COMPRESSORS

TRAINING OVERVIEW

EQUIPMENT OVERVIEW

Tiering Strategy for Residential M1 Endeavor Product

COMPRESSOR TYPES & HOW THEY WORK

- Single Stage Scroll
- Two Stage Scroll
- Twin Rotary
- Variable Speed Scroll

TROUBLESHOOTING, SERVICE PROCEDURES & BENEFITS

- Application, Installation & Service Best Practices
- Compressor Winding Checks
- Diagnosing Seized Compressors
- Diagnosing Compressor Solenoid

COMPRESSOR TYPES & HOW THEY WORK

SECTION OUTLINE

SINGLE STAGE SCROLL
Copeland: ZP**K7E
LG: APH***K | ABH***K

TWO STAGE SCROLL
Copeland: ZPS**K7E
LG: APM***K | ABM***K

TWIN ROTARY
Highly: AUH***RN / AUE***UN

VARIABLE SPEED SCROLL
Copeland: ZPV***KE

SINGLE STAGE SCROLLS

Copeland - ZP**K7E

LG - APH***K | ABH***K

COPELAND SINGLE STAGE SCROLLS – ZP**K7E

Motor Type: Induction Motor

Refrigerant Type: R410a

Oil Type: POE

Power Supply:

Voltage - 208-230VAC +/- 10% (187-253VAC)

Phase - 1

Frequency - 60hz

COPELAND SINGLE STAGE SCROLLS – ZP**K7E

Discharge Fitting and Check Valve
prevents back flow into the low side of the compressor during shutdown.

Suction Funnel
Mechanism that the forces refrigerant directly into the scroll set.

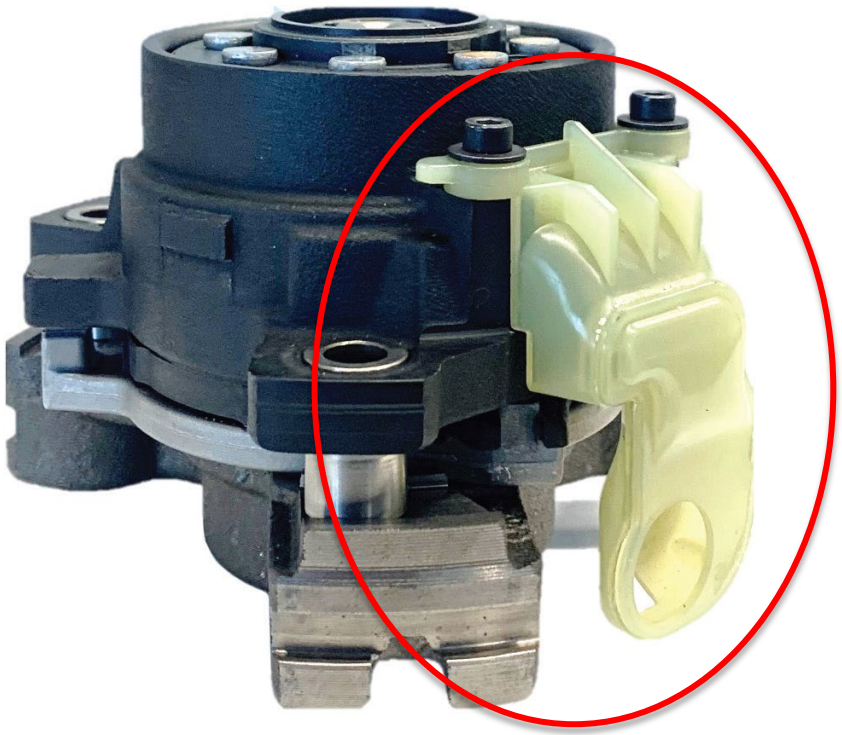
Stator (Not pictured)
Magnet that is energized by the motor windings in order to turn the main bearing.

Oil Sump or Oil Pool
This where the oil is accumulated in the compressor.

Scroll Set
Is the combination of the fixed and orbiting scroll which are the mechanisms inside the compressor that compress vapor.

Crank Shaft & Rotor
The crank shaft sits inside the rotor, and both coupled together are the mechanisms that rotate to turn the scroll.

COPELAND SINGLE STAGE SCROLLS – ZP**K7E – SCROLL SET



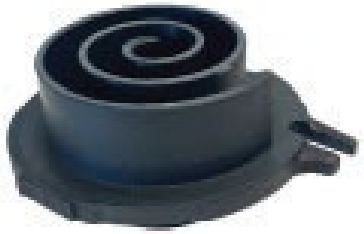
Scroll Set
Made up of many different parts that's root purpose is to compress vapor.

Compression Pocket

COPELAND SINGLE STAGE SCROLLS – ZP**K7E – SCROLL SET CONT'D

Floating Seal
provides a positive seal for the discharge of the scrolls and places pressure on the scrolls to keep them in compliance.

Oldham Coupling
converts the rotational motion of the crank shaft to the orbiting motion of the scroll.



Orbiting Scroll
The bottom scroll is attached to the orbiting bearing and is the scroll that orbits inside the fixed scroll to compress the gas.

Fixed Scroll
The Top scroll is the scroll that stays stationary during the compression process.

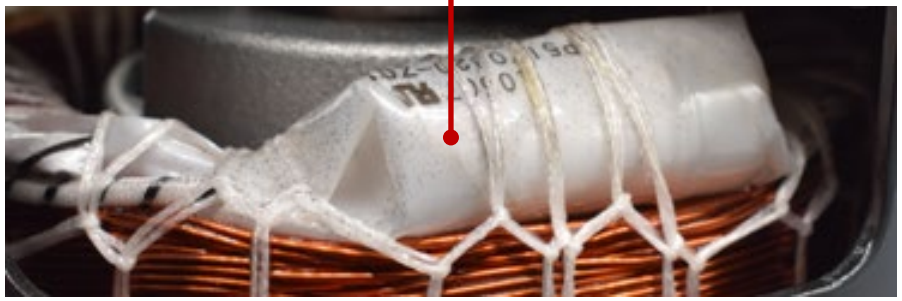
Unloader Bushing
couples the crank shaft to the orbiting scroll. It works in conjunction with the Oldham Coupling to convert motions.

Main Bearing Housing
supports upper end of crankshaft stator rotor assembly.

ENGINEERED TO PERFORM

COPELAND SINGLE STAGE SCROLLS – ZP**K7E

Overload Protection (OLP)
Is designed to protect the motor windings from reaching excessive temperatures.



Pressure Relief Valve (IPR)
Is designed to protect the compressor from excessive high pressure. Will open if pressure exceeds 550 – 625psig

Thermal Disk (TOD)
Designed to route hot discharge back to the motor protector if the discharge gas gets excessively hot.

LG SINGLE STAGE SCROLLS - APH***K | ABH***K

Motor Type: Induction Motor

Refrigerant Type: R410a

Oil Type: POE

Power Supply:

Voltage - 208-230VAC +/- 10% (187-253VAC)

Phase - 1

Frequency - 60hz

LG SINGLE STAGE SCROLLS - APH***K | ABH***K

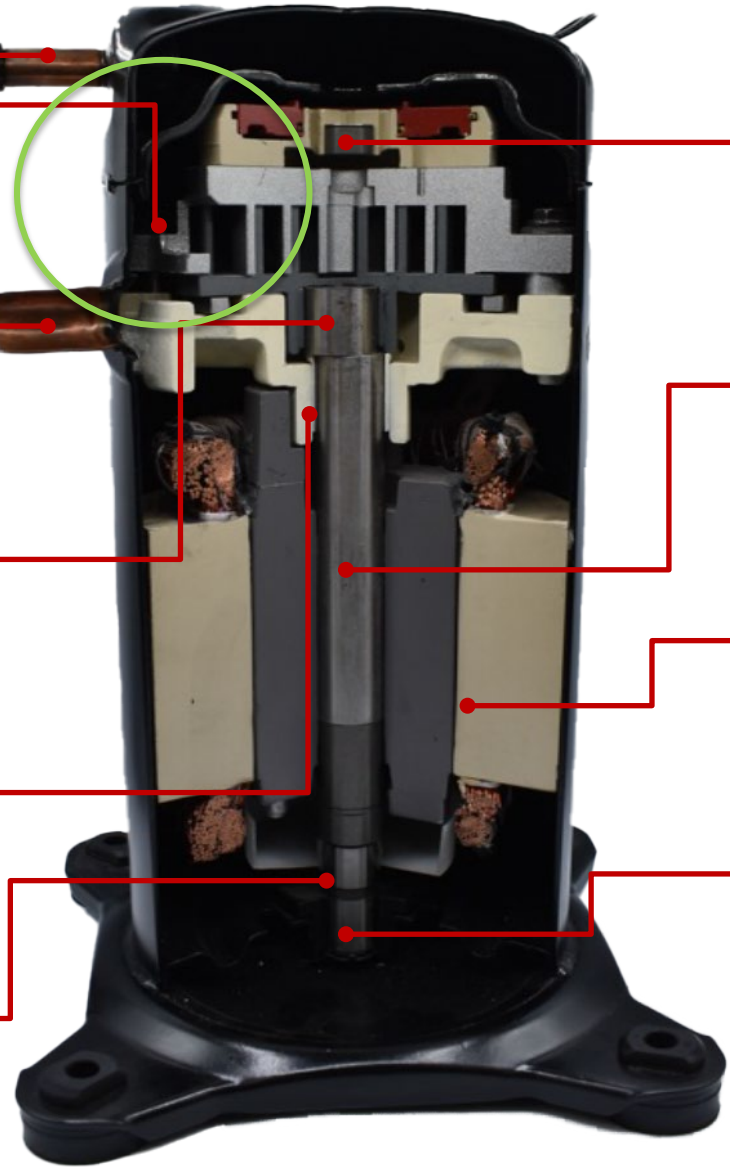
Suction Guide
Purpose is to help guide suction vapor into the scroll set.

Discharge and Suction ports
Where Vapor enters and exits the compressor.

Orbiting Bearing
Purpose is to turn the orbiting scroll. (convert rotation to orbiting motion.)

Top Bearing
Purpose is to support the crankshaft

Bottom Bearing
Purpose is to support crank shaft to prevent damage.



