

NG Compressor Series

RECIPROCATING GAS COMPRESSORS
PRODUCT BROCHURE



Blackmer

Where Innovation Flows

SUPERIOR
COMPONENTS
FOR MAXIMUM
RESULTS



Blackmer® NG Series Natural Gas Compressors

Specially designed for the oilfield, the NG Series Reciprocating Gas Compressors have proven themselves over and over as dependable and robust equipment for oil and natural gas production, vapor recovery and storage operations. These oil-free reciprocating gas compressors are constructed and equipped with superior components, which help provide maximum performance and reliability under the most severe service conditions.

NG Series Reciprocating Gas Compressors are highly efficient, heavy-duty single- and two-stage oil-free compressors. Each NG Series Compressor is constructed with a single distance piece between two sets of seals on each piston rod. The distance piece provides leakage control and prevents oil contamination of the compressed gas stream. Ports are provided in the distance piece chamber for purging, pressurizing or venting. This enables NG Series Compressors to be utilized in a wide range of wellhead applications for oil-and-gas production and storage operations. Additionally, NGS Series Sour Gas compressors can handle liquefied gases with up to 8% dry hydrogen sulfide (H₂S) content.

Applications

- Wellhead Annulus Gas Pressure Reduction
- Gas Gathering
- Wellhead Vapor Control
- Gas Evacuation
- Pressure Boosting
- Gas Blanketing
- Tank Battery Vapor Control and Recovery
- Flare Elimination
- Vapor Recovery
- Enhanced Recovery



Blackmer® NG Compressors | Design Features

High Efficiency, PEEK Valves

Blackmer valves are specifically designed for oil-free gas applications. Standard valve plates are constructed of self-lubricating PEEK (Poly Ether Ketone) material that provides superior sealing characteristics, high efficiency, and durability. Optional stainless steel valves are also available.

Note: NG080, NG160, and NG170 Series have TNT 12 impregnated steel valves.

Ductile-Iron Construction

All pressure parts are made of ductile iron for greater resistance to both thermal and mechanical shock.

O-Ring Seals

The head and cylinder are sealed with O-rings to ensure positive sealing under all operating conditions, eliminating leakage and maintenance problems. O-rings are available in Buna-N, FKM, neoprene, PTFE or ethylene-propylene.

Live Loaded Piston Rod Seals

Filled PTFE seals are wear compensating and maintain a constant sealing pressure around the piston rods with minimum friction. This special seal design prevents crankcase oil contamination and cylinder blow-by.

One-Piece Piston

One-piece, heavy-duty, ductile iron pistons are connected to the rod with a single positive locking nut. The pistons are stronger and simpler than multi-piece designs with numerous fasteners which eliminates potential problems.

Distance Piece

Distance pieces (isolation chambers), control contamination of the compressed gas from crankcase lubricant. Each isolation chamber may be independently purged, pressurized or vented for maximum containment and safety from toxic or hazardous gases.

Self-Lubricating Piston Rings

Extra-thick, self-lubricating filled PTFE piston rings provide more wear surface for maximum sealing efficiency with minimal friction wear, resulting in peak performance and extended compressor life.

Wrist-Pin Needle Bearings

Free of yellow metals and designed to last a lifetime, Blackmer large roller needle bearings provide long life under high rod load applications and will not need to be replaced under normal operating conditions. Superior wrist pin lubrication is assured under all load conditions.

S3R Oil Control Seal

Available on all 600 and 900 Series configurations, the S3R seal delivers enhanced oil control providing even greater leakage control by keeping oil in the crankcase.

Heavy-Duty Crankshaft

The ductile iron crankshaft is precision ground with integral counterweights for smooth, quiet operation. Rifle drilling ensures positive oil distribution to the wrist pin and connecting rod bearings. Crankshaft main bearings are built to last and will not need to be replaced under normal operating conditions.

