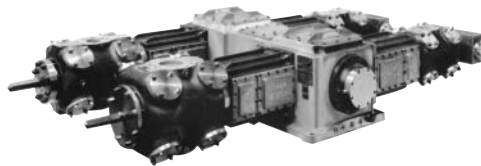


## Reciprocating gas compressors

### TP Series

### Pressure lubricated. 400 two throw commpressors

### TP400/TP445



Using the same field proven design of the Knox Western two throw compressors, Knox Western has now developed the four throw version, available with 3.5" or 4.5: stroke crankshafts, for direct couple or Vbelt drive.

#### SPECIFICATIONS

	TP400	TP445
Stroke	3.5"	4.5"
RPM, Continuous	550 to 1,200	550 to 1,200
Piston Speed (fpm)	to 900	to 900
Horsepower	400	400
Crankshaft Centerline		
Overall Width, (maximum)		
Overall Length, (maximum)		
Approximate Weight (frame only) (lbs)	1,200	1,200
Oil Pump Capacity (gpm)	n/a	
Sump Capacity (gallons)		
Rod Loads, (tension)	9,000	9,000
Rod Loads, (compression)	9,000	9,000
Rod Loads, (combined)	18,000	18,000

#### COMPONENTS

	All models
<b>Crankshaft</b>	
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"
<b>Piston rod</b>	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.

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## Cylinder specifications

### 3" STROKE TAMDEM CYLINDER COMBINATIONS

#### High Pressure Tandem (part 1)

Bore Diameter HExCE	1.125x4.00"	1.125x3.500	1.125x8.00	1.25x2.25"	1.250x3.500	1.250x3.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x1500	5000x1500	2250x500	5000x2250	5000x1500	5000x1500
MAWP (Bar)	344.7x103.4	344.7x103.4	155.1x34.5	344.7x155.1	344.7x103.4	344.7x103.4
PD @1800RPM (Cfm) HE	3.106	3.106	3.106	3.835	3.835	3.835
PD @1800RPM (M <sup>3</sup> h) HE	56.808	56.808	56.808	70.134	70.134	70.134
PD @1800RPM (Cfm) CE	39.270	30.066	157.080	12.425	30.066	22.089
PD @1800RPM (M <sup>3</sup> h) CE	718.168	549.847	2872.672	227.233	549.847	403.970
Head End Clr Min/Max %	23.00/23.00	18.35/18.35	23.00/23.00	30.00/30.00	20.00/19.95	18.35/18.35
Crank End Clr Min/Max %	20.70/165.48	27.15/221.37	15.75/49.76	48.00/48.00	27.15/221.37	21.45/297.27
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 3" 600#	1-1/2 / 1-1/2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

#### High Pressure Tandem (part 2)

Bore Diameter HExCE	1.375x2.50	1.375x3.00	1.375x3.500	1.375x4.00	1.375x5.00	1.5x2.5
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x2250	5000x1500	5000x1500	5000x750	5000x1500
MAWP (Bar)	344.7x155.1	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x103.4
PD @1800RPM (Cfm) HE	4.640	4.640	4.640	4.644	4.640	5.522
PD @1800RPM (M <sup>3</sup> h) HE	84.862	84.862	84.862	84.923	84.862	100.992
PD @1800RPM (Cfm) CE	15.340	22.089	30.066	39.270	61.359	15.340
PD @1800RPM (M <sup>3</sup> h) CE	280.534	403.970	549.847	718.168	1122.138	280.534
Head End Clr Min/Max %	27.00/27.00	18.35/18.35	18.35/18.35	18.35/18.35	18.35/18.35	15.00/15.00
Crank End Clr Min/Max %	48.00/48.00	21.45/297.27	27.15/221.37	20.70/165.48	21.45/111.33	33.00/461.01
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

#### High Pressure Tandem (part 3)

Bore Diameter HExCE	1.5x3.00	1.50x3.50	1.50x4.00	1.50x5.00	1.50x5.00	1.625x2.75
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x750	5000x2250
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x51.7	344.7x155.1
PD @1800RPM (Cfm) HE	5.522	5.522	5.522	5.522	5.522	6.481
PD @1800RPM (M <sup>3</sup> h) HE	100.992	100.992	100.992	100.992	100.992	118.526
PD @1800RPM (Cfm) CE	22.089	30.066	39.270	61.359	61.359	18.561
PD @1800RPM (M <sup>3</sup> h) CE	403.970	549.847	718.168	1122.138	1122.138	339.447
Head End Clr Min/Max %	15.00/15.00	15.00/15.00	15.00/15.00	27.00/27.00	27.00/27.00	18.35/18.35
Crank End Clr Min/Max %	21.45/297.27	27.15/221.37	20.70/165.48	21.45/111.33	21.45/111.33	33.00/33.00
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**High Pressure Tandem (part 4)**