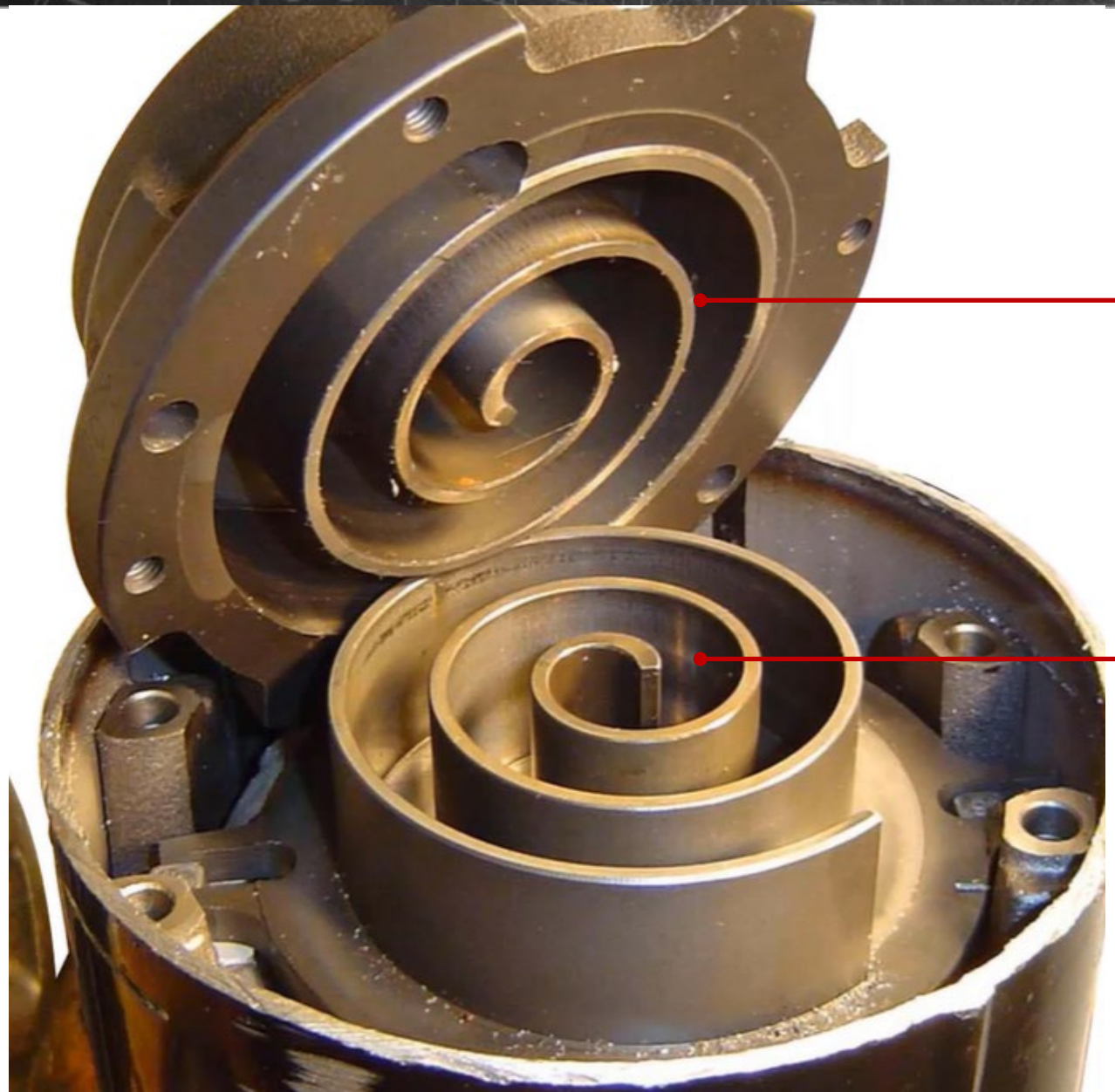
Discharge Valve
Once the suction vapor has been compressed to the highest possible pressure, it will exit this discharge valve.

Crank Shaft
The crank shaft sits inside the stator and turns the top and bottom bearing.

Stator
Generate electromagnetic field that turns the rotor.

Oil Sump or Oil Pool
This where the oil is accumulated in the compressor.

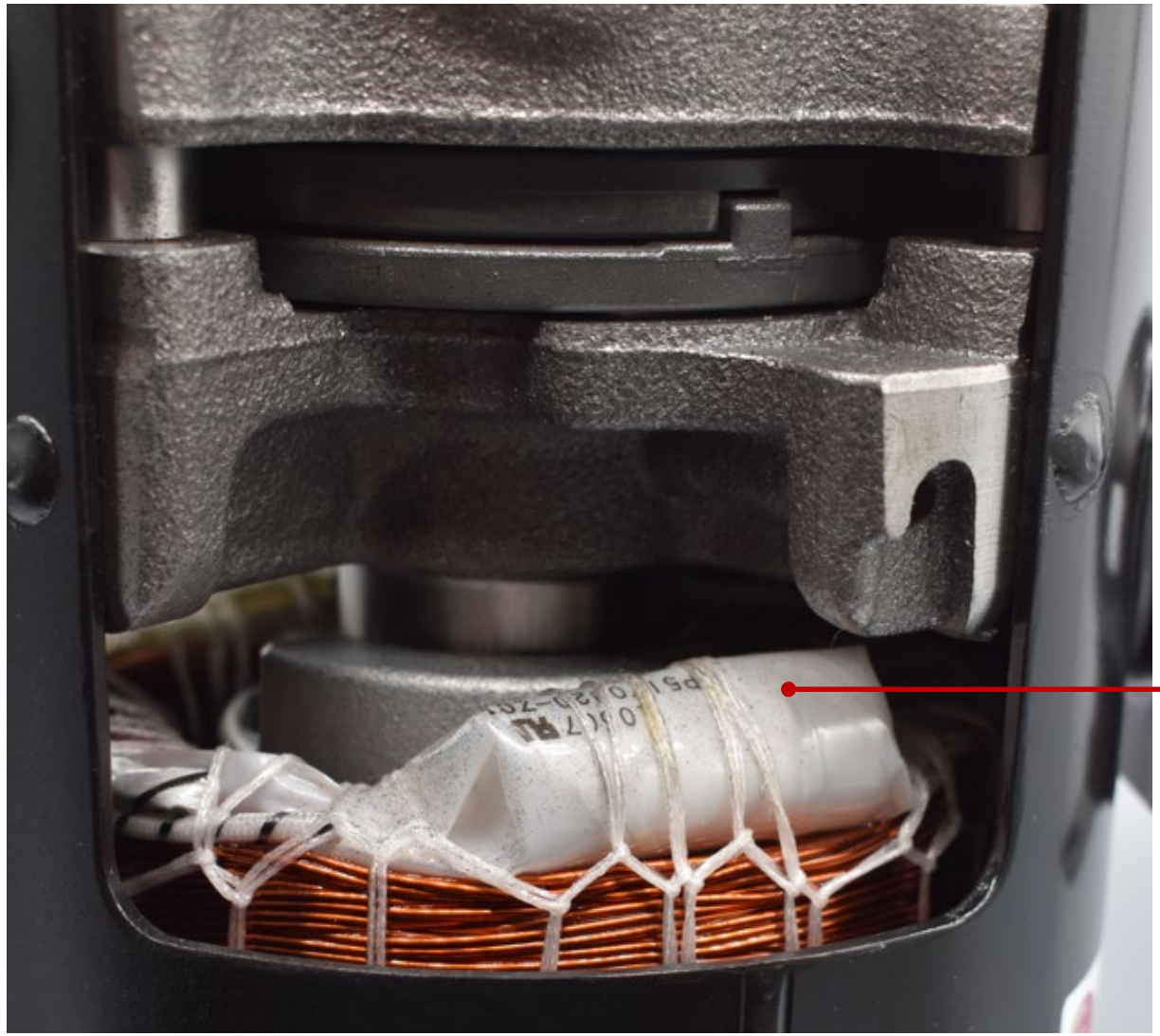
SINGLE STAGE SCROLLS



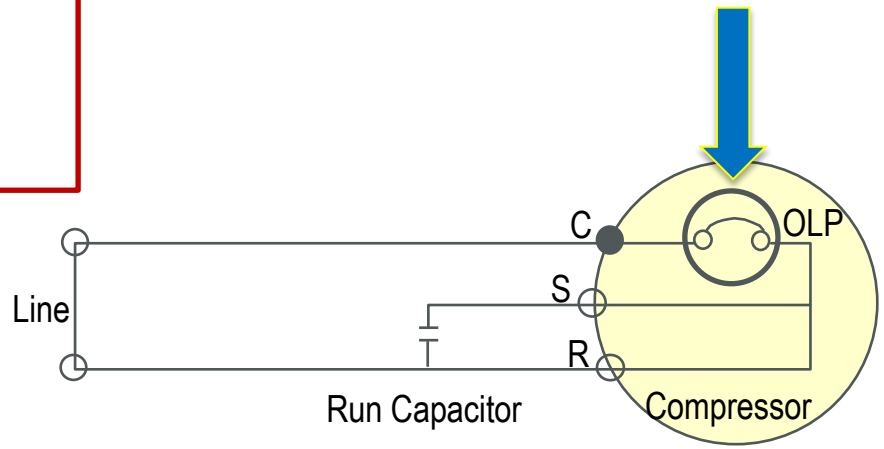
Fixed / Top Scroll
The Top scroll is the scroll that stays stationary during the compression process.

Bottom / Orbiting Scroll
The bottom scroll is attached to the orbiting bearing and is the scroll that orbits inside the fixed scroll to compress the gas.

LG SINGLE STAGE SCROLLS



Overload Protection (OLP)
Is designed to protect the motor windings from reaching excessive temperatures.



LG SINGLE STAGE SCROLLS

Thermal Disk
Designed to route hot discharge back to the motor protector if the discharge gas gets excessively hot.