Pressure Lubricated Crankcase

A self-reversing oil pump provides positive oil distribution to all running gear components, including the crosshead, for long life and minimal wear. A full-flow spin-on filter is standard.

Special Epoxy Coating

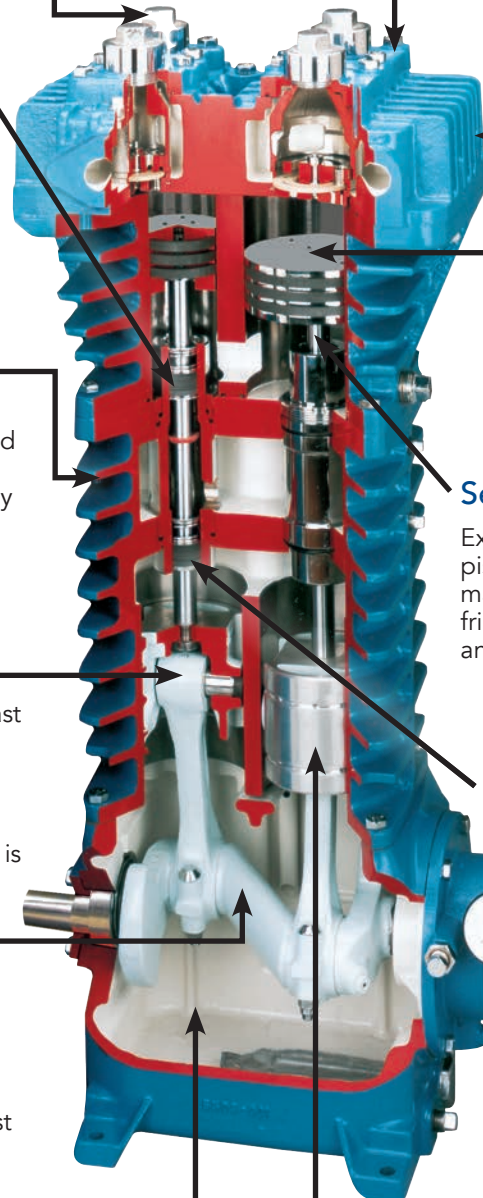
The entire interior of the crankcase is coated with a specially formulated epoxy coating, providing an added layer of protection.

Wear-Resistant Crosshead Assemblies

The ductile iron crossheads feature special machine lube channels for maximum lubrication and wear resistance.

ANSI Flanges

Many models are available with ANSI flanges for compatibility with CPI and refinery industry standards.



BLACKMER® NG COMPRESSORS

Blackmer® NG Compressors | Standard Features

All Blackmer NG Compressor models feature an oil-free design and high-efficiency valves that provide superior sealing characteristics, high efficiency and durability. This makes them ideal for use in the most severe oilfield and wellhead applications.

Other standard features include:

- A heavy-duty, precision-ground crankshaft for smooth, quiet operation with long-lasting bearings
- A specially formulated crankcase epoxy coating for added protection
- Self-adjusting loaded-glass PTFE piston-rod seals that maintain constant sealing pressure that helps prevent oil contamination and cylinder blow-by
- One-piece ductile-iron pistons connected to the piston rod with a single positive-locking nut for added strength and easier maintenance
- Self-reversing oil pump that lubricates the crankcase and all running gear components through positive oil distribution
- An S3R oil-control seal that keeps oil in the crankcase for enhanced leakage control
- High-efficiency, long-lasting valves with precision-engineered clearances and spring tension that allow the movement of more gas volume with each piston stroke

Specific features of the NG Series Compressors include:

- No use of yellow metals (brass and copper) for protection against corrosion
- Self-lubricating PTFE piston rings with a special pressure-assisted design for maximum efficiency with minimal friction wear
- Steel wrist-pin needle bearings for long life when used in high rod-load applications with wrist-pin lubrication assured under all load conditions
- Isolation chambers with single-distance pieces for leakage control, keeps crankcase lubricant isolated from the compression chamber
- Pressure-containing parts sealed with FKM or PTFE O-rings for positive sealing under all operating conditions
- Valves and valve plates constructed of self-lubricating PEEK material for superior sealing, high efficiency and extended service life; optional stainless-steel valves are also available



NG080 Series | NG082, NGS082

The NG080 Series Gas Compressors offer a flow rate of 8.45 CFM (14.35 m³/hr) at a maximum rpm of 7.5 BHP (5.0 kW). This single-cylinder, single-stage compressors offers two models: NG082 for natural gas and NGS082 for sour gases of up to 8% dry H₂S content.

