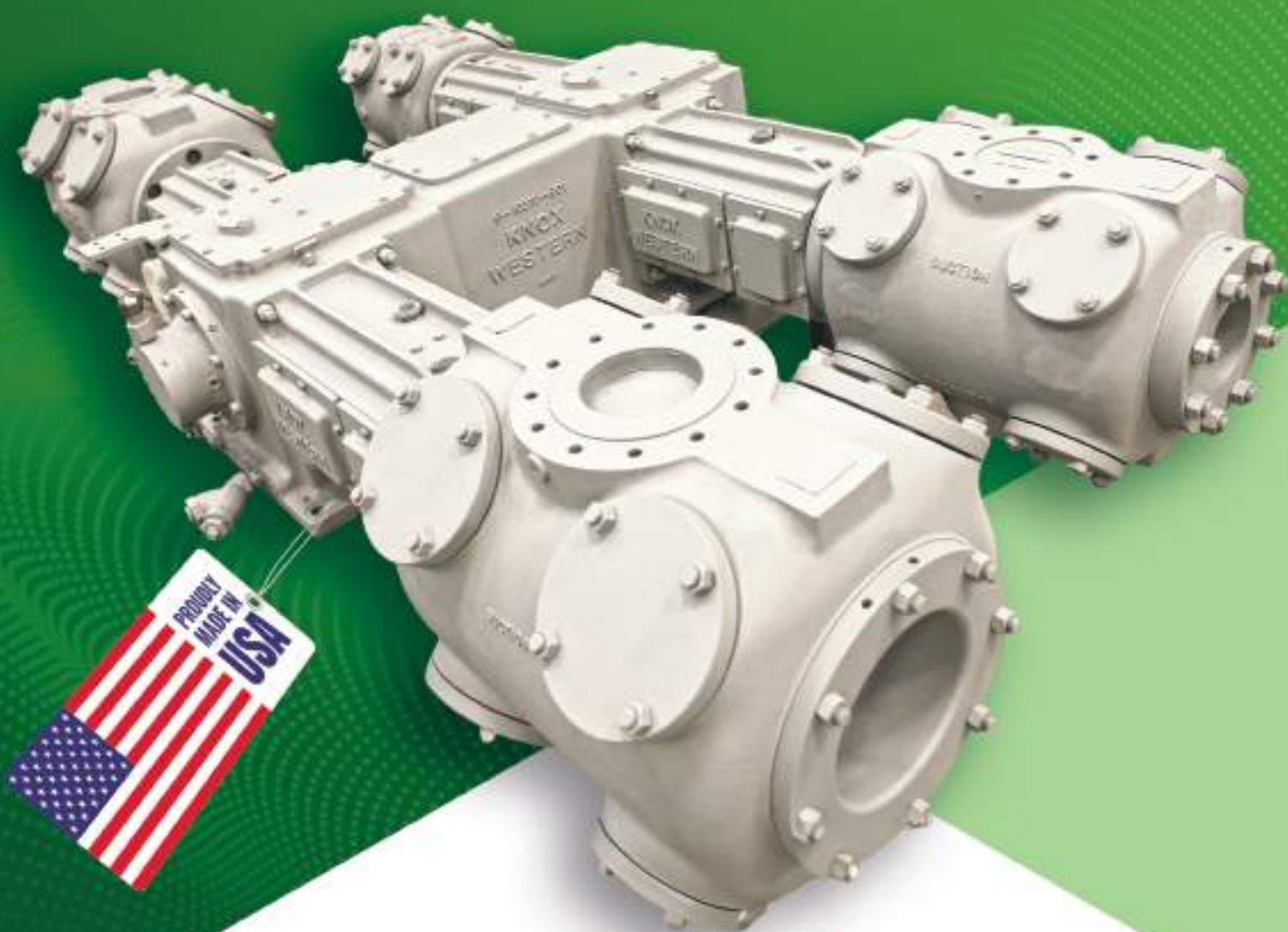


RECIPROCATING GAS COMPRESSORS



Knox
Western
COMPRESSOR TECHNOLOGY



knoxwestern.com
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HYDROGEN • BIOGAS • AMMONIA • SYNGAS • CNG

