

VHP® P9390X

With ESM® 2 and emPact Emission Control System

Upgrade and reUp® Offering



Technical Data

Cylinders	V16
Combustion	Rich burn
Power	1,980 BHP (1,476 kWb)
Speed	900 - 1,200 rpm
Piston displacement	9,388 in ³ (153.9 L)
Compression ratio	8:1
Bore & Stroke	9.375 x 8.5" (238 x 216 mm)
Jacket water system capacity	148 gal (560 L)
Lube oil capacity	165 gal (625 L)
Starting system	150 psi (1034 kPa) air/gas

Dimensions l x w x h inch (mm)

170 (4,318) x 78 (1,981) x 113 (2,870)

Weights lb (kg)

34,000 (15,422)

Product Details

VHP® P9390X is offered as a reUp engine or upgrade kit to offer customer flexibility. The reUp® VHP P9390X engine comes with all equipment and product offerings, regardless of engine vintage or previous upgrades applied. Upgrade kits required may vary by engine, depending on vintage and which upgrades have already been applied. Standard equipment for the VHP P9390X includes:

- xCooled heads
- Series Four® pistons
- ESM 2/AFR2 controls
- 12" HMI
- Harnesses, wireways, and sensors
- Ignition Power Module with Diagnostics (IPMD) and spark plugs
- Power distribution box with fault logic
- Exhaust and main bearing thermocouples
- Advanced breather
- Turbocharger and wastegates
- Carburetor and butterfly valves
- Governor actuator
- Alternator
- skidIQ (reUp only)
- emPact emissions control system (optional)

Customer Benefits

ESM 2 controls

- Single integrated engine control system
- Data trending and analysis
- Troubleshooting guides and manuals
- Remote monitoring capabilities utilizing Asset Performance Management (APM)

xCooled cylinder heads

- Increased lifetime up to 60%
- Up to 40% cooler valve temperatures
- Reduced parts cost and downtime
- Water cooled guides and seats
- Valve rotators
- Redesigned exhaust path minimize hot spots

Series Four pistons

- Reduced oil consumption up to 67%
- Scuff resistant pistons, cylinder liners
- Significant oil cost savings

emPact catalyst

- Standard configuration: 0.15 g/bhp-hr NOx and 0.30 g/bhp-hr CO
- Stainless steel and carbon steel housings
- Controlled and monitored from ESM 2 HMI
- Automatically adjusts to achieve and maintain emissions compliance
- Differential temperature and pressure monitoring decreases potential for catalyst damage and increases life

Advanced breather

- Up to 90% less oil blow-by
- Less oil contamination of three-way catalyst
- Reduced coking/Fewer oil leaks
- 8,000-hour service intervals

Units Available

Core exchange*	reUp Engine
P9390GSI	P9390X
P9390GL	
P9390G	

*core return is subject to serial number review

Upgrade Kits

- G-962-1287A (2-pc crankcase)
- G-962-1287B (1-pc crankcase)
- G-962-1287C (Alternator)



INNIO® Waukesha® is introducing the VHP P9390X, exclusively offered for service as a reUp engine, or upgrade kit. Leveraging over 115 years of engine design, development, and manufacturing, Waukesha is the global leader in rich burn gas engine technology. VHP P9390X is a fuel flexible, low emissions solution designed for the gas compression industry. VHP P9390X is designed to extend the life your existing equipment with modernized controls, catalyst emissions control and monitoring, simpler maintenance, and increased reliability.

reUp **SKIDIQ**

A POWERFUL FUTURE

Waukesha

VHP P9390X

Performance Data

Intercooler Water Temperature 130°F (54°C)		1,200 RPM	1,000 RPM
	Power bhp (kWb)	1,980 (1,476)	1,650 (1,230)
	BSFC (LHV) Btu/bhp-hr (KJ/kWh)	7,930 (11,221)	7,783 (11,014)
	Fuel Consumption Btu/hr x 1000 (kW)	15,701 (4,601)	12,842 (3,763)
emPact Catalyst-Out Emissions	NOx g/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.15 (62)	
	CO g/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.30 (123)	
	NMHC g/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.105 (39)	
	THC g/bhp-hr (mg/Nm ³ @ 5% O ₂)	1.4 (518)	
Engine-Out Emissions	NOx g/bhp-hr (mg/Nm ³ @ 5% O ₂)	13.0 (4,815)	
	CO g/bhp-hr (mg/Nm ³ @ 5% O ₂)	9.0 (3,333)	
	NMHC g/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.30 (111)	
	THC g/bhp-hr (mg/Nm ³ @ 5% O ₂)	2.0 (741)	
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	4,985 (1,461)	4,265 (1,250)
	Heat to Lube Oil Btu/hr x 1000 (kW)	519 (1,52)	461 (135)
	Heat to Intercooler Btu/hr x 1000 (kW)	385 (113)	268 (79)
	Heat to Radiation Btu/hr x 1000 (kW)	634 (186)	562 (165)
	Total Exhaust Heat Btu/hr x 1000 (kW)	4,444 (1,303)	3,336 (978)
Intake/Exhaust System	Induction Air Flow scfm (Nm ³ /hr)	3,081 (4,735)	2,520 (3,873)
	Exhaust Flow lb/hr (kg/hr)	13,713 (6,220)	11,216 (5,087)
	Exhaust Temperature °F (°C)	1,177 (636)	1,109 (599)

All data according to full load and subject to technical development and modification.

emPact catalyst-out emissions valid from 100% - 75% load and 1200 rpm to 900 rpm and assume proper engine/catalyst maintenance and manual adjustment as necessary.

Consult your local Waukesha representative for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

SkidIQ (reUp only)



Engine ships “ready to connect” with SkidIQ full skid monitoring system. SkidIQ is a cloud-based digital solution that integrates real-time engine analytics and compressor monitoring technology. The result is a unified platform that reduces operating expenses and emissions while enhancing uptime.

Waukesha – an INNIO brand - INNIO's Waukesha engines are at the forefront of the energy transition, providing reliable and compliant energy solutions for distributed gas compression and power generation applications. The brand's rich and lean-burn engines, ranging from 335 hp to 5,000 hp, set an industry standard for low emissions, high reliability, and fuel flexibility.

Waukesha products are continuously upgraded to help operators stay emission-compliant without sacrificing operational excellence. These upgrades include new and remanufactured engines and parts, as well as conversion and modification kits, all of which are backed by OEM warranty and more than 115 years of engine expertise. Additionally, our Waukesha digital solutions include a collaborative solution with Detection Technologies for gas compression applications and INNIO's myPlant platform for power generation applications. Both solutions provide customers with enhanced monitoring and optimization capabilities, resulting in improved performance and reduced downtime.

We connect locally with our customers to enable a rapid response to their service needs, providing enhanced support through our broad network of distributors and solution providers with parts, services, and digital offerings.

Waukesha engines are engineered in Waukesha, Wisconsin, U.S., and manufactured in Welland, Ontario, Canada. To learn more about the company's products and services, please visit INNIO's website at www.waukeshaengine.com or follow Waukesha engines on [LinkedIn](https://www.linkedin.com/company/waukeshaengine).

IWK-123088-EN

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