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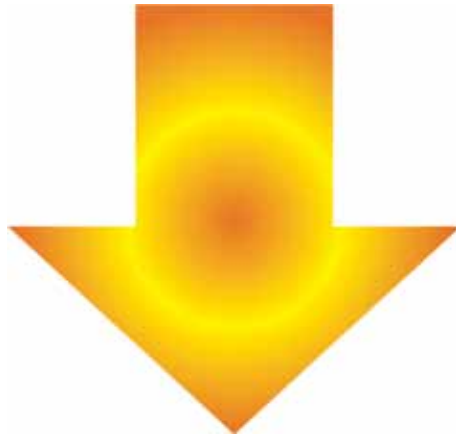
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SXT101	35	THA2P	75	VG66	68, 69
SXT103 thru SXT106	35	THC120	73	VGC	68, 69
SXT111 thru SXT116	35	THP2	73	VLCEL	83
SXT148	35	THP5	94	VLPAPER	83
SXT150	35	THS60	106	VLS CABLE	83
SXT160	35	TLA	81	VLSK	83
T1001 thru T1197	107, 108, 109, 110	TP15	91	VLT	83
T1121 thru T1125	42	TP15	96	VLT PROBE	83
T2001 thru T2112C	107, 108, 109, 110	TP6	96	VLT4-115	83
T45	34	TPFDA	78	VLT4-12	83
TA2	74	TPFDA	81	VLT4-230	83
TA22	74	TPFDA	87	VLTH PROBE	83
TA2-220	74	TPM110	73	VLTH-115	83
TA2-220C	74	TPMP2	12	VLTH-12	83
TA2C	74	TPMPU	12	VLTH-230	83
TA3001	106	TPP	78	VLWPCASE	83
TA3-220	76	TPS	78	VPR	83
TA3C	76	TTP5	94	VSG	68, 69
TA3C220	76	UFC1	104	WA100	80
TA3P	75	UPR041	59	WH3	14
TA3P	76	UPR081	59	WH4	14
TA6	74	UR041	59		
TA6220	74	URC0210	59		
TA6C	74	URC0210RC	59		
TA6C220	74	URC0410	59		
TA7	74	URC0410RC	59		
TA7C	74	URC0810	59		
TA7PROBE	75	URC0810RC	59		
TAL2	76	UR081	59		
TAP4	76	URSC10	59		
TAP4-220	76	USBS	75		
TAP4-220	76	USBS	87		
TAP4C	76	UW1	105		
TC103	106	V20120F31	98		
TC104	106	V20120F7D	98		
TC2	104	V2050F12	98		
TCW100	75	V2050F31	98		
TCW100	91	V2050F7	98		
TCW100	94	V3010C12	98		
TCW25	75	V3010C24	98		
TCW25	91	V3010C31	98		
TCW25	94	V3010C7	98		
TCW50	75	V3050C24	98		
TCW50	91	V3050C31	98		
TCW50	94	V3050C7	98		
TCW75	75	V40110F12	98		
TCW75	91	V40110F24	98		

Keep Scrolling
Down



AC Hard Starts

A/C Hard Starts

Choosing the correct hard start for the application combines a technical need with a professional preference. Select from the broadest offering of Hard Starts from the Pioneer of Hard Start technology.

Four (4) styles to choose from:

- **HT Series** High Torque Series Relay (EPR)/Capacitor combination
- **SPPE Elite Series** Electronic Potential Relay (EPR)/Capacitor combination
- **SPP Series** PTC/Capacitor combination
- **SK3W Series** 3-wire Potential Relay/Capacitor combination

Applications

- Use on any single phase air conditioner or refrigeration unit
- Low voltage situations
- Hard starting compressors



NATE Recognized Course 1867-0002
SUPCO Hard Start Kits

HT Series - HIGH TORQUE Hard Start Kits

Matching a high current potential relay with a high voltage capacitor means the ultimate *Torque* for the most reliable Hard Start Kits. Choose from 4 sizes for the best solution.



Features/Benefits

- Device includes high current potential relay and 330 VAC start capacitor.
- 40 Amp Electronic Potential relay (EPR) provides superior performance for low voltage applications.
- Senses Motor Start
- Instant Re-start
- Safety time delay if compressor fails to start
- Easy 2-wire installation
- Made in the USA
- UL recognized

Applications

- For use on ALL types of single phase 208 – 277 VAC air conditioning, heat pump and refrigeration compressors; including reciprocating, scroll and rotary from 1 – 5 hp.



Product Information

SUPCO. PART NO.	RECOMMENDED RANGE	APPLICATION	INCREASE IN TORQUE (%)	CAPACITOR DIMENSIONS	CAPACITOR SPECIFICATIONS	REPLACES KICKSTART
HT70	1-3 hp	Cap Tube & Orifice Metering Devices	1000 %	6 3/4"L X 1 9/16"W X 2 1/2"H	108-130 μ F X 330 VAC	KS8
HT80	1-3 hp	All Metering Devices	1000 %	6 3/4"L X 1 9/16"W X 2 1/2"H	189-227 μ F X 330 VAC	TO-5
HT90	Maneurop Compressors	All Maneurop Compressors +	1000 %	6 3/4"L X 1 9/16"W X 2 1/2"H	233-280 μ F X 330 VAC	MP1
HT100	3.5 - 5 hp	All Metering Devices	1000 %	6 3/4"L X 1 9/16"W X 2 1/2"H	270-324 μ F X 330 VAC	KS1

+ Use HT80 for M/N's MT18JA* MTEJA* & MTZ18JA*

*** For HT Cross Reference refer to page 125 -127**

Hard Start Comparison Selection Table	HT Series	SPPE Series	SK3W Series	SPP Series
Start Sensing Technology	Voltage	Voltage	Voltage	NA
Uses Electronic Potential Relay (EPR)	Yes	Yes	Yes	No
Instant Re-Start	Yes	Yes	Yes	No
Senses Motor Start	Yes	Yes	Yes	No
Two wire, non-polarized	Yes	Yes	No	Yes
OEM Style, 3-wire	No	No	Yes	No
Replaces 3-wire capacitor kit	Yes	Yes	Yes	Yes
UL approved	Yes	Yes	Pending	Yes
PTCR Device	No	No	No	Yes
Backup Timing Safety Circuit	Yes	Yes	No	No
Potentially damaging to motor windings	No	No	No	No
Requires non-replaceable fuse protection	No	No	No	No
330V Capacitor	Yes	Yes	Yes	No

Potential Relay Devices

The Potential Relay start device has recently been the subject of considerable attention in the market place. Several manufacturers are promoting products with a variety of technologies. The primary distinction between the potential relay devices relates to a voltage sensing or current sensing capability.

The voltage sensing method monitors start winding developed voltage and actuates a mechanical or electronic potential relay to disengage the start capacitor. The electronic potential relay is inherently more reliable and precise than the older type mechanical potential relay. SUPCO employs voltage sensing technology with an electronic potential relay.

AC Hard Starts

SPPE 'E Class' Series EPR/Capacitor Combination



See Page 123-124
for E Class Advantage
Tech Notes

Features/Benefits

- Electronic Potential Relay Technology (EPR)
- Backup electronic timing circuit to protect the compressor
- Voltage sensing
- Instant Re-start
- Easy 2-wire installation
- Can be used on PSC and CSIR type compressors
- 330 V Capacitor



PART NO.	OPERATING VOLTAGE (VAC)	RECOMMENDED RANGE (hp)	CAPACITOR SIZE (μF)
SPP4E	90 – 130	1/8 – 1	88 – 106
SPP5E	170 – 277	1/3 – 2	43 – 52
SPP6E	170 – 277	1/2 – 3	88 – 106
SPP7E	170 – 277	1 – 4	130 – 156
SPP8E	170 – 277	1 and up	189 – 227
SPP9E	170 – 277	1 and up	233 – 280
SPP10E	170 – 277	3 and up	270 – 324

SPP Series PTC/Capacitor Combination

Features/Benefits

- Positive Temperature Coefficient Technology (PTC)
- Field proven reliability
- Easy 2-Wire installation
- Most economic



PART NO.	VOLTAGE (VAC)	RECOMMENDED RANGE (hp)	INCREASE IN TORQUE (%)
SPP*	90 – 277	1/2 to 10	250%
SPP5	90 – 277	1/2 to 10	300%
SPP6	90 – 277	1/2 to 10	500%
SPP7S	90 – 277	1/2 to 10	600%

* This model does not include a capacitor

SK3W Series 3-Wire Potential Relay/Capacitor Combination

Features/Benefits

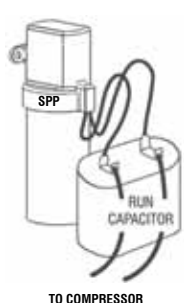
- OEM-Style 3-wire Installation
- Instant re-start
- Easy installation with "fast clamp-on" connection
- Models for standard and scroll compressors
- 330 VAC Start Capacitor Voltage



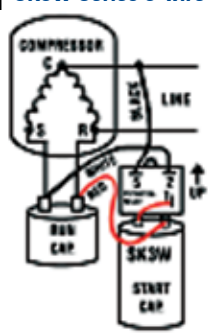
PART NO.	hp RATINGS	COMPRESSOR	DROP-OUT VOLTAGE (VAC)	PICK-UP VOLTAGE (VAC)	MAXIMUM COIL VOLTAGE	CAPACITOR SIZE (μF)
SK3W2	1 thru. 2 hp	Standard	60-135	204-233	500 VAC	88 - 108
SK3W3	2 1/2 thru. 3 1/2 hp	Standard	60-121	171-184	420 VAC	189 - 227
SK3W5	4 thru. 5 hp	Standard	60-121	171-184	420 VAC	243 - 292
SK3W4S	3 thru. 4 hp	Scroll	60-135	204-233	500 VAC	189 - 227
SK3W6S	4 1/2 thru. 6 hp	Scroll	60-121	171-184	420 VAC	270 - 324

Application Note: 2-wire vs. 3-wire Installation

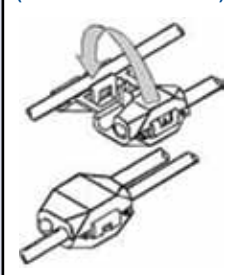
HT, SPP & SPPE Series 2-wire



SK3W Series 3-wire



"Fast Clamp-On" Connection (used with SK3W Series)



Relays

Universal Potential Relays

Note: See Technical Area for Application Note on Relays

Replacing all potential relays, these WIRE TO WIRE Universal Potential Relays offer the ultimate in convenience. One potential relay to fit any application. Choose to “drop in” the SUPR Universal Potential Relay or “dial in” the exact pick-up voltage for the APR5 Adjustable Potential Relay. State of the Art electronic circuitry provides Wire to Wire replacement of any potential relay with added motor protection.

