MSC 110mm Series

Vertical Medium Screw Compressors

10 - 110 TR (35 - 385kW) : 118 - 176 CFM : 65 - 115 HP



DUNHAM-BUSH

Products that perform... By people who care

INTRODUCTION

Backed by over 40 years of experience, the Dunham-Bush MSC - Medium Screw Compressors, are available from in the following ranges:

- 10 to 110 TR (35 to 385 kW)
- 65 - 115 HP
- 118 to 176 CFM
- -50°F (-46°C) to 50°F (10°C) SST
- 65°F (18°C) to 145° F (63°C) SDT

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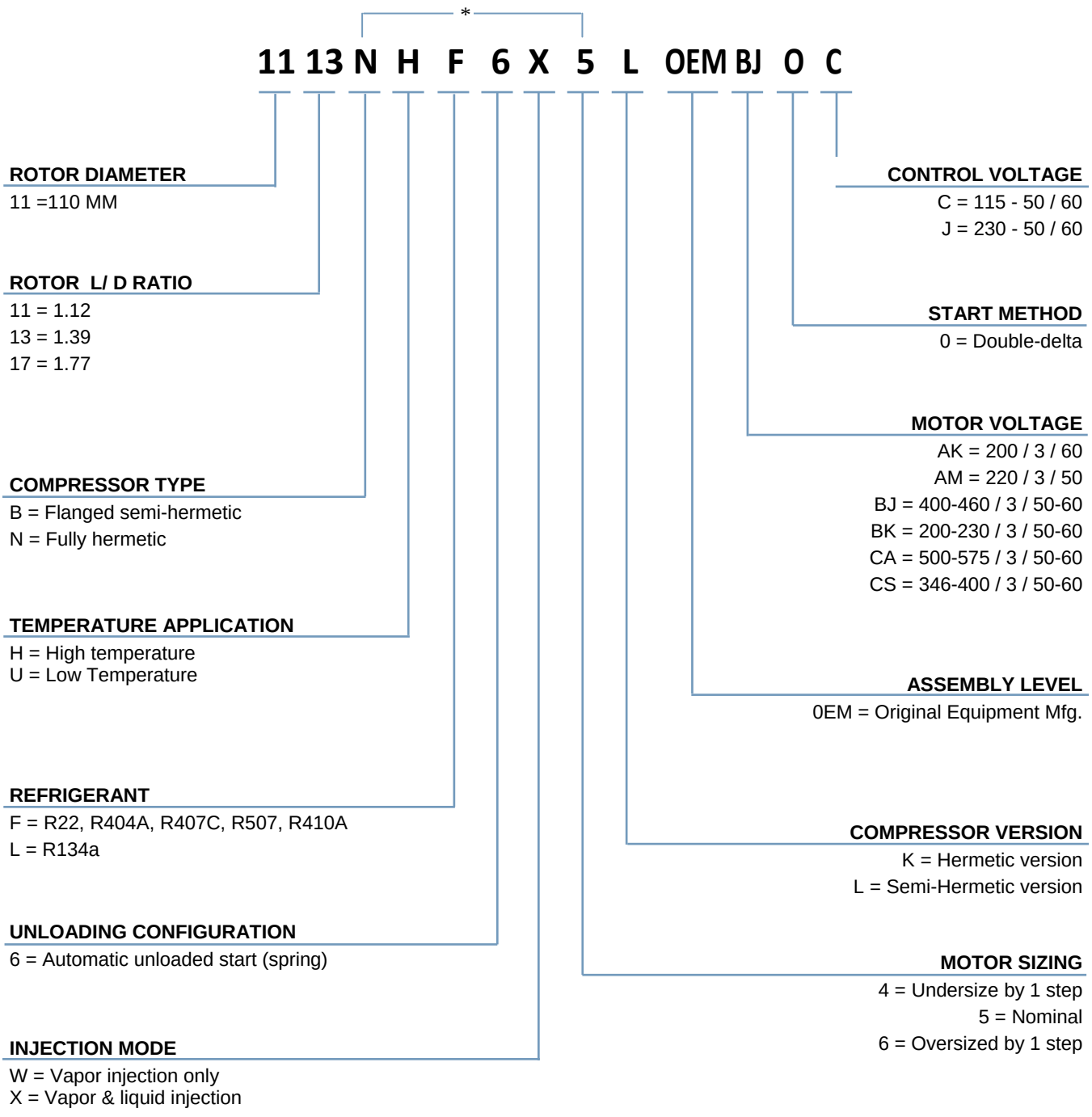
STANDARD FEATURES

