

# ZPP NA 416

4 Cylinder Inline | Naturally-Aspirated |  
1.6L - Gasoline, Natural Gas, Propane |

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## Specifications

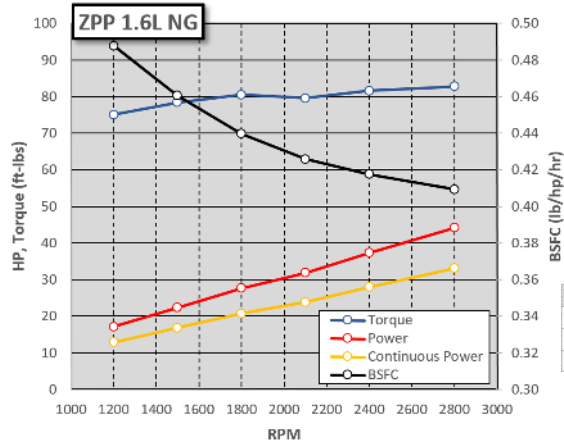
# of Cylinders	4 Inline
Operation	4-stroke
Ignition	Spark-Ignited
# of Valves	4/cylinder
Firing Order	1-3-4-2
Bore x Stroke	76.5 X 87.0 mm 3.012" x 3.425"
Displacement	1599 cc / 87.6 ci
Compression Ratio	10.0 : 1
Dry Weight	126.3 kg / 278 lbs
Piston Speed @ 2400 rpm	1,370 fpm
Piston Speed @ 1800 rpm	1,028 fpm
Oil Capacity	3.7L / 3.9 qts
Electrical System	12 Volt

## Standard Features

☆	US EPA & CARB Certified
☆	CAN bus controlled—J1939
☆	Full Built-in Engine Protection
☆	Stoichiometric Combustion
☆	80A Alternator

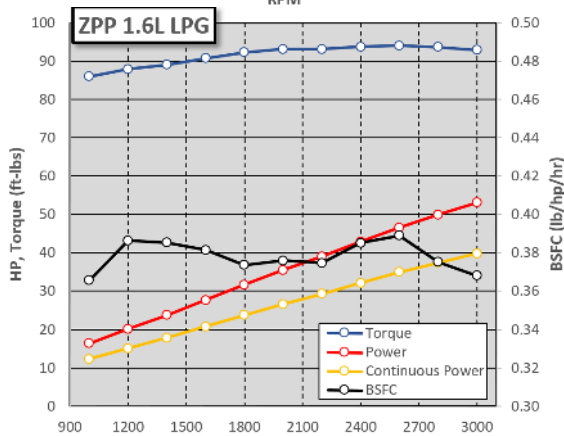
## Optional Features

☆	Customer Specific Packaging
☆	Turn-Key Enclosures

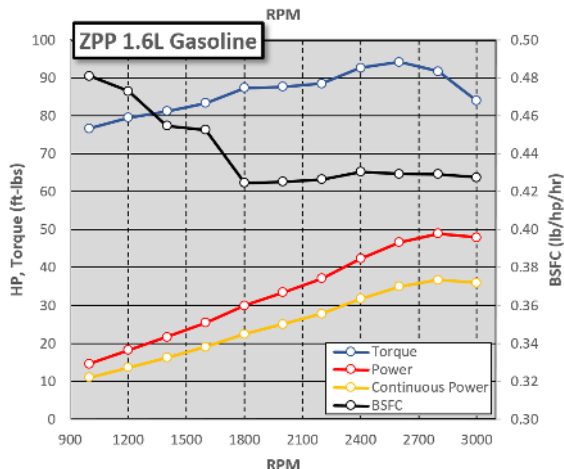


	Industrial Rating (bHP)		Genset Rating (kWe)
Rating	2400 rpm	1800 rpm	1800 rpm
Intermittent	37.3	27.6	18.9
Prime	33.6	24.8	17.0
Continuous	28.0	20.7	14.2

\*All data is corrected per SAE J1349  
\*Performance is NET including losses from engine auxiliaries (alternator, fan, water pump, air cleaner, catalyst)  
\*NG is pipeline grade gas  
\*LPG is commercial grade  
\*Gasoline is pump gasoline  
\*Electrical kW calculated with 92% generator efficiency