Applications

- Replaces all OEM potential relays
- Use on any single phase motor or air conditioning and refrigeration compressor up to 5 hp.

Features/Benefits

- Reduces inventory
- Wire to Wire Replacement for virtually ALL potential relays.
- Recycles instantly
- Replaces both 3 and 5 terminal potential relays
- Normally closed contacts
- Accommodates screw-on or push-on connections.
- Dimensions identical to industry standard potential relays.
- Easy replacement mounting with universal mounting bracket.
- Start winding protection if motor does not start.
- Prevents start capacitor venting when motor doesn't start.
- Contact Material: Silver Cadmium Oxide



SUPR Universal Potential Relay

- Time Function Relay
- Start Time: 1.0 - 1.5 seconds

Common Specifications

Operating Voltage	110 – 270 VAC, Single Phase
Amperage	30 AMP
Motor Power Rating	up to 5 hp
Operating Position	Non-positional mounting.
Universal Mounting Bracket	Allows for easy installation. Unused portions of the bracket simply snap off with pliers.
Terminals	Screw or push-on. Adapters to convert screw-on to push-on are provided.
Dimensions	1.75W x 2.25L x 1.50H



APR5 Adjustable Potential Relay

- Adjustable, Voltage Sensitive Relay
- Set pick-up voltage
- Safety time out 1.0 – 1.5 seconds

90X Series Potential Relays

- Meets all requirements of OEM relays
- Universal break-off bracket

Features/Benefits

- 50/60 cycle
- Contact rating 35 amp @ 277 VAC
- Non-positional
- Instructions and wiring diagram included in each relay



PART NO.	CONTINUOUS COIL VOLTAGE		PICK-UP MIN. MAX.		DROP MAX.	OUT RELAY GROUPS*	REPLACES GE 3ARR
9063	170		139	153	55	2J; 2K; 2L; 2M; 5N; 7J; 7K; 7L; 7M; 7N; 8L; 8M; 8N	
9064	395		260	275	120	3A; 3B; 3AV; 3AU; 4A; 4B; 6A; 6B; 6AV; 10A; 10B; 10AU; 10AV; 14A; 14B; 16A	
9065	332		168	182	90	3P; 3R; 3AP; 5P; 5R; 5S; 5T; 13P; 19N; 22S	
9066	395		215	225	120	3U; 3V; 3AT; 6U; 6V; 6W; 16U	
9067	420		295	315	125	3C; 3D; 3AA; 4C; 4D; 4BK; 6C; 6D; 6AA; 10C; 10D; 26A; 26B; 26C; 26D	
9068	502		325	345	135	3E; 3F; 3AB; 3AC; 4E; 4F; 4G; 6E; 6F; 6G; 10H; 10AB; 10AC; 26E; 26F; 26G; 26H; 27E; 27F; 27G	
9069	336		180	195	105	3S; 3T; 10S; 10T; 10AS; 13S; 13T; 20S; 25S; 25T	
9070	253		285	305	77	5B; 5C; 5D; 5AA; 8B; 8C; 8D; 27A; 27B; 27C	
9071	420		212	232	121	6TV; 6TW; 10V; 16TV; 20V	

*Determine group from GE part number.

903X Series General Purpose Switching Relays

Double pole – double throw (DPDT)

Applications

- HVAC/ R
- Appliance vending machines
- Fan controls
- Business machines



PART NO.	COIL VOLTAGE	TERMINAL 1-2-3	TERMINAL 4-5-6	CROSS REFERENCE	
				ESSEX/RBM	HONEYWELL
90340	24	power	power	90-340	R8222D1014
90341	110/12	power	power	90-341	R4222D1013
90342	208/240	power	power	90-342	R4222N1021

CONTACT RATINGS	POWER 208/240V208/240V		PILOT 277V	
	120V	277V	120V	277V
Full Load Amps	12	6	-	-
Resistive Amps*	15	15	3	3
Locked Rotor Amps	60	35	-	-
Horsepower	3/4	3/4	1/10	1/10

*0.75 power factor

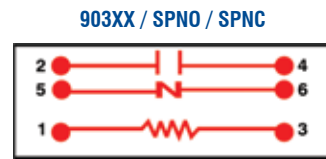
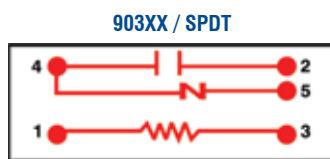
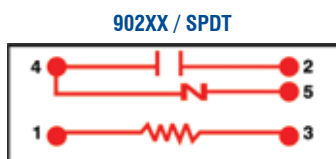
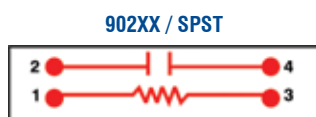
902XX & 903XX Series General Purpose Fan Relays



Engineering Data

- CONTACTS:** SPST-NO, SPST-NC, SPDT, 1 NO/1 NC, Material/ Power - Silver Alloy, Material 1/2 Pilot - Fine Silver
- POWER RATINGS (All Forms):** 125 VAC, 18A Resistive, 12 FLA, 60 LRA, 240/277 VAC, 18A Resistive, 8 FLA, 48 LRA
- SPECIAL POWER RATINGS (Form 1 & 2):** 125 VAC, 14 FLA, 84 LRA, 277 VAC, 25A Resistive
- PILOT RATINGS (All Forms):** 3A, 277 VAC Gen. Purpose, 250 VA @ 250 VAC, 277 VA @ 277 VAC, 125 VA @ 125 VAC
- COILS :** Voltage Ratings - 24, 120, 208/240, 77 VAC, 12, 24 VAC Frequency - 50/60 Hz Pick-up Voltage - AC 85% of nominal, DC 75% of nominal, Power Ratings -AC DC, Inrush 5 VA 3VA, Sealed 3 VA 3 VA

Wiring Diagrams



PART NO.	DESCRIPTION	AMPS	COIL VOLTAGE
90290	SPST	4	24V
90291	SPST	4	120V
90292	SPST	4	240V
90293	SPDT	1	24V
90294	SPDT	1	120V
90295	SPDT	1	240V
90370	SPDT	12	24V
90372	SPDT	12	120V
90374	SPDT	12	240V
90380	NO/NC	13	24V
90382	NO/NC	13	120V
90384	NO/NC	13	240V



Short Cycle Protector, Time Delay Relay and Contactor Combination

- Choose Delay on Break or Delay on Make model
- Ideal for split systems not supplied with contactor or time delay relay
- Prevents short cycling
- Contactor takes compressor load off the thermostat circuit

Features/Benefits

- Adjustable Delay
- Relay coil same voltage as load
- 1/4" male quick connect terminals
- Encapsulated circuitry
- Input Voltage: 208 - 230 VAC

PART NO.	DELAY TYPE	DELAY RANGE
TDP269	Delay on Make (DOM)	6 sec. to 300 sec.



Compressor Protection Package Combination

Combines Hard Start Kit with maximum compressor protection.

Features/Benefits

- Can be installed in pilot circuits for 24 to 288 VAC
- Adjustable time delay from 6 seconds to 5 minutes
- Operates with or without cooling thermostat anticipator
- Only two terminal connection on Time Delay
- Can be mounted as an assembly or snapped apart for separate mounting
- Two models available to suit specific requirements

Applications

- Residential and commercial PSC A/C units and heat pumps
- For all PSC A/C units from 1 hp to 10 hp
- Can be used on 115 thru 288 VAC units
- For severe low voltage or hard starting compressors

PART NO.	INCREASED TORQUE	TIME DELAY RANGE
SPP5TD	270 ounce inches (300%)	6 sec. to 5 minutes
SPP6TD	390 ounce inches (500%)	6 sec. to 5 minutes

Capacitors

Facts About Capacitors

- Capacitors are rated by microfarads (uF) and voltage. The rated capacitor should not be changed since the motor operates at maximum efficiency when using a specified capacitor size. However a plus or minus 10 % rule of thumb applies to the microfarad rating when changing out a capacitor. If necessary, the replacement capacitor voltage rating can be higher than specified, but not lower without effecting the capacitor life.
- Always replace the run capacitor when installing a new motor. If a defective capacitor is in the circuit the motor will probably not run. If it does run, it will operate as if it is overloaded. The motor speed will be low; it will overheat and probably activate the motor overload protector causing short cycling.
- Capacitors can hold a charge for long periods of time. To prevent shock the capacitor should be discharged before it is removed. The proper procedure to do this is to use a 5000 to 20000 Ohm bleed resistor.
- To check capacitors, use a SUPCO Capacitor Tester p/n MFD10.

