WATEROUS

DIESEL ENGINE/PUMP RATIO WORK SHEET

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

Document Number	Issue Date	Rev. Date
F–2102	**07/93**	**06/01/00**

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					

*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 HP deductions.

**Determine horsepower deduction for altitude on a per application basis.
For engines not mentioned and/or questions not answered, please determine HP deduction by interpreting engine curve or contact engine distributor and/or manufacturer for their guidelines.

*** Automatic Transmission Deduction:

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

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.

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.

DIESEL 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.

**Determine kilowatt deduction for altitude on a per application basis.

For engines not mentioned and/or questions not answered, please determine kW deduction by interpreting engine curve or contact engine distributor and/or manufacturer for their guidelines.

*** Automatic Transmission Deduction:

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

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.

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.