Bore Diameter HExCE	1.75x3.00	1.75x3.50	1.75x4.00	1.75x5.00	1.75x5.75	2.75x7.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x650	2250x500
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x100.1	155.13x34.47
PD @1800RPM (Cfm) HE	7.517	7.517	7.517	7.517	7.517	18.561
PD @1800RPM (M <sup>3</sup> h) HE	137.462	137.462	137.462	137.462	137.462	339.447
PD @1800RPM (Cfm) CE	22.089	30.066	39.270	61.359	81.148	120.264
PD @1800RPM (M <sup>3</sup> h) CE	403.970	549.847	718.168	1122.138	1484.027	2199.390
Head End Clr Min/Max %	13.14/13.14	13.14/13.14	13.14/13.14	13.14/13.14	13.14/13.14	19.01/19.01
Crank End Clr Min/Max %	21.45/297.27	27.15/221.37	20.70/165.48	21.45/111.33	16.05/83.15	65.84/21.15
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2 / HE2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 3-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
 For unspecified cylinder specifications, contact Knox Western Sales Department.

**Mid / Low Pressure Tandem (part 1)**

Bore Diameter HExCE	2.50x4.00	3.00x4.00	2.25x5.00	2.5x5.00	3.00x5.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x1500	1500x1500	2250x750	2250x750	1500x750
MAWP (Bar)	103.4x103.4	103.4x103.4	155.1x51.7	155.1x51.7	103.4x51.7
PD @1800RPM (Cfm) HE	15.340	22.089	12.425	15.340	22.089
PD @1800RPM (M <sup>3</sup> h) HE	280.534	403.970	227.233	280.534	403.970
PD @1800RPM (Cfm) CE	39.270	32.725	51.133	51.133	51.133
PD @1800RPM (M <sup>3</sup> h) CE	718.168	598.473	935.115	935.115	935.115
Head End Clr Min/Max %	26.09/33.00	18.50/100.01	23.00/23.00	26.09/33.00	18.50/100.01
Crank End Clr Min/Max %	20.70/165.48	20.70/165.48	21.45/111.33	21.45/111.33	21.45/21.45
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2 1500#	2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 2)**

Bore Diameter HExCE	2.5x5.75	3.00x5.75	3.50x5.75	2.25x6.00	3.00x6.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	1500x650	1500x650	2250x650	1500x650
MAWP (Bar)	103.4x44.8	103.4x44.8	103.4x44.8	155.1x44.8	103.4x44.8
PD @1800RPM (Cfm) HE	15.340	22.089	30.066	15.340	22.089
PD @1800RPM (M <sup>3</sup> h) HE	280.534	403.970	549.847	280.534	403.970
PD @1800RPM (Cfm) CE	67.623	67.623	67.623	73.631	73.631
PD @1800RPM (M <sup>3</sup> h) CE	1236.689	1236.689	1236.689	1346.565	1346.565
Head End Clr Min/Max %	26.09/33.00	18.50/100.01	15.79/100.01	23.00/23.00	18.50/100.01
Crank End Clr Min/Max %	16.05/83.15	16.05/83.15	16.05/83.15	15.15/76.58	15.15/76.58
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2	2 / 2-1/2	2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 3)**

Bore Diameter HExCE	3.50x6.00	2.25X7.00	2.50X8.00
Cylinder Material	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	2250x500	2250x500
MAWP (Bar)	103.4x44.8	155.1x34.5	155.1x34.5
PD @1800RPM (Cfm) HE	30.066	12.425	15.340
PD @1800RPM (M <sup>3</sup> h) HE	549.847	227.233	280.534
PD @1800RPM (Cfm) CE	73.631	100.220	130.900
PD @1800RPM (M <sup>3</sup> h) CE	1346.565	1832.825	2393.894
Head End Clr Min/Max %	15.79/100.01	23.00/23.00	22.01/22.01
Crank End Clr Min/Max %	15.15/76.58	21.15/65.84	15.76/49.76
No. of valves per End	CE 2/HE 2	CE 4/HE2	CE 4/HE2
Flange Size (in-class) CE/HE	2 / 2-1/2	1-1/2 / 3"-600#	1-1/2 / 3"-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.