DIDWANIA GROUP

Compressors and Cryogenics

GLOBAL MANUFACTURING LOCATIONS



- Knox Western was established over **90** years ago
- **API 618** designs Reciprocating Compressors
- Over **3500+** installations with our TP & Eagle range

OUR KEY CUSTOMERS



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HYDROGEN COMPRESSORS



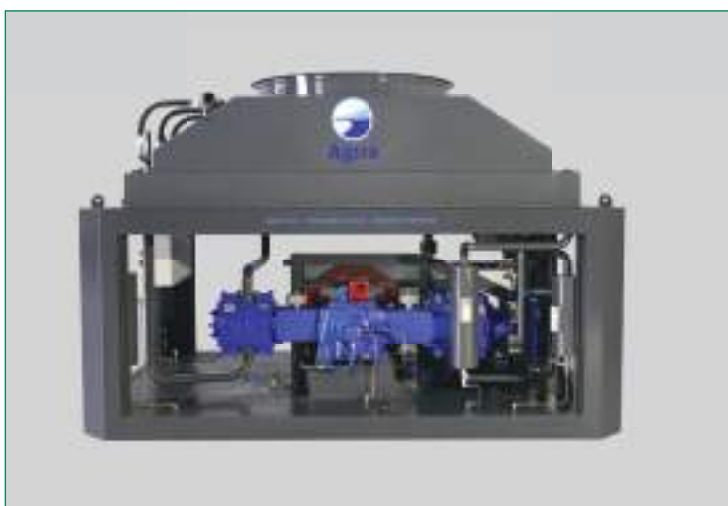
TP & EAGLE SERIES		SPECIAL FEATURES	
Single Stage to 6 Stage Compressors		Oil-Free Compressors	
20 HP to 1600 HP Power		Double Distance Piece Designs	
5000 psi / 350 bar Oil - Free Compressors		API 618 Compliance	
Low Inlet Pressures up to 3 psi / 0.2 bar		Non-Cooled Cylinders with Low Discharge Temperatures	
For Process and Cylinder Filling Applications			

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APPLICATIONS



NITROGEN • OXYGEN • HELIUM • PROCESS GASES



APPLICATIONS



BIOGAS • SYNGAS • AMMONIA • CNG



Reciprocating Gas Compressors

TP Series

Pressure Lubricated. 200 Two Throw Compressors

TP200 / TP220 / TP245



Using the same field proven design of the Knox Western model TP200 compressor, Knox Western has now developed two units available with 3.0" or 4.5" stroke crankshafts, for direct couple or V-belt drive

SPECIFICATIONS

	TP200	TP220	TP 245
Stroke	3.5"	3.0"	4.5"
RPM, Continuous	550 to 1,200	550 to 1,800	550 to 1,200
Piston Speed (fpm)	to 900	to 900	to 900
Horsepower	200	200	200
Crankshaft Centerline			
Overall Width, (maximum)			
Overall Length, (maximum)			
Approximate Weight (frame only) (lbs)	500	500	500
Oil Pump Capacity (gpm)	n/a		
Sump Capacity (gallons)			
Rod Loads, (tension)	9,000	9,000	9,000
Rod Loads, (compression)	9,000	9,000	9,000
Rod Loads, (combined)	18,000	18,000	18,000

COMPONENTS

	All models
Crankshaft	
Crankpin diameter	3.00"
Journal diameter	2.95"
Main bearing	5.12" x 1.22"
Connection Rod CL to CL	9.00"
Connection Rod bearing	3" x 2.4"
Connection Rod bolting	0.625"
Connection Rod bushing	1.75" x 1.9"
Piston rod	1.125"