Pressure Relief Valve (IPR)
Is designed to protect the compressor from excessive high pressure. Will open if pressure exceeds 550 – 600psig

TWO STAGE SCROLLS

Copeland - ZPS**K7E

LG - APM***K | ABM***K

TWO STAGE SCROLLS – COPELAND – ZPS**K7E

Motor Type: Induction Motor

Refrigerant Type: R410a

Oil Type: POE

Solenoid: 24VDC Internal

Power Supply:

Voltage - 208-230VAC +/- 10% (187-253VAC)

Phase - 1

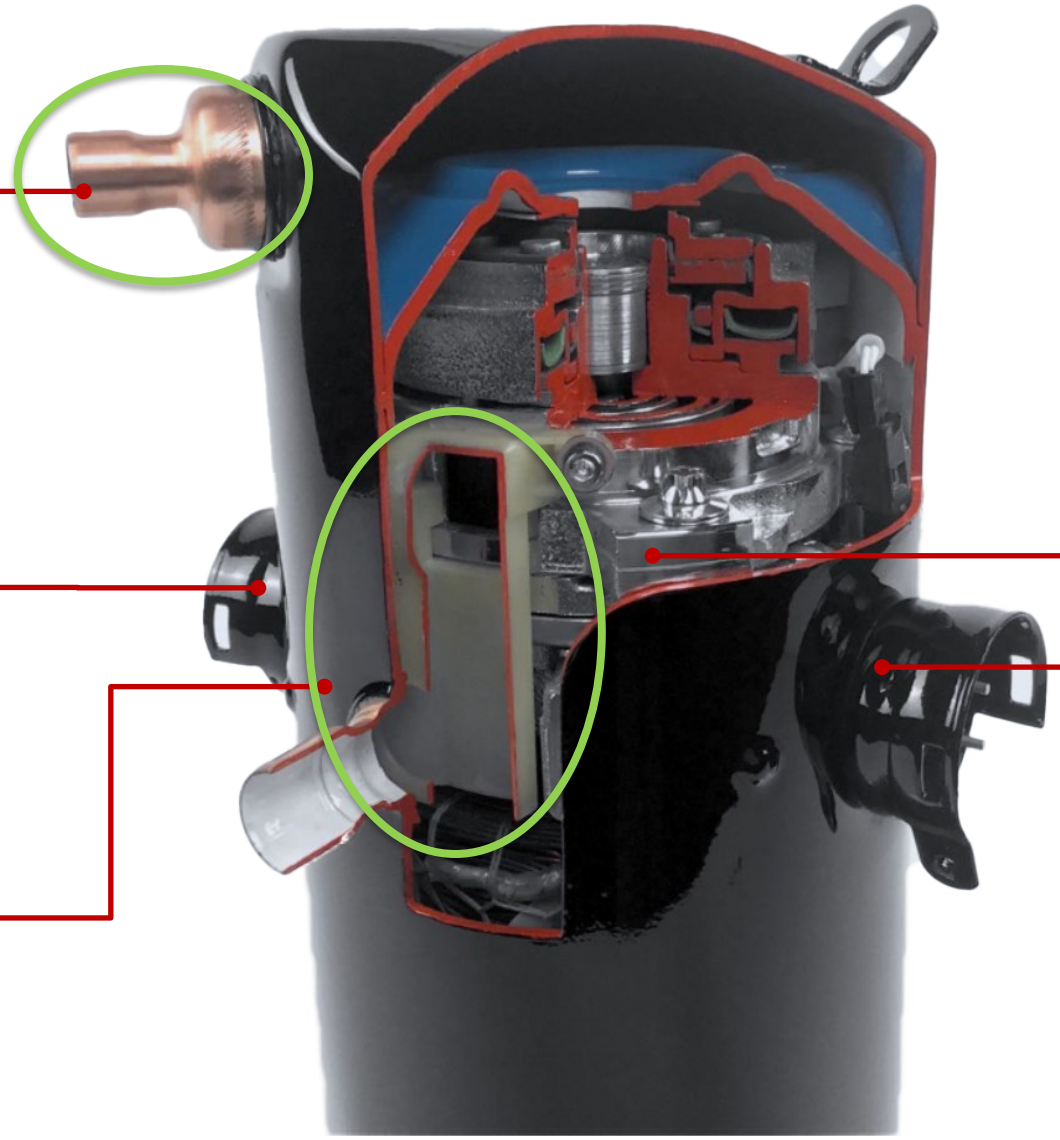
Frequency - 60hz

COPELAND TWO STAGE SCROLLS - ZPS**K7E

Discharge Fitting / Check Valve
prevents back flow into the low side of the compressor during shutdown.

Compressor Terminal
Where the compressor harness connects to the compressor.

Suction Funnel
Mechanism that the forces refrigerant directly into the scroll set.

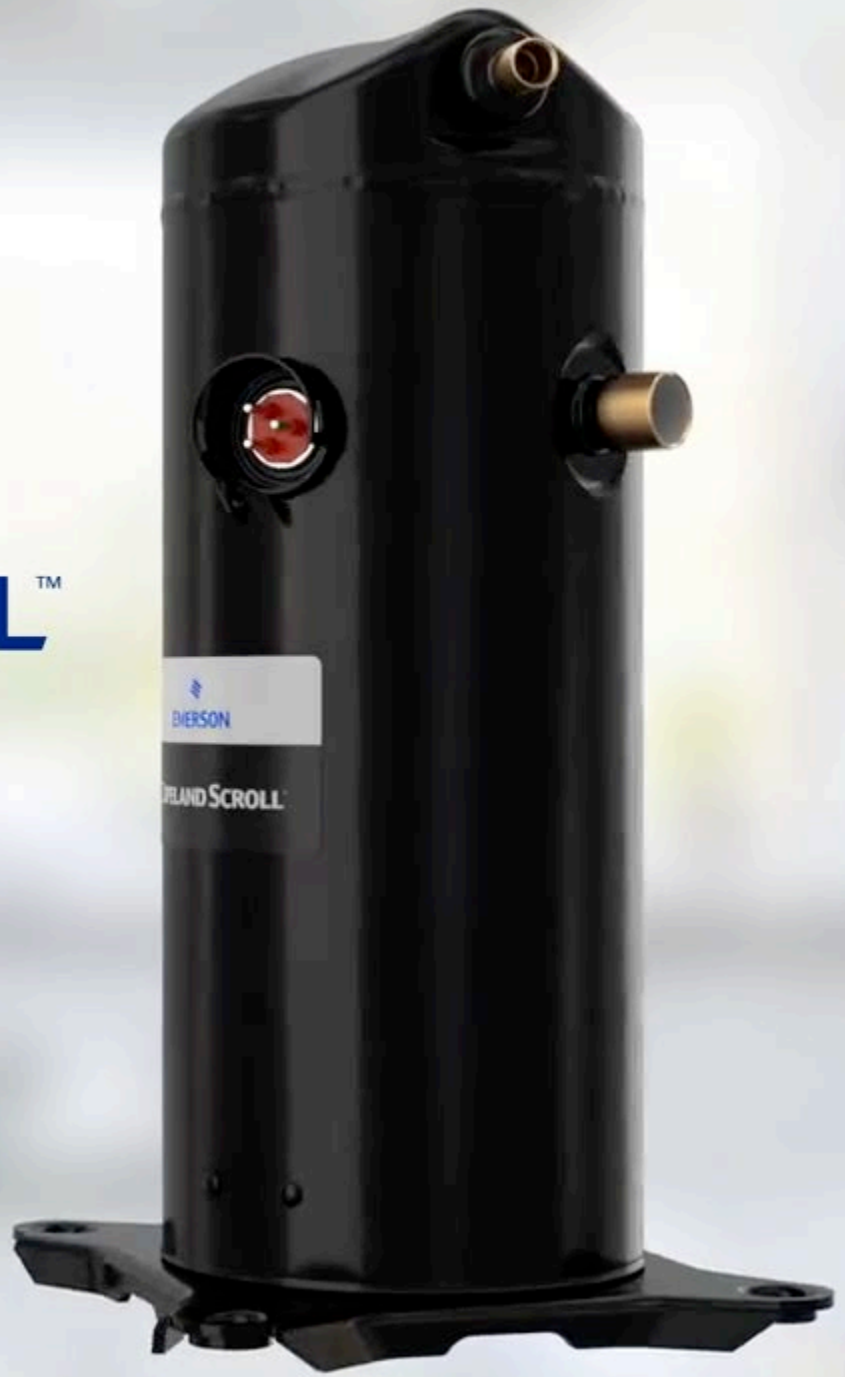


Scroll Set
Is the combination of the fixed and orbiting scroll which are the mechanisms inside the compressor that compress vapor.

Solenoid Terminals
The terminals that connects to the plug that receives 24VAC for a Y2 Call. The plug is mechanism used to convert the 24VAC being sent to the solenoid plug connector to a 24VDC. To send to the solenoid.

COPELAND SCROLL™

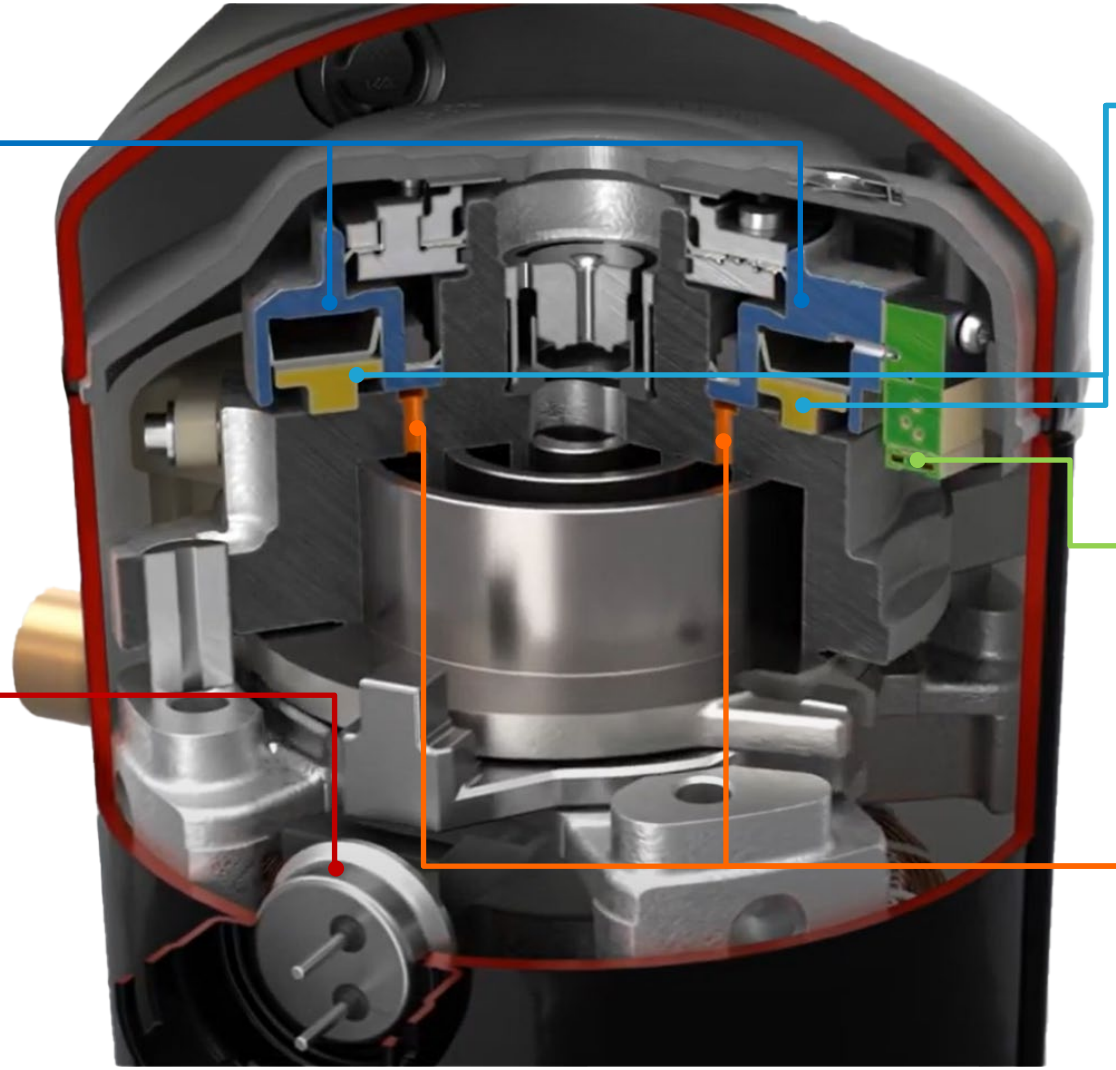
TWO-STAGE COMPRESSOR



COPELAND TWO STAGE SCROLLS - ZPS**K7E

Modulating Ring
Is the ring lifted by the lift ring that allows vapor to bypass the scroll.