- Small Footprint
- Designed for refrigeration, air conditioning
- Applicable R22, R134a, R407C, R507and other HFCs
- Built-in, High Efficiency Oil Separator
- Slide Valve Unloading to 20% of Full Load
- UL Recognized
- Semi - Hermetic Design available
- Vapor Injection Ready
- Smooth, quiet rotary motion

NOMENCLATURE



* For special engineered compressors, these six characters would be replaced by “SE”.
Example: 1117SE1171KOEMBJO

CAPABILITIES OVERIEW

Comprehensive service and support from design to application…

APPLICATION ENGINEERING

Comprehensive customer technical support from pre-sales to mass production.

CUSTOM ENGINEERING

Long term partnership and commitment to the successful collaborative development of a customized solution.

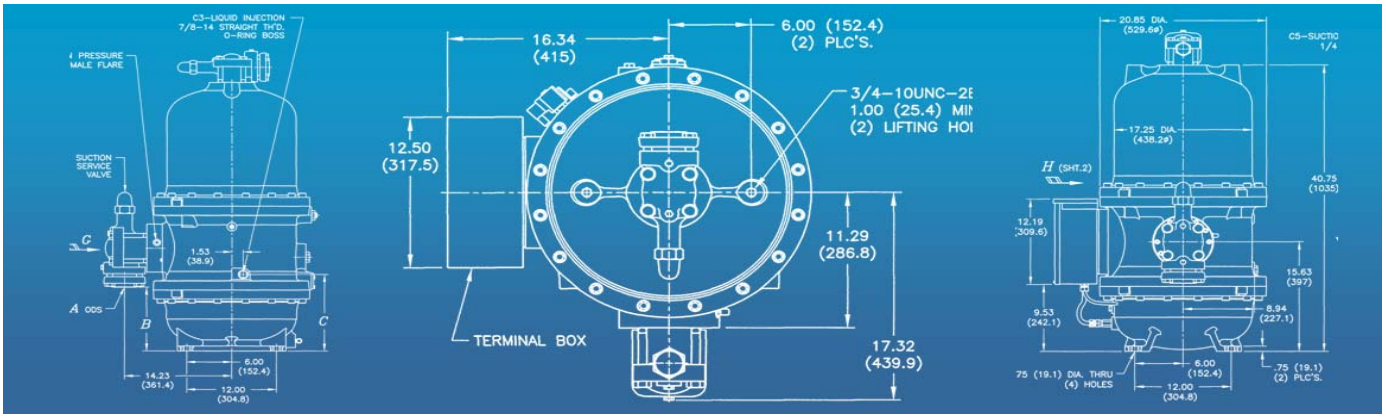
OEM TESTING FACILITY

Custom designed testing to meet customer specification.