**D.A. (part 1)**

Bore Diameter	2.50	3.00	3.50	4.00	5.00
Cylinder Material	steel	DI	DI	DI	DI
MAWP (psig)	5000	1500	1500	1500	750
MAWP (Bar)	344.74	103.42	103.42	103.42	51.71
PD @1800RPM (M <sup>3</sup> h)	504.261	751.131	1042.887	1379.528	2187.467
Head End Clr Min/Max %	29.84/29.84	23.85/73.80	26.31/101.66	19.50/77.25	20.55/83.70
Crank End Clr Min/Max %	40.50/40.50	21.45/21.45	27.15/221.37	20.70/165.48	21.45/111.33
No. of valves per End	2	2	2	2	2
Flange Size (in-class)	1-1/2	2	2	2	2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**D.A. (part 2)**

Bore Diameter	5.75	6.00	7.00	8.00	10.00
Cylinder Material	DI	DI	DI	DI	DI
MAWP (psig)	650	650	500	500	250
MAWP (Bar)	44.82	44.82	34.47	34.47	17.24
PD @1800RPM (M <sup>3</sup> h)	2911.246	3174.948	4341.971	5688.536	8920.293
Head End Clr Min/Max %	15.90/58.88	15.15/54.33	20.70/80.00	17.25/80.39	10.67/53.33
Crank End Clr Min/Max %	16.05/83.15	15.15/76.58	21.15/65.84	15.75/49.76	10.50/24.90
No. of valves per End	2	2	4	4	4
Flange Size (in-class)	2-1/2	2-1/2	3-600#	3-600#	6-300#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.

### 3.5" STROKE TAMDEM CYLINDER COMBINATIONS

#### High Pressure Tandem (part 1)

Bore Diameter HExCE	1.125x4.00"	1.125x3.500	1.125x8.00	1.25x2.25"	1.250x3.500	1.250x3.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x1500	5000x1500	2250x500	5000x2250	5000x1500	5000x1500
MAWP (Bar)	344.7x103.4	344.7x103.4	155.1x34.5	344.7x155.1	344.7x103.4	344.7x103.4
PD @1800RPM (Cfm) HE	3.020	3.020	3.020	3.728	3.728	3.728
PD @1800RPM (M <sup>3</sup> h) HE	55.230	55.230	55.230	68.185	68.185	68.185
PD @1800RPM (Cfm) CE	38.179	29.231	152.716	12.080	29.231	21.476
PD @1800RPM (M <sup>3</sup> h) CE	698.219	534.574	2792.876	220.921	534.574	392.748
Head End Clr Min/Max %	19.71/19.71	15.72/15.72	19.71/19.71	25.71/25.71	17.10/17.10	15.72/15.72
Crank End Clr Min/Max %	17.74/141.84	23.27/189.75	13.50/42.65	41.14/41.14	23.27/189.75	18.39/254.80
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 3" 600#	1-1/2 / 1-1/2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

#### High Pressure Tandem (part 2)

Bore Diameter HExCE	1.375x2.50	1.375x3.00	1.375x3.500	1.375x4.00	1.375x5.00	1.5x2.5
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x2250	5000x1500	5000x1500	5000x750	5000x1500
MAWP (Bar)	344.7x155.1	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x103.4
PD @1800RPM (Cfm) HE	4.511	4.511	4.511	4.515	4.511	5.369
PD @1800RPM (M <sup>3</sup> h) HE	82.504	82.504	82.504	82.564	82.504	98.187
PD @1800RPM (Cfm) CE	14.914	21.476	29.231	38.179	59.655	14.914
PD @1800RPM (M <sup>3</sup> h) CE	272.742	392.748	534.574	698.219	1090.967	272.742
Head End Clr Min/Max %	23.14/23.14	15.72/15.72	15.72/15.72	15.72/15.72	15.72/15.72	12.86/12.86
Crank End Clr Min/Max %	41.14/41.14	18.39/254.80	23.27/189.75	17.74/141.84	18.39/95.43	28.29/395.15
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

