

$$6375 / 4" = 1593.75 \text{ RPM}$$

OR: CHANGE PULLEY A TO: $1600 \text{ RPM} \times 3.5" = 5600$

$$\text{PULLEY A DIAMETER BECOMES: } 5600 / 750 \text{ RPM} = 7.466"$$

$$\text{USE } 7\frac{1}{2}" \text{ DRIVE PULLEY: } 750 \text{ RPM} \times 7.5" = 5625 / 3.5" = 1607 \text{ RPM.}$$

THIS COULD ALSO BE COMPUTED BY RATIO. DIVIDE THE DIAMETER OF THE LARGE PULLEY BY THAT OF THE SMALL PULLEY:

$$8.5" / 3.5" = 2.428:1 \quad \text{THEN } 750 \text{ RPM} \times 2.428 = 1821 \text{ RPM.}$$

BELTED PULLEYS COULD BE RELATED TO PULLEY CIRCUMFERENCE, BELT TRAVEL SPEED, ECT. HOWEVER, WHEN π (3.1416) IS INSERTED INTO A DIVISION FORMULA, IT BECOMES A VALUE OF 1 AND DOES NOT AFFECT THE RESULT.

FOR AN INTERESTING PROBLEM, COMPUTE BELT TRAVEL SPEED.

FOR GEARS AND SPROCKETS, USE NUMBER OF TEETH RATHER THAN DIAMETER. TO FIND RATIO, DIVIDE THE NUMBER OF TEETH ON THE LARGE GEAR BY THAT OF THE SMALLER GEAR.

EXAMPLE: A 40 TOOTH GEAR MESHED WITH A 16 TOOTH GEAR WOULD HAVE A RATIO OF: $40 / 16 = 2.5:1$