TP COMPRESSOR FRAME SPECIFICATIONS

	TP60	TP65	TP75	TP90	TP100	TP120	TP145	TP200	TP220	TP245	TP400	TP445
Max Brake Horsepower	60	75	75	100	100	150	150	200	200	200	400	400
Stroke	4.5	4.5	3.0	3.0	3.5	3.0	4.5	3.5	3.0	4.5	3.5	4.5
Number of Throws	1	1	1	1	1	2	2	2	2	2	4	4
Maximum RPM	800	1,200	1,800	1,800	1,500	1,800	1,200	1,500	1,800	1,200	1,200	1,200
Minimum RPM	350	550	550	550	550	550	550	550	550	550	550	550
Max. Piston Speed (fpm)	600	900	900	900	874	900	900	874	900	900	700	900
Frame Lubrication	Splash	FFL	FFL	FFL	FFL	FFL	FFL	FFL	FFL	FFL	FFL	FFL
Oil Pressure (min/max) (psig)	Splash	35/60	35/60	35/60	35/60	35/60	35/60	35/60	35/60	35/60	35/60	35/60
Crankcase Oil Capacity (gal)	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	7.0	7.0
Max. Rod Load (lbs)	6,000	6,000	6,000	9,000	9,000	6,000	6,000	9,000	9,000	9,000	9,000	9,000
Max. Total Rod Loads (lbs)	12,000	12,000	12,000	18,000	18,000	12,000	12,000	18,000	18,000	18,000	18,000	18,000

Abbreviations: FFL: Force Feed Lubrications

TP COMPRESSOR SERIES MATERIALS

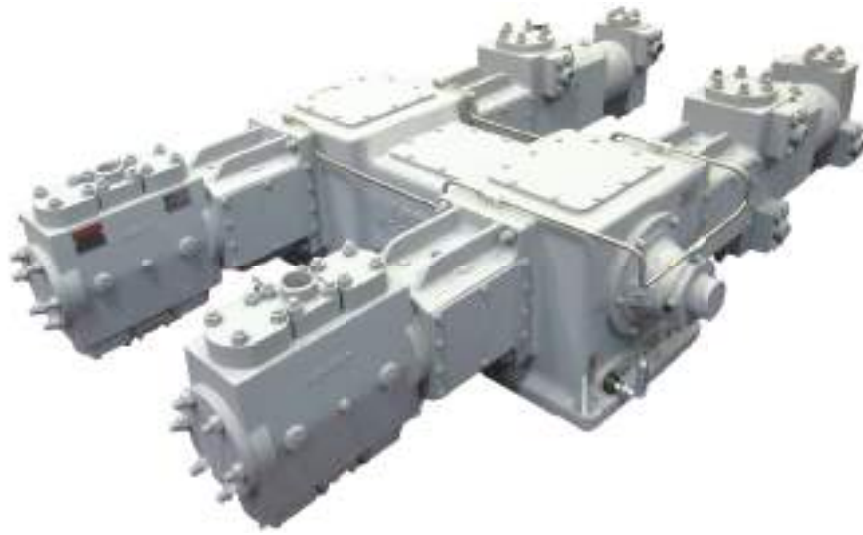
COMPONENT	MATERIAL
Crankcase	Grey Iron class 40
Bearing housing	Gray cast iron / class 30
Flywheel	Carbon steel
Crankshaft	Ductile iron / clas 80/55/06
Main bearings	Double row spherical roller
Connecting rods	Ductile iron / class 60/40/18
Connecting rod bearings	Tri-metal
Wrist pin	Alloy steel / AISI 8602
Wrist pin bearings	Bronze
Crossheads	Ductile iron / class 60/40/18
Crosshead guides	Grey cast iron / class 30
Piston rods (rolled threads)	Alloy steel / AISI 4140
Cylinders, low pressure	Grey cast iron /class 40
Cylinders, medium pressure	Ductile iron / class 60/40/18
Cylinders, high pressure	Forged steel
Oil wiper packing	Tinized cast iron
Pressure packing	Non-metallic, full floating
Pistons, low pressure	Aluminum S A E 355
Pistons, medium pressure	Grey cast iron / class 30
Pistons, high pressure	Integral with piston rod
Pistons compression rings	Reinforced TFE (see note)
Pistons rider rings	Reinforced TFE (see note)
Valve seats and guards	Carbon steel
Valve plates	Non-metal
Valve springs	Stainless steel or chrome vanadium
Valve covers	Carbon Steel

Note: specific TFE blend to be determined per application. API 618: Packages can be designed to API 618 third edition requirements including all piping, instrumentation and electrical systems. With some published exceptions, Knox Western compressors also meet the API 618 discipline.