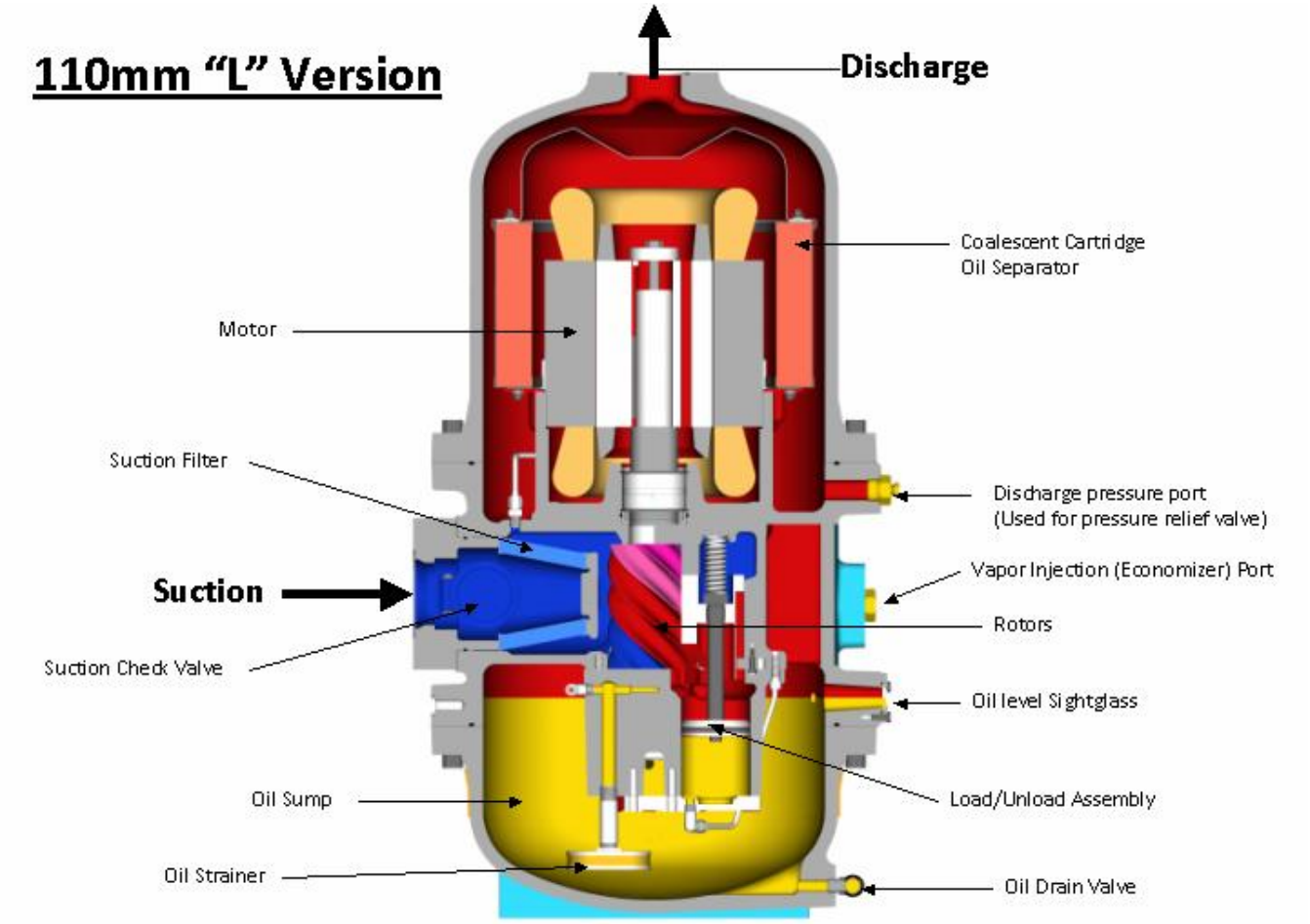
WAREHOUSING PROGRAM

Your compressor when you need it, without delay.

…Dunham-Bush welcomes the opportunity to partner with your company in the engineering and development of your projects.



COMPONENTS



BENEFITS

Slide-Valve Capacity Control	Capacity control from 100% to 20% of full load
Solid State Motor Protector	Thermal motor protection
Unloading Solenoid Valves	Energizes load/unload mechanism
Optical Oil Level Sensor	Electronic low oil level safety, mounted externally
Oil Sump Heater	Prevents refrigerant migration
XL or 2 Step Motor Start	Choice of motor starting method
Built-in Suction Check Valve	Prevents rotors from spinning backwards
Suction Filter	Serviceable filter for compressor protection
Standard Voltages	200/3/50Hz; 400/3/50Hz; 460/3/60Hz
NEMA 3 Terminal Box	Weather-Proof terminal box
Oil Strainer	Located in the oil sump to filter oil continuously
Vapor Injection Port	Increases EER and capacity from 25% to 60%
Liquid Injection	Cools motor and controls discharge temperature

COMPRESSOR SPECIFICATIONS - US Standard

Model	Refrigerant	Motor nominal HP	Displacement @ 60 Hz (CFM)	Rotor L/D	SST range		SDT range		Estimated Weight (Lb.)
					Min (°F)	Max (°F)	Min (°F)	Max (°F)	
1111BHF6X6L	R22, R407C, R507	75	118 @ 3500 RPM	1.12	0	50	65	145	1200
1111BHL6X5L	R134a*	65		1.12	0	50	65	145	1160
1113BHF6X6L	R22, R407C, R507	95	146 @ 3500 RPM	1.39	0	50	65	145	1240
1113BHL6X5L	R134a*	75		1.39	0	50	65	145	1180
1117BHF6X6L	R22, R407C, R507	115	176 @ 3500 RPM	1.77	0	50	65	145	1270
1117BHL6X5L	R134a*	75		1.77	0	50	65	145	1210

* Compressor shipped less oil.