Capacitors



Motor Run Capacitors

Features

- Non – PCB biodegradable synthetic oil
- Physical interrupter for safety
- Operating temperature -13°F to + 185°F (- 25°C to + 85°C)
- Microfarad uF tolerance +/- 5 %
- Drawn steel case construction
- Quad blade quick connect terminals
- Hermetically sealed

Applications

- Air Conditioning Compressors
- Refrigeration Compressors
- Furnace Blower Motors
- Condenser Fan Motors

SINGLE - OVAL

370 VOLT

PART NO.	μF
CR2X370	2
CR3X370	3
CR4X370	4
CR5X370	5
CR6X370	6
CR7.5X370	7.5
CR10X370	10
CR12.5X370	12.5
CR15X370	15
CR17.5X370	17.5
CR20X370	20
CR25X370	25
CR30X370	30
CR35X370	35
CR40X370	40
CR45X370	45
CR50X370	50
CR55X370	55
CR60X370	60
CR70X370	70

440 VOLT

PART NO.	μF
CR2X440	2
CR3X440	3
CR4X440	4
CR5X440	5
CR6X440	6
CR7.5X440	7.5
CR10X440	10
CR12.5X440	12.5
CR15X440	15
CR17.5X440	17.5
CR20X440	20
CR25X440	25
CR30X440	30
CR35X440	35
CR40X440	40
CR45X440	45
CR50X440	50
CR55X440	55
CR60X440	60

SINGLE - ROUND

370 VOLT

PART NO.	μF
CR15X370R	15
CR20X370R	20
CR25X370R	25
CR30X370R	30
CR35X370R	35
CR40X370R	40
CR45X370R	45
CR50X370R	50
CR55X370R	55
CR60X370R	60
CR70X370R	70
CR80X370R	80

440 VOLT

PART NO.	μF
CR5X440R	5
CR10X440R	10
CR15X440R	15
CR20X440R	20
CR25X440R	25
CR30X440R	30
CR35X440R	35
CR40X440R	40
CR45X440R	45
CR50X440R	50
CR55X440R	55
CR60X440R	60
CR70X440R	70
CR80X440R	80

DUAL - OVAL

370 VOLT

PART NO.	μF
CD15+5X370	15+5
CD15+10X370	15+10
CD20+5X370	20+5
CD20+15X370	20+15
CD25+3X370	25+3
CD25+5X370	25+5
CD25+10X370	25+10
CD30+3X370	30+3
CD30+5X370	30+5
CD30+7.5X370	30+7.5
CD35+3X370	35+3
CD35+5X370	35+5
CD35+7.5X370	35+7.5
CD35+10X370	35+10
CD40+5X370	40+5
CD45+5X370	45+5
CD55+5X370	55+5
CD55+7.5X370	55+7.5
CD60+10X370	60+10

440 VOLT

PART NO.	μF
CD20+5X440	20+5
CD25+5X440	25+5
CD25+7.5X440	25+7.5
CD25+10X440	25+10
CD30+5X440	30+5
CD35+5X440	35+5
CD35+7.5X440	35+7.5
CD40+5X440	40+5
CD40+7.5X440	40+7.5
CD45+5X440	45+5
CD45+7.5X440	45+7.5
CD50+5X440	50+5
CD55+5X440	55+5
CD55+10X440	55+10
CD60+5X440	60+5

DUAL - ROUND

370 VOLT

PART NO.	μF
CD20+5X370R	20+5
CD20+7.5X370R	20+7.5
CD25+3X370R	25+3
CD25+4X370R	25+4
CD25+5X370R	25+5
CD30+3X370R	30+3
CD30+5X370R	30+5
CD35+5X370R	35+5
CD40+5X370R	40+5
CD45+5X370R	45+5
CD80+5X370R	80+5
CD80+7.5X370R	80+7.5

440 VOLT

PART NO.	μF
CD20+5X440R	20+5
CD25+5X440R	25+5
CD25+7.5X440R	25+7.5
CD30+5X440R	30+5
CD30+7.5X440R	30+7.5
CD35+5X440R	35+5
CD35+7.5X440R	35+7.5
CD35+10X440R	35+10
CD40+5X440R	40+5
CD40+7.5X440R	40+7.5
CD40+10X440R	40+10
CD45+5X440R	45+5
CD45+7.5X440R	45+7.5
CD50+5X440R	50+5
CD50+7.5X440R	50+7.5
CD55+5X440R	55+5
CD55+7.5X440R	55+7.5
CD55+10X440R	55+10
CD60+5X440R	60+5
CD60+7.5X440R	60+7.5
CD80+5X440R	80+5
CD80+7.5X440R	80+7.5
CD80+10X440R	80+10



Motor Start Capacitors

UL approved Start Capacitors available in 110 VAC, 165 VAC, 220 VAC and 330 VAC.



Features

- Dry, electrolytic, no polarized type for intermittent duty in AC motors and compressors.
- Used where starting torques must be higher in relation to running torques.
- Moisture and oil resistant molded phenolic resin or plastic material.
- Standard dual blade terminals.
- Industry standard case sizes.

compressors.

110 VAC

PART NO.	VALUE (µF)	CASE SIZE
CS21-25X110	21-25	1
CS25-30X110	25-30	1
CS30-36X110	30-36	1
CS36-43X110	36-43	1
CS43-56X110	43-56	1
CS56-72X110	56-72	1
CS64-77X110	64-77	1
CS72-88X110	72-88	1
CS88-108X110	88-108	1
CS108-130X110	108-130	1
CS124-156X110	124-156	1
CS145-175X110	145-175	1
CS161-193X110	161-193	1
CS189-227X110	189-227	1
CS200-240X110	200-240	2
CS216-259X110	216-259	2
CS233-292X110	233-292	4
CS270-324X110	270-324	4
CS300-360X110	300-360	4
CS324-388X110	324-388	4
CS340-408X110	340-408	4
CS378-440X110	378-440	4
CS400-480X110	400-480	5
CS460-552X110	460-552	5
CS540-648X110	540-648	5
CS590-708X110	590-708	5
CS708-850X110	708-850	7
CS829-995X110	829-995	8
CS1000-1200X110	1000-1200	8

165 VAC

PART NO.	VALUE (µF)	CASE SIZE
CS124-156X165	124-156	4
CS145-175X165	145-175	4
CS161-193X165	161-193	4
CS233-292X165	233-292	5
CS270-324X165	270-324	5

220 VAC

PART NO.	VALUE (µF)	CASE SIZE
CS21-25X220	21-25	1
CS25-30X220	25-30	1
CS30-36X220	30-36	1
CS36-43X220	36-43	1
CS43-56X220	43-56	2
CS56-72X220	56-72	2
CS64-77X220	64-77	4
CS72-88X220	72-88	4
CS88-108X220	88-108	4
CS108-130X220	108-130	4
CS124-156X220	124-156	5
CS145-175X220	145-175	7
CS161-193X220	161-193	7
CS189-227X220	189-227	7
CS216-259X220	216-259	8
CS233-292X220	233-292	8
CS270-324X220	270-324	8

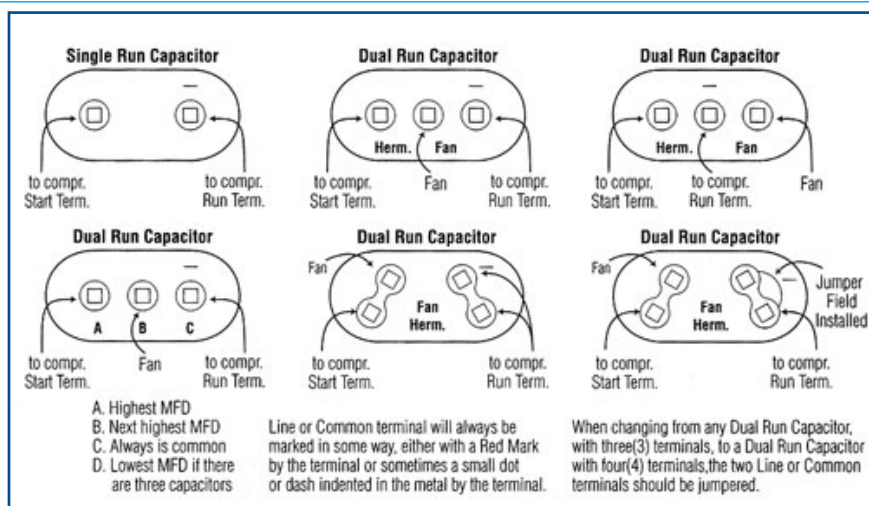
330 VAC

PART NO.	VALUE (µF)	CASE SIZE
CS21-25X330	21-25	1
CS25-30X330	25-30	1
CS30-36X330	30-36	4
CS36-43X330	36-43	4
CS43-56X330	43-56	4
CS53-70X330	53-70	5
CS56-72X330	56-72	5
CS72-88X330	72-88	5
CS88-108X330	88-108	7
CS108-130X330	108-130	8
CS124-156X330	124-156	8
CS130-156X330	130-156	8
CS145-175X330	145-175	8
CS161-193X330	161-193	8
CS189-227X330	189-227	8
CS216-259X330	216-259	8
CS270-324X330	270-324	8
CS324-388X330	324-388	8

Case Dimensions

CASE SIZE	DIAMETER	HEIGHT
1	1 7/16"	2 3/4"
2	1 7/16"	3 3/8"
4	1 13/16"	3 3/8"
5	1 13/16"	4 3/8"
6	2 1/16"	3 3/8"
7	2 1/16"	4 3/8"
8	2 9/16"	4 3/8"

Wiring Diagrams for Run Capacitors



Contactors

SUPCO Brand Definite Purpose Contactors

SUPCO contactors are designed for use in HVAC&R systems. These contactors are available in 1.5, 2 and 3 pole configurations from 20 through 90 full amps. Compact universal design allows replacement of the most common brands.