NG080 Series Technical Data:

Bore	3" (76.2 mm)
Stroke	2.5" (63.5 mm)
Piston Displacement @ Maximum rpm	8.45 CFM (14.35 m ³ /hr)
Max. Power	7.5 BHP (5.5 kW)
Inlet/Outlet Connections	0.75" NPT

NG160 Series | NG162, NGS162

With flow rates of 16.9 CFM (28.7 m³/hr) at maximum rpm, the two-cylinder, single-stage NG160 Series Gas Compressors are available in two different models, the NG162 for natural gas and the NGS162 for sour gases of up to 8% dry H₂S content.

NG160 Series Technical Data:

Bore	3" (76.2 mm)
Stroke	2.5" (63.5 mm)
Piston Displacement @ Maximum rpm	16.9 CFM (28.7 m ³ /hr)
Max. Power	10 BHP (7.5 kW)
Inlet/Outlet Connections	0.75" NPT

NG170 Series | NG172, NGS172

The NG170 Series two-stage reciprocating gas compressors feature flow rates of 8.42 CFM (14.3 m³/hr) at maximum rpm. The compressors feature a two-cylinder design and are available in an NG172 model for natural gas and the NGS172 model for sour gases of up to 8% dry H₂S content.

NG170 Series Technical Data:

	1 st Stage	2 nd Stage
Bore	3" (76.2 mm)	1.75" (44.5 mm)
Stroke	2.5" (63.5 mm)	
Piston Displacement @ Maximum rpm	8.42 CFM (14.3 m ³ /hr)	
Max. Power	10 BHP (7.5 kW)	
Inlet/Outlet Connections	0.75" NPT	

Blackmer® NG Series | Natural Gas Compressors

NG360 Series | NG362, NGS362

The NG360 Series Gas Compressors have flow rates of 36 CFM (61.2 m³/hr) at maximum rpm with two different models, the NG362 for natural gas and the NGS362 for sour gases of up to 8% dry H₂S content.

NG360 Series Technical Data:

Bore	4" (102 mm)
Stroke	3" (76 mm)
Piston Displacement @ Maximum rpm	36.0 CFM (61.2 m ³ /hr)
Max. Power	15 BHP (11 kW)
Inlet/Outlet Connections	1.5" NPT or Welded Flanges

NG370 | NG372, NGS372

The Blackmer NG370 Series two-stage reciprocating gas compressors feature flow rates of 24.1 CFM (40.8 m³/hr) at maximum rpm. They have a two-cylinder design and are available in the NG372 model for natural gas and the NGS372 model for sour gases of up to 8% dry H₂S content.

NG370 Series Technical Data:

	1 st Stage	2 nd Stage
Bore	4.625" (117 mm)	2.69" (68 mm)
Stroke	3" (76.2 mm)	
Piston Displacement @ Maximum rpm	24.1 CFM (40.8 m ³ /hr)	
Max. Power	15 BHP (11 kW)	
Inlet/Outlet Connections	1.25" NPT / 1" NPT	

NG600 Series | NG602, NGS602

The two-cylinder, single-stage NG600 Series Gas Compressors are available in two different models, the NG602 for natural gas and the NGS602 for sour gases of up to 8% dry H₂S content. The NG600 Series Gas Compressors have flow rates of 64.2 CFM (109 m³/hr) at maximum rpm.

