

Copeland Scroll™ Modular Compression For Oil & Gas

Copeland Scroll modular compression is an exceptionally low maintenance, compact, rugged new approach to oilfield gas compression. The scroll compressor module comes equipped with many high quality features typically found only on larger oilfield compression packages. Packaged flow rates are 30-600 mcf/d, 70-190 psig single stage discharge pressure, vacuum to 25 psig suction.

Features

- **Once Per Year Maintenance** – No periodic compressor checks or operator adjustments required. Simple annual maintenance for most applications involves changing oil and two filters. Hermetic compressor design eliminates belt tightening, periodic mechanical alignments and interim oil additions. No compressor parts to wear out.
- **Oilfield Construction** – Cold rolled steel housing, cast gray iron scroll compressor elements, stainless steel tubing, swage type steel fittings, welded aluminum oil cooler, approved for use in Class I, Division II applications.
- **Fewest Service Parts** – Minimized service parts requirements reduces inventory costs. Simplicity of service greatly reduces operator/technician training and helps increase workforce productivity.
- **Applications Flexibility** – Optimize horsepower by putting modules in parallel, matching horsepower to required flow rates and pressures. Variable speed capability enables compressors to control flow or pressure set points.
- **Self Contained Modules** – Factory built modules ship complete with compressor/motor, oil cooler/fan, full oil charge, two stage oil separation, pressure and temperature shutdowns, controls and power pre-wired to junction boxes.
- **Lowest Emissions** – Hermetic compressor design (no shaft seals) eliminates oxygen, oil and gas leak paths. Commercial air conditioning noise levels allow for installation in environmentally sensitive areas.



Figure 1
Copeland Scroll Compressor Module

Product Bulletin

Model Number: SZO44C1A

May 2005

Copeland Scroll Modular Compression

SYSTEM MODEL NUMBER	SZO44C1A-EDE-244 (Variable Speed Version)	SZO44C1A-ADE-244 (Fixed Speed Version)
GENERAL INFORMATION		
Inlet pressure range	-7.5 to 25 PSIG	
Outlet pressure range	70 to 190 PSIG	
MECHANICAL DESCRIPTION		
Module Weight	~625 lbs. (159 kg)	~625 lbs. (161 kg)
Suction pipe connection	1.5 " NPT	
Discharge pipe connection	1.0 " NPT	
Sound Level	~75 dBA @ 1 meter, ~60dBA @ 10 meters	
Vibration	3 mil at 60 Hz.	
Minimum cold start ambient temp.	0°F (-18°C)	
Ambient operating temp. range	0° to 122°F (-18° to 50°C)	
Module Dimensions	See Figure 5	
Materials of Construction		
Compressor - general	Cold Rolled Steel, Aluminum, Cast Iron as required	
Compressor bearings	Self lubricated, sleeve type, steel backed	
Oil heat exchanger	Aluminum	
Oil/Gas separator tank	Cold rolled steel	
Tubes/fittings/skid structure	Stainless/Carbon Steel	
LUBRICATION		
Oil type	Synthetic, 15 Weight, PAO (proprietary Copeland blend)	
System Oil Capacity	~380 oz. (11.2 liters)	
Projected Oil Consumption (1)	Approx. 40 oz (0.9 liter) / 8,000 hours at 0.25 psig suction (<5 ppm)	
SYSTEM ELECTRICAL (Standard)		
Power supply to inverter - Voltage range - Input frequency range	345 to 525 VAC 48 to 62 Hz (50/60 Hz)	414 to 506 VAC 48 to 62 Hz (50/60 Hz)
Over pressure detection (outlet)	215 PSIG open	215 PSIG open
Under pressure detection (inlet)	0.75 psig open	
Oil over temperature detection	240°F (110°C) open	
Fault output to customer	Dry contact, 5-60 VDC	
Run input from customer	Dry contact, 28 VDC max	
GAS MEDIUM		
Natural gas		
H2S maximum content (2)	450 ppm	
Moisture content (2)	100% saturated, no free liquids	
Inlet temperature (2)	-20° to 115°F (-28° to 46°C)	

1. Based on sweet gas wellhead gas. Results may vary due to gas quality and site conditions
2. Consult factory for more details and applications guidelines