Please contact applications Engineering for operating limits using R410A

COMPRESSOR SPECIFICATIONS - Metric Units

Model	Refrigerant	Motor nominal kW	Displacement @ 50 Hz (m^3/hr)	Rotor L/D	SST range		SDT range		Estimated Weight (Kg)
					Min (°C)	Max (°C)	Min (°C)	Max (°C)	
1111BHF6X6L	R22, R407C, R507	56	167@ 2900 rpm	1.12	-18	10	18	63	544
1111BHL6X5L	R134a*	49		1.12	-18	10	18	63	526*
1113BHF6X6L	R22, R407C, R507	71	207 @ 2900 rpm	1.39	-18	10	18	63	563
1113BHL6X5L	R134a*	56		1.39	-18	10	18	63	535*
1117BHF6X6L	R22, R407C, R507	86	249 @ 2900 rpm	1.77	-18	10	18	63	576
1117BHL6X5L	R134a*	56		1.77	-18	10	18	63	549*

* Compressor shipped less oil.

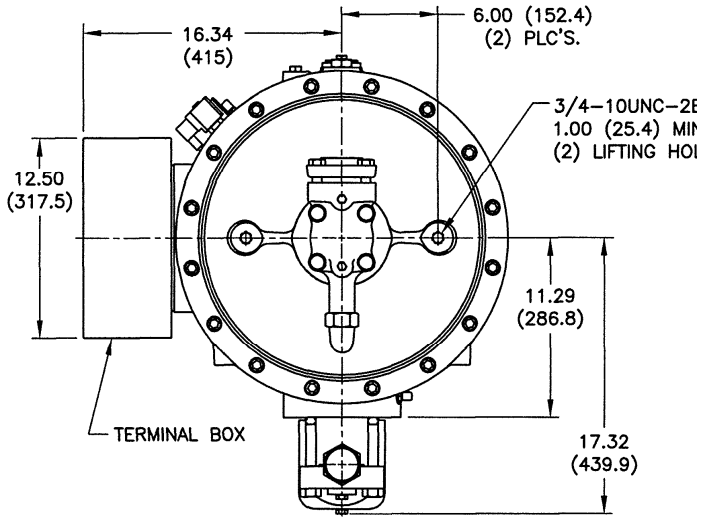
PERFORMANCE DATA

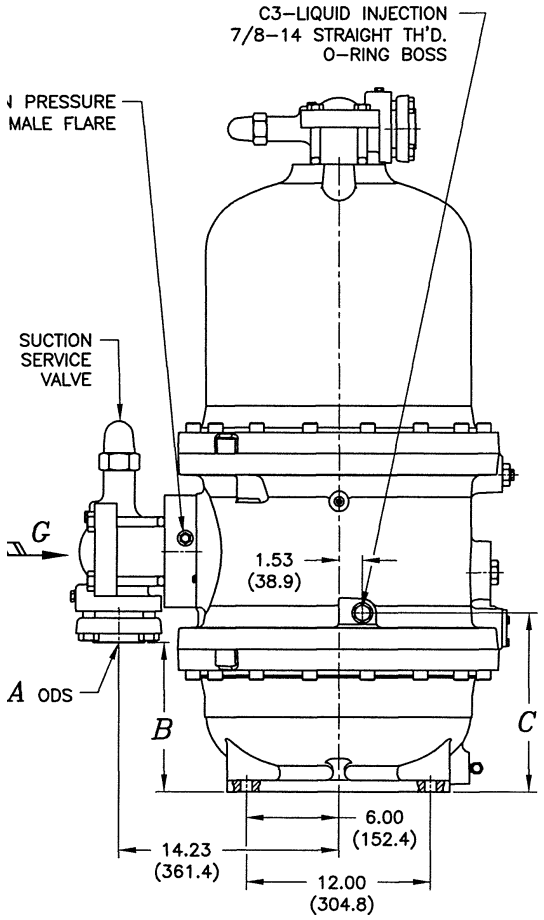
With Vapor Injection - 60 Hz, R22										
Saturated Suction Temp °F	Saturated Discharge Temp °F	1111			1113			1117		
		CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER
0	105	28.5	48.2	7.1	36.0	56.9	7.6	42.4	69.5	7.3
	125	24.4	60.6	4.8	31.2	72.1	5.2	37.1	88.7	5.0
	145	19.5	76.7	3.0	25.6	92.3	3.3	28.9	109.1	3.2
10	105	36.5	48.9	8.9	44.9	58.1	9.3	52.5	69.8	9.0
	125	32.1	62.0	6.2	39.9	73.6	6.5	46.8	89.7	6.3
	145	27.0	79.0	4.1	34.2	94.1	4.3	38.1	111.1	4.1
20	105	44.7	49.5	10.8	55.1	59.4	11.1	64.4	70.4	11.0
	125	40.2	63.2	7.6	49.8	75.2	8.0	58.3	90.8	7.7
	145	34.7	80.9	5.1	43.9	96.1	5.4	49.1	113.2	5.2
30	105	53.4	50.0	12.8	66.2	60.6	13.1	77.7	70.9	13.1
	125	48.6	64.1	9.1	60.5	76.7	9.5	71.3	91.8	9.3
	145	42.9	82.5	6.2	54.2	98.0	6.6	61.6	115.1	6.4
40	105	62.7	50.5	14.9	77.8	61.5	15.2	92.0	71.4	15.5
	125	57.6	64.9	10.7	71.7	77.9	11.0	85.3	92.6	11.0
	145	51.5	83.8	7.3	64.9	99.7	7.7	75.1	116.7	7.6
50	105	72.6	50.9	17.1	89.5	61.8	17.4	106.8	71.6	17.9
	125	67.2	65.4	12.3	82.8	78.7	12.6	99.9	93.1	12.9
	145	60.8	84.7	8.5	75.6	100.9	8.9	89.3	117.8	9.0

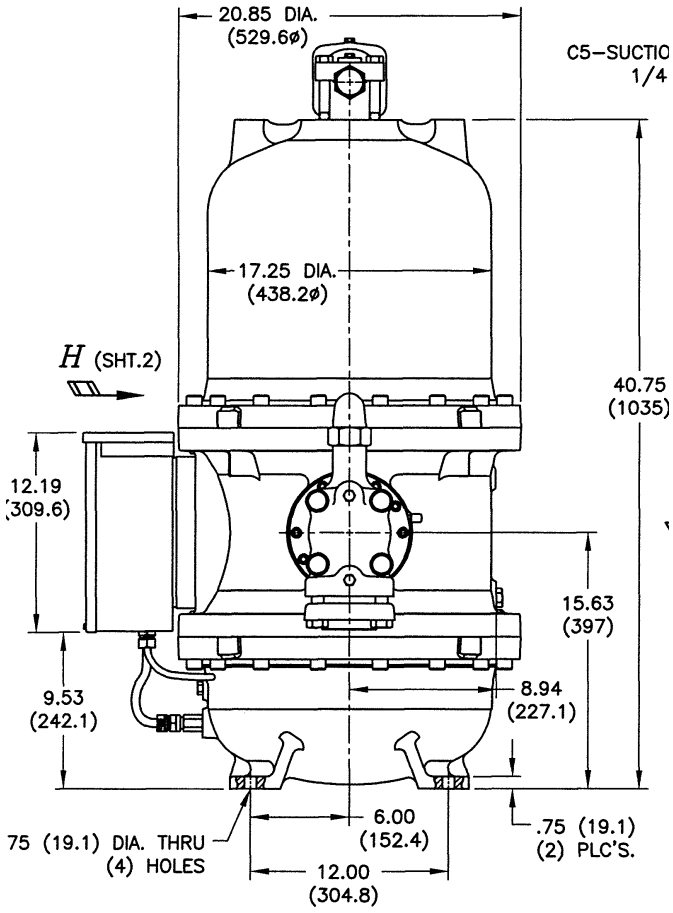
Without Vapor Injection - 60 Hz, R22										
Saturated Suction Temp °F	Saturated Discharge Temp °F	1111			1113			1117		
		CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER	CAP (TR)	POW (KW)	EER
0	105	22.0	42.5	6.2	27.3	51.7	6.3	31.9	59.4	6.4
	125	17.0	54.1	3.8	21.1	65.8	3.8	24.6	76.6	3.9
	145	10.8	69.5	1.9	13.4	83.3	1.9	15.7	97.7	1.9
10	105	28.5	43.2	7.9	35.4	52.7	8.1	41.4	60.6	8.2
	125	23.1	55.0	5.0	28.7	67.0	5.1	33.6	78.0	5.2
	145	16.8	70.4	2.9	20.9	84.7	2.9	24.4	98.9	2.9
20	105	36.1	43.8	9.9	44.8	53.6	10.0	52.3	61.8	10.2
	125	30.2	55.8	6.5	37.5	68.1	6.6	43.8	79.3	6.6
	145	23.6	71.2	3.9	29.3	85.9	4.0	34.2	99.9	4.1
30	105	44.7	44.5	12.0	55.5	54.5	12.2	64.8	62.8	12.4
	125	38.1	56.6	8.1	47.4	69.0	8.2	55.3	80.5	8.2
	145	31.0	71.9	5.1	38.6	86.8	5.3	45.0	100.9	5.3
40	105	54.4	45.2	14.4	67.5	55.3	14.7	78.9	63.7	14.9
	125	47.1	57.5	9.8	58.5	69.8	10.1	68.3	81.6	10.0
	145	39.3	72.6	6.4	48.9	87.5	6.6	57.0	101.8	6.7
50	105	65.2	46.1	17.0	81.1	56.1	17.3	94.6	64.4	17.6
	125	57.0	58.4	11.7	70.8	70.5	12.0	82.7	82.5	12.0
	145	48.5	73.4	7.8	60.2	88.1	8.1	70.3	102.5	8.1

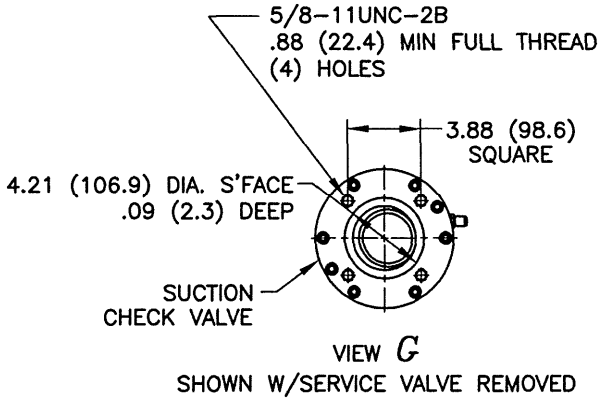
Data based on 10°F subcooling / 10°F Superhat
Note: Performance data on this page is adequate for preliminary selections. For detailed information on specific applications contact Dunham Bush

OUTLINE DRAWINGS









CAPABILITIES

Comprehensive service and support from design to application…….

APPLICATION ENGINEERING

Comprehensive customer technical support from pre-sales to mass production.

Together our Applications and Customer Service departments have combined to make Dunham-Bush a pleasant and responsive company to deal with.

Providing technical support aids in the understanding and specification of our products into your system applications. Our services range from discussion of possible applications of our compressors or components, answering detailed questions on product performance, to overseeing all details of custom or semi-custom prototype production for your specific product requirements.

CUSTOM ENGINEERING

Long term partnership and commitment to the successful collaborative development of a customized solution.

While incorporating the OEM customers own set of requirements, Dunham-Bush is able to create and drive technologies providing extended product life cycles, product change management, early access to equipment, engineering support, and ultimately reduced time to market.

All Dunham-Bush compressors are engineered with the highest attention to detail. Whether you choose a standard model or one specifically designed to your specifications, we give you the features you want and the benefits you need. The option of a dedicated serial/model number provides complete product traceability to maintain the quality of performance throughout life of your equipment.

OEM TESTING FACILITY

Custom designed testing to meet customer specification.

We perform positive displacement testing of system performance using sophisticated instrumentation and procedures. We also test a variety of other compressor characteristics such as noise, vibration and mechanical reliability.

Our testing procedures are in accordance with ASHRAE Standard 23. All instrumentation is calibrated in accordance with the National Institute of Standards and Technology (NIST). Testing can be done using test most refrigerants available today: R134a, R407c, R507, R410A, and R717.

WAREHOUSING PROGRAM

Your compressor when you need it, without delay.

The Dunham-Bush Compressor Warehousing Program allows you to purchase a “standby” compressor before you need it. Beneficial for critical applications, the program ensures you have your compressor when needed without delay.

…Hartford Compressors welcomes the opportunity to partner with your company in the engineering and development of your projects.

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.

COMPANY INFORMATION

Dunham-Bush designs, manufactures, and supports an extensive range of rotary screw compressors and reciprocating compressors for use in air conditioning and refrigeration systems.

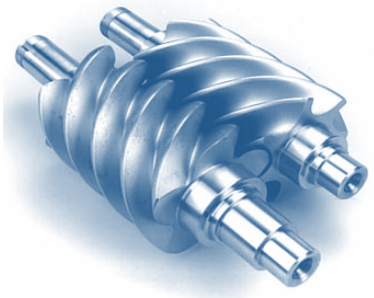
With decades of experience in developing innovative products for commercial, industrial, and marine applications, Dunham-Bush sets the standard for precision engineering, optimum performance, and customer satisfaction.

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, Dunham-Bush proudly presents the entire line of compressors which illustrate all aspects of engineering excellence.



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