NG600 Series Technical Data:

Bore	4.625" (117 mm)
Stroke	4" (102 mm)
Piston Displacement @ Maximum rpm	64.2 CFM (109 m ³ /hr)
Max. Power	40.0 BHP (30.0 kW)
Inlet/Outlet Connections	2.0", 1.5" NPT or Welded Flanges

Blackmer® NG Series | Natural Gas Compressors

NG610 | NG612, NGS612

The Blackmer NG610 Series two-stage reciprocating gas compressors offer flow rates of 53.7 CFM (91.2 m³/hr) at maximum rpm. Offering a two-cylinder design, the NG610 Series compressors come in an NG612 model for natural gas and an NGS612 model for sour gases of up to 8% dry H₂S content.

NG610 Series Technical Data:

	1 st Stage	2 nd Stage
Bore	6" (152 mm)	3.25" (83 mm)
Stroke	4" (102 mm)	
Piston Displacement @ Maximum rpm	53.7 CFM (91.2 m ³ /hr)	
Max. Power	40 BHP (30 kW)	
Inlet/Outlet Connections	2", 1.5" NPT or Welded Flanges	

NG640 Series | NG642, NGS642

With flow rates of 31.7 CFM (53.8 m³/hr) at maximum rpm, the two-cylinder, single-stage NG640 Series of Gas Compressors are available in two different models, the NG642 for natural gas and the NGS642 for sour gases of up to 8% dry H₂S content.

NG640 Series Technical Data:

Bore	3.25" (83 mm)
Stroke	4" (102 mm)
Piston Displacement @ Maximum rpm	31.7 CFM (53.8 m ³ /hr)
Max. Power	40 BHP (30 kW)
Inlet/Outlet Connections	2", 1.5" NPT or Welded Flanges

NG940 Series | NG942, NGS942

The NG940 Series is the largest Blackmer NG Reciprocating Gas Compressors available with flow rates of 125.2 CFM (212 m³/hr) at maximum rpm. These single-stage, double-acting two-cylinder gas compressors are available in two different models, the NG942 for natural gas and the NGS942 for sour gases of up to 8% dry H₂S content.

NG940 Series Technical Data:

Bore	4.625" (117 mm)
Stroke	4" (102 mm)
Piston Displacement @ Maximum rpm	125.2 CFM (212 m ³ /hr)
Max. Power	50 BHP (37 kW)
Inlet/Outlet Connections	2" 300# ANSI

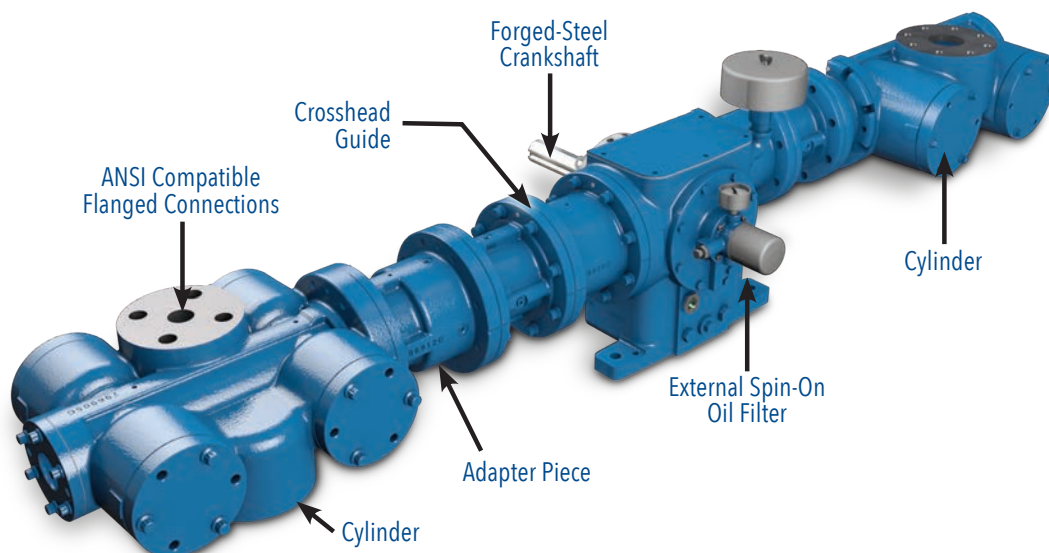
Blackmer® NG Series | Natural Gas Compressors