#### High Pressure Tandem (part 3)

Bore Diameter HExCE	1.5x3.00	1.50x3.50	1.50x4.00	1.50x5.00	1.50x5.00	1.625x2.75
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x750	5000x2250
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x51.7	344.7x155.1
PD @1800RPM (Cfm) HE	5.369	5.369	5.369	5.369	5.369	6.301
PD @1800RPM (M <sup>3</sup> h) HE	98.187	98.187	98.187	98.187	98.187	115.233
PD @1800RPM (Cfm) CE	21.476	29.231	38.179	59.655	59.655	18.046
PD @1800RPM (M <sup>3</sup> h) CE	392.748	534.574	698.219	1090.967	1090.967	330.018
Head End Clr Min/Max %	12.86/12.86	12.86/12.86	12.86/12.86	23.14/23.14	52.71/52.71	15.72/15.72
Crank End Clr Min/Max %	18.39/254.80	23.27/189.75	17.74/141.84	18.39/95/43	183.39/18.39	28.29/28.29
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**High Pressure Tandem (part 4)**

Bore Diameter HExCE	1.75x3.00	1.75x3.50	1.75x4.00	1.75x5.00	1.75x5.75	2.75x7.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x650	2250x500
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x100.1	155.13x34.47
PD @1800RPM (Cfm) HE	7.308	7.308	7.308	7.308	7.308	21.655
PD @1800RPM (M <sup>3</sup> h) HE	133.643	133.643	133.643	133.643	133.643	396.021
PD @1800RPM (Cfm) CE	21.476	29.231	38.179	59.655	78.893	140.308
PD @1800RPM (M <sup>3</sup> h) CE	392.748	534.574	698.219	1090.967	1442.804	2565.955
Head End Clr Min/Max %	11.26/11.26	11.26/11.26	11.26/11.26	11.26/11.26	11.26/11.26	16.29 / 16.29
Crank End Clr Min/Max %	18.39/254.80	23.27/189.75	17.74/141.84	18.39/95.43	13.76/71.27	56.43 / 18.13
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2 / HE2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 3-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
 For unspecified cylinder specifications, contact Knox Western Sales Department.

**Mid / Low Pressure Tandem (part 1)**

Bore Diameter HExCE	2.50x4.00	3.00x4.00	2.25x5.00	2.5x5.00	3.00x5.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x1500	1500x1500	2250x750	2250x750	1500x750
MAWP (Bar)	103.4x103.4	103.4x103.4	155.1x51.7	155.1x51.7	103.4x51.7
PD @1800RPM (Cfm) HE	15.340	21.476	12.080	14.914	21.476
PD @1800RPM (M <sup>3</sup> h) HE	280.534	392.748	220.921	272.742	392.748
PD @1800RPM (Cfm) CE	39.270	38.179	59.655	59.655	59.655
PD @1800RPM (M <sup>3</sup> h) CE	718.168	698.219	1090.967	1090.967	1090.967
Head End Clr Min/Max %	26.09/33.00	15.85/85.72	19.71/19.71	22.36/28.29	15.85/85.72
Crank End Clr Min/Max %	20.70/165.48	17.74/141.84	18.39/95.43	18.39/95.43	18.39/18.39
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2 1500#	2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 2)**

Bore Diameter HExCE	2.5x5.75	3.00x5.75	3.50x5.75	2.25x6.00	3.00x6.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	1500x650	1500x650	2250x650	1500x650
MAWP (Bar)	103.4x44.8	103.4x44.8	103.4x44.8	155.1x44.8	103.4x44.8
PD @1800RPM (Cfm) HE	14.914	21.476	29.231	14.914	21.476
PD @1800RPM (M <sup>3</sup> h) HE	272.742	392.748	534.574	272.742	392.748
PD @1800RPM (Cfm) CE	78.893	78.893	78.893	85.903	85.903
PD @1800RPM (M <sup>3</sup> h) CE	1442.804	1442.804	1442.804	1570.993	1570.993
Head End Clr Min/Max %	22.36/28.29	15.85/85.72	13.54/85.72	19.71/19.71	18.50/100.01
Crank End Clr Min/Max %	13.76/71.27	13.76/71.27	13.76/71.27	12.99/65.64	15.85/85.72
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	12.99/65.64
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2	2 / 2-1/2	2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 3)**

Bore Diameter HExCE	3.50x6.00	2.25X7.00	2.50X8.00
Cylinder Material	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	2250x500	2250x500
MAWP (Bar)	103.4x44.8	155.1x34.5	155.1x34.5
PD @1800RPM (Cfm) HE	29.231	12.080	14.914
PD @1800RPM (M <sup>3</sup> h) HE	534.574	220.921	272.742
PD @1800RPM (Cfm) CE	85.903	116.923	152.716
PD @1800RPM (M <sup>3</sup> h) CE	1570.993	2138.296	2792.876
Head End Clr Min/Max %	13.54/85.72	19.71/19.71	18.86/18.86
Crank End Clr Min/Max %	12.99/65.64	18.13/56.43	13.50/42.65
No. of valves per End	CE 2/HE 2	CE 4/HE2	CE 4/HE2
Flange Size (in-class) CE/HE	2 / 2-1/2	1-1/2 / 3"-600#	1-1/2 / 3"-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.

**D.A. (part 1)**

Bore Diameter	2.50	3.00	3.50	4.00	5.00
Cylinder Material	steel	DI	DI	DI	DI
MAWP (psig)	5000	1500	1500	1500	750
MAWP (Bar)	344.74	103.42	103.42	103.42	51.71
PD @1800RPM (M <sup>3</sup> h)	490.253	730.266	1013.918	1341.208	2126.704
Head End Clr Min/Max %	25.57/25.57	20.44/63.26	22.55/87.13	16.71/66.21	17.61/71.74
Crank End Clr Min/Max %	34.71/34.71	18.39/18.39	23.27/189.75	17.74/141.84	18.39/95.43
No. of valves per End	2	2	2	2	2
Flange Size (in-class)	1-1/2	2	2	2	2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**D.A. (part 2)**

Bore Diameter	5.75	6.00	7.00	8.00	10.00
Cylinder Material	DI	DI	DI	DI	DI
MAWP (psig)	650	650	500	500	250
MAWP (Bar)	44.82	44.82	34.47	34.47	17.24
PD @1800RPM (M <sup>3</sup> h)	2830.378	3086.755	4221.361	5530.522	8672.507
Head End Clr Min/Max %	13.63/50.46	12.99/46.57	17.74/68.57	14.79/68.90	10.67/53.33
Crank End Clr Min/Max %	13.76/71.27	12.99/65.64	18.13/56.43	13.50/42.65	10.5/24.90
No. of valves per End	2	2	4	4	4
Flange Size (in-class)	2-1/2	2-1/2	3-600#	3-600#	6-300#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.



#### 4.5" STROKE TAMDEM CYLINDER COMBINATIONS

##### High Pressure Tandem (part 1)

Bore Diameter HExCE	1.125x4.00"	1.125x3.500	1.125x8.00	1.25x2.25"	1.250x3.500	1.250x3.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x1500	5000x1500	2250x500	5000x2250	5000x1500	5000x1500
MAWP (Bar)	344.7x103.4	344.7x103.4	155.1x34.5	344.7x155.1	344.7x103.4	344.7x103.4
PD @1800RPM (Cfm) HE	3.106	3.106	3.106	3.835	3.835	3.835
PD @1800RPM (M <sup>3</sup> h) HE	56.808	56.808	56.808	70.134	70.134	70.134
PD @1800RPM (Cfm) CE	39.270	30.066	157.080	12.425	30.066	22.089
PD @1800RPM (M <sup>3</sup> h) CE	718.168	549.847	2872.672	227.233	549.847	403.970
Head End Clr Min/Max %	15.33/15.33	12.23/12.23	15.33/15.33	20.00/20.00	13.33/13.30	12.23/12.23
Crank End Clr Min/Max %	13.80/110.32	18.10/147.58	10.50/33.17	32.00/32.00	18.10/147.58	14.30/198.18
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 3" 600#	1-1/2 / 1-1/2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

##### High Pressure Tandem (part 2)

Bore Diameter HExCE	1.375x2.50	1.375x3.00	1.375x3.500	1.375x4.00	1.375x5.00	1.5x2.5
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x2250	5000x1500	5000x1500	5000x750	5000x1500
MAWP (Bar)	344.7x155.1	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x103.4
PD @1800RPM (Cfm) HE	4.640	4.640	4.640	4.644	4.640	5.522
PD @1800RPM (M <sup>3</sup> h) HE	84.862	84.862	84.862	84.923	84.862	100.992
PD @1800RPM (Cfm) CE	15.340	22.089	30.066	39.270	61.359	15.340
PD @1800RPM (M <sup>3</sup> h) CE	280.534	403.970	549.847	718.168	1122.138	280.534
Head End Clr Min/Max %	18.00/18.00	12.23/12.23	12.23/12.23	12.23/12.23	12.23/12.23	10.00/22.00
Crank End Clr Min/Max %	32.00/32.00	14.30/198.18	18.10/147.58	13.80/110.32	14.30/74.22	22.00/307.34
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

##### High Pressure Tandem (part 3)

Bore Diameter HExCE	1.5x3.00	1.50x3.50	1.50x4.00	1.50x5.00	1.50x5.00	1.625x2.75
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x750	5000x2250
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x51.7	344.7x155.1
PD @1800RPM (Cfm) HE	5.522	5.522	5.522	5.522	5.522	6.481
PD @1800RPM (M <sup>3</sup> h) HE	100.992	100.992	100.992	100.992	100.992	118.526
PD @1800RPM (Cfm) CE	22.089	30.066	39.270	61.359	61.359	18.561
PD @1800RPM (M <sup>3</sup> h) CE	403.970	549.847	718.168	1122.138	1122.138	339.447
Head End Clr Min/Max %	10.00/10.00	10.00/10.00	10.00/10.00	18.00/18.00	41.00/41.00	12.23/12.23
Crank End Clr Min/Max %	14.30/198.18	18.10/147.58	13.80/110.32	14.30/74.22	14.30/14.30	22.00/22.00
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**High Pressure Tandem (part 4)**

Bore Diameter HExCE	1.75x3.00	1.75x3.50	1.75x4.00	1.75x5.00	1.75x5.75	2.75x7.00
Cylinder Material	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI	steelxDI
MAWP (psig)	5000x2250	5000x1500	5000x1500	5000x750	5000x650	2250x500
MAWP (Bar)	344.7x155.1	344.7x103.4	344.7x103.4	344.7x51.7	344.7x100.1	155.13x34.47
PD @1800RPM (Cfm) HE	7.517	7.517	7.517	7.517	7.517	27.842
PD @1800RPM (M <sup>3</sup> h) HE	137.462	137.462	137.462	137.462	137.462	509.170
PD @1800RPM (Cfm) CE	22.089	30.066	39.270	61.359	81.148	180.396
PD @1800RPM (M <sup>3</sup> h) CE	403.970	549.847	718.168	1122.138	1484.027	3299.085
Head End Clr Min/Max %	8.76/8.76	8.76/8.76	8.76/8.76	8.76/8.75	8.76/8.76	12.67 /12.67
Crank End Clr Min/Max %	14.30/198.18	18.10/147.58	13.80/110.32	14.30/74.22	10.70/55.43	43.89 / 14.10
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2 / HE2
Flange Size (in-class) CE/HE	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	1-1/2 / 3-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECP: Crank End Clearance Pocket.  
 For unspecified cylinder specifications, contact Knox Western Sales Department.

**Mid / Low Pressure Tandem (part 1)**

Bore Diameter HExCE	2.50x4.00	3.00x4.00	2.25x5.00	2.5x5.00	3.00x5.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x1500	1500x1500	2250x750	2250x750	1500x750
MAWP (Bar)	103.4x103.4	103.4x103.4	155.1x51.7	155.1x51.7	103.4x51.7
PD @1800RPM (Cfm) HE	15.340	22.089	12.425	15.340	22.089
PD @1800RPM (M <sup>3</sup> h) HE	280.534	403.970	227.233	280.534	403.970
PD @1800RPM (Cfm) CE	39.270	39.270	61.359	61.359	61.359
PD @1800RPM (M <sup>3</sup> h) CE	718.168	718.168	1122.138	1122.138	1122.138
Head End Clr Min/Max %	17.39/22.00	12.33/66.67	15.33/15.33	17.39/22.00	12.33/66.67
Crank End Clr Min/Max %	13.80/110.32	13.80/110.32	14.30/74.22	14.30/74.22	14.30/14.30
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2 1500#	2 / 2	1-1/2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 2)**