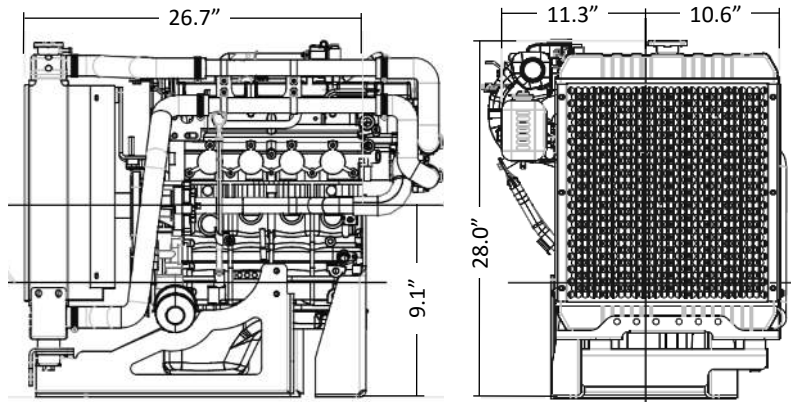
	Industrial Rating (bHP)		Genset Rating (kWe)
Rating	2400 rpm	1800 rpm	1800 rpm
Intermittent	42.8	31.6	21.7
Prime	38.6	28.5	19.5
Continuous	32.1	23.7	16.3



	Industrial Rating (bHP)		Genset Rating (kWe)
Rating	2400 rpm	1800 rpm	1800 rpm
Intermittent	42.3	30.0	20.5
Prime	38.1	27.0	18.5
Continuous	31.8	22.5	15.4

## Fuel System Features

- ☆ Natural Gas, LPG, or Gasoline
- ☆ Air-valve Mixer based fueling
- ☆ Electronic, closed-loop control
- ☆ EPA certified to pipeline quality fuels
- ☆ Electronic Throttle body
- ☆ Inline catalyst provided with engine



*\*All data is corrected per SAE J1349*

Pipeline NG

RPM	Torque ft-lbs (Nm)	Power BHP (kW)	BMEP (psi)	Fuel Flow (lb/hr)	Air Flow (lb/hr)	BSFC (lb/hp/hr)	Exhaust Outlet (F)
2800	82.7 (112.2)	44.1 (32.9)	127.8	18.0	296	0.409	1,019
<b>2400</b>	<b>81.6 (110.6)</b>	<b>37.3 (27.8)</b>	<b>126.1</b>	<b>15.6</b>	<b>255</b>	<b>0.418</b>	<b>899</b>
2100	79.5 (107.8)	31.8 (23.7)	122.9	13.5	222	0.426	838
<b>1800</b>	<b>80.5 (109.2)</b>	<b>27.6 (20.6)</b>	<b>124.4</b>	<b>12.1</b>	<b>199</b>	<b>0.440</b>	<b>785</b>
1500	78.4 (106.2)	22.4 (16.7)	121.1	10.3	169	0.460	725
1200	75.1 (101.8)	17.2 (12.8)	116.0	8.4	138	0.488	629

Commercial LPG

RPM	Torque ft-lbs (Nm)	Power BHP (kW)	BMEP (psi)	Fuel Flow (lb/hr)	Air Flow (lb/hr)	BSFC (lb/hp/hr)	Exhaust Outlet (F)
2800	93.6 (127.0)	49.9 (37.2)	144.7	18.7	293	0.375	1,368
<b>2400</b>	<b>93.7 (127.1)</b>	<b>42.8 (31.9)</b>	<b>144.8</b>	<b>16.5</b>	<b>258</b>	<b>0.385</b>	<b>1,319</b>
2000	93.1 (126.3)	35.5 (26.4)	143.9	13.3	209	0.376	1,239
<b>1800</b>	<b>92.3 (125.1)</b>	<b>31.6 (23.6)</b>	<b>142.6</b>	<b>11.8</b>	<b>185</b>	<b>0.374</b>	<b>1,184</b>
1600	90.8 (123.0)	27.6 (20.6)	140.2	10.5	165	0.381	1,151
1200	87.9 (119.2)	20.1 (15.0)	135.8	7.8	122	0.386	1,075

Gasoline

RPM	Torque ft-lbs (Nm)	Power BHP (kW)	BMEP (psi)	Fuel Flow (lb/hr)	Air Flow (lb/hr)	BSFC (lb/hp/hr)	Exhaust Outlet (F)
2800	91.8 (124.4)	48.9 (36.5)	141.8	21.0	308.6	0.429	1,358
<b>2400</b>	<b>92.7 (125.6)</b>	<b>42.3 (31.6)</b>	<b>143.2</b>	<b>18.2</b>	<b>267.7</b>	<b>0.430</b>	<b>1,427</b>
2000	87.7 (118.9)	33.4 (24.9)	135.5	14.2	208.8	0.425	1,360
<b>1800</b>	<b>87.4 (118.5)</b>	<b>30.0 (22.3)</b>	<b>135.0</b>	<b>12.7</b>	<b>187.2</b>	<b>0.425</b>	<b>1,300</b>
1600	83.4 (113.0)	25.4 (18.9)	128.8	11.5	169.0	0.453	1,303
1200	79.5 (107.8)	18.2 (13.5)	122.9	8.6	126.6	0.473	1,237