Features

- Silver Cadmium Oxide Contacts
- Ranges: 20 – 90 FLA
- Poles: 1.5, 2 & 3
- Coil Voltages: 24, 120 & 240 VAC
- Terminations: #10-32 screw – 20, 25 & 30 FLA Models, Box Lug – 40, 50, 60, 75 & 90 FLA Models
- Temperature Range: - 40°F to + 150°F / (- 40°C to + 65°C)
- UL & CSA Approved

Benefits

- Economically priced
- Space saving dimensions allow for smaller panels and more wiring room.
- Interchangeable mounting with many competitive contactors.
- Complete competitive cross-reference available.

Applications

- Low drop out voltage making them ideal for any air conditioning, heating and refrigeration application.

1.5 POLE PART NO.	FULL LOAD AMPS	COIL VOLTAGE
DP25241	25	24
DP251201	25	120
DP252401	25	240
DP30241	30	24
DP301201	30	120
DP302401	30	240

2 POLE PART NO.	FULL LOAD AMPS	COIL VOLTAGE
DP20242	20	24
DP201202	20	120
DP202402	20	240
DP25242	25	24
DP251202	25	120
DP252402	25	240
DP30242	30	24
DP301202	30	120
DP302402	30	240
DP40242	40	24
DP401202	40	120
DP402402	40	240

3 POLE PART NO.	FULL LOAD AMPS	COIL VOLTAGE
DP25243	25	24
DP251203	25	120
DP252403	25	240
DP30243	30	24
DP301203	30	120
DP302403	30	240
DP40243	40	24
DP401203	40	120
DP402403	40	240
DP50243	50	24
DP501203	50	120
DP502403	50	240
DP60243	60	24
DP601203	60	120
DP602403	60	240
DP75243	75	24
DP751203	75	120
DP752403	75	240
DP90243	90	24
DP901203	90	120
DP902403	90	240

Contactors Nomenclature

Example: DP30242
 DP = Definite Purpose
 30 = Full Load Amps
 24 = Coil Voltage
 2 = # Of Poles

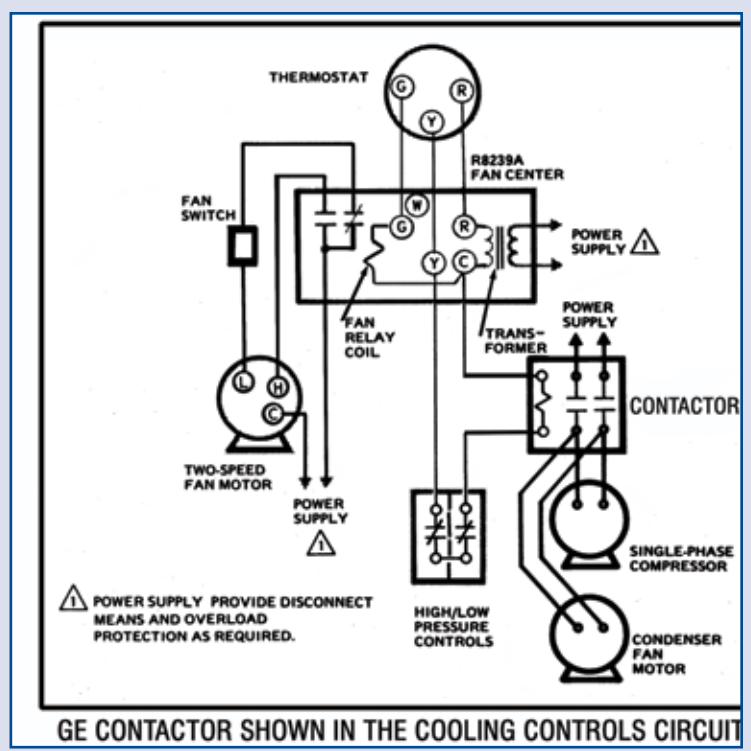
Application Note

The contactor is the primary controller in a cooling controls circuit. It is the switching device which activates the compressor motor to pump refrigerant through the system to provide cooling.

Contactors are used to break the power supply to the compressor. Either 1 or 2 poles are needed for single phase; 2 or 3 poles for 3 phase motors. Auxiliary contacts may be used for interlock switching, fan loads or crankcase heaters. If the contactor is selected with an adequate current rating, the condenser fan may also be wired in parallel with the compressor. Then the condenser fan is energized whenever the compressor is powered.

Checking Contactor Operation:

- Check contactor operation by switching the contactor from the system controls.
- Make sure that the pressure and overload controls can break the system circuit to prevent contactor operation, if necessary.