Reciprocating Gas Compressors

Eagle Series

Eagle 2000 Series



Available in both two-throw and four-throw configurations with 3", 3-1/2", and 4-1/2" stroke, rated at 10,000 pounds Tension and Compression frame load capacity. This series uses the TP style as well as Eagle compressor cylinders mounted on a larger wider base, and accommodates up to 12" diameter bore cylinders.

SPECIFICATIONS	Two throw units models			Four throw units models		
	2230	2235	2245	2230	2235	2245
No. of crankthrows	2	2	2	4	4	4
Stroke (in.)	3	3.5	4.5	3	3.5	4.5
RPM, continuous	1,800	1,500	1,200	1,800	1,500	1,200
Piston speed, t./ Min.	900	875	900	900	875	900
Rated horsepower	200	200	200	400	400	400
Crankshaft Cl. height (in.)	10	10	10	10	10	10
Overall width, max. (in.)	90	90	90	140	140	140
Overall length, max. (in.)	29	29	29	55	55	55
Crankshaft dia. - Drive end	2.875	2.875	2.875	2.875	2.875	2.875
Approx. wt. (lbs.)	750	750	750	1500	1500	1500
Oil pump capacity (GPM)	20	20	20	20	20	20
Sump capacity (gallons)	2.5	2.5	2.5	7.0	7.0	7.0
Rod loads (tension) (lbs.)	10,000	10,000	10,000	10,000	10,000	10,000
Rod loads (compression) (lbs.)	10,000	10,000	10,000	10,000	10,000	10,000
Rod loads (combined) (lbs.)	20,000	20,000	20,000	20,000	20,000	20,000
Crankpin diameter (in.)	3.00	3.00	3.00	3.00	3.00	3.00
Main bearing (dia.) (in.)	5.12	5.12	5.12	5.12	5.12	5.12
Piston rod diameter (in.)	1.125	1.125	1.125	1.125	1.125	1.125

COMPONENTS

	2000
Crankshaft	
Crankpin diameter	3.00
Bearing Journal diameter	2.95
Main Bearing diameter	5.12
Connecting rod CL to CL	9.00
Connecting rod bearing width	1.85
Connecting rod bolting size	1/2-13
Connecting rod bushing width	1.91
Crosshead	
Crosshead Surface Area/Side (Sq. In.)	17.5
Floating Crosshead Pin Diameter	1.75
Piston Rod diameter	1.12

Reciprocating Gas Compressors

Eagle Series

Eagle 3000 Series



A heavy duty intermediate size compressor offered as a two-throw or four-throw unit, and with 3", 3 1/2", and 4-1/2" stroke. Frame load for this unit is 15,000 pounds Tension and Compression, making is a very economical compressor covering a wide selection of services.

SPECIFICATIONS	Two throw units models		Four throw units models			
	3230	3235	3245	3430	3435	3445
No. of crankthrows	2	2	2	4	4	4
Stroke (in.)	3	3.5	4.5	3	3.5	4.5
RPM, continuous	1800	1500	1200	1800	1500	1200
Piston speed, Ft./Min.	900	875	900	900	875	900
Rated horsepower	300	300	300	600	600	600
Crankshaft Cl. height (in.)	12	12	12	12	12	12
Overall width, max. (in.)	132	132	132	132	132	132
Overall length, max. (in.)	40	40	40	79	79	79
Crankshaft dia. - Drive end	3.875	3.875	3.875	3.875	3.875	3.875
Approx. wt. (lbs.)	2500	2500	2500	5200	5200	5200
Oil pump capacity (GPM)	20	20	20	20	20	20
Sump capacity (gallons)	8	8	8	18	18	18
Rod loads (tension) (lbs.)	15000	15000	15000	15000	15000	15000
Rod loads (compression) (lbs.)	15000	15000	15000	15000	15000	15000
Rod loads (combined) (lbs.)	30000	30000	30000	30000	30000	30000
Crankpin diameter (in.)	4.125	4.125	4.125	4.125	4.125	4.125
Main bearing (dia.) (in.)	7.00	7.00	7.00	7.00	7.00	7.00
Piston rod diameter (in.)	1.500	1.500	1.500	1.500	1.500	1.500