NGH100 Series | NGH1013, NGH1023

The Blackmer NGH100 Series Reciprocating Gas Compressor is a 100-BHP rated horizontal compressor unit that has been developed for use in vapor-recovery, wellhead-transfer and artificial-lift applications in the upstream oil-and-gas market. It is compatible with sour gas up with up to 8% dry hydrogen sulfide (H₂S) content. The NGH100 comes in a two-cylinder, single-stage NGH1013 model, which has a flow rate up to 345.8 CFM (588 m³/hr) at 1,800 rpm, and the NGH1023 model, which is a two-stage, one-cylinder model with flow rate of 172.9 CFM (294 m³/hr) at 1,800 rpm.

NGH100 Series Technical Data:

MODEL		NGH1013		NGH1023
Number of Cylinders Per Stage		2	2	2
Bore – In. (mm)	Stage 1	3.25 (82.55)	6.0 (152.4)	6.0 (152.4)
	Stage 2	3.25 (82.55)	6.0 (152.4)	3.25 (82.55)
Stroke – In. (mm)		3 (76.2)	3 (76.2)	3 (76.2)
MAWP – psia (bar)		1,500 (103.42)	500 (34.47)	1,500 (103.42)
Minimum Speed – RPM		500	500	500
Maximum Speed – RPM		1,800	1,800	1,800
Piston Displacement CFM (m ³ /h)				
	at 100 RPM	5.3 (9)	19.2 (32.6)	9.6 (16.3)
	at 900 RPM	48 (81.6)	172.9 (294)	86.4 (147)
	at 1,200 RPM	64 (109)	231 (392)	115.3 (196)
	at 1,800 RPM	96 (163)	345.8 (588)	172.9 (294)
Maximum Discharge Temperature – °F (°C)		350° (176.7°)	350° (176.7°)	350° (176.7°)
Maximum Brake Horsepower		100	100	100
Maximum Rod Load – lbs (kg)		7,000 (3175.2)	7,000 (3175.2)	7,000 (3175.2)
Bare Compressor Weight* – lbs (kg)		1,300 (589.7)	1,500 (680.4)	1,400 (635.0)
Inlet	Stage 1	1.5" 900# ANSI	3" 300# ANSI	3" 300# ANSI
	Stage 2	1.5" 900# ANSI	3" 300# ANSI	3" 300# ANSI
Outlet	Stage 1	N/A	N/A	1.5" 900# ANSI
	Stage 2	N/A	N/A	1.5" 900# ANSI



Blackmer® NG Series | Natural Gas Compressors

Wherever wellhead gases need to be cost-effectively extracted and efficiently managed, Blackmer® NG Series Gas Compressors are on the job.



With decades of deep oil and gas industry experience, Blackmer earned its reputation for product innovation, quality, and most critical to Wellhead Operators – reliability – especially in rugged and remote unmanned locations. These professionals rely on Blackmer NG Gas Compressors to perform without fail at the wellhead and storage tank batteries for an array of critical applications.

Annulus Reduction

Blackmer NG Compressors reduce wellhead gas pressure improving oil flow into underground formations for more efficient oil production enhancement.



Vapor Control

The wellhead and tank batteries are the two major sources of fugitive methane emissions. Common air compressors lack critical seals to prevent gas leakage and crankcase oil dilution. Condensate can form in the compressor, which will contaminate crankcase oil. Condensate will break down the oil acting like a solvent, stripping bearings of critical lubrication. The result is damaging heat, friction, and equipment damage or breakdown. Blackmer NG Compressors are specially designed to capture and control wellhead gases. The design prevents gas leakage and oil contamination.