Supco Brand Contactor Cross Reference

PART NO.	GE	API	ARROW HART	CUTLER HAMMER	DIVERSITECH	ELMWOOD	FURNAS	GE	GEMLINE	GLOBAL CUTLER HAMMER
DP25241	CR453CB3HAA	***	C251NU10	C25CNB125T	***	***	45DG10AJD8A	CR353CB3AH1	***	4140
DP251201	CR453CB3AAA	***	C251NU20	C25CNB125A	***	***	45DG10AFD8A	CR353CB3AA1	***	4141
DP252401	CR453CB3BAA	***	C251NU30	C25CNB125B	***	***	45DG10AGA	CR353CB3AB1	***	4142
DP30241	CR453CC3HAA	***	C301NU10	C25CNB130T	***	***	45EG10AJA	CR353CD3AH1	***	4143
DP301201	CR453CC3AAA	***	C301NU20	C25CNB130A	***	***	45EG10AJA	CR353CD3AA1	***	4144
DP302401	CR453CC3BAA	***	C301NU30	C25CNB130B	***	***	45EG10AGA	CR353CD3AB1	***	4145
DP20242	CR453CA2HAA	***	C202U10	C25BNB220T	***	30B020	45CG20AJ	CR353CA2AH1	***	4101
DP201202	CR453CA2AAA	***	C202U20	C25BNB220A	***	30B0-20	45CG20AF	CR353CA2AA1	***	4102
DP202402	CR453CA2BAA	***	C202U30	C25BNB220B	***	***	45CG20AG	Same	***	4103
DP25242	CR453CB2HAA	***	C252U10	C25BNB225T	DP25224	30C0-20	45DG20AJ	CR353CB2AH1	***	4104
DP251202	CR453CB2AAA	***	C252U20	C25BNB225A	DP252120	30C0-20	45DG20AF	CR353CB2AA1	***	4105
DP252402	CR453CB2BAA	***	C252U30	C25BNB225B	DP252240	30C0-20	45DG20AG	CR353CB2AB1	***	4106
DP30242	CR453CC2HAA	SA2S3024V	C302U10	C25BNB230T	DP30224	30E0-20	45EG20AJ	CR353AC2AH1	***	4107
DP301202	CR453CC2AAA	SA2S30120V	C302U20	C25BNB230A	DP302120	30E0-20	45EG20AF	CR353AC2AA1	***	4108
DP302402	CR453CC2BAA	SA2S30240V	C302U30	C25BNB230B	DP302240	30E0-20	45EG20AG	CR353AC2AB1	***	4109
DP40242	CR453CE2HBB	SA2M4024V	ACC420U10	C25DNF240T	DP40224	30F0-20	45GG20AJ	CR353AD2BH1	***	4161
DP401202	CR453CE2ABB	SA2M40120V	ACC420U20	C25DNF240A	DP402120	30F0-20	45GG20AF	CR353AD2BA1	***	4162
DP402402	CR453CE2BBB	SA2M4024V	ACC420U30	C25DNF240B	DP402240	30F0-20	45GG20AG	CR353AD2BB1	***	4163
DP25243	CR453AB3HAA	***	ACC220U10	C25DND325T	***	30D0-30	42AF35AJ	CR353AB3AH1	DP2530	4110
DP251203	CR453AB3AAA	***	ACC220U20	C25DND325A	***	30D0-30	42AF35AF	CR353AB3AA1	DP2531	4111
DP252403	CR453AB3BAA	***	ACC220U30	C25DND325B	***	30D0-30	42AF35AG	CR353AB3AB1	DP2532	4112
DP30243	CR453AC3HAA	SA3S3024V	ACC330U10	C25DND330T	DP30324	30E0-30	42BF35AJ	CR353AC3AH1	DP3030	4113
DP301203	CR453AC3AAA	SA3S30120V	ACC330U20	C25DND330A	DP303120	30E0-30	42BF35AF	CR353AC3AA1	DP3031	4114
DP302403	CR453AC3BAA	SA3S30240V	ACC330U30	C25DND330B	DP303240	30E0-30	42BF35AG	CR353AC3AB1	DP3032	4115
DP40243	CR453AD3HBB	SA3M4024V	ACC430U10	C25DNF340T	DP40324	30F0-30	42CF35AJ	CR353AD3BH1	DP4030	4116
DP401203	CR453AD3ABB	SA3M40120V	ACC430U20	C25DNF340A	DP403120	30F0-30	42CF35AF	CR353AD3BA1	DP4031	4117
DP402403	CR453AD3BBB	SA3M40240V	ACC430U30	C25DNF340B	DP403240	30F0-30	42CF35AG	CR353AD3BB1	DP4032	4118
DP50243	CR353FE3BH1	SA3G5024V	ACC530U10	C25FNF350T	DP50324	30G0-30	42DF35AJ	CR353FE3BH1	DP5030	4128
DP501203	CR353FE3BA1	SA3G50120V	ACC530U20	C25FNF350A	DP503120	30G0-30	42DF35AF	CR353FE3BA1	DP5031	4129
DP502403	CR353FE3BB1	SA3G50240V	ACC530U30	C25FNF350B	DP503240	30G0-30	42DF35AG	CR353FE3BB1	DP5032	4130
DP60243	CR353FF3BH1	SA3A6024V	ACC530U10	C25FNF360T	DP60324	30H0-30	42EF35AJ	CR353FF3BH1	DP6030	4131
DP601203	CR353FF3BA1	SA3A60120V	ACC530U20	C25FNF360A	DP603120	30H0-30	42EF35AF	CR353FF3BA1	DP6031	4132
DP602403	CR353FF3BB1	SA3A60240V	ACC530U30	C25FNF360B	DP603240	30H0-30	42EF35AG	CR353FF3BB1	DP6032	4133
DP75243	CR353EG3BH1	***	ACC730U10	C25FNF375T	DP75324	***	42FE35AJ	CR353EG3BH1	***	4134
DP751203	CR353EG3BA1	***	ACC730U20	C25FNF375A	DP753120	***	42FE35AF	CR353EG3BA1	DP7531	4135
DP752403	CR353EG3BB1	***	ACC730U30	C25FNF375B	DP753240	***	42FE35AG	CR353EG3BB1	DP7532	4136
DP90243	CR353EH3BH1	***	***	C25GNF390T	DP90324	***	42GE35AJ	CR353EH3BH1	***	4137
DP901203	CR353EH3BA1	***	ACC930U20	C25GNF390A	DP903120	***	42GE35AF	CR353EH3BA1	DP9031	4138
DP902403	CR353EH3BB1	***	ACC930U30	C25GNF390B	DP903240	***	42GE35AG	CR353EH3BB1	DP9032	4139
PART NO.	HONEYWELL	HONEYWELL	JOSLYN CLARK	MA LINE POWER PRO	MARS ECONOMY	PACKARD / FASCO	PRODUCTS UNLIMITED	RBM/ESSEX	SQUARE D	STEVECO
DP25241	DP1025A5005	***	A77306654A3	***	***	1S25A	310015Q01XXXA	***	8910DP21	94385
DP251201	DP1025B5046	***	A77306654A1	***	***	1S25B	310015T01XXXA	***	***	94386
DP252401	DP1025C5045	***	A77306654A2	***	***	1S25C	310015U01XXXA	***	***	94387
DP30241	DP1030A5013	***	A77306653A3	***	13067/13101	1S30A	310015Q02XXXA	***	8910DP12	94388
DP301201	DP1030B5020	***	A77306653A1	***	13068	1S30B	310015T02XXXA	***	***	94389
DP302401	DP1030C5029	***	A7730665312	***	13069	1S30C	310015U02XXXA	***	***	94390
DP20242	DP2020A5021	***	A77306680A3	***	13071	2S20A	310020Q03XXXA	143-1	DP12V14	90234
DP201202	DP2020B5038	***	A77306680A1	***	13072	2S20B	310020T03XXXA	143-1	DP12V02	90235
DP202402	DP2020C5037	***	A77306680A2	***	13073	2S20C	310020U03XXXA	***	***	90236
DP25242	***	***	A77306660A3	***	13077	***	***	143-6	DP22V14	***
DP251202	***	***	A77306660A1	***	13078	***	***	143-6	DP22V02	***
DP252402	***	***	A77306660A2	***	13079	***	***	143-6	DP22V09	***
DP30242	DP2030A5004	DP2030A1003	A77306657A3	8910DP32V14	14321/13104	C2S30A	310020Q06XXXA	143-7	DP32V14	90244
DP301202	DP2030B5003	DP2030B1002	A77306657A1	***	14322	C2S30B	310020T06XXXA	143-7	DP32V02	90245
DP302402	DP2030C5002	DP2030C1001	A77306657A2	***	14323	C2S30C	310020U06XXXA	143-7	DP32V09	90246
DP40242	DP2040A5003	***	A77309045A3	8910DP42V14	14421	C2S40A	310020Q18XXXA	154-4	DP442V14	***
DP401202	DP2040B5002	***	A77309045A1	***	14422	C2S40B	310020T18XXXA	154-4	DP442V02	***
DP402402	DP2040C5001	***	A77309045A2	***	14423	C2S40C	310020U18XXXA	154-4	DP442V09	***
DP25243	DP3025A5003	DP3025A1002	A77309040A3	***	13001	3M25A	310030Q8XXXAH	154-2	8910DPA23	90160
DP251203	DP3025B5002	DP3025B1001	A77309040A1	***	13002	3M25B	310030T8XXXAH	154-2	DP423V02	90161
DP252403	DP3025C5001	DP3025C1000	A77309040A2	***	13003	3M25C	310030U8XXXAH	154-2	DP423V09	90162
DP30243	DP3030A5003	DP3030A1002	A77309044A3	8910DPA33V14	14331/13007	C3M30A	310030Q9XXXAH	154-3	DP433V14	90163
DP301203	DP3030B5002	DP3030B1001	A77309044A1	8910DPA33V02	13008	C3M30B	310030T9XXXAH	154-3	DP433V02	90164
DP302403	DP3030C5001	DP3030C1000	A77309044A2	8910DPA33V09	13009	C3M30C	310030U9XXXAH	154-3	DP433V09	90165
DP40243	DP3040A5002	DP3040A1001	A77309046A3	8910DPA43V14	14431/13013	C3M40A	310030Q10XXXAH	154-4	DP443V14	90170
DP401203	DP3040B5001	DP3040B1000	A77309046A1	8910DPA43V02	13014	C3M40B	310030T10XXXAH	154-4	DP443V02	90171
DP402403	DP3040C5000	DP3040C1009	A77309046A2	8910DPA43V09	14433/13015	C3M40C	310030U10XXXAH	154-4	DP443V09	90172
DP50243	DP3050A5001	DP3050A1000	A77288514A3	8910DPA53V14	13200	C3L50A	310030Q16XXXCG	***	8910M03	92459
DP501203	DP3050B5000	DP3050B1009	A77288514A1	8910DPA53V02	13201	C3L50B	310030T16XXXCG	***	8910M03	92460
DP502403	DP3050C5009	DP3050C1008	A77288514A2	8910DPA53V09	13202	C3L50C	310030U16XXXCG	***	8910M03	92461
DP60243	DP3060A5000	DP3060A1009	A77288517A3	8910DPA63V14	13220	C3L60A	310030Q17XXXCG	***	8910N03	92463
DP601203	DP3060B5009	DP3060B1008	A77288517A1	8910DPA63V02	13221	C3L60B	310030T17XXXCG	***	8910N03	92464
DP602403	DP3060C5008	DP3060C1007	A77288517A2	8910DPA63V09	13222	C3L60C	310030U17XXXCG	***	8910N03	92465
DP75243	DP3075A5008	DP3075A1007	A77288520A3	***	13240	C3L75A	3100Y30Q75XXXCG	***	***	92467
DP751203	DP3075B5007	DP3075B1006	A77288520A1	***	13241	C3L75B	3100Y30T75XXXCG	***	8910P03	92468
DP752403	DP3075C5006	DP3075C1005	A77288520A2	***	13242	C3L75C	3100Y30U75XXXCG	***	***	92469
DP90243	***	DP3090A1006	***	***	13260	C3L90A	3100Y30Q90XXXCG	***	***	***
DP901203	***	DP3090B1005	***	***	13261	C3L90B	3100Y30T90XXXCG	***	8910Q03	***
DP902403	***	DP3090C1004	***	***	13262	C3L90C	3100Y30U90XXXCG	***	***	***

Surge Protection

Surge Arrestors



LIGHTNING is the most obvious source of a power surge, but not the only culprit. Utility Events, Cycling of Air Conditioners, Generators, and Motors can also produce damaging surges. Protect your equipment with SUPCO's Surge Arrestors. With a full product line, we can protect all of your equipment.

These devices do not protect electronic appliances such as TVs, computers, microwaves, etc. They only protect dedicated electromechanical devices such as air conditioners. If whole house protection is required use SUPCO p/n **DTK-WH5**, which will protect AC power, coaxial and two telephone lines.



SCM1



SCMPLUS

SCM1, SCM & SCMPLUS Surge Arrestors

Features/Benefits

- Easy Installation at Disconnect or Panel
- Weatherproof Housing
- Indicator Light on some models for Surge Protection Present
- Promote Additional Profits
- Reduce Callbacks
- Keep Equipment Running

Surge Protection for:

- Air Conditioners
- Air Handlers
- Motors
- Refrigeration Systems
- Heat Pumps
- Pumps
- Furnaces
- Electro-Mechanical Devices

Specifications

	SCM	SCMPLUS	
Service Voltage	120/240 Volt, Single Phase	120/240 Volt, Single Phase	120/240 Volt, Single Phase
Max. Surge Current	26,000 Amps	50,000 Amps	100,000 Amps
Max. Energy Dissipation	320 Joules	420 Joules	840 Joules
AC Protection Modes	L-L, L-G	L-L, L-G	L-L, L-G
Response Time	< 5ns Installed < 1ns Component Level	< 5ns Installed < 1ns Component Level	< 5ns Installed < 1ns Component Level
Operating Frequency	0 – 400 Hz.	0 – 400 Hz.	0 – 400 Hz.
Diagnostics	N/A	N/A	Indicator light – Surge Suppression Present
Class	Secondary Surge Arrestor, Cat C	Secondary Surge Arrestor, Cat C	Secondary Surge Arrestor, Cat C
Installation Point	Electrical Panel, Electrical Disconnect	Electrical Panel, Electrical Disconnect	Electrical Panel, Electrical Disconnect
Connection Method	Hardwired parallel	Hardwired parallel	Hardwired parallel
Agency Approvals	UL, cUL, ANSI/IEEE C62.11	UL, cUL, ANSI/IEEE C62.11	UL, cUL, ANSI/IEEE C62.11
Housing	High Impact Plastic	High Impact Plastic	High Impact Plastic
Housing Size	2 in. x 2 in.	4.35" x 3.55" x 1.60"	4.35" x 3.55" x 1.60"
Weight	1.0 lbs	.75 lbs	.75 lbs
Warranty	Limited Lifetime	Limited Lifetime	Limited Lifetime

SCMPLUS Operation:

The SCMPLUS uses an LED diagnostics connected at each phase wire to indicate power, ground and surge protection activity.