COMPONENTS

	3000
"Crankshaft	
Crankpin Diameter"	4.25
Bearing Journal Diameter	3.93
Main Bearing Diameter	7.00
Connecting Rod CL to CL	10.25
Connecting Rod Bearing Width	2.40
Connecting Rod Bolting Size	5/8-11
Connecting Rod Bushing Width	2.45
"Crosshead	
Crosshead Surface Area/Side (Sq. In.)"	38.0
Floating Crosshead Pin Diameter	3.0
Piston rod diameter	1.50

Reciprocating Gas Compressors

Eagle Series

Eagle 4000 Series



The mainstay of Knox Western large compressors for many years. Built in two-throw and four-throw models in both 3" and 4-1/2" strokes. Frame load for this compressor is 20,000 pounds Tension and Compression.

SPECIFICATIONS	Two throw units models		Four throw units models	
	4230	4245	4430	4445
No. of crankthrows	2	2	4	4
Stroke (in.)	3	4.5	3	4.5
RPM, continuous	1800	1200	1800	1200
Piston speed, t./ Min.	900	900	900	900
Rated horsepower	500	500	1000	1000
Crankshaft Cl. height (in.)	13	13	13	13
Overall width, max. (in.)	140	140	140	140
Overall length, max. (in.)	45	45	84	84
Crankshaft dia. - Drive end	5.000	5.000	5.000	5.000
Approx. wt. (lbs.)	3000	3000	6500	6500
Oil pump capacity (GPM)	35	35	55	55
Sump capacity (gallons)	12	12	30	30
Rod loads (tension) (lbs.)	20000	20000	20000	20000
Rod loads (compression) (lbs.)	20000	20000	20000	20000
Rod loads (combined) (lbs.)	40000	40000	40000	40000
Crankpin diameter (in.)	5.250	5.250	5.250	5.250
Journal diameter (in.)	5.11	5.11	5.11	5.11
Main bearing (dia.) (in.)	9.05	9.05	9.05	9.05
Piston rod diameter (in.)	1.875	1.875	1.875	1.875

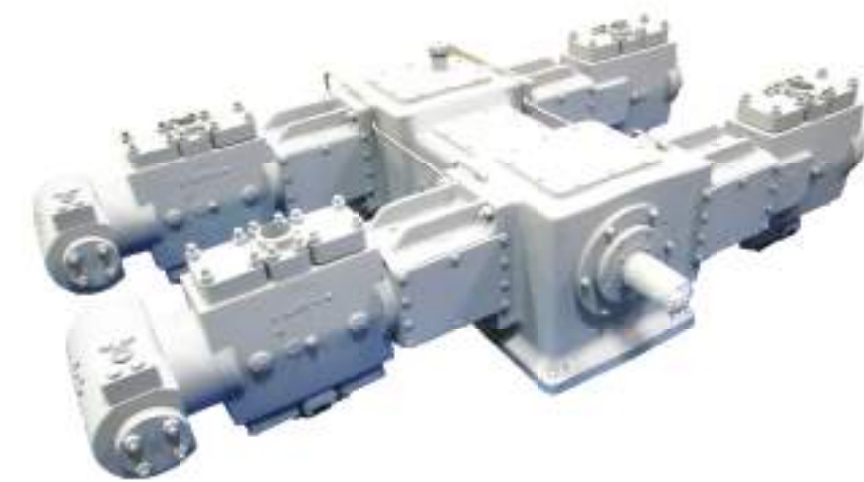
COMPONENTS

	4000
Crankshaft	
Crankpin diameter	5.25
Bearing Journal diameter	5.12
Main Bearing diameter	9.05
Connecting rod CL to CL	13.75
Connecting rod bearing width	3.00
Connecting rod bolting size	5/8-11
Connecting rod bushing width	3.25
Crosshead	
Crosshead Surface Area/Side (Sq. In.)	50.0
Floating Crosshead Pin Diameter	3.25
Piston rod diameter	1.88

