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 mcfd, 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

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

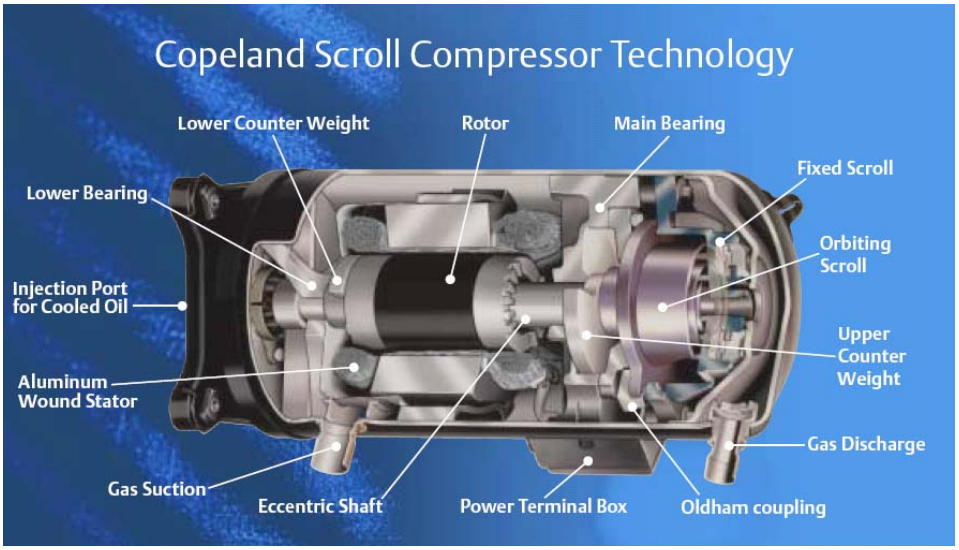


Figure 3
Scroll Compressor Cross Section

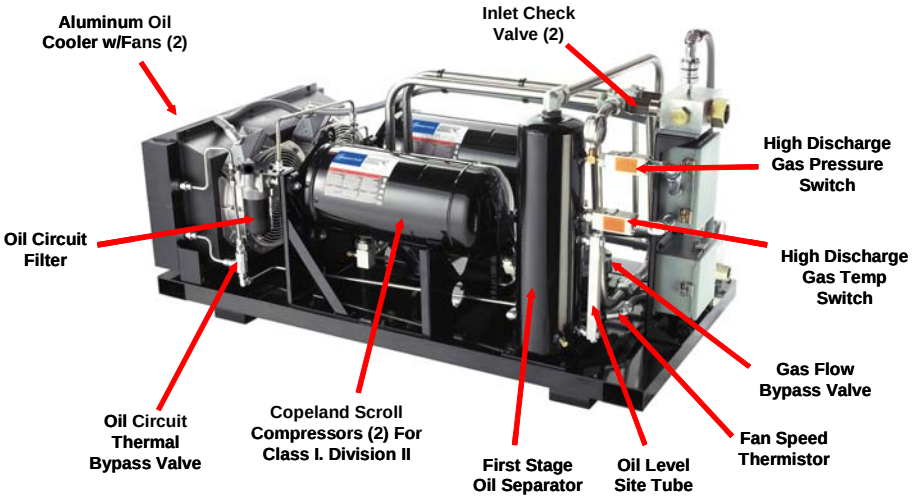


Figure 4
Scroll Compressor Module

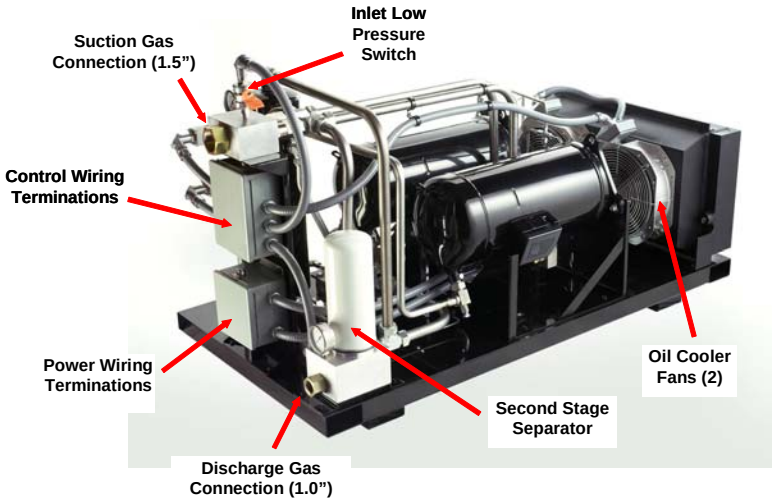
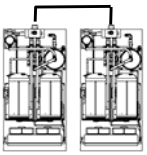
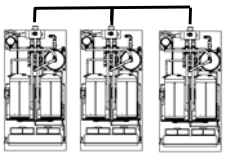


Figure 7
Compressor Module Flow, Pressure, Horsepower Data (See Note 1-4)

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