LED Sequence:

- 1 LED = 120 VAC L-G operation
- 2 LED = 240 VAC L-L operation

Wiring The Surge Protector:

The SCM1, SCM and SCMPLUS include two black wires and one green wire. A surge protector works by shunting the voltage to ground. A good ground is imperative. The National Electrical Code (NEC) maximum resistance at ground is 25 ohms.

120 VOLT WIRING

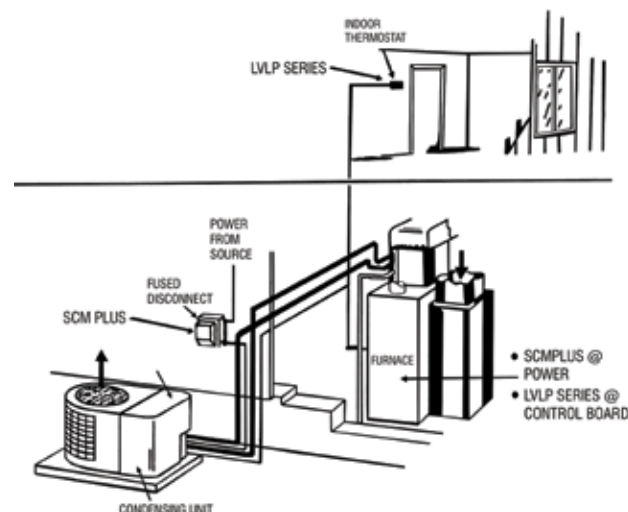
- Black to Hot
- Black to Neutral
- Green to Ground

240 VOLT WIRING

- Black to Hot
- Black to Hot
- Green to Ground

*** For Installation Instructions See Page 128**

HVAC Installation Points



Refer to and abide by all Local and State Electrical Codes for proper installation of these devices.

Surge Protection



DTK-240-3CMPLUS

DTK-240-3CMPLUS 3 Phase Surge Arrestors

- 240 volt three phase
- 50,000 amp surge current, per phase
- Limited lifetime warranty

Air Conditioning & Heat Pump Surge Protection Applications

EQUIPMENT SIZE	TRANSIENT POTENTIAL	PART NO.
Up to 5 Tons	Low to Moderate (Degrading arc fault Potential)	SCMPLUS DTK-3CM Series

*Note: These items are special order. Please call SUPCO for more information (800) 333-9125

Specifications

	DTK-240-3CMPLUS
Service Voltage	240 VAC 3 phase
Max. Surge Current	50,000 Amps
Continuous Current	Unlimited
Max. Energy Dissipation	660 Joules
MCOV	250 VAC (L-G)
AC Protection Modes	L-L, L-G
Response Time	< 5ns Installed, < 1ns Component Level
Operating Frequency	0-400 Hz
Class	Secondary Surge Arrestor, Cat C
Installation Point	Meter base, main panel, disconnect or weatherhead
Connection Method	Hardwired parallel
Agency Approvals	UL-OWHX, cUL, ANSI/IEEE C62.11
Housing	High Impact Plastic
Housing Size	4.35" x 3.35" x 1.60"
Weight	0.75 lbs
Warranty	Limited Lifetime



DTK-LVLP Series

Low Voltage Applications

- Available in 4 pairs
- UL497B listed and UL497A models available
- Specify desired clamping voltage; 7, 15, 27, 52, 75, 95, 130
- Hardwire Series Connection

*Note: these units are only examples of the many applications. Voltages may vary between different manufacturers. Please call SUPCO Technical Support Representative for specific applications.

***Any other DTK Surge Arrestor Available by Special Order.**

PART NO.	# OF WIRES PROTECTED	130 VRMS	95 VRMS	75 VRMS	52 VRMS	27 VRMS	15 VRMS	7 VRMS
DTK-4LVLP	8 wires	RUV	SGR	SPK	OPX	LV	X	D

Example: DTK-1LVLP-SCP*-LV (30V DC, 2 wire) *Note: SCP adds over current protection.

RESIDENTIAL APPLICATIONS

DTK-1LVLP-LV (24V AC)	Load side of 24v AC transformer
DTK-1LVLP-D (5V DC)	Thermostat lines, controls, sensors

COMMERCIAL APPLICATIONS

DTK-2 LVLP-SCP-RUV (130V DC)	Telephone lines at master/control Communications Panel
DTK-1-4 LVLP-LV (24V AC/DC) (SCP available)	4-20 milliamp loop circuits for monitoring pressure, humidity, air quality, air flow...
DTK-1-4 LVLP-D (7V DC)	Communication circuits, RS485 Networks, temperature, air and liquid monitoring controls



SCMPLUS

Providing the same protection of the SCM in a convenient, single outlet plug. Plug the SCMPLUS into an outlet, then plug your sensitive equipment into the SCMPLUS for surge protection!



APP120 All Purpose Protector

Benefits

- Helps prevent blown fuses
- Short cycle protection
- Prevents operation in low voltage conditions
- Prevents false starting attempts
- Easy installation
- LED to indicate proper operation
- Automatically restarts

Helps protect refrigerators, window air conditioners, dehumidifiers and other appliances from damage due to power interruptions. (Brown-outs)

Refer to and abide by all Local and State Electrical Codes for proper installation of these devices.

Specifications

	APP120
Minimum Starting Volts	90 VAC single phase
Operating Volts	115 VAC single phase
Maximum Switching	1.0 HP @ 115 VAC (12,000 BTU)

General Specifications

Time Delay	4 minutes $\pm$ 1 minute
Power consumption	10 mA
Operating Temperature	14°F to 158°F (-10°C to 70°C)
Size	9.055" X 4.72" X 3.15" (230mm X 120mm X 80mm)

Motor Protection



TPMP2

Compact Three Phase Motor Protector

Features & Benefits

- Low cost three phase motor protection
- Easy Installation
- Compact design
- Monitors and protects against phase loss and phase imbalance only
- Operating Temperature -40°F to +167°F (-40°C to + 75°C)
- 1/4" male spade terminal connections

Sequence of Operation

The TPMP series will disconnect the motor pilot when the monitored problem is detected. The TPMP series will only re-energize the circuit when all 3 phases are activated at the full voltage ratings and the delay on make time has elapsed. The TPMP2 does not have a time delay feature.

Applications

- HVAC/R Motors and Pumps
- HVAC/R Compressors
- Protects Scroll and Screw Compressors from reverse rotation
- Material Handling Equipment (Overhead Electric Crane Motors)
- Elevator Motors
- Utilities

TPMP2

Input Line Voltage	208 - 277 VAC
Control Voltage	18 - 240 VAC
Frequency	50/60 Hz
Imbalance	Fixed 7%
Total Power Consumption	3 VA Maximum
Contact Type	N.O. & N.C. Type C
Resistive	5 AMP 240 VAC/10 AMP 120 VAC
Fire Resistive Plastic	UL-94 V0
Dimensions	2.35" x 2.43" x 1.1" (59.7 x 61.7 x 27.9 mm)
Weight	2 oz. (54 gr)



TPMPU

Universal Three Phase Motor Protector

Features & Benefits

- Low cost Universal three phase motor protection
- Easy Installation
- Minimizes inventory
- Monitors and protects against phase loss, reversal and imbalance
- Response time 80 milliseconds maximum
- Bright LED for on and fault indications
- Operating Temperature -40°F to 167°F (-40°C to 75°C)
- 1/4" male spade terminal connections
- Delay on make timer
- Adjustable 10 seconds to 5 minutes
- Tolerance +/- 20%

TPMPU

Input Line Voltage	180 - 600 VAC
Control Voltage	18 - 240 VAC
Frequency	50/60 Hz (cut wire for Hz)
Imbalance	Adjustable ± 40 to 20%
Total Power Consumption	3 VA Maximum
Contact Ratings	10 AMP SPDT
Resistive	10 AMP 240 VAC, 12 AMP 120 VAC/24 VAC
Inductive	4.5 AMP 230 V- Cos. 0.6
Fire Resistive Plastic	UL-94 V0
Dimensions	5.35" x 3.68" x 1.26" (136 x 93.5 x 32 mm)
Weight	6.35 oz. (180 gr)

TPMPU Application Note

The TPMPU is designed to protect the motor against running with phases reversed. On your first start if the fault indication is ON and the motor did not start, switch any two of the lines (L1, L2, or L3) so that the TPMPU phases match the existing motor

Three Phase Motor Protector Tech Tip

Voltage Imbalance

The voltage applied to a three-phase motor must be balanced, meaning the applied voltage to each leg must be relatively the same. The applied voltage must not deviate more than 2% from the average supplied voltage. A voltage imbalance of greater than 2% will cause the windings within a motor to generate heat beyond its safe levels, leading to premature motor failure.

The following steps can be used to calculate the percentage of voltage imbalance:

1. Measure the voltage applied across each of the windings, from L1 to L2, L1 to L3 and L2 to L3.
2. Next, calculate the average supplied voltage. This is done by adding the three measured voltage values and dividing the sum by three.
3. Next calculate the maximum deviation of each of the measured voltages from the calculated average voltage.
4. The percentage of voltage imbalance can then be calculated using the following formula:

$$\% \text{ Voltage Imbalance} = \text{Maximum Deviation} / \text{Average Voltage} \times 100$$

For example, suppose the following voltages were measured:

L1 to L2 - 221 volts
L2 to L3 - 223 volts
L1 to L3 - 220 volts

Calculate the average applied voltage:

221 volts + 223 volts + 220 volts = 664 volts/3 = 221.3 volts
(average applied voltage)

Calculate the maximum deviation of each applied voltage from the calculated average voltage:

221.3 - 221 = 0.3 volts
223 - 221.3 = 1.7 volts
221.3 - 220 = 1.3 volts

1.7 volts is the maximum deviation from the average calculated voltage.