Reciprocating Gas Compressors

Eagle Series

Eagle 6000 Series



This series is currently the largest of the Knox Western compressors built in both two-throw and four-throw models in 3" and 4-1/2" strokes with a frame load rating of 30,000 pounds Tension and Compression.

SPECIFICATIONS	Two throw units models		Four throw units models	
	6230	6245	6430	6445
No. of crankthrows	2	2	4	4
Stroke (in.)	3	4.5	3	4.5
RPM, continuous	1800	1200	1800	1200
Piston speed, t./ M in.	900	900	900	900
Rated horsepower	600	700	1350	1400
Crankshaft Cl. height (in.)	13	13	13	13
Overall width, max. (in.)	140	140	140	140
Overall length, max. (in.)	45	45	84	84
Crankshaft dia. - Drive end	5.250	5.250	5.250	5.250
Approx. wt. (lbs.)	3000	3000	6500	6500
Oil pump capacity (GPM)	35	35	55	55
Sump capacity (gallons)	12	12	30	30
Rod loads (tension) (lbs.)	30000	30000	30000	30000
Rod loads (compression) (lbs.)	30000	30000	30000	30000
Rod loads (combined) (lbs.)	60000	60000	60000	60000
Crankpin diameter (in.)	5.250	5.250	5.250	5.250
Journal diameter (in.)	5.50	5.50	5.50	5.50
Main bearing (dia.) (in.)	9.84	9.84	9.84	9.84
Piston rod diameter (in.)	2.500	2.500	2.500	2.500

COMPONENTS

	6000
Crankshaft	
Crankpin diameter	5.25
Bearing Journal diameter	5.51
Main Bearing diameter	9.84
Connecting rod CL to CL	13.75
Connecting rod bearing width	3.00
Connecting rod bolting size	3/4-10
Connecting rod bushing width	3.25
Crosshead	
Crosshead Surface Area/Side (Sq. In.)	50.0
Floating Crosshead Pin Diameter	3.75
Piston rod diameter	2.50

Reciprocating Gas Compressors

Eagle Series

Eagle 2000, 3000, 4000, 6000 Series

COMPRESSOR MATERIAL EAGLE SERIES*

COMPONENTS	MATERIAL
Crankcase	Grey iron
Crosshead guides	Grey Iron
Crankshaft	Forged Steel
Connecting rods	Ductile iron 60-40-18
Connecting rod bearings	Steel backed babbit
Main bearings	Double row spherical roller
Connecting rod bushings	Phosphor bronze
Crossheads	Ductile iron 60-40-18 babbitt faced
Crosshead pin	Alloy steel 8620
Crosshead pin bushings	660 bronze
Piston rod	Alloy steel 4140
Rod packing rings	Non metallic full floating
All stress bolts	High tensile alloy
Pistons	Steel grey iron, or alum
Standard piston rings	Non metallic
Standard rider rings	Non metallic
Valve cover O rings	Viton
Valve seats	Carbon steel
Valve guards	Carbon steel

* API 618: Packages can be designed to API 618 third edition requirements including all piping, instrumentation and electrical systems. With some published exceptions, Knox Western compressors also meet the API 618 discipline.

EAGLE CLASS DOUBLE ACTING CYLINDER SPECIFICATIONS **

Bore Diameter (in.)	2	3	4	4.5	5	5.75	6	7	8	9	10	11	12	12.5	13	15	16	17	18.5
Cylinder Material	STL	STL	STL	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI	DI

*Abbreviations: DI: Ductile Iron / STL: Steel

** For Special Cylinder Applications, contact your Knox Western Representative.



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DIAPHRAGM COMPRESSORS



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