
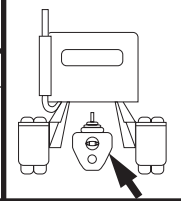


CAUTION: MAXIMUM OUTPUT SHAFT SPEED NOT TO EXCEED 2,500 RPM.

RAM TRANSMISSION							RIGHT SIDE ONLY (LEFT SIDE TURN PAGE)				
		TORQUEFLITE HD ZF POWERLINE Footnotes (1, 2, 3, & 4)					ZF 8-BOLT OPENING				
							PTO DRIVE GEAR DATA: 51T 9.42P 20°PA 22.0° R.H. LOCATION: Front PLMF: 3.891 PLV: 1417 FPM RPM: 1,000				
8-BOLT TYPE	PTO MODEL NUMBER	FOOT NOTES	SHAFT ROTATION	ENGINE %	STUD KIT	SHIFT TYPE	SHAFT EXTENSION	CONTINUOUS RATING @ 1,000 RPM of PTO		INTERMITTENT RATING @ 1,000 RPM of PTO	
								TORQUE	HP	TORQUE	HP
CLUTCH SHIFT	Z21-Z1111-DX1BBBX		Crnk	130	Included	Elec/Hyd		265	50	265	50



FOOTNOTES:

- 1 Engine driven direct drive PTO gear.
- 2 Requires RAM wiring connection for PTO activation. Minimum engine speed for PTO use is 900 RPMs.
- 3 Driveline outputs cannot be used due to exhaust interference.
- 4 Passenger side PTO opening can be accessed through the passenger side floorboard via a patch panel. Patch panel is present on all PTO prep trucks.

Pump Selection Example:

- a. First you need to know the flow and pressure requirement of your application.
- b. Next find the closest pump output flow from the chart that is based on the most appropriate engine speed for your application. Follow the grid up to the top to read the basic pump series and size. This is the pump that will give you the flow you desire.
- c. If your system required 8 GPM to operate. Then you would look for 8 GPM in the columns. Finding the first one under the pump PH1-07 would give you a pump which will deliver the 8 GPM you require at an engine speed of 1,000 RPM. You would also get 8 GPM if you select the PH1-05 pump, but you would need to operate the engine at 1,300 RPM.
- d. After you have selected the Pump Series and size the complete pump model number can be ordered.

The PH Series would follow PH1-**-02BSBR-S for "BB" output option. PK Series would follow PK1-**-02BSBB-S for "BB" output option.

APPROXIMATE FLOW AND PRESSURE FOR PUMP P/N PH1-*-02BSBR-S PAIRED WITH PTO P/N Z21-Z1111-DX1BBBX**

ENGINE SPEED	PH1-11 <i>2.48 cu. in./Rev</i>		PH1-09 <i>2.17 cu. in./Rev</i>		PH1-08 <i>1.86 cu. in./Rev</i>		PH1-07 <i>1.55 cu. in./Rev</i>		PH1-05 <i>1.24 cu. in./Rev</i>		PH1-03 <i>0.62 cu. in./Rev</i>	
	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI
	900	12.6	2,500	11.0	2,900	9.4	3,250	7.9	3,500	6.3	3,500	3.1
1,000	14.0	2,500	12.2	2,900	10.5	3,250	8.7	3,500	7.0	3,500	3.5	3,500
1,100	15.4	2,500	13.4	2,900	11.5	3,250	9.6	3,500	7.7	3,500	3.8	3,500
1,200	16.7	2,500	14.7	2,900	12.6	3,250	10.5	3,500	8.4	3,500	4.2	3,500
1,300	18.1	2,500	15.9	2,900	13.6	3,250	11.3	3,500	9.1	3,500	4.5	3,500
1,400	19.5	2,500	17.1	2,900	14.7	3,250	12.2	3,500	9.8	3,500	4.9	3,500
1,500	20.9	2,500	18.3	2,900	15.7	3,250	13.1	3,500	10.5	3,500	5.2	3,500
1,600	22.3	2,500	19.5	2,900	16.7	3,250	14.0	3,500	11.2	3,500	5.6	3,500
1,700	23.7	2,500	20.8	2,900	17.8	3,250	14.8	3,500	11.9	3,500	5.9	3,500
1,800	25.1	2,500	22.0	2,900	18.8	3,250	15.7	3,500	12.6	3,500	6.3	3,500
1,900	26.5	2,500	23.2	2,900	19.9	3,250	16.6	3,500	13.3	3,500	6.8	3,500