Solenoid Terminals
Mechanism that connects to the plug that convert the 24VAC being sent to the solenoid plug connector to a 24VDC.



Lift Ring
Mechanism used to lift the modulating ring when pressurized.

3-way Solenoid Valve
Provides pressure to a lift ring assembly that is used to open and close the scroll modulation ports.

Bypass Ports
Used to bypass low pressure gas in the scroll set for low stage operation.

LG TWO STAGE SCROLLS - APM***K | ABM***K

Motor Type: Induction Motor

Refrigerant Type: R410a

Oil Type: POE

Solenoid: 24VAC External

Power Supply:

Voltage - 208-230VAC +/- 10% (187-253VAC)

Phase - 1

Frequency - 60hz

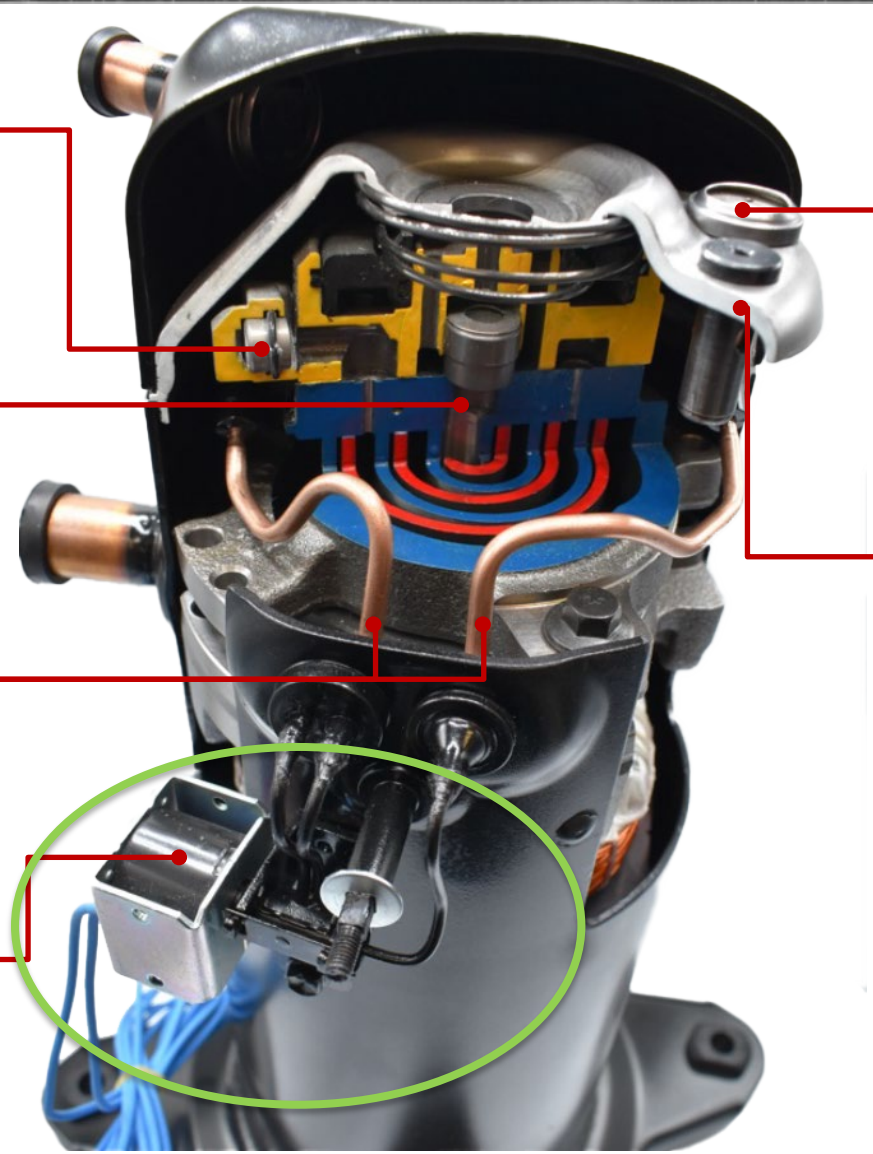
LG TWO STAGE SCROLLS - APM***K | ABM***K

Scroll Puck
Used to control vapor for 1st and 2nd stage operation.

Discharge Valve
Where high pressure discharge gas exits the scroll set.

Bypass Port Tubes
Used to help move the “puck” inside the compressor for 2nd stage operation.

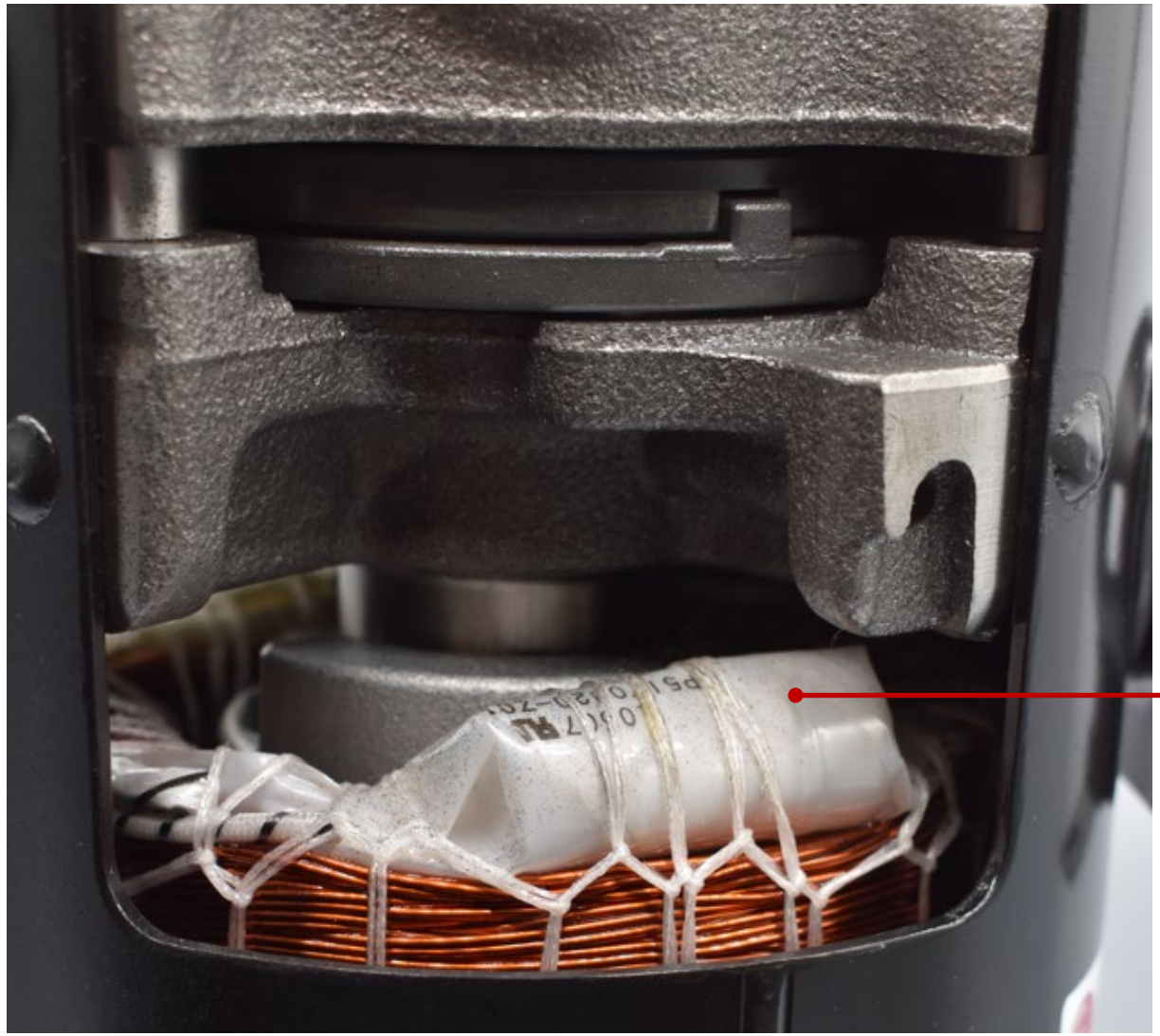
Valve Solenoid
Used to move spring loaded valve for 2nd stage operation.



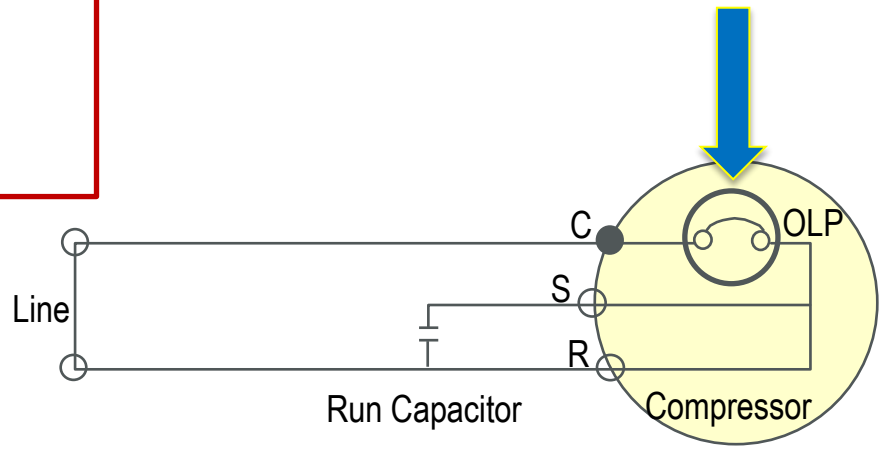
Thermal Disk
Designed to route hot discharge back to the motor protector if the discharge gas gets excessively hot.

Internal Pressure Relief Valve (IPR)
Is designed to protect the compressor from excessive high pressure. Will open if pressure exceeds 550 – 600psig.