**Figure 2
Compressor Module Specifications**

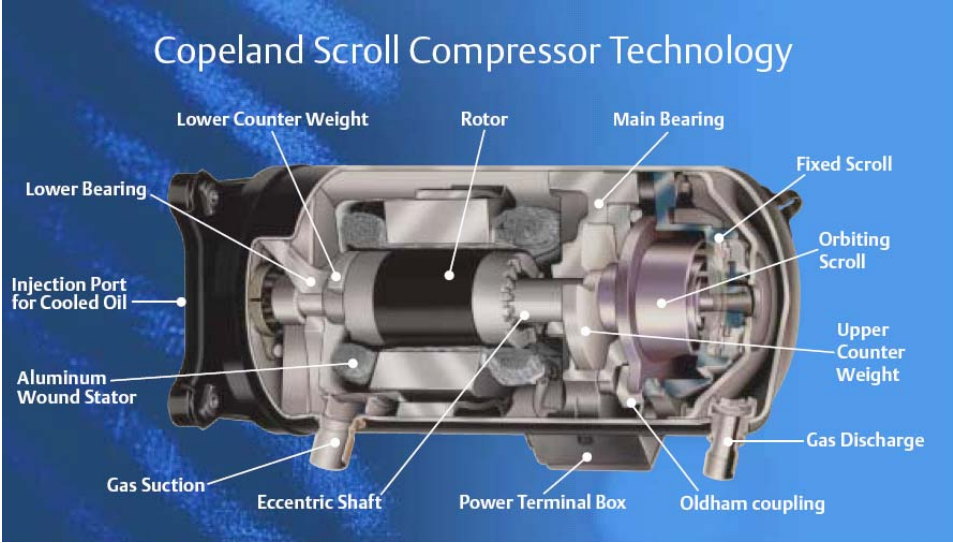


Figure 3
Scroll Compressor Cross Section

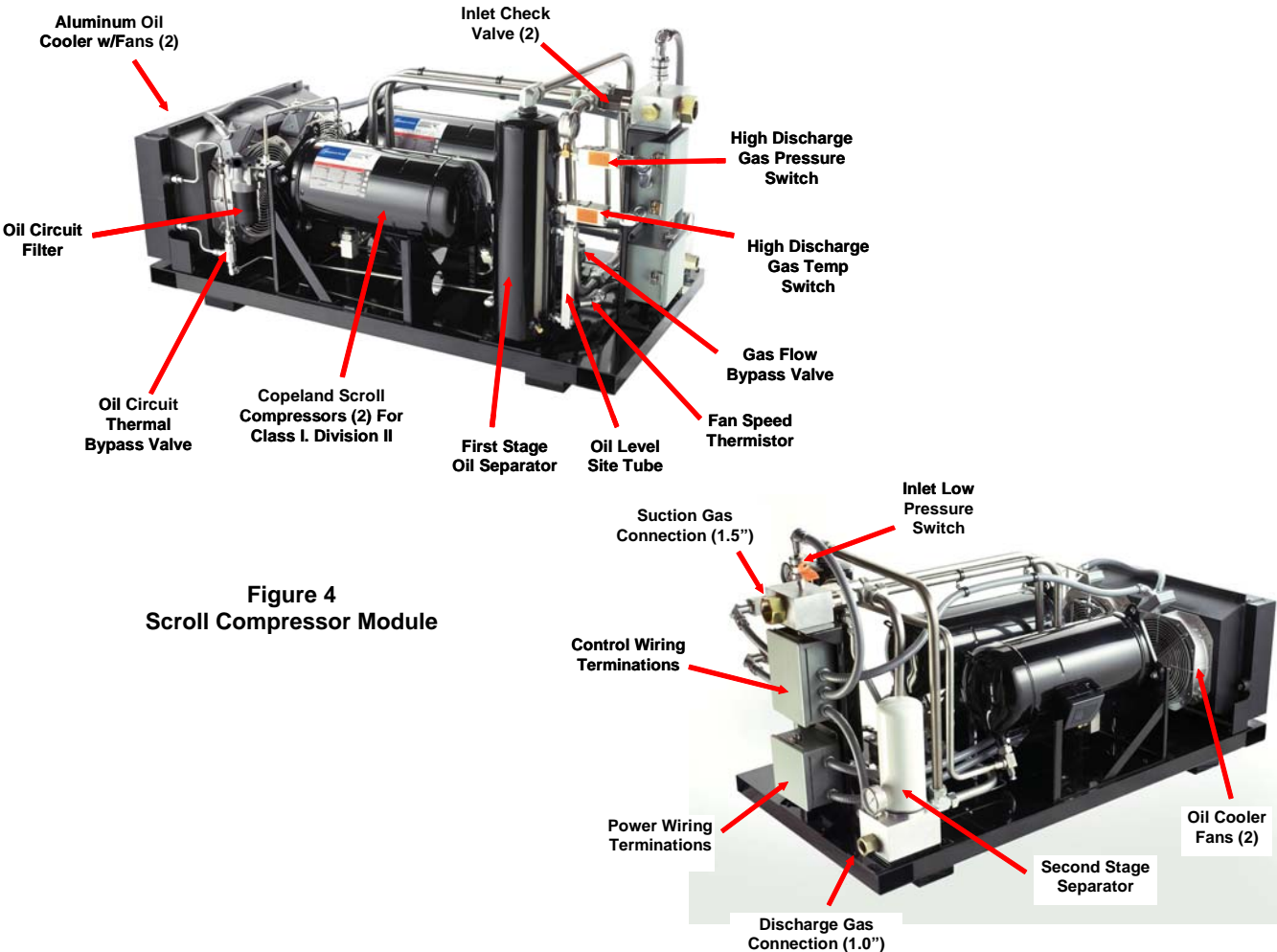
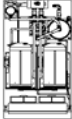
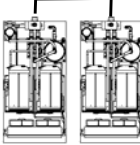
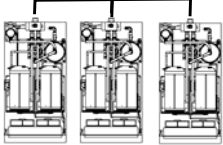