APPROXIMATE FLOW AND PRESSURE FOR PUMP P/N PK1-*-02BSBB-S PAIRED WITH PTO P/N Z21-Z1111-DX1BBBX**

ENGINE SPEED	PK1-17 <i>3.94 cu. in./Rev</i>		PK1-15 <i>3.45 cu. in./Rev</i>		PK1-13 <i>2.96 cu. in./Rev</i>		PK1-11 <i>2.46 cu. in./Rev</i>		PK1-08 <i>1.97 cu. in./Rev</i>		PK1-06 <i>1.47 cu. in./Rev</i>	
	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI
	900	20.0	2,500	17.5	2,500	15.0	3,000	12.5	3,000	10.0	3,000	7.4
1,000	22.2	2,500	19.4	2,500	16.7	3,000	13.8	3,000	11.1	3,000	8.3	3,000
1,100	24.4	2,500	21.4	2,500	18.3	3,000	15.2	3,000	12.2	3,000	9.1	3,000
1,200	26.6	2,500	23.3	2,500	20.0	3,000	16.6	3,000	13.3	3,000	9.9	3,000
1,300	28.8	2,500	25.2	2,500	21.7	3,000	18.0	3,000	14.4	3,000	10.8	3,000
1,400	31.0	2,500	27.2	2,500	23.3	3,000	19.4	3,000	15.5	3,000	11.6	3,000
1,500	33.3	2,500	29.1	2,500	25.0	3,000	20.8	3,000	16.6	3,000	12.4	3,000
1,600	35.5	2,500	31.1	2,500	26.7	3,000	22.2	3,000	17.7	3,000	13.2	3,000
1,700	37.7	2,500	33.0	2,500	28.3	3,000	23.5	3,000	18.8	3,000	14.1	3,000
1,800	39.9	2,500	34.9	2,500	30.0	3,000	24.9	3,000	20.0	3,000	14.9	3,000
1,900	42.1	2,500	36.9	2,500	31.7	3,000	26.3	3,000	21.1	3,000	15.7	3,000

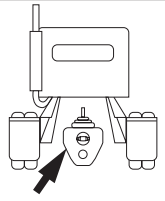

PLEASE NOTE:
If you are accustomed to ordering a hydraulic pump based on the pump model number, you may be ordering a pump larger than you require when you apply that pump to this application.

To calculate the PTO output speed:
Engine speed × 130% = PTO output speed. Example: Engine speed of 1,000 RPM would yield the following:
1,000 × 1.3 = 1,300 RPM PTO

A 7 GPM pump (like the PH1-07) would deliver a theoretical output flow of: Disp. × RPM/231
1.55 × 1,300/231 = 8.7 GPM

* Theoretical Flow Shown. Speed shown for pump at 0 in.Hg. vacuum.

CAUTION: MAXIMUM OUTPUT SHAFT SPEED NOT TO EXCEED 2,500 RPM.

RAM TRANSMISSION							LEFT SIDE ONLY (RIGHT SIDE TURN PAGE)				
 TORQUEFLITE HD ZF POWERLINE Footnotes (1, 2, & 3)							ZF 8-BOLT OPENING				
							PTO DRIVE GEAR DATA: 51T 9.42P 20°PA 22.0° R.H. LOCATION: Front PLMF: 3.891 PLV: 1417 FPM RPM: 1,000				
8-BOLT TYPE	PTO MODEL NUMBER	FOOT NOTES	SHAFT ROTATION	ENGINE %	STUD KIT	SHIFT TYPE	SHAFT EXTENSION	CONTINUOUS RATING @ 1,000 RPM of PTO		INTERMITTENT RATING @ 1,000 RPM of PTO	
								TORQUE	HP	TORQUE	HP
CLUTCH SHIFT	Z25-Z1113-DX3TAPX		Crnk	145	Included	Elec/Hyd		125	24	125	24

FOOTNOTES:

- 1 Engine driven direct drive PTO gear.
- 2 Requires RAM wiring connection for PTO activation. Minimum engine speed for PTO use is 900 RPMs.
- 3 1¼" Round keyed shaft output only usable on 4 x 2 applications, or 4 x 4 trucks with modified transfer case.

Pump Selection Example:

- a. First you need to know the flow and pressure requirement of your application.
- b. Next find the closest pump output flow from the chart that is based on the most appropriate engine speed for your application. Follow the grid up to the top to read the basic pump series and size. This is the pump that will give you the flow you desire.
- c. If your system requires 6 GPM to operate, then you would look for 6 GPM in the columns. Finding the first one under the pump PF4-502 would give you a pump which will deliver the 6 GPM you require at an engine speed of 900 RPM. You would also get 6 GPM if you select the PF4-424 pump, but you would need to operate the engine at 1,000 RPM.
- d. After you have selected the Pump Series and size the complete pump model number can be ordered.

APPROXIMATE FLOW AND PRESSURE FOR PUMP P/N PF4-*-16ASRR PAIRED WITH PTO P/N Z25-Z1113-DX3TAPX**

ENGINE SPEED	PF4-870 <i>2.01 cu. in./Rev</i>		PF4-818 <i>1.83 cu. in./Rev</i>		PF4-714 <i>1.71 cu. in./Rev</i>		PF4-606 <i>1.4 cu. in./Rev</i>		PF4-502 <i>1.16 cu. in./Rev</i>		PF4-424 <i>0.98 cu. in./Rev</i>		PF4-368 <i>0.85 cu. in./Rev</i>		PF4-290 <i>0.73 cu. in./Rev</i>		PF4-264 <i>0.61 cu. in./Rev</i>		PF4-212 <i>0.49 cu. in./Rev</i>		PF4-160 <i>0.37 cu. in./Rev</i>		
	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	GPM	MAX. PSI	
	900	11.4	2,320	10.2	2,900	9.7	2,900	7.9	3,625	6.6	3,625	5.5	3,625	4.8	3,625	4.1	3,625	3.4	3,625	2.8	3,625	2.1	3,625
1,000	12.6	2,320	11.5	2,900	10.7	2,900	8.8	3,625	7.3	3,625	6.2	3,625	5.3	3,625	4.6	3,625	3.8	3,625	3.1	3,625	2.3	3,625	
1,100	13.9	2,320	12.6	2,900	11.8	2,900	9.7	3,625	8.0	3,625	6.8	3,625	5.9	3,625	5.0	3,625	4.2	3,625	3.4	3,625	2.6	3,625	
1,200	15.1	2,320	13.8	2,900	12.9	2,900	10.5	3,625	8.7	3,625	7.4	3,625	6.4	3,625	5.5	3,625	4.6	3,625	3.7	3,625	2.8	3,625	
1,300	16.4	2,320	14.9	2,900	14.0	2,900	11.4	3,625	9.5	3,625	8.0	3,625	6.9	3,625	6.0	3,625	5.0	3,625	4.0	3,625	3.0	3,625	
1,400	17.7	2,320	16.1	2,900	15.0	2,900	12.3	3,625	10.2	3,625	8.6	3,625	7.5	3,625	6.4	3,625	5.4	3,625	4.3	3,625	3.3	3,625	
1,500	18.9	2,320	17.2	2,900	16.1	2,900	13.2	3,625	10.9	3,625	9.2	3,625	8.0	3,625	6.9	3,625	5.7	3,625	4.6	3,625	3.5	3,625	
1,600	20.2	2,320	18.4	2,900	17.2	2,900	14.1	3,625	11.7	3,625	9.8	3,625	8.5	3,625	7.3	3,625	6.1	3,625	4.9	3,625	3.7	3,625	
1,700	21.4	2,320	19.5	2,900	18.2	2,900	14.9	3,625	12.4	3,625	10.5	3,625	9.1	3,625	7.8	3,625	6.5	3,625	5.2	3,625	3.9	3,625	
1,800	RPM EXCEEDS PUMP LIMIT							13.1	3,625	11.1	3,625	9.6	3,625	8.2	3,625	6.9	3,625	5.5	3,625	4.2	3,625		
1,900	RPM EXCEEDS PUMP LIMIT							13.8	3,625	11.7	3,625	10.1	3,625	8.7	3,625	7.3	3,625	5.8	3,625	4.4	3,625		

APPROXIMATE FLOW AND PRESSURE FOR PUMP P/N 24FXG-*-D00000 PAIRED WITH PTO P/N Z25-Z1113-DX3UUPX**

ENGINE SPEED	016		025	
	GPM	MAX. PSI	GPM	MAX. PSI
900	5.8	6.525	8.9	6.525
1,000	6.5	6.525	9.9	6.525
1,100	7.2	6.525	10.8	6.525
1,200	7.8	6.525	11.8	6.525
1,300	8.4	6.525	12.8	6.525
1,400	9.1	6.525	13.8	6.525
1,500	9.7	6.525	14.8	6.525

PLEASE NOTE:

If you are accustomed to ordering a hydraulic pump based on the pump model number, you may be ordering a pump larger than you require when you apply that pump to this application.

To calculate the PTO output speed:

Engine speed x 145% = PTO output speed. Example: Engine speed of 1,000 RPM would yield the following:

1,000 x 1.45 = 1,450 RPM PTO

A .98 cubic inch pump like PF4-424 would deliver a theoretical output flow of: Disp. x RPM/ 231

0.98 x 1,450/231 = 6.2 GPM

* Theoretical Flow Shown.

Speed shown for pump at 0 in.Hg. vacuum.