Calculate the percentage of voltage imbalance:

$$\% \text{ Voltage Imbalance} = \text{Maximum Deviation} / \text{Average Voltage} \times 100$$

$$\% \text{ Voltage Imbalance} = 1.7 \text{ volts} / 221.3 \text{ volts} \times 100 = 0.77\%$$

Since this is well below 2%, the motor will operate safely.

SUPCO Commercial Refrigeration Defrost Controls

Designed to meet a wide variety of customer requirements. These electro-mechanical controls are used on many different types of commercial refrigeration equipment, including walk in boxes, reach in boxes, refrigerated cases and condensing units.



Features/Benefits

- Heavy-duty synchronous motor.
- Adjustable Defrost Initiation Frequency: One to six times per day.
- Adjustable Defrost Cycle Duration: 4 to 110 minutes in two-minute increments.
- Contact Arrangements: Electric heat, hot gas, or off cycle defrost available.
- Heavy-duty steel case with electrical knockouts in the sides, back and bottom.

Specifications

- Operating Voltages: 120 or 208/240 VAC, 60 Hz
- Amperage: 40-amp non-inductive @ 120, 208 or 240 VAC
- Maximum hp: 2 hp @ 120, 208 or 240 VAC
- Pilot Duty: 690 VA @ 120, 208 or 240 VAC
- Operating Temperature Range: -35°F to 175°F
- Overall Case Dimensions: 7.697" H x 4.4" W x 3.8" D
- Shipping Weight: S8040 series 3.5 lbs & S8141 series 3.75 lbs.

Applications

As a defrost control based upon the following functions.

- Time initiation and time termination.
- Time initiation and temperature termination.
- Time initiation and pressure termination.



Accessories

X3596 Dial Pins 5 Pins Per Pack

Models

PART NO.	VOLTAGE	SWITCHING NO NORMALLY OPEN NC NORMALLY CLOSED	TIME INITIATED TIME TERMINATED	TIME INITIATED TEMPERATURE OR PRESSURE TERMINATED
S804100	120	1 NO / 2 NC	YES	NO
S804120	240	1 NO / 2 NC	YES	NO
S804500	120	1 NO / 1 NC	YES	NO
S804520	240	1 NO / 1 NC	YES	NO
S814100	120	1 NO / 2 NC	NO	YES
S814120	240	1 NO / 2 NC	NO	YES
S814500	120	1 NO / 1 NC	NO	YES
S814520	240	1 NO / 1 NC	NO	YES

Cross Reference

SUPCO	PARAGON	PRECISION
S804100	8041-00	6041-00
S804120	8041-20	6041-20
S804500	8045-00	6045-00
S804520	8045-20	6045-20
S814100	8141-00	6141-00
S814120	8141-20	6141-20
S814500	8145-00	6145-00
S814520	8145-20	6145-20

M814520

EXACT DROP-IN REPLACEMENT MECHANISM for SUPCO S814520 and Paragon® 8145-20



**Sold in convenient
6-pack counter display!**

Timers

General Purpose 24 Hour Mechanical Type CD100 Series



CD101

Features

- Dial: 24 hour, 2 on and 2 off trippers
- Switch Rating: 40 amps resistive or tungsten, 1000 VA pilot duty, 2 hp and 120 or 240 volts.
- Operations: Up to 10 ON/OFF operations per 24 hours. With manual ON/OFF switch that allows circuit to be hand operated without disturbing scheduled setting.
- Minimum Setting: 1 hour between ON/OFF, 2 hours between OFF/ON.
- Enclosure: Non corrosive NEMA 1

Applications

- Pool filter pumps
- Indoor and outdoor lighting systems
- Pool heaters
- Sprinkler systems

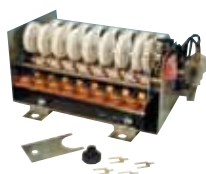
PART NO.	REPLACES			
	PARAGON	VOLTS	SWITCH	ENCLOSURE
CD101	4001-00	120	SPST	NEMA1
CD104	4004-71	240	DPST	NEMA1

Accessories

X100 - Trippers (2 per bag)

5000 Series Multi Circuit Defrost Controls

These accurate multi-circuit timing devices can individually operate from 1 to 24 switches.



Features

- Field adjustable defrost control combines ease of programming with accuracy and reliability.
- Positive snap acting switches to provide positive and immediate switching.
- Time Cycle: Adjustable in 2 minute increments from 2 to 120 minutes.
- Motor: Synchronous type, completely sealed and lubricated.
- Motor Power: 4 watts
- Motor Temperature Range: (Ambient): 35°F to 175°F
- Base: All steel construction, 16 gauge-channelled steel. Zinc plated for corrosion resistance and durability.
- Contact Transfers: Maximum number of contact transfers per 24-hour period for each program timer is 64 (8-switch unit) or 32 (4-switch unit).
- Terminals: 1/4" male quick connect (standard).

PART NO.	VOLTS	Hz	NO. OF SWITCHES	NO. OF MOTORS
50100B	120	60	8	2
50103B	240	60	8	2
5011	Slave	Slave	8	Slave
5014	Slave	Slave	4	Slave
50150B	120	60	4	2
50153B	240	60	4	2

Applications

The 5000 series controls are designed to control a series of operations with a variable time sequence; such as a refrigerator defrost cycle.

Electronic Adjustable Timers

Features

- Adjustable Interval Timers
- LED to indicate energized load
- Fast cycle button to alternate timer manually
- Automatic cycle is between 40 to 60 seconds
- Timer reset connection for external reset control
- Replaces most mechanical commercial timers
- Mounted using # 6 screws (not included)
- Available in 120 Volts or 220 Volts

Applications

- Defrost Heaters
- Motors
- Water Heaters
- Pumps
- Indoor or Outdoor Lighting Systems

Common Specifications for EDT12 and EDT13

On Time	5 to 60 Minutes
Off Time	1 to 27 Hours
Timing Accuracy	±10%
Fast Cycle	Approximately 30 Seconds

PART NO.	OPERATING VOLTAGE	MAXIMUM MOTOR SWITCHING CAPACITY, hp	MAXIMUM SWITCHING CURRENT (RESISTIVE), AMP	NO. OF Set OF CONTACTS
EDT12	120	1	27	1
EDT12-20	220	2	25	1
EDT13	120	1	27	2
EDT13-20	220	2	25	2

EDT Series Electronic Adjustable Defrost Timers

Features/Benefits

- Universal Replacement
- Electronic Circuitry
- Adjustable Defrost Frequency 4 to 12 Hours
- Adjustable Defrost Time 10 to 35 Minutes
- Available in 115 & 208/240 Volts
- Standard Size & Mounting To Fit Most Applications
- No Ground Wire
- Quiet Operation & Durability
- Standard Terminal Configuration To Accommodate Most Connections
- Dust Proof Case
- Temperature Range: 32°F to 135°F (0°C to 57°C)
- Humidity Range: 10-95% Non-Condensing

PART NO.	VOLTAGE	MAX. COMPRESSOR RATING	MAX. RESISTIVE LOAD
EDT10	115 VAC	1/3 HP	10 Amp
EDT20	208/240 VAC	1/3 HP	5 Amp
EDT11	115 VAC	3/4 HP	20 Amp
EDT21	208/240 VAC	3/4 HP	20 Amp

Optional Accessories

- WH3 - Three wire adapter kit
- WH4 - Four wire adapter kit

Applications

- Replaces Most Defrost Timers In Domestic & Commercial Refrigerators & Freezers

GC400 Series Cycle Defrost Controls

Constant Cut-in Universal Replacement

Features/Benefits

- 39°F Constant Cut-In
- Adjustable Cut Out
- Universal Mounting Hardware Included

Applications

- Provides automatic defrost each compressor cycle

PART NO.	CALIBRATION °F				CAPILLARY LENGTH
	NORM OFF	WARM OFF	COLD OFF	CUT-IN	
GC401	3	-11	-23	39	51"
GC405	12	-5	-15	39	60"
GC410	12	24	5	39	40"

Thermostats rated 125 VAC, 1/2 HP, 20 Amps F.L. - 80 Amps L.R., SPST switch action.

GC500 Series Cold Control

Constant Differential Universal Replacement

Features/Benefits

- Maintains Differential between On and Off Temperatures
- Adjustable Operating Temperatures
- Universal Mounting Hardware Included

Applications

- "Frostfree" and Conventional Refrigeration Units

PART NO.	NORMAL °F		CALIBRATION °F		DIFF °F	CAPILLARY LENGTH
	OFF	ON	WARM OFF	COLD ON		
GC501	9	20	38	-16	11	42"
GC503	9	26	42.5	-16	17	42"
GC505	31	36	49	16	5	24"
GC506	18	31	48.5	-7	13	24"

Thermostats rated 125 VAC, 1/2 HP, 20 Amps F.L. - 80 Amps L.R., SPST switch action.

GC600 Series Cold Control

Constant Differential Universal Replacement

Features/Benefits

- Maintains Differential between On and Off Temperatures
- Adjustable Operating Temperatures
- Universal Mounting Hardware Included

Applications

- Freezers

PART NO.	NORMAL °F		CALIBRATION °F		DIFF °F	CAPILLARY LENGTH
	OFF	ON	WARM OFF	COLD ON		
GC601	-5	4	22	-29	9	78"
GC602	-13	0	12	-30	13	78"
GC604	-12	6	20	-34	18	36"
GC607	-8	1	13	-23	9	31"

Thermostats rated 125 VAC, 1/2 HP, 20 Amps F.L. - 80 Amps L.R., SPST switch action.