LG TWO STAGE SCROLLS



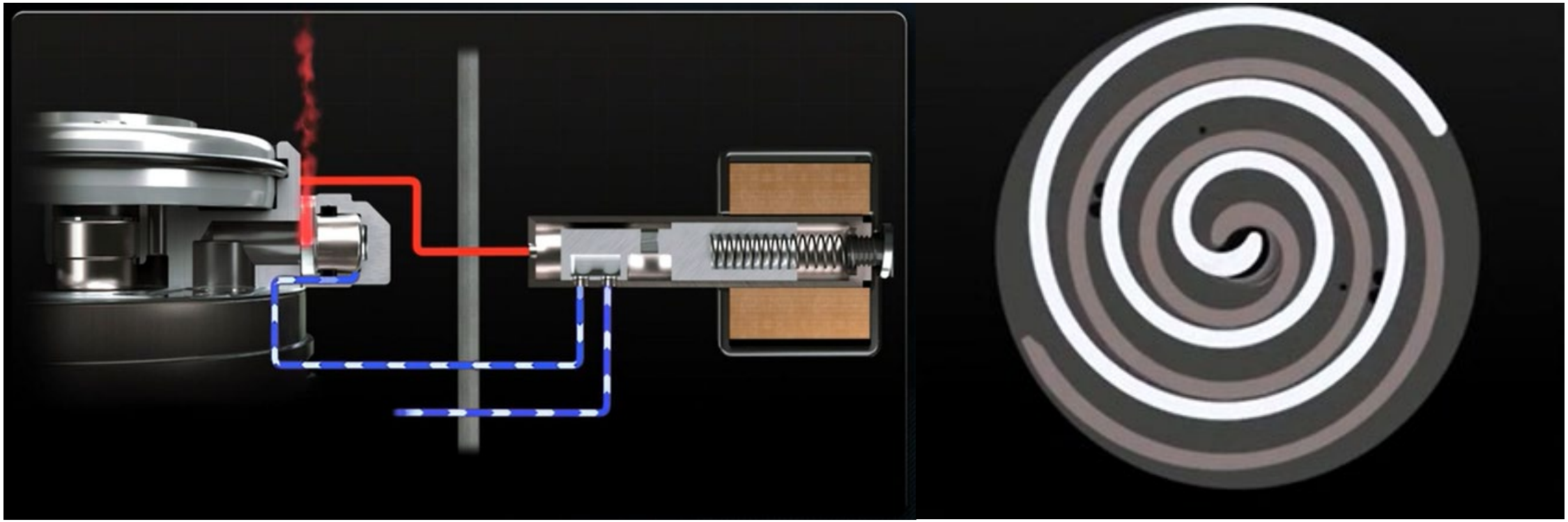
Overload Protection (OLP)
Is designed to protect the motor windings from reaching excessive temperatures.



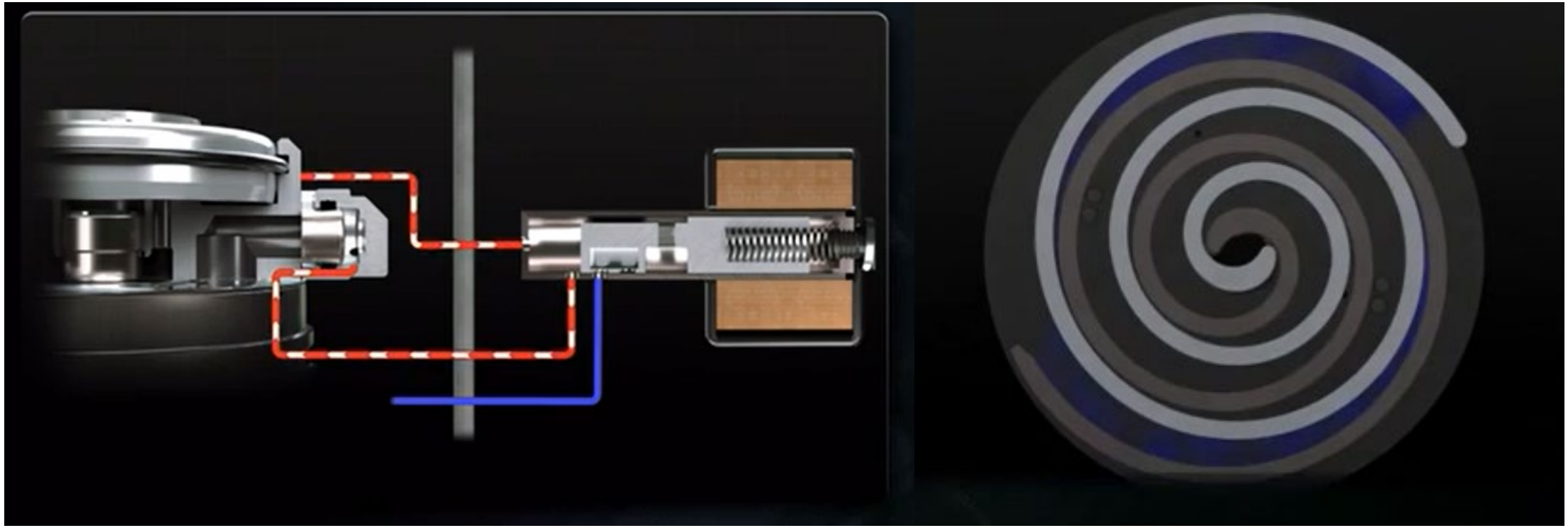
OPERATION MECHANISM

LG TWO STAGE SCROLLS - APM***K | ABM***K

1st stage



2nd stage



HIGHLY TWIN ROTARY - AUH***RN / AUE***UN

Motor Type: Induction Motor

Refrigerant Type: R410a

Oil Type: POE

Power Supply:

Voltage - 208-230VAC +/- 10% (187-253VAC)

Phase - 1

Frequency - 60hz

HIGHLY TWIN ROTARY - AUH***RN / AUE***UN

Discharge Line
Where refrigerant vapor exits the compressor.

Rotor
Attaches to the crankshaft in order to spin the upper and lower rollers that are compressing refrigerant.

Stator
Mechanism generates a rotating magnetic field by the motor windings in order to turn the rotor and the attached crankshaft.

Crankshaft
Crankshaft is the mechanism attached to the rotors that allow them to spin.

Accumulator
Designed to accumulate liquid to mitigate liquid flood back.

Upper & Lower Suction Port
Where the refrigerant vapor enters the cylinders.

Overload Protection (Not pictured)
Is designed to protect the motor windings from reaching excessive temperatures

HIGHLY TWIN ROTARY - ACCUMULATOR

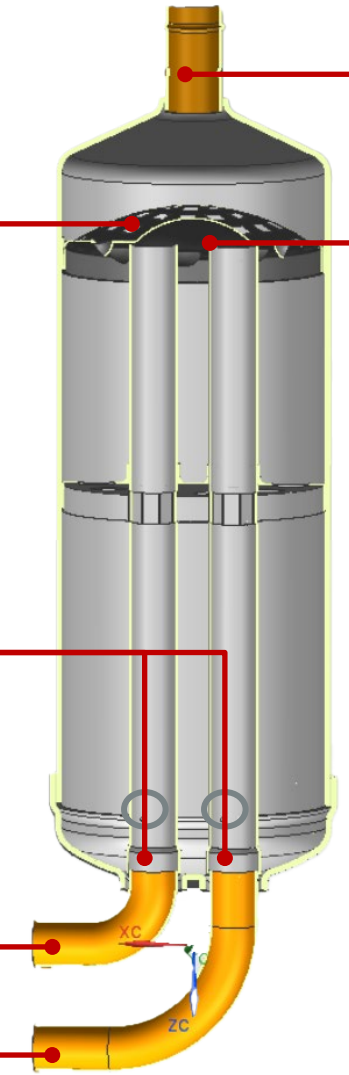
Suction Inlet
Where refrigerant vapor will first enter in the accumulator.

Filter Screen
Designed to help block any liquid or debris from entering in the suction port.

Semi-sphere Cover
Cover that prevents liquid from entering the tube/suction port

Oil Return Holes
Designed to return any oil back to the pump and limit the volume to prevent the liquid strike.

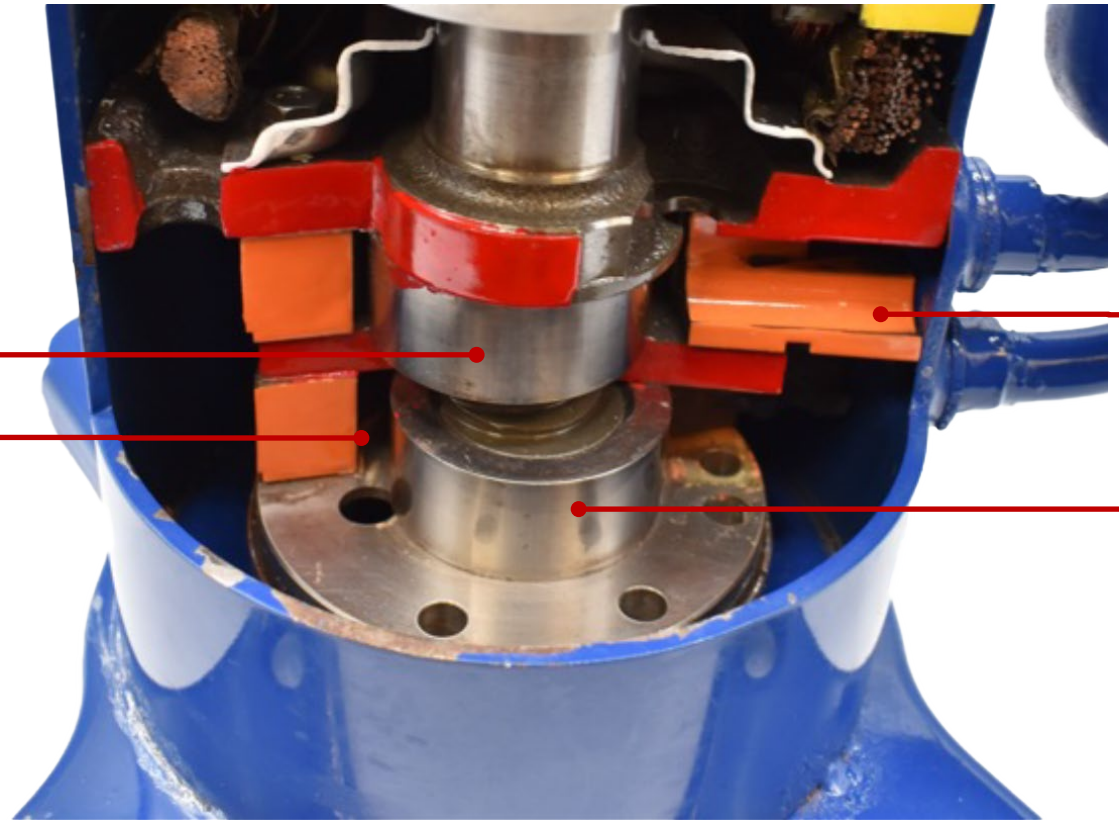
Suction Outlet
Where refrigerant vapor exits the accumulator and enters the compressor cylinders



HIGHLY TWIN ROTARY – PUMP CUT AWAY

Upper Rotor/Roller
Compresses refrigerant vapor and discharges it through the discharge port and up the cylinder.

Lower Cylinder
It is the mechanism that the lower rotor rolls inside of in order to compress the superheated vapor.



Upper Cylinder
It is the mechanism that the upper roller rolls inside of in order to compress the superheated vapor.

Lower Rotor/Roller Compresses
refrigerant vapor and discharges it through the discharge port and up the cylinder.

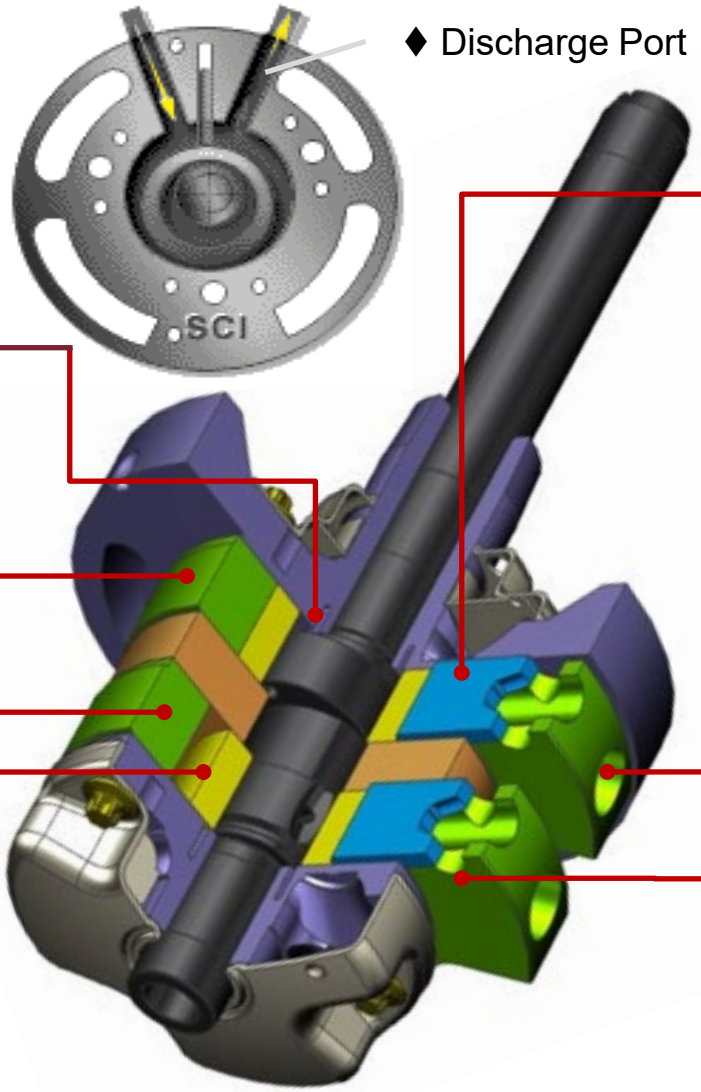
HIGHLY TWIN ROTARY – PUMP CUT AWAY (CONT'D)

Upper Rotor/Roller
Compresses refrigerant vapor and discharges it through the discharge port and up the cylinder.

Upper Cylinder
It is the mechanism that the upper roller rolls inside of in order to compress the superheated vapor.

Lower Cylinder
It is the mechanism that the lower rotor rolls inside of in order to compress the superheated vapor.

Lower Rotor/Roller
Compresses refrigerant vapor and discharges it through the discharge port and up the cylinder.



Sliding Vane
Sliding vane serves the purpose of separating the high- and low-pressure zones in the cylinder

Suction Port
Hole in the cylinder that superheated suction gas enters the cylinder to be compressed.

Discharge Port
Hole in where discharge gas exits the cylinder through the pump and out of the compressor

COPELAND VARIABLE SPEED SCROLL

Motor Type: Brushless Permanent Magnet (BPM)

Refrigerant Type: R410a

Oil Type: POE

Power Supply:

Voltage – Varies From Drive

Phase - 3

Frequency - 60hz

COPELAND VARIABLE SPEED SCROLL

Suction Baffle
Mechanism that helps deflect liquid from entering the scroll set.

Upper Counterweight Cup
Mechanism that allows oil to accumulate during low RPM operation.

Crank Shaft & Rotor
The crank shaft sits inside the rotor, and both coupled together are the mechanisms that rotate to turn the scroll.

Scroll Set
Is the combination of the fixed and orbiting scroll which are the mechanisms inside the compressor that compress vapor.

BPM Motor
Three-phase brushless permanent magnet (BPM) motor that allows for variable speed operation.

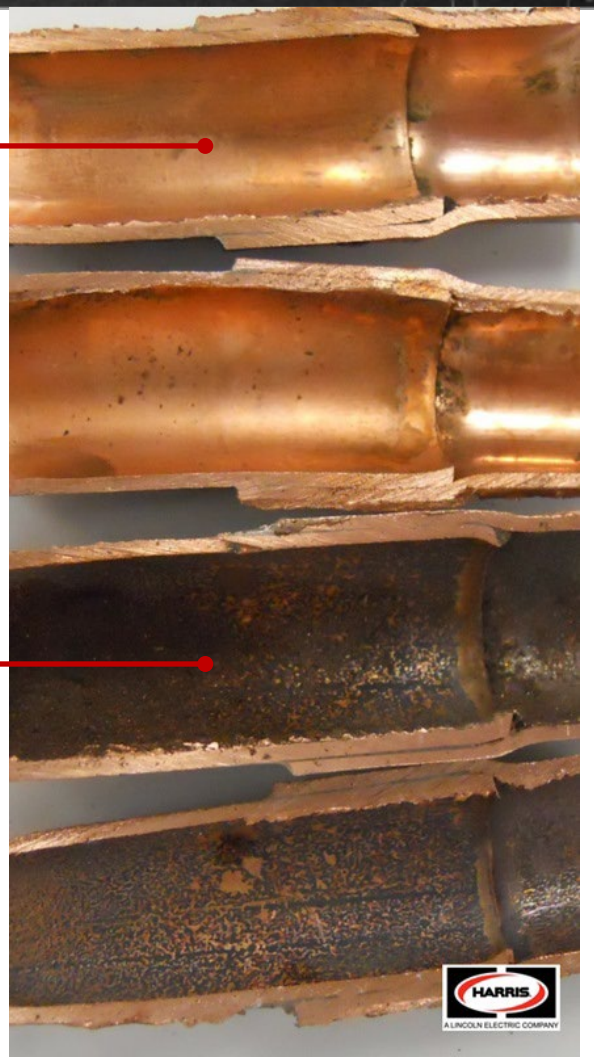
Positive – Displacement Oil Pump
ensures an adequate supply of oil to the bearing system throughout the operating speed range of 900 to 7000 RPM.


EMERSON
COPELAND SCROLL

TROUBLESHOOTING, SERVICE PROCEDURES & BEST PRACTICES

APPLICATION, INSTALLATION, & SERVICE BEST PRACTICES – BRAZING WITH NITROGEN

- Heating up copper to above 500F can cause copper oxide to form rapidly inside and outside the copper.
- Purging with nitrogen displaces the oxygen.
- Elimination copper oxide inside the system can improve equipment life cycle.
- “Purge” is a flow rate of 2-5 SCF/H
- There are multiple tool venders who make purging tools.



APPLICATION, INSTALLATION, & SERVICE BEST PRACTICES – TRIPLE EVACUATION

Evacuation and Leak Testing (Triple Evacuation Process)

Steps:

1. Evacuate system to 1500 Microns.
   Once it has reached 1500 microns pressurize the system with dry nitrogen back up to 0Psig

2. Evacuate system to 1000 Microns.
   Once it has reached 1000 microns pressurize the system with dry nitrogen back up to 0Psig

3. Evacuate System to 500 microns or less .
   Perform a rise test by allowing the vacuum to hold >500 microns without climbing for at least 30minutes.

APPLICATION, INSTALLATION, & SERVICE BEST PRACTICES – CONFIRMING PROPER AIRFLOW

METHOD 1: AIR FLOW PERFORMANCE DATA CHART

3.13.3 AIRFLOW PERFORMANCE DATA: (-)H2T

Air-Handler (-)H2T	Outdoor Unit	Motor Speed From Factory	Blower			Motor Speed	CFM [L/s]/Air Delivery / RPM / Watts (Dry Coil, No Filter, No Heat) External Static Pressure - Inches W.C. [kPa]							
			Size Motor HP	Size	#Speeds			0.1 [.02]	0.2 [.05]	0.3 [.07]	0.4 [.10]	0.5 [.12]	0.6 [.15]	0.7 [.17]
2417ST 2417SE No Heat	(-)A1714A (-)P1724A	Y1 tap 4 Y2 tap 5	1/3	10x8	5	1	CFM [L/s]	651 [307]	511 [241]	307 [145]	-	-	-	-
							RPM	530	558	590	-	-	-	-
							Watts	61	47	35	-	-	-	-
						2	CFM [L/s]	734 [346]	526 [248]	387 [182]	-	-	-	-
							RPM	579	580	614	-	-	-	-
							Watts	66	46	42	-	-	-	-
						3	CFM [L/s]	872 [412]	826 [390]	782 [369]	735 [347]	690 [326]	637 [301]	578 [273]
							RPM	606	654	701	750	800	854	906
							Watts	91	97	103	108	115	123	122
2417ST 2417SE No Heat	(-)A1714A (-)P1724A	Y1 tap 4 Y2 tap 5	1/3	10x8	5	4	CFM [L/s]	918 [433]	872 [412]	829 [391]	783 [370]	738 [348]	691 [326]	638 [301]
							RPM	627	677	724	766	816	866	917
							Watts	103	111	116	122	128	137	141
						5	CFM [L/s]	1047 [494]	1003 [473]	966 [456]	925 [437]	855 [418]	845 [399]	806 [380]
							RPM	692	737	780	821	860	903	944
							Watts	140	149	156	163	173	178	184
2421ME No Heat	(-)A1724A	Y1 tap 4 Y2 tap 5	1/3	10x8	5	2	CFM [L/s]	810 [382]	642 [303]	361 [170]	-	-	-	-
							RPM	477	510	555	-	-	-	-
							Watts	63	52	34	-	-	-	-
						3	CFM [L/s]	939 [443]	815 [385]	666 [314]	597 [282]	547 [258]	479 [226]	433 [204]
							RPM	537	565	59	662	738	795	852
							Watts	91	83	72	77	87	90	100
2421ME No Heat	(-)A1724A	Y1 tap 4 Y2 tap 5	1/3	10x8	5	4	CFM [L/s]	838 [395]	674 [318]	423 [200]	-	-	-	-
							RPM	495	527	571	-	-	-	-
							Watts	69	60	42	-	-	-	-
						5	CFM [L/s]	1038 [490]	956 [451]	931 [439]	877 [414]	842 [397]	787 [371]	749 [353]
							RPM	581	629	677	723	722	826	879
							Watts	120	122	132	138	149	157	168
3617SE No Heat	(-)A1736A (-)P1736A	Y1 tap 4 Y2 tap 5	1/2	10x8	5	1	CFM [L/s]	769 [363]	617 [291]	445 [210]	-	-	-	-
							RPM	559	580	625	-	-	-	-
							Watts	71	58	50	-	-	-	-
						2	CFM [L/s]	1093 [516]	1050 [496]	1017 [480]	997 [471]	935 [441]	-	-
							RPM	671	725	764	809	852	-	-
							Watts	153	168	174	180	188	-	-
						3	CFM [L/s]	1310 [618]	1246 [588]	1187 [560]	1133 [535]	1084 [512]	1040 [491]	1001 [472]
							RPM	686	746	801	851	896	936	971
							Watts	177	201	221	237	249	257	261
3617SE No Heat	(-)A1736A (-)P1736A	Y1 tap 4 Y2 tap 5	1/2	10x8	5	4	CFM [L/s]	1270 [599]	1237 [584]	1199 [566]	1165 [550]	1130 [533]	-	-
							RPM	775	816	846	882	926	-	-
							Watts	237	249	259	268	277	-	-
						5	CFM [L/s]	-	-	-	-	1275 [602]	1244 [587]	1211 [572]
							RPM	-	-	-	-	963	999	1029
							Watts	-	-	-	-	338	349	363
3621ME No Heat	(-)A1736A	Y1 tap 4 Y2 tap 5	3/4	10x10	5	2	CFM [L/s]	814 [384]	852 [402]	776 [366]	659 [311]	599 [283]	-	-
							RPM	582	609	690	773	812	-	-
							Watts	75	86	100	110	116	-	-
						3	CFM [L/s]	-	-	1096 [517]	1043 [492]	964 [455]	909 [429]	820 [387]
							RPM	-	-	753	817	888	948	1003
							Watts	-	-	164	178	193	207	222
3621ME No Heat	(-)A1736A	Y1 tap 4 Y2 tap 5	3/4	10x10	5	4	CFM [L/s]	1053 [497]	1001 [472]	939 [443]	872 [412]	-	-	-
							RPM	601	660	726	803	-	-	-
							Watts	107	117	130	143	-	-	-
						5	CFM [L/s]	-	-	1305 [616]	1260 [595]	1213 [572]	1147 [541]	1107 [522]
							RPM	-	-	829	876	927	987	1028
							Watts	-	-	238	249	265	281	294
4821ME No Heat	(-)A1748A (-)P1748A	Y1 tap 4 Y2 tap 5	3/4	10x10	5	1	CFM [L/s]	865 [408]	735 [347]	648 [306]	597 [282]	538 [254]	497 [235]	435 [205]
							RPM	589	652	721	765	804	846	890
							Watts	90	86	96	102	109	114	119
						2	CFM [L/s]	1104 [521]	1044 [493]	995 [470]	949 [448]	-	-	-
							RPM	683	734	795	851	-	-	-
							Watts	149	158	171	184	-	-	-
						3	CFM [L/s]	-	-	1399 [660]	1361 [642]	1321 [623]	1286 [607]	1242 [586]
							RPM	-	-	940	987	1040	1075	1121
							Watts	-	-	342	357	378	392	409

NOTE: The addition of field installed electric heat will reduce air-flow by approximately 3%.

METHOD 2: TEMPERATURE RISE METHOD

$$CFM = \frac{BTU\ Output\ (Volts\ x\ Amps\ x\ 3.414)}{Temperture\ Rise\ x\ ACF\ (altitude\ correction\ factor)}$$

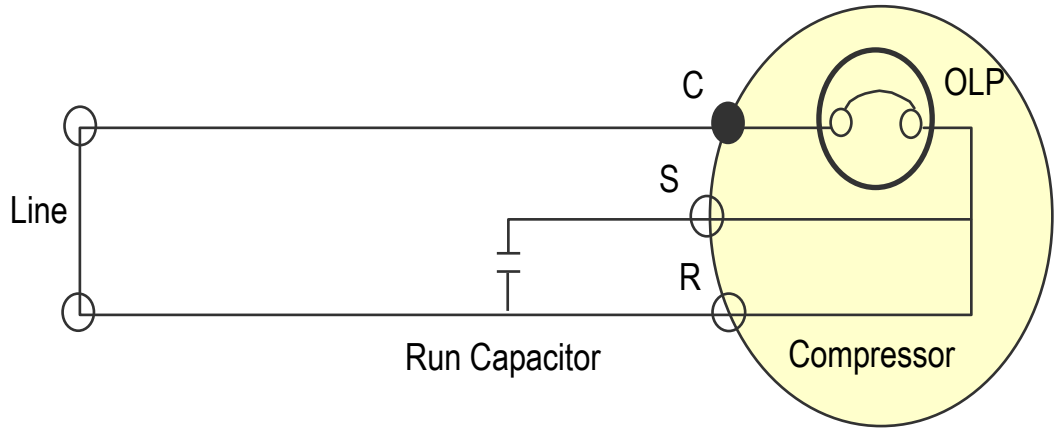
APPLICATION, INSTALLATION, & SERVICE BEST PRACTICES – SYSTEM CHARGING

- Indoor ambient temperature must be between 70°F and 80°F dry bulb
- Cooling Mode ONLY: 55°F outdoor dry bulb and above
- Heating Mode ONLY: 40°F and 60°F outdoor dry bulb
- The system must run for a minimum of 15 -20 minutes before fine tuning charge.
- Use the charging chart on the system to verify charge. (not by weight)

DIAGNOSING COMPRESSORS – CHECKING THE OVERLOAD PROTECTION (OLP)

Applies to: Copeland, LG, and Highly Single-Phase compressors.

- Measure resistance between C-R, C-S, and S-R.
- If both C-R & C-S show no resistance the OLP is likely open.
- If the OLP is open the motor has likely over heated.

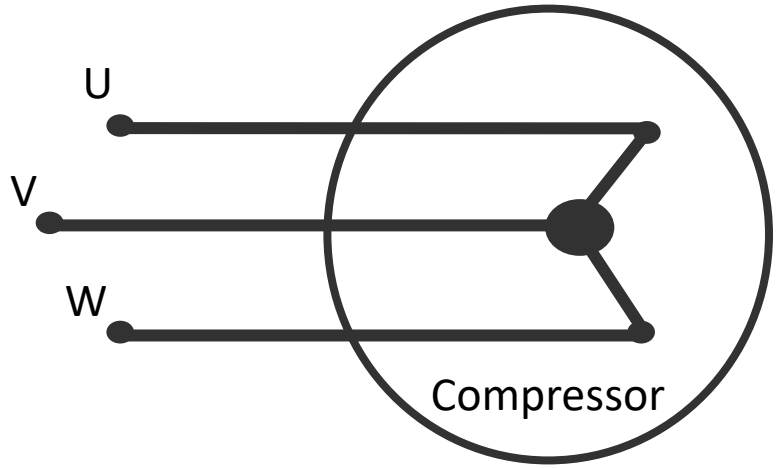


DIAGNOSING COMPRESSORS – CHECKING THE OVERLOAD PROTECTION (OLP)

Applies to: Copeland ZPV***KE, 3 Phase motor.


COPELAND/LG

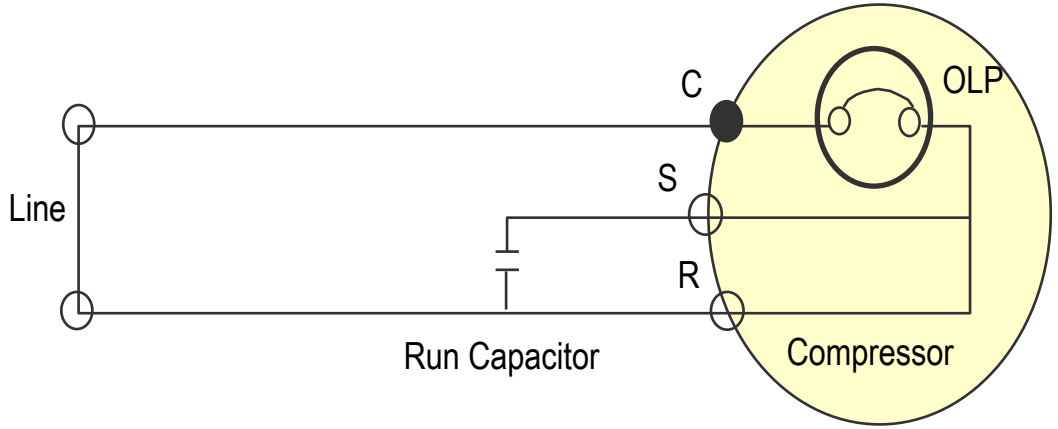
- The ZPV compressor is paired with the Emerson inverter drive.
- ZPV compressor does not have internal OLP
- The inverter drive senses discharge temp through a thermistor installed on the discharge line.
- If the temperature gets too high a system alarm will be generated.



DIAGNOSING COMPRESSORS – CHECKING COMPRESSOR WINDINGS

Applies to: Copeland, LG, and Highly Single-Phase compressors.

- If no OLP issue, perform additional check
- Measure resistance between C-R, C-S and S-R.
- S-R should equal the sum of C-R and C-S
- Example: IF C-R = 1.7ohm & C-S = 1.3ohm, then S-R should = 3ohm +/- 10%.

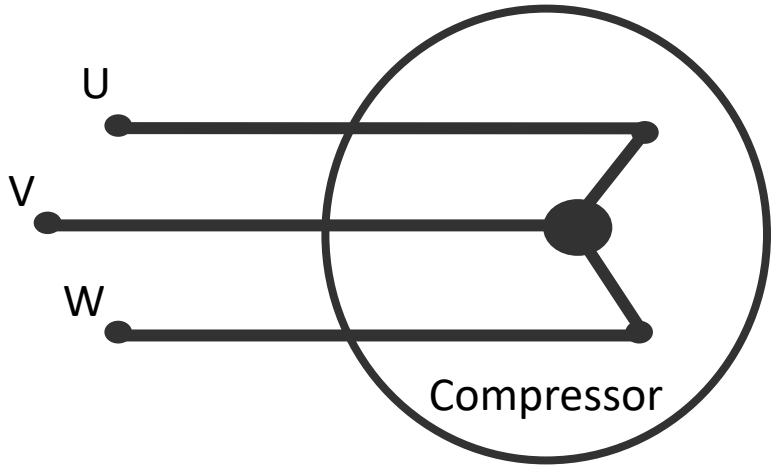


DIAGNOSING COMPRESSORS – CHECKING COMPRESSOR WINDINGS

Applies to: Copeland ZPV***KE, 3 Phase motor.

