

**DC-XHD Dynamometer Testing**  
 Holt of Texas  
 San Antonio, Texas

Engine Type: Caterpillar High Idle: 2330 rpm  
 Model #: D3408 Low Idle: 885 rpm  
 Frame Model #: 769C Rated Hp: 474

**DC-100 Dynamometer results**  
 Holt testing facility - San Antonio, TX  
 Holt Work Order: FD20783 50% Load Test

Without DC-100			
RPM	Torque	Horsepower	% of Rated Hp
2274	502	217	45.78%
2275	476	206	43.46%
2277	477	206	43.46%
2271	502	216	45.57%
2271	493	213	44.94%
2261	512	220	46.41%
2258	528	227	47.89%
2260	511	219	46.20%
2249	512	219	46.20%
2250	507	217	45.78%
2254	495	212	44.73%
2251	507	217	45.78%
2245	521	222	46.84%
2247	512	219	46.20%
2248	565	241	50.84%
Total	33891	7620	3271
Average	2259.40	508.00	218.07
***			
46.01%			

lbs of fuel 112  
 gallons/hour 15.77  
 lbs of fuel/Hp 0.5136  
 Turbo Xducer 990 degrees Fahrenheit  
 Temperature  
 Max. Hp at 100% load - 447  
 Opacity 53.1  
 Hydrocarbons 9  
 Carbon Monoxide 0.05%  
 Nitrogen Oxides 520

With DC-100			
RPM	Torque	Horsepower	% of Rated Hp
2264	502	216	45.57%
2256	474	203	42.83%
2261	439	188	39.66%
2263	502	216	45.57%
2264	488	210	44.30%
2261	483	207	43.67%
2259	483	207	43.67%
2258	495	212	44.73%
2259	495	212	44.73%
2263	481	207	43.67%
2262	470	202	42.62%
2259	490	210	44.30%
2260	493	211	44.51%
2260	495	213	44.94%
2258	493	211	44.51%
Total	33907	7283	3125
Average	2260.47	485.53	208.33
***			
43.95%			

lbs of fuel 96  
 gallons/hour 13.52  
 lbs/Hp 0.4608 **10.28% Reduction**  
 Turbo Xducer 945 degrees Fahrenheit **4.55% Reduction**  
 Temperature  
 Max. Hp at 100% load - 520 **16.3% Increase**  
 Opacity 10.9 **79.5% Reduction**  
 Hydrocarbons 6  
 Carbon Monoxide 0.03%  
 Nitrogen Oxides 604

**50% Load test -**

During the course of the test, the throttle was held constant to produce steady horsepower, samples of the output horsepower were taken at equal increments to precisely obtain an average horsepower value. Fuel was calculated by weighing the fuel over the course of the test and then compared to the average horsepower produced. This accurately shows the 10.28% reduction in fuel consumption. The exhaust temperature shows a 4.55% reduction resulting from more complete combustion inside the chamber rather than in the exhaust.

Harmonics	Vibration		Torsion	
	Without ET	Without ET	Without ET	Without ET
0.50	0.022	0.02	0.096	0.006
1.00	0.357	0.039	0.24	0.031
1.50	0.064	0.014	0.08	0.013
2.00	0.033	0.008	0.03	0.006
2.50	0.08	0.026	0.102	0.027
3.00	0.08	0.004	0.045	0.005
3.50	0.095	0.008	0.074	0.005
4.00	0.144	0.043	0.114	0.046
4.50	0.077	0.004	0.075	0.003
5.00	0.137	0.006	0.134	0.005
5.50	0.032	0.006	0.048	0.005
	1.121	0.178	1.038	0.152

Harmonics	Vibration		Torsion	
	With ET	With ET	With ET	With ET
0.50	0.096	0.006	0.096	0.006
1.00	0.24	0.031	0.24	0.031
1.50	0.08	0.013	0.08	0.013
2.00	0.03	0.006	0.03	0.006
2.50	0.102	0.027	0.102	0.027
3.00	0.045	0.005	0.045	0.005
3.50	0.074	0.005	0.074	0.005
4.00	0.114	0.046	0.114	0.046
4.50	0.075	0.003	0.075	0.003
5.00	0.134	0.005	0.134	0.005
5.50	0.048	0.005	0.048	0.005
	1.038	0.152	1.038	0.152

Harmonics	Vibration		Torsion	
	% Change	% Change	% Change	% Change
0.50	336%	-70%	0%	0%
1.00	-33%	-21%	0%	0%
1.50	25%	-7%	0%	0%
2.00	-9%	-25%	0%	0%
2.50	28%	4%	0%	0%
3.00	-44%	25%	0%	0%
3.50	-22%	-38%	0%	0%
4.00	-21%	7%	0%	0%
4.50	-3%	-25%	0%	0%
5.00	-2%	-17%	0%	0%
5.50	50%	-17%	0%	0%

SKF Vib-Pen	CMVP20
Before	
Injector #1	0.92 in/sec Pump #1 1.81 in/sec
Injector #4	1.27 in/sec Pump #4 0.72 in/sec
Overall	1.66 in/sec

Engine Type: Caterpillar High Idle: 2330 rpm  
Model #: D3408 Low Idle: 885 rpm  
Frame Model #: 769C Rated Hp: 474

**DC-100 Dynamometer results**  
Holt testing facility - San Antonio, TX  
Holt Work Order: FD207 85% Load Test

**Without DC-100**

RPM	Torque	Horsepower	% of Rated Hp
2128	1011	409	86.29%
2118	945	381	80.38%
2104	1062	425	89.66%
2100	1106	442	93.25%
2141	999	406	85.65%
2152	957	392	82.70%
2071	1050	414	87.34%
2112	1027	412	86.92%
2112	1002	402	84.81%
2105	995	398	83.97%
2118	1011	407	85.86%
2109	994	398	83.97%
2112	1065	428	90.30%
Total	27482	13224	5314 ***
Average	2114.00	1017.23	408.77 86.24%

lbs of fuel 170  
gallons/hour 23.94  
lbs of fuel/Hp 0.4159  
Turbo Xducer 1234 degrees Fahrenheit  
Temperature  
Max. Hp at 100% load - 447  
Opacity 53.1  
Hydrocarbons 9  
Carbon Monoxide 0.05%  
Nitrogen Oxides 626

**With DC-100**

RPM	Torque	Horsepower	% of Rated Hp
2199	992	414	87.34%
2165	976	402	84.81%
2176	1002	415	87.55%
2171	1018	420	88.61%
2167	1027	422	89.03%
2195	980	409	86.29%
2195	967	404	85.23%
2198	960	401	84.60%
2210	946	398	83.97%
2207	952	400	84.39%
2200	964	403	85.02%
2207	959	402	84.81%
2179	969	402	84.81%
Total	28469	12712	5292 ***
Average	2189.92	977.85	407.08 85.88%

lbs of fuel 158  
gallons/hour 22.25  
lbs/Hp 0.3881 **6.67% Reduction**  
Turbo Xducer 1115 degrees Fahrenheit **9.64% Reduction**  
Temperature  
Max. Hp at 100% load - 520 **16.3% Increase**  
Opacity 10.9 **79.5% Reduction**  
Hydrocarbons 3  
Carbon Monoxide 0.02%  
Nitrogen Oxides 809.5

**85% Load test -**

During the course of the test, the throttle was held constant to produce steady horsepower, samples of the output horsepower were taken at equal increments to precisely obtain an average horsepower value. Fuel was calculated by weighing the fuel over the course of the test and then compared to the average horsepower produced. This accurately shows the 6.67% reduction in fuel consumption. The exhaust temperature shows a 9.64% reduction resulting from more complete combustion inside the chamber rather than in the exhaust.

Harmonics	Without ET	Without ET
0.50	0.0652	0.0146
1.00	0.318	0.0149
1.50	0.0445	0.0248
2.00	0.0418	0.007
2.50	0.0841	0.042
3.00	0.14	0.0116
3.50	0.153	0.0214
4.00	0.0859	0.079
4.50	0.0862	0.0051
5.00	0.0924	0.0079
5.50	0.105	0.0055
	1.2161	0.2338

Harmonics	Vibration With ET	Torsion With ET
0.50	0.077	0.0107
1.00	0.484	0.0248
1.50	0.066	0.0195
2.00	0.021	0.0054
2.50	0.077	0.0397
3.00	0.122	0.0085
3.50	0.119	0.0163
4.00	0.079	0.0602
4.50	0.084	0.0048
5.00	0.102	0.0075
5.50	0.061	0.0059
	1.293	0.2033

Harmonics	Vibration % Change	Torsion % Change
0.50	19%	-27%
1.00	52%	66%
1.50	48%	-21%
2.00	-49%	-23%
2.50	-9%	-5%
3.00	-13%	-27%
3.50	-22%	-24%
4.00	-8%	-24%
4.50	-3%	-6%
5.00	10%	-5%
5.50	-42%	7%

SKF Vib-Pen	CMVP20	
After		
Injector #1	0.49 in Pump #1	0.91 in/sec
Injector #4	0.99 in Pump #4	0.15 in/sec
Overall		1.47 in/sec