GC700 Series For Air Conditioners

Universal Replacement

Features/Benefits

- Covers a Wide Range of Applications
- Universal Mounting Hardware Included

Applications

- Room Air Conditioners

PART NO.	RANGE °F			CAPILLARY DETAILS		ELECTRICAL RATINGS		
	COLD Off	WARM On	DIFF °F	LENGTH	STYLE	120 / 208 / 240 VAC SWITCH	F.I.A.L.	R.A
GC701	52	93	6	18"	Air Coil	SPST	20 A	80 A
GC702	52	93	6	36"	Straight	SPST	30 A	125A
GC707	52	93	6	36"		StraightSPDT		25A

SC1002 Temporary Cold Control

Features/Benefits

- Temporary Emergency Universal Replacement
- Keeps Equipment Up & Running Until Exact Replacement or Permanent Control Is Installed
- SC1002 Can Be Used As Permanent Control
- Three Mounting Options Available Suction Cup, Velcro or Screw Mounting
- Safe & Easy Installation

Applications

- Domestic & Commercial Refrigerators & Freezers

PART NO.	TEMP. RANGE	DIFF °F	SWITCH
SC1002	-6°F to 40°F	7°	SPST

***For wiring accessories refer to pages 107 -110 Terminals & Connectors.**

Time Delays

TD Series Time Delays

Standard Features / Specifications

- Three styles available: Delay on Make, Delay on Break & By – Pass
- Fixed or adjustable delay ranges
- Initiate timer in 70 milliseconds
- Broad input voltage range (Pilot Circuit)
19 to 250 VAC/VDC, 50/60 Hz (TD60)
19 to 250 VAC ONLY, 50/60 Hz (TD70)
- Maximum load 1.0 amp, 10 amp inrush
- Varying models work with or without anticipator type thermostats
- Terminal or wire connections available

- Operating Temperature Range 0°F to 160° F (-18°C to 71°C)
- Compact Size 2" x 2" x .075" (5.08 x 5.08 x 1.9 cm)
- Non positional single hole mounting
- All parameters are subject to change as per special requirements
- By – pass a control or device during start up
- Helps to reduce power surges in multiple compressor applications

General Applications

- Protection from short cycling of compressor
- Ideal for compressor staging

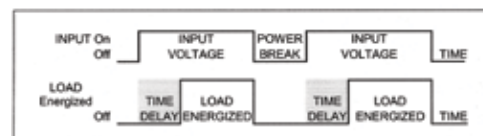


TD60 Series Delay on Make Timers (DOM)

Mode of Operation

- Upon application of power the time delay initiates. On completion of selected delay period, the load is energized. Timer will reset on power interruption or when thermostat disconnects.

Timing Diagram



PART NO.	DELAY RANGE ADJUSTABLE	DELAY RANGE FIXED (min)	CONNECTIONS	REPLACES
TD68**	6 sec to 8 min	n/a	2 1/4" male terminals	Diversitech AC-800-ADM1 / ICM 105 / A-1 706 / Mars 32391
TD69*	6 sec to 8 min	n/a	2 1/4" male terminals	Diversitech AC-800-ADM1 / ICM 102 / A-1 701 / Mars 32391
TD69W*	6 sec to 8 min	n/a	2 6" long wire leads	

*Cut the jumper to use in 120/240 volts. **The TD68 is not for use with a cooling anticipator.

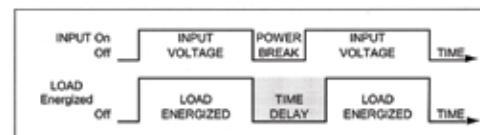


TD70 Series Delay on Break Timers (DOB)

Mode of Operation

- Upon application of power the load is energized immediately. When the thermostat opens or on power interruption the load is de-energized and the time delay initiates. The load will be energized again after the delay time has elapsed.

Timing Diagram



PART NO.	DELAY RANGE ADJUSTABLE	DELAY RANGE FIXED (min)	CONNECTIONS	REPLACES
TD72**	6 sec to 5 min	n/a	2 1/4" male terminals	Diversitech ASC500-ADB1 / ICM203 / Mars 32392 / A-1 EAC-501-ADJ
TD73*	6 sec to 5 min	n/a	2 1/4" male terminals	Diversitech ASC500-ADB1 / ICM203 / Mars 32392 / A-1 EAC-501-ADJ
TD73W*	6 sec to 5 min	n/a	2 6" long wire leads	

*Cut the jumper to use in 120/240 volts. **The TD72 is not for use with a cooling anticipator.

Ventilator Motors



SM550 Series Ventilator Motors

Features/Benefits

- Exact Replacement for Nutone Range Hood Ventilators
- C Frame Design
- SM550 Motor includes FB460 Impeller

Applications

- Range Hoods
- Bathroom Exhaust Fans

PART NO.	SPEED	RPM	SHAFT DIMENSIONS	ROTATION	STACK	LEAD	NUTONE NO.	ROBERTSHAW NO.
SM550	1	3000	7/32" X 1 3/4"	CCW	1/2"	120 V Plug	C65878	33-100
SM551	2	High 3000 Low 1640	7/32" X 1 7/16"	CW	7/8"	2 Speed Plug	C52367	33-101
SM552	1	3000	7/32" X 1 1/4"	CCW	3/4"	120 V Plug	C63675	33-103
SM553	1	3000	7/32" X 1 3/4"	CCW	3/4"	Eyelet	C66582	33-104
SM554	2	High 3300 Low 1500	7/32" X 1 7/16"	CCW	7/8"	2 Speed Plug	C27987	33-105
SM555	1	3000	7/32" X 2 3/8"	CCW	5/8"	120 V Plug	C68627	33-106
SM556	1	3000	7/32" X 1 7/8"	CCW	5/8"	120 V Plug	C34484	N/A

SM700 Series Ventilator Motors

Features/Benefits

- Exact Replacement for Broan Ventilators
- C Frame Design
- 120 Volts / 60 Hz
- CCW Rotation
- Multi Fit To Work With Other Brand Ventilators

Tech Tips

PART NO.	SPEED	SHAFT DIA.	STACK	SHAFT LENGTH	PLUG TYPE	REPLACES BROAN NO.
SM700	2	7/32"	3/4"	1 1/4" F	3 PIN	99080218
SM701	1	1/4"	7/8"	2 3/4" F	2 PRONG	99080159
SM702	1	1/4"	7/8"	2 3/4" F	5 PIN	99080160
SM703	1	5/32"	1/2"	1 3/4" S	2 PRONG	99080245
SM704	1	7/32"	7/8"	1 1/4" F	2 PRONG	99080166
SM705	1	.181"	5/8"	1 1/2" F	2 PRONG	99080216

- "F" suffix on shaft length indicates flat on shaft.
- "S" suffix indicates spline shaft.
- When replacing a motor make sure that the type, voltage, amperage, wattage, rotation, shaft size, stack size and the electrical connectors are the same as the original motor.



Evaporator Fan Motors

SM999 Universal Evaporator Fan Motor Kit – 120 VAC

Features/Benefits

- Prefastened Multi Fit, Break Off Mounting Bracket
- Break Off 2" Motor Shaft with Breakaways at 1/2" and 1-1/2"
- Includes All Mounting Accessories and Hardware
- Reversible Rotation
- Single Speed
- Shaft Diameter 1/8"

Applications

- Replaces Over 450 Different Evaporator Type Motors.
- Direct Replacement For The GEM 240 Series, Mars 90999 and Robertshaw 33-110, 33-112 & 33-114.



SM998 Universal Evaporator Fan Motor Kit – 220 VAC

Features/Benefits

- Includes the same Features & Benefits, Applications and Specifications as the SM999, except it operates on 220 VAC 50/60 Hz.
- Direct Replacement for the Mars 90998

PART NO.	DESCRIPTION
SM999	120 VAC, 3000 RPM, 1/200 hp, .31 AMP impedance protected
SM998	220 VAC, 3000 RPM, 1/200 hp, .31 AMP impedance protected



Motor Rotation

To determine motor rotation:

CW - Clockwise CCW - Counter Clockwise

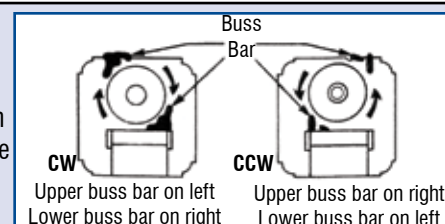
A. Facing shaft end of motor, locate the copper Buss Bar as indicated in illustration.

B. The Buss Bar location determines shaft rotation.

Motor Rotation as viewed facing Shaft

CW - Clockwise Rotation

CCW - Counter Clockwise



Motors



SM140-40A Blower Fan Assembly

Features/Benefits

- Direct replacement kit for Nutone bath fans
- Replaces Nutone motor P/N K5895 and kit P/N K5894

- Kit includes single speed motor, 3 3/4"x2" blower wheel and mounting bracket.
- Motor includes 6" wire leads with molded plug.

PART NO.	SPEED	RPM	VOLTS	AMPS	ROTATION	NUTONE
SM140-40A	1	2400	115	0.9	CCWSE	K5894 Motor Kit K5895 Motor Only

Exact Replacement & Utility Motors



SM600 Series Utility Motor Kits

Features/Benefits

- Versatile replacement for all "C" Frame and 3 1/2" Round Style motors
- Impedance Protected
- SM670, SM672 and SM673 include fan blades FB402 and FB550
- SM675 is thermal protected
- Available in sleeve or ballbearing design
- SM675 includes fan blade FB550 only
- Motor Kits include complete hardware and mounting kits

Applications

- Reach In Cooler & Freezer Evaporators
- Walk In Cooler & Freezer Evaporators
- Exhaust Fans
- Ventilator Fans
- Range Hoods
- