LSC Series

Open Drive Large Screw Compressors

Fifteen Displacements

50-2,500 TR (176-8,785 kW)
278-3,336 CFM
100-2,200 HP

- Designed for Refrigeration, Air-Conditioning, and Process Applications
- Field Serviceable Bearing Design*
- Applicable R717, R22; R134a, R404A, R407C, R507 and Other HFCs
- Helium, Propane, Air, Natural Gas and Other Alternative Gas Applications
- Optional Vapor Injection to Enhance Capacity and EER/COP
- Bellows-Type Shaft Seal*
- Models from -50°F (-46°C) to 100°F (38°C) SST Range
- Models from 65°F (18°C) to 212°F (100°C) SDT Range

* 204mm, 255mm and 321mm only.

HARTFORD® COMPRESSORS

Pioneers in Screw Compressor Technology

Company Information

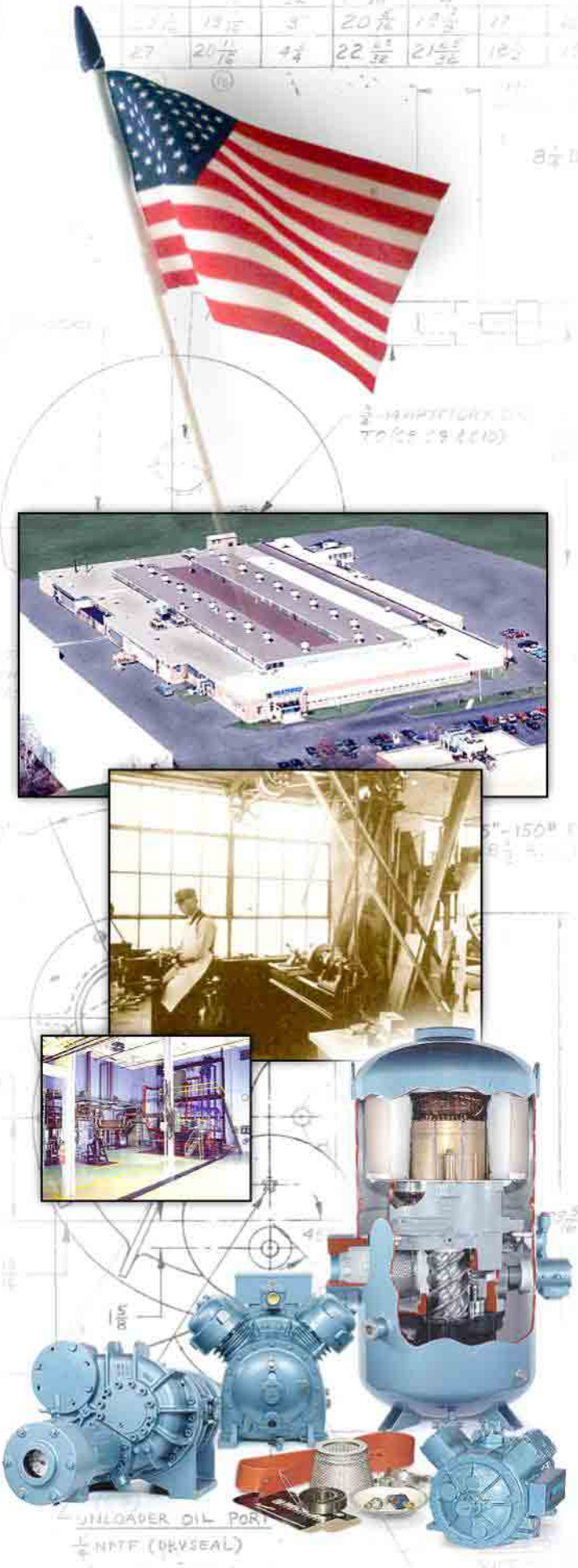
Hartford Compressors Inc. designs, manufactures, and supports an extensive range of rotary screw compressors and reciprocating compressors for use in air conditioning and refrigeration systems. With decades of experience in developing innovative products for commercial, industrial, and marine applications, Hartford Compressors sets the standard for precision engineering, optimum performance, and customer satisfaction.

Our latest generation of medium and large screw compressors have been designed for long life, low noise and vibration levels, improved reliability, and lower operating costs. They are compatible with environmentally friendly refrigerants and gases with zero ozone depletion potential (ODP) and zero global warming potential (GWP).

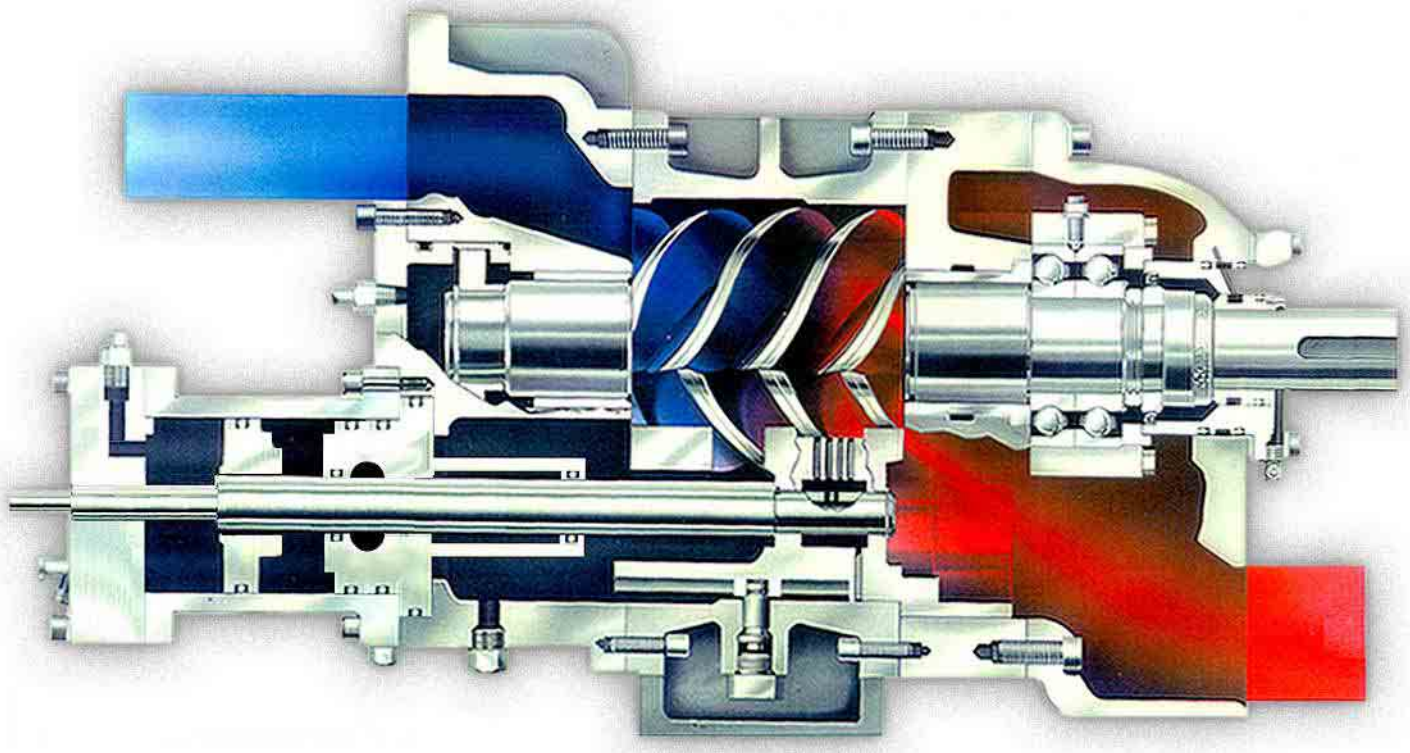
A continuing program of in-house laboratory testing has resulted in screw compressors with the best combination of economy and efficiency available today.

With fewer moving parts and smooth rotary motion, screw compressors provide reliable, non-pulsating positive displacement compression. Paired male and female helically profiled rotors are machined with extreme accuracy of pitch and thread form, to obtain tight uniform clearances. This ensures proper sealing and dynamic balance necessary for quiet and efficient performance. Positive displacement compression results in stable operation at partial or full load. A built-in separator (MSC only) creates a full self-contained unit.

All of our products are engineering with the highest attention to detail. Whether choosing a standard model or one specially engineered, we provide needed features and benefits. With this philosophy, Hartford Compressors Inc. proudly presents the LSC which illustrates all aspects of engineering excellence.



Standard Features & Benefits



FEATURE	BENEFIT
Pure Rotary Motion	Ensures uniform, continuous gas flow
Slide-Valve Control	Capacity modulation in infinite stages to as low as 10%
Vapor Injection	A capacity increasing and energy saving option
Low Vibration	Elimination of vibration sources ensures quiet operation
Steel Rotors	Precision matched for rugged, uniform performance
Liquid Injection	Simplified oil cooling
Wide Application	-50°F (-46°C) to 100°F (38°C) SST range
Rugged Construction	Outstanding in long life and trouble free operation
Positive Displacement	Gives stable operation over a broad range of load conditions
Field Serviceable Bearings	Allows servicing on location (not available on 163mm)
Bellow-Type Shaft Seal	Uses an expanding seal (not available on 163mm)

U. S. Standard Units

Model	CFM at 3550 RPM, 60 Hz.	Max. Discharge Pressure	Max. Pressure Differential	Built-In Volume Ratio (Vi)			
				High H_20 Cooled	High	Low	Ultra Low
1610	278	350 psig	275 psid	---	2.4	4.15	5.4
1610F**	417	350 psig	275 psid	---	2.4	---	---
1615	398	350 psig	275 psid	---	2.4	4.15	5.4
1615F**	593	350 psig	275 psid	---	2.4	---	---
2010	544	350 psig	275 psid	2.0	2.4	4.15	5.4
2015	776	350 psig	275 psid	2.0	2.4	4.15	5.4
2018	932	350 psig	210 psid	2.0	2.4	4.15	5.4
2510	1061	325 psig	250 psid	2.0	2.4	3.6	5.4
2512	1264	325 psig	250 psid	2.0	2.4	3.6	5.4
2515	1516	325 psig	250 psid	2.0	2.4	3.6	5.4
2516	1668	325 psig	250 psid	2.0	2.4	3.6	5.4
2519	1911	325 psig	210 psid	2.0	2.4	3.6	5.4
2522	2263	325 psig	210 psid	2.0	2.4	3.6	5.4
3211	2225	350 psig	300 psid	---	2.0	3.6	5.4
3216	3334	350 psig	300 psid	---	2.0	3.6	5.4

** Female drive rotor.

Water Cooled, 60 Hz, 3550 RPM, 35°F SST, 105°F SDT, 10°F Superheat, 10°F Liquid Subcooling

Model	R22			R134a			R717		
	Capacity TR	Power BHP*	EER	Capacity TR	Power BHP*	EER	Capacity TR	Power BHP*	EER
1610	113.7	120.1	15.2	75.1	82.1	14.7	118.2	125.6	15.2
1610F**	164.6	201.9	13.1	112.9	143.8	12.6	---	---	---
1615	165.2	173.2	15.4	109.1	118.3	14.8	171.7	181.1	15.3
1615F**	235.0	288.3	13.1	161.2	205.4	12.6	---	---	---
2010	228.9	240.3	15.3	151.1	164.2	14.8	237.9	251.3	15.2
2015	332.6	346.6	15.4	219.6	236.8	14.9	345.5	362.4	15.3
2018	406.8	420.6	15.6	268.5	287.4	15.0	422.5	439.8	15.5
2510	456.6	477.4	15.4	301.3	326.3	14.9	474.0	499.3	15.3
2512	546.8	570.3	15.4	360.8	389.8	14.9	567.7	596.5	15.3
2515	663.3	688.5	15.5	437.7	470.6	15.0	688.6	720.2	15.4
2516	736.1	761.3	15.6	485.7	520.3	15.0	764.1	796.2	15.4
2519	859.1	882.0	15.7	566.8	602.8	15.1	891.7	922.5	15.6
2522	1017.3	1044.5	15.7	671.2	712.9	15.1	1056.0	1092.4	15.6
3211	971.3	1032.0	15.1	640.8	705.3	14.6	1008.2	1079.4	15.0
3216	1454.0	1548.0	15.1	961.2	1058.0	14.6	1512.3	1619.1	15.0

* Measured at the shaft.
** Female drive rotor.

NOTE: Performance data on this page is adequate for preliminary selections.
For detailed information on specific applications contact Hartford Compressors.

Metric Units

Model	M3/Hr at 2950 RPM, 50 Hz.	Max. Outlet Pressure	Max. Pressure Differential	Built-In Volume Ratio (Vi)			
				High H20 Cooled	High	Low	Ultra Low
1610	231	241 kPa	190 kPa	---	2.4	4.15	5.4
1610F**	347	241 kPa	190 kPa	---	2.4	---	---
1615	332	241 kPa	190 kPa	---	2.4	4.15	5.4
1615F**	494	241 kPa	190 kPa	---	2.4	---	---
2010	453	241 kPa	190 kPa	2.0	2.4	4.15	5.4
2015	646	241 kPa	190 kPa	2.0	2.4	4.15	5.4
2018	776	241 kPa	145 kPa	2.0	2.4	4.15	5.4
2510	884	224 kPa	172 kPa	2.0	2.4	3.6	5.4
2512	1053	224 kPa	172 kPa	2.0	2.4	3.6	5.4
2515	1263	224 kPa	172 kPa	2.0	2.4	3.6	5.4
2516	1389	224 kPa	172 kPa	2.0	2.4	3.6	5.4
2519	1592	224 kPa	145 kPa	2.0	2.4	3.6	5.4
2522	1885	224 kPa	145 kPa	2.0	2.4	3.6	5.4
3211	1853	241 kPa	207 kPa	---	2.0	3.6	5.4
3216	2777	241 kPa	207 kPa	---	2.0	3.6	5.4

** Female drive rotor.

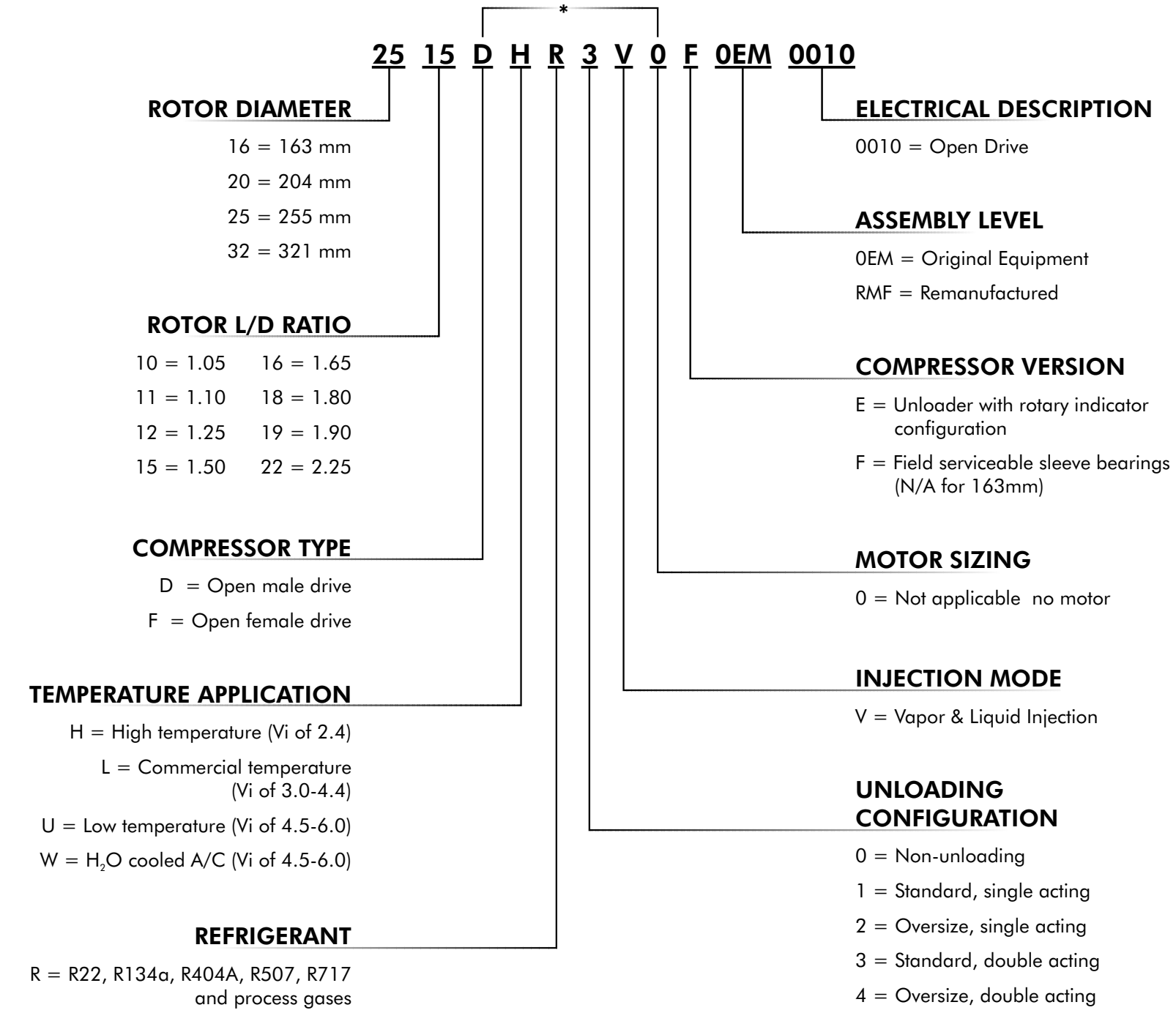
Water Cooled, 60 Hz, 3550 RPM, 35°F SST, 105°F SDT, 10°F Superheat, 10°F Liquid Subcooling

Model	R22			R134a			R717		
	Capacity KW	Power* KW	COP	Capacity KW	Power* KW	COP	Capacity KW	Power* KW	COP
1610	373.6	71.5	5.2	247.8	48.9	5.1	381.3	74.8	5.1
1610F**	527.7	125.4	4.2	374.5	88.6	4.2	---	---	---
1615	542.7	103.1	5.3	359.9	70.5	5.1	553.8	107.8	5.1
1615F**	753.5	179.1	4.2	534.7	126.5	4.2	---	---	---
2010	743.6	145.2	5.1	494.2	99.0	5.0	761.1	151.2	5.0
2015	1080.4	209.4	5.2	717.9	142.7	5.0	1105.7	218.1	5.1
2018	1321.4	254.1	5.2	878.0	173.2	5.1	1352.2	264.7	5.1
2510	1488.1	288.9	5.2	988.5	196.9	5.0	1522.3	300.9	5.1
2512	1782.3	345.1	5.2	1184.0	235.3	5.0	1823.2	359.5	5.1
2515	2162.1	416.7	5.2	1436.2	284.0	5.1	2211.6	434.0	5.1
2516	2399.3	460.7	5.2	1593.7	314.0	5.1	2454.0	479.8	5.1
2519	2800.3	533.7	5.2	1859.9	363.8	5.1	2863.9	555.9	5.2
2522	3316.1	632.0	5.2	2202.5	430.8	5.1	3391.4	658.3	5.2
3211	3166.0	624.5	5.1	2102.8	425.7	4.9	3237.9	650.4	5.0
3216	4749.0	936.75	5.1	3154.2	638.6	4.9	4856.9	975.6	5.0

* Measured at the shaft.
** Female drive rotor.

NOTE: Performance data on this page is adequate for preliminary selections.
For detailed information on specific applications contact Hartford Compressors.

Compressor Nomenclature



*** For special-engineered compressors, the indicated portion of the model number is replaced by the "SE Number"**
Example: 1610SE1652E0EM0010

General Compressor Information

Compressor Specifications

Model	Version	Rotor Diameter (mm)	Rotor L/D	Drive Rotor Rotation*	Min. Drive Speed	Max. Drive Speed	Estimated Weight	
					RPM	RPM	Lbs.	Kg.
1610	E	163	1.05	CCW	1500	4000	905	411
1610F**	E	163	1.05	CW	1000	4000	905	411
1615	E	163	1.50	CCW	1500	4000	1,025	465
1615F**	E	163	1.50	CW	1000	4000	1,025	465
2010	F	204	1.05	CCW	1500	4000	1,275	578
2015	F	204	1.50	CCW	1500	4000	1,435	651
2018	F	204	1.80	CCW	1500	4000	1,600	726
2510	F	255	1.05	CCW	1750	3600	2,100	953
2512	F	255	1.25	CCW	1750	3600	2,250	1021
2515	F	255	1.50	CCW	1750	3600	2,406	1091
2516	F	255	1.65	CCW	1750	3600	2,600	1179
2519	F	255	1.90	CCW	1750	3600	2,750	1247
2522	F	255	2.25	CCW	1750	3600	3,000	1361
3211	F	321	1.10	CCW	1750	3600	4,875	2211
3216	F	321	1.65	CCW	1750	3600	6,200	2812

* Rotation direction looking at compressor from shaft end.
** Female drive rotor.

Dimensions / Connection Sizes

Model	Length		Width		Height		Suction Inlet Port Connection		Discharge Port Connection	
	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
1610	45	1143	19	483	23	584	4	102	3	76
1610F**	48	1220	19	480	23	585	4	101	3	76
1615	48	1220	19	480	23	585	4	101	3	76
1615F**	51	1300	19	480	23	585	4	101	3	76
2010	52	1320	23	585	24	610	5	127	4	101
2015	55	1400	23	585	24	610	5	127	4	101
2018	59	1500	23	585	24	610	5	127	4	101
2510	58	1470	28	710	30	760	8	203	6	152
2512	60	1524	28	710	30	760	8	203	6	152
2515	64	1625	28	710	30	760	8	203	6	152
2516	66	1676	28	710	30	760	8	203	6	152
2519	68	1722	28	710	30	760	8	203	6	152
2522	72	1829	28	710	30	760	8	203	6	152
3211	70	1779	35	889	31	787	12	305	8	203
3216	81	2057	35	889	31	787	12	305	8	203

** Female drive rotor.

Rotary Motion Operation

For clarity reasons, the compressor operation description will be limited to one lobe on the male rotor (right) and one interlobe space of the female rotor (left). In actual operation, as the rotors turn all of the male lobes and female interlobe spaces interact with a uniform gas flow.

Suction Phase — As a lobe of the male rotor begins to unmesh from an interlobe space in the female rotor, a void is created and suction gas is drawn in through the inlet port. As the rotors continue to turn the interlobe space increases in size, and gas flows continuously into the compressor. Suction is sealed off when the interlobe space reaches its maximum volume.

Compression Phase — As rotation continues, the gas in the interlobe space is carried around the circumference of the compressor housing. Further rotation meshes male and female lobes thus reducing interlobe volume. Positive displacement compression continues in the direction of the discharge port.

Discharge Phase — At a point determined by the designed "built-in" compressor volume ratio (V), the discharge port is uncovered and the compressed gas is discharged by further meshing of the male and female interlobe space. While the meshing point of a pair of lobes is moving axially, the next charge is being drawn into the unmeshed portion and the working phase of the compressor cycle are repeated.

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