

# WATEROUS

## GASOLINE ENGINE/PUMP RATIO WORK SHEET

NOTE: This form is to be used as a guide and may change without notice.

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S.O. \_\_\_\_\_ Pump Model \_\_\_\_\_ Impeller(s) \_\_\_\_\_  
 Engine \_\_\_\_\_ HP \_\_\_\_\_ RPM \_\_\_\_\_ Injectors \_\_\_\_\_  
 Truck Transmission \_\_\_\_\_ Torque Converter Model \_\_\_\_\_ Ratio \_\_\_\_\_ Altitude \_\_\_\_\_ Ft  
 \_\_\_\_\_ GPM @ \_\_\_\_\_ PSI \_\_\_\_\_ GPM @ \_\_\_\_\_ PSI \_\_\_\_\_ GPM @ \_\_\_\_\_ PSI

Impeller RPM = \_\_\_\_\_ Impeller RPM = \_\_\_\_\_ Impeller RPM = \_\_\_\_\_

Ratio: \_\_\_\_\_

Eng RPM \_\_\_\_\_

Net curve HP available	A	_____	_____	_____	_____	_____
* Deduction for losses	B	_____	_____	_____	_____	_____
A minus B	C	_____	_____	_____	_____	_____
** HP deduction for altitude	D	_____	_____	_____	_____	_____
C minus D	E	_____	_____	_____	_____	_____
*** HP deduction for Auto Trans	F	_____	_____	_____	_____	_____
E minus F = available HP	G	_____	_____	_____	_____	_____
Published pump HP required plus 5%	H	_____	_____	_____	_____	_____
Surplus HP	I	_____	_____	_____	_____	_____

\*For Chevrolet, Chrysler and International engines deduct 12% from net curve. For GMC engines deduct 5% for engine variation from any as-installed engine curve.

\*\*Engine Manufacturers Guidelines: To determine horsepower deduction for altitude above 500 ft sea level use the following formula which is based on 2000 ft altitude. Example: 1.5 alt x .035 x HP on line C = deduction for altitude.  
 When interpretation of engine curve is questionable please contact engine distributor and/or engine manufacturer for qualification.

*** Automatic Transmission Deduction:					Determine maximum stall torque:  _____ x _____ x _____ = _____  Maximum Engine Torque      Torque Converter Ratio      Highest Numerical Trans Ratio      Stall Torque	Pump Transmission Driveline Ratings:  1.75"-10      4100 lb-ft 2"-10      6100 lb-ft 2"-38      9100 lb-ft 2.35"-46      16000 lb-ft  Refer to F-1052 for permissible speeds and loads for driven sprockets.		
RPM	AT-500	MD-Series MT-Series	RPM	HT-700				
1000	5 HP	3 HP	1000	7 HP				
1500	6 HP	4 HP	1300	9 HP				
1750	7 HP	5 HP	1500	11 HP				
2000	8 HP	6 HP	1600	12 HP				
2250	9 HP	7 HP	1700	13 HP				
2500	10 HP	8 HP	1800	14 HP				
2750	11 HP	9 HP	1900	15 HP				
3000	12 HP	10 HP	2000	16 HP				
Booster Reel Performance at 60 GPM:  _____ x _____ = _____ -- _____  Maximum Engine RPM      Ratio      Impeller RPM      Maximum PSI from pump curve							NOTE: Refer to pump performance curve and determine maximum pressure that can be obtained. Determine if sufficient engine power is available.	

## GASOLINE ENGINE/PUMP RATIO WORK SHEET – METRIC

NOTE: This form is to be used as a guide and may change without notice.

S.O. \_\_\_\_\_ Pump Model \_\_\_\_\_ Impeller(s) \_\_\_\_\_  
 Engine \_\_\_\_\_ kW \_\_\_\_\_ RPM \_\_\_\_\_ Injectors \_\_\_\_\_  
 Truck Transmission \_\_\_\_\_ Torque Converter Model \_\_\_\_\_ Ratio \_\_\_\_\_ Altitude \_\_\_\_\_ m  
 \_\_\_\_\_ l/min @ \_\_\_\_\_ bar \_\_\_\_\_ l/min @ \_\_\_\_\_ bar \_\_\_\_\_ l/min @ \_\_\_\_\_ bar

Impeller RPM = \_\_\_\_\_ Impeller RPM = \_\_\_\_\_ Impeller RPM = \_\_\_\_\_

Ratio: \_\_\_\_\_

Eng RPM \_\_\_\_\_

Net curve kW available	A	_____	_____	_____	_____	_____
* Deduction for losses	B	_____	_____	_____	_____	_____
A minus B	C	_____	_____	_____	_____	_____
** kW deduction for altitude	D	_____	_____	_____	_____	_____
C minus D	E	_____	_____	_____	_____	_____
*** kW deduction fro Auto Trans	F	_____	_____	_____	_____	_____
E minus F = available kW	G	_____	_____	_____	_____	_____
Published pump kW required plus 5%	H	_____	_____	_____	_____	_____
Surplus kW	I	_____	_____	_____	_____	_____

\*Suggested percentage deductions that must be taken from engine power curve for losses due to engine accessories and engine variation are as follows:  
 For Caterpillar, Cummins, Ford, GMC & Mack, deduct 12% from net engine power curve;  
 For Detroit Diesel and International deduct 15% from net engine power curve.  
 NOTE: Computer scan will also provide predictable kW deductions.

\*\* Engine Manufacturer's Guidelines: To determine kilowatt deduction for altitude above 152.4m sea level use the following formula which is based on 609.6m altitude. Example: 1.5 alt x .035 x kW on line C = deduction for altitude.

When interpretation of engine curve is questionable, please contact engine distributor and/or engine manufacturer for qualification.

*** Automatic Transmission Deduction:					Determine maximum stall torque:  _____ x _____ x _____ = _____  Maximum Engine Torque      Torque Converter Ratio      Highest Numerical Trans Ratio      Stall Torque	Pump Transmission Driveline Ratings:  1.75"-10      5560 N•m 2"-10      8272 N•m 2"-38      12340 N•m 2.35"-46      21760 N•m  Refer to F-1052 for permissible speeds and loads for driven sprockets.
RPM	AT-500	MD-Series MT-Series	RPM	HT-700		
1000	3.7 kW	2.2 kW	1000	5.2 kW		
1500	4.5 kW	3.0 kW	1300	6.7 kW		
1750	5.2 kW	3.7 kW	1500	8.2 kW		
2000	6.0 kW	4.5 kW	1600	8.9 kW		
2250	6.7 kW	5.2 kW	1700	9.7 kW		
2500	7.5 kW	6.0 kW	1800	10.4 kW		
2750	8.2 kW	6.7 kW	1900	11.2 kW		
3000	8.9 kW	7.5 kW	2000	11.9 kW		

Booster Reel Performance at 227 l/min  
 \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_  
 Maximum Engine RPM      Ratio      Impeller RPM      Maximum bar from pump curve

NOTE: Refer to pump performance curve and determine maximum pressure that can be obtained. Determine if sufficient engine power is available.