Vapor Recovery

Increasingly stringent state and federal clean air rules are promoting the reduction and elimination of gas venting and flaring of fugitive gas emissions. Blackmer NG Compressors are unsurpassed in reducing emissions and the recovery of saleable wellhead gas, thus protecting the environment, supporting regulatory compliance and improving the bottom line.

Product Transfer

Blackmer NG Compressors move wellhead and tank battery vapors into low to medium pressure pipelines where it can be further processed downstream at a gas processing station.

Wellhead operators attest to the importance of equipment reliability and uptime performance, and understand the risks and downtime costs of relying upon less capable, less durable air compressors. They avoid the unnecessary expense of daily and weekly oil changes, and the frequent replacement of these less durable compressors. They recognize the Blackmer product outlasts and outperforms, requiring only routine maintenance. Its ability to remain on 24/7/365 continuous duty for the long haul is testimony to Blackmer reliability and bottom line results.



Talk to Your Local Blackmer Distributor

Your distributor will be glad to discuss with you your wellhead and tank battery needs and develop the appropriate compressor configuration to meet your operational requirements. Ask about how your choice of a Blackmer NG Gas Compressor will pay for itself.

Blackmer® NG Compressors | Options & Ancillary Equipment

Options

	AVAILABLE LITERATURE	DETAILS
Crankcase Oil Heater	CB322	Used to maintain adequate oil temperature in cold to severe climates
Distance Piece Options	CB037	Section of gas compressor between crankcase and compressor cylinder that isolates the two areas, providing oil-free operation for cylinder
Suction Valve Unloaders & Systems	CB039	Prevents the compression of gas in the cylinder by holding the suction valves open, allowing compressor to be started without a load and to control compressor's capacity
Various O-Ring Materials	CB001	Optional O-ring materials including PTFE, FKM, Neoprene, Ethylene-Propylene
Oversized Flywheels		Available for various drive options

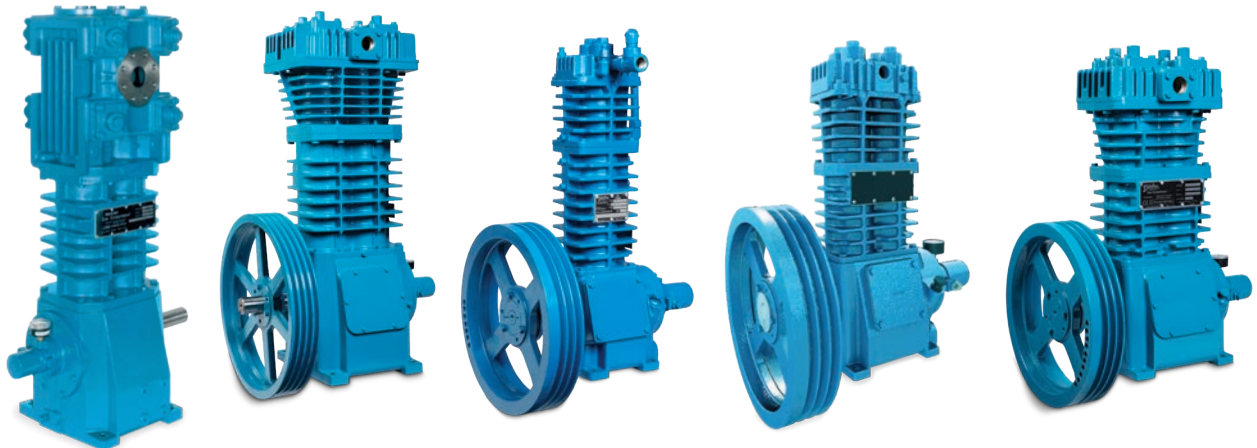


Blackmer® NG Compressors | Specifications

To select an NG Series Compressor that best fits your application requirements, use the charts shown. Actual capacities will depend upon line restrictions, along with the size and length of piping. Horsepower requirements for both liquid-transfer and vapor-recovery applications are based on moderate climatic conditions.