Bore Diameter HExCE	2.5x5.75	3.00x5.75	3.50x5.75	2.25x6.00	3.00x6.00
Cylinder Material	DI x DI	DI x DI	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	1500x650	1500x650	2250x650	1500x650
MAWP (Bar)	103.4x44.8	103.4x44.8	103.4x44.8	155.1x44.8	103.4x44.8
PD @1800RPM (Cfm) HE	15.340	22.089	30.066	15.340	22.089
PD @1800RPM (M <sup>3</sup> h) HE	280.534	403.970	549.847	280.534	403.970
PD @1800RPM (Cfm) CE	81.148	81.148	81.148	88.357	88.357
PD @1800RPM (M <sup>3</sup> h) CE	1484.027	1484.027	1484.027	1615.878	1615.878
Head End Clr Min/Max %	17.39/22.00	12.33/66.67	10.53/66.67	15.33/15.33	12.33/66.67
Crank End Clr Min/Max %	10.70/55.43	10.70/55.43	10.70/55.43	10.10/51.05	10.10/51.05
No. of valves per End	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2	CE 2/HE 2
Flange Size (in-class) CE/HE	1-1/2 / 2-1/2	2 / 2-1/2	2 / 2-1/2	1-1/2 / 2-1/2	2 / 2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**Mid / Low Pressure Tandem (part 3)**

Bore Diameter HExCE	3.50x6.00	2.25X7.00	2.50X8.00
Cylinder Material	DI x DI	DI x DI	DI x DI
MAWP (psig)	1500x650	2250x500	2250x500
MAWP (Bar)	103.4x44.8	155.1x34.5	155.1x34.5
PD @1800RPM (Cfm) HE	30.066	12.425	15.340
PD @1800RPM (M <sup>3</sup> h) HE	549.847	227.233	280.534
PD @1800RPM (Cfm) CE	88.357	120.264	157.080
PD @1800RPM (M <sup>3</sup> h) CE	1615.878	2199.390	2872.672
Head End Clr Min/Max %	10.53/66.67	15.33/15.33	14.67/14.67
Crank End Clr Min/Max %	10.10/51.05	14.10/43.89	10.50/33.17
No. of valves per End	CE 2/HE 2	CE 4/HE2	CE 4/HE2
Flange Size (in-class) CE/HE	2 / 2-1/2	1-1/2 / 3"-600#	1-1/2 / 3"-600#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECPC: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.

**D.A. (part 1)**

Bore Diameter	2.50	3.00	3.50	4.00	5.00
Cylinder Material	steel	DI	DI	DI	DI
MAWP (psig)	5000	1500	1500	1500	750
MAWP (Bar)	344.74	103.42	103.42	103.42	51.71
PD @1800RPM (M <sup>3</sup> h)	504.261	751.131	1042.887	1379.528	2187.467
Head End Clr Min/Max %	19.89/19.89	15.90/49.20	17.54/67.77	13.00/51.50	13.70/55.80
Crank End Clr Min/Max %	27.00/27.00	14.30/14.30	18.10/147.58	13.8/110.32	14.30/74.30
No. of valves per End	2	2	2	2	2
Flange Size (in-class)	1-1/2	2	2	2	2-1/2
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

**D.A. (part 2)**

Bore Diameter	5.75	6.00	7.00	8.00	10.00
Cylinder Material	DI	DI	DI	DI	DI
MAWP (psig)	650	650	500	500	250
MAWP (Bar)	44.82	44.82	34.47	34.47	17.24
PD @1800RPM (M <sup>3</sup> h)	2911.246	3174.948	4341.971	5688.536	8920.293
Head End Clr Min/Max %	10.60/39.25	10.10/36.22	13.80/53.33	11.50/53.59	10.67/53.33
Crank End Clr Min/Max %	10.70/55.43	10.10/51.05	14.10/43.89	10.50/33.17	10.5/24.90
No. of valves per End	2	2	4	4	4
Flange Size (in-class)	2-1/2	2-1/2	3-600#	3-600#	6-300#
Piston rod Diameter (in)	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8

Abbreviations: DI: Ductile Iron / CI: Cast Iron / MAWP: Maximum allowable working pressure / PD: Piston displacement / CLR: Cylinder Clearance / HE: Head End / CE: Crank End / HECPC: Head End Clearance Pocket / CECPC: Crank End Clearance Pocket.  
For unspecified cylinder specifications, contact Knox Western Sales Department.