- Measure resistance between W-U, W-V, and V-U.
- All resistance should approximately read equal in value.
- If equal, the compressor windings are good.
- If not equal, compressor windings are defective.

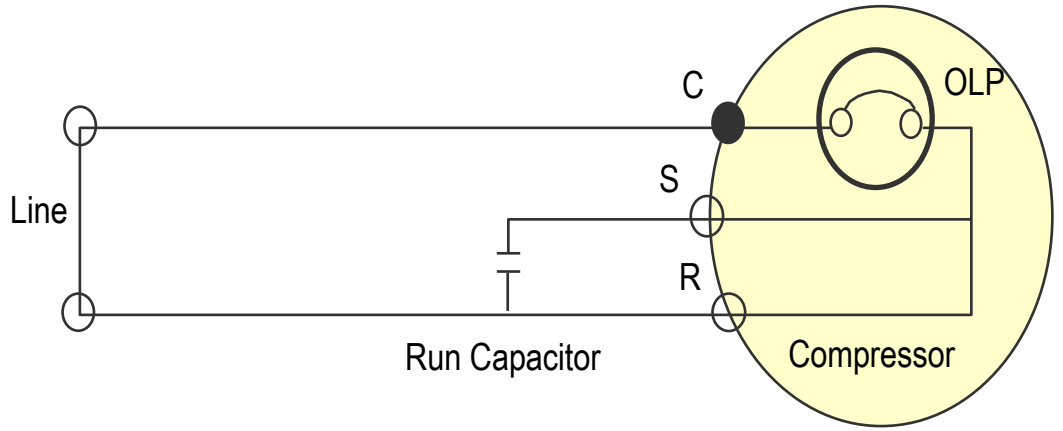

COPELAND/LG



DIAGNOSING COMPRESSORS – CHECKING ELECTRICAL SHORT TO GROUND

Applies to: Copeland, LG, and Highly Single-Phase compressors.

- Measure resistance from C-Ground, S-Ground, and R-Ground.
- Resistance should read infinite or open to indicate no short to ground.
- If resistance is measured from any terminal to ground, compressor is shorted.
- If no resistance is measured, compressor is not shorted.

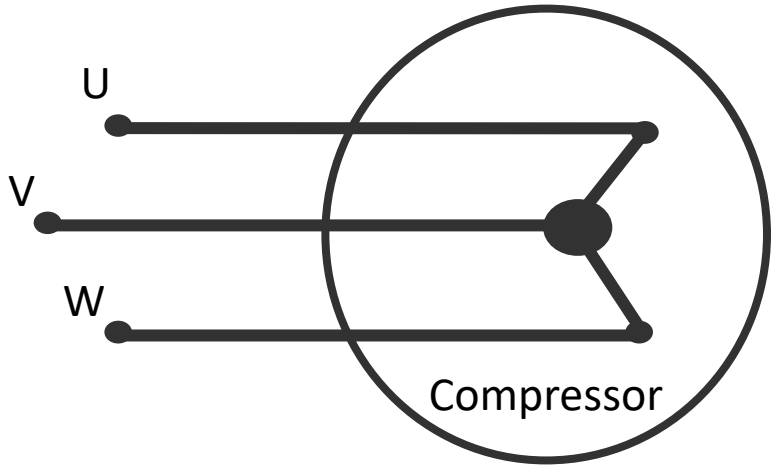


DIAGNOSING COMPRESSORS – CHECKING ELECTRICAL SHORT TO GROUND

Applies to: Copeland ZPV***KE, 3 Phase motor.

- Measure resistance from W-Ground, U-Ground, and V-Ground.
- Resistance should read infinite or open to indicate no short to ground.
- If resistance is measured from any terminal to ground, compressor is shorted.
- If no resistance is measured, compressor is not shorted.


COPELAND/LG



DIAGNOSING COMPRESSORS – DIAGNOSING SEIZED COMPRESSORS

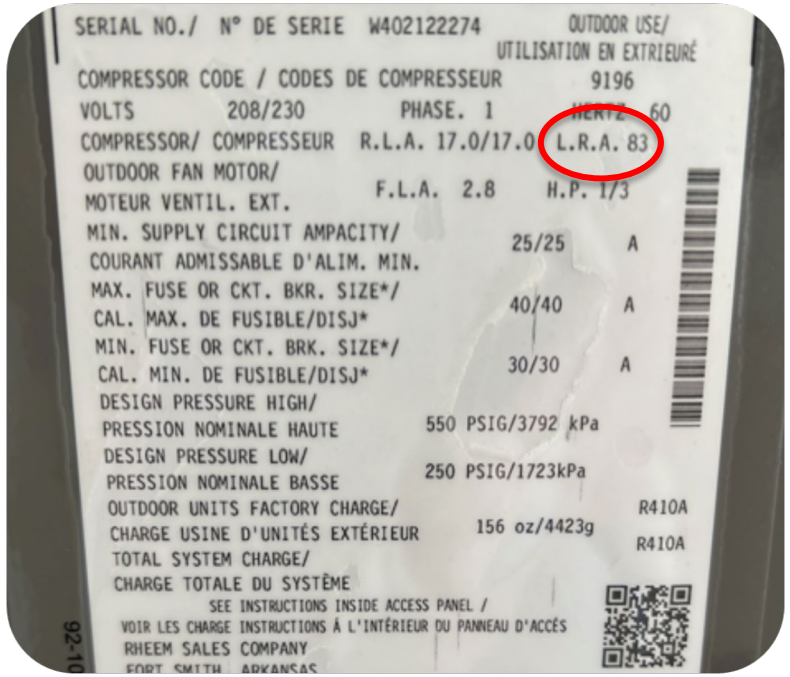
Applies to: Copeland & LG single phase compressors.

- Identify correct setting on your AMP meter.
- Clamp amp meter to black common wire going to compressor from contactor.
- Give the system an active heating or cooling call.
- Monitor starting amperage of compressor .

DIAGNOSING COMPRESSORS – DIAGNOSING SEIZED COMPRESSORS CONT'D

Applies to: Copeland & LG single phase compressors.

- Is the amperage greater than or equal to LRA?
- If so, determine root cause of seized compressor.
- Bad start / run component, Rotor / crank locked up, or Liquid submerge?
- Take corrective action necessary



DIAGNOSING COMPRESSORS – CHECKING UNLOADING SOLENOID

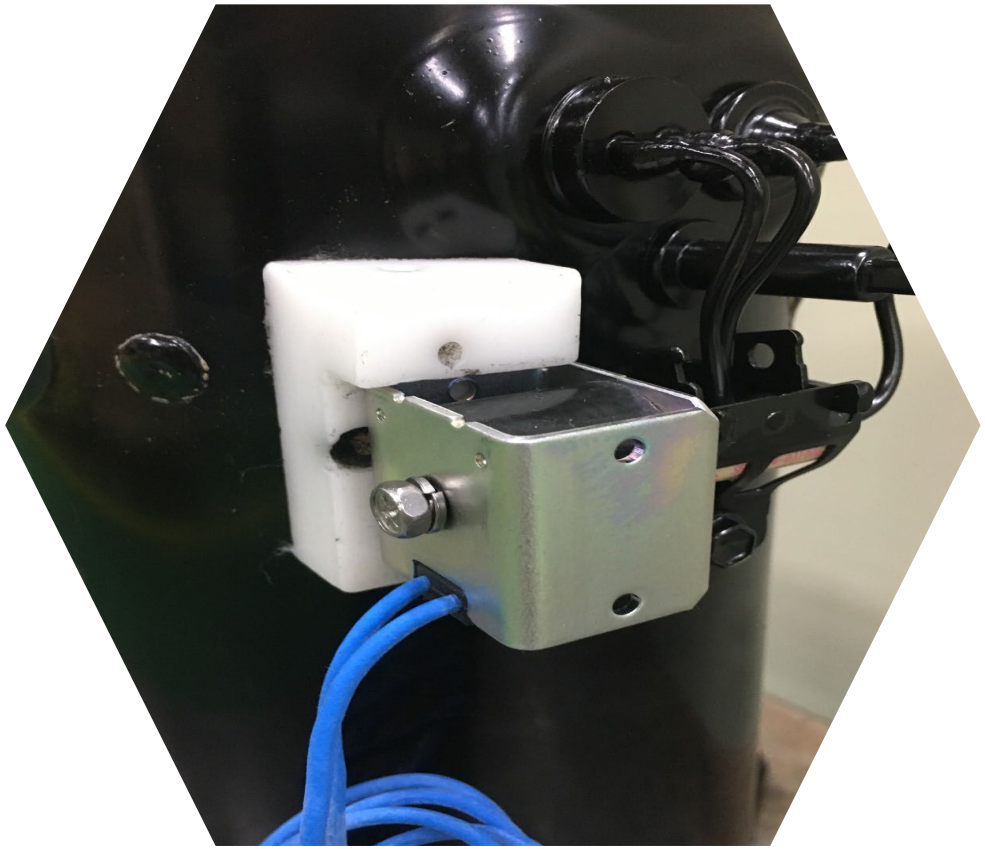
Applies to: Copeland, ZPS**K7E 2 stage compressor. (Internal Solenoid)

- Energize a call for Y1 Cooling.
- Clamp Amp meter the black common wire going to the compressor.
- Energize a call for Y2 Cooling.
- Should see approximately 25% increase in amperage.

DIAGNOSING COMPRESSORS – CHECKING UNLOADING SOLENOID

Applies to: LG, APM***K | ABM***K
2 stage compressors. (External Solenoid)

- Energize a call for Y1 Cooling.
- Clamp Amp meter around d1 of the 3 wires going to the compressor.
- Energize a call for Y2 Cooling.
- Should see approximately 25% increase in amperage.



SHOW CUSTOMERS HOW YOU CAN HELP THEM LIVE MORE COMFORTABLY—AND RESPONSIBLY

Learn more about the Sustainability Standout™ seal and Ruud's commitment to sustainability:
www.Ruud.com/Sustainability

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KEY TAKEAWAYS

1

We will be utilizing multiple compressor technologies in the new M1 Product.

Compressor Types:

- Single Stage Scroll
- Two Stage Scroll
- Twin Rotary
- Variable Speed Scroll

2

We will be utilizing multiple sources for our compressors to diversify our supply chain.

3

The compressors we are choosing to use were extensively tested and proven during thousands of run hours through our field trial tests.

4

Understanding how to apply and install equipment will be crucial in prolonging the life of these compressors.

THANK YOU!

QUESTIONS?