Compressor Model	NG080	NG160	NG170	NG360	NG370	NG600	NG610	NG640	NG940	NGH1013		NGH1023		
Number of Cylinders	1	2	2	2	2	2	2	2	2 Double Acting	2	2	1		
Bore x Stroke, in. (mm)	3.0 x 2.5 (76.2 x 64)	3.0 x 2.5 (76.2 x 64)	Stage 1 3.0 x 2.5 (76 x 64) Stage 2 1.75 x 2.5 (45 x 64)	4.0 x 3.0 (102 x 76)	Stage 1 4.63 x 3.0 (117 x 76) Stage 2 2.69 x 3.0 (68 x 76)	4.6 x 4.0 (117 x 102)	Stage 1 6.0 x 4.0 (152 x 102) Stage 2 3.25 x 4.0 (83 x 102)	3.25 x 4.0 (83 x 102)	4.6 x 4.0 (117 x 102)	3.25 x 3.0 (83 x 76)	6.0 x 3.0 (152 x 76)	Cyl 1 6.0 x 3.0 (152 x 76) Cyl 2 3.25 x 3.0 (83 x 76)		
MAWP, psig (bar)	350 (24)	350 (24)	615 (42)	350 (24)	615 (42)	350 (24)	415 (29)	515 (36)	350 (24)	Stage 1 1,500 (103)	Stage 1 500 (34)	Stage 1 500 (34) Stage 2 1,500 (103)		
Speed, rpm	350 - 825	350 - 825	350 - 825	350 - 825	350 - 825	350 - 825	350 - 825	350 - 825	350 - 825	500 - 1,800	500 - 1,800	500 - 1,800		
Piston Displacement, CFM (m³/hr)									@ 100 RPM			5 (9)	19 (32.6)	10 (16)
									@ 900 RPM			48 (82)	173 (294)	86 (147)
									@ 1,200 RPM			64 (109)	231 (392)	115 (196)
									@ 1,800 RPM			96 (163)	346 (588)	173 (294)
@ Min rpm	4 (6)	7 (12)	4 (6)	15 (26)	10 (17)	27 (46)	23 (39)	13.4 (23)	52.5 (89)	-	-	-		
@ Max rpm	8 (14.4)	17 (29)	8 (14.3)	36 (61)	24 (41)	64 (109)	54 (91)	32 (54)	125 (212)	-	-	-		
Piston rod dia. - in. (mm)	-	-	0.75 (19)	-	0.75 (19)	-	1.25 (32)	-	-	-	-	-		
Max. Discharge Temp.	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)	350°F (176°C)		
Max. BHP (kw)	7.5 (5)	10 (7.5)	10 (7.5)	15 (11)	15 (11)	40 (30)	40 (30)	40 (30)	50 (37)	100 (75)	100 (75)	100 (75)		
Maximum Rod Load - lbs (kg)												7,000 (3,175)	7,000 (3,175)	7,000 (3,175)
Weight, lb. (kg)	~215 (97)	~225 (102)	~245 (111)	~365 (166)	~405 (184)	~705 (320)	~775 (352)	~725 (329)	~905 (410)	1,300 (590)	1,500 (680)	1,400 (635)		
Inlet / Outlet Connections*	0.75" NPT	0.75" NPT	0.75" NPT	1.5" NPT or Weld Flanges	1.25" x 1" NPT	2.0", 1.50" NPT or Weld Flanges	2", 1.5" NPT or Weld	2.0", 1.5" NPT or Weld Flanges	2" 300# ANSI	Stage 1 1.5" 900# ANSI	Stage 1 3" 300# ANSI	Stage 1 3" 300# ANSI Stage 2 1.5" 900# ANSI		

Note: NGS has Maximum H2S 8%





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