Figure 4
Scroll Compressor Module

Figure 7
Compressor Module Flow, Pressure, Horsepower Data (See Note 1-4)

Packaging Configuration <i>(1-3 modules in parallel to achieve required flow rate)</i>	Suction Press (PSIG)	Max Flow & HP	Discharge Pressure (PSIG)																
			70	80	90	100	110	120	130	140	150	160	170	180	190				
One Module Package (30-200 MCFD) 	-7.5	MCFD HP	33 14	32 15															
	0	MCFD HP	75 15	74 16	74 18	73 19	72 20	72 21	72 22	72 23	71 24	71 25	70 26	70 27	70 28				
	5	MCFD HP	101 16	100 17	100 19	99 20	99 21	98 22	98 23	97 24	97 25	97 26	96 27	96 28	95 29				
	10	MCFD HP	127 17	126 18	126 19	126 20	125 22	124 23	124 24	123 25	123 26	122 27	122 28	121 29	121 30				
	15	MCFD HP		152 19	152 20	152 21	152 23	151 24	150 25	150 27	149 28	148 29	148 30	147 31	147 32				
	20	MCFD HP		179 20	179 21	178 22	178 24	177 25	176 26	176 28	175 29	175 30	174 31	173 32	173 33				
	25	MCFD HP				203 23	203 24	203 24	203 25	202 27	202 28	201 30	200 31	199 32	199 33				
	Two Module Package (60-400 MCFD) 	-7.5	MCFD HP	66 28	64 31														
0		MCFD HP	150 29	148 32	147 35	146 37	145 39	145 41	144 44	144 46	143 48	142 50	141 52	140 54	139 57				
5		MCFD HP	201 32	201 34	200 37	199 39	197 41	197 43	196 46	195 48	194 50	193 52	192 54	191 56	191 58				
10		MCFD HP	253 34	253 37	252 39	251 41	250 43	249 45	247 47	246 49	246 51	245 53	244 55	243 58	242 60				
15		MCFD HP		305 39	305 41	304 43	303 45	301 46	300 48	299 51	298 53	297 55	296 57	295 60	294 62				
20		MCFD HP		357 41	357 43	356 45	356 47	354 47	353 49	352 52	351 55	349 57	348 59	347 61	345 64				
25		MCFD HP				406 46	406 48	406 49	405 49	404 53	403 57	402 59	400 61	399 63	397 65				
Three Module Package (100-600 MCFD) 		-7.5	MCFD HP	99 43	97 46														
	0	MCFD HP	224 44	222 48	221 53	219 56	217 59	217 62	217 65	215 69	214 72	212 75	211 78	210 81	209 85				
	5	MCFD HP	302 48	301 52	299 56	298 59	296 62	295 65	294 68	292 71	291 75	290 78	288 81	287 84	286 87				
	10	MCFD HP	380 52	379 55	378 58	377 61	375 65	373 68	371 71	370 74	368 77	367 80	365 83	364 87	363 90				
	15	MCFD HP		457 58	457 61	456 64	455 68	452 69	450 72	449 76	447 80	445 83	444 86	442 89	440 93				
	20	MCFD HP		536 61	536 64	535 67	534 71	530 71	529 73	527 78	526 83	524 86	522 89	520 92	518 95				
	25	MCFD HP				609 69	609 72	609 73	608 74	606 80	605 85	603 89	601 92	598 95	596 98				

NOTES:

1. Max flow at 4800 rpm, 80Hz. For 3600 rpm, 60Hz (fixed speed) performance, multiply maximum flow and horsepower values by 0.75
2. All modules capable of continuous 100% flow bypass of discharge gas back to suction without shutting down on high temperature
3. Standard test conditions: 60° F suction gas, 60° F ambient, 0.6 SG gas, 14.7 psia = 0 psig
4. Performance data to be used as an estimation guide only and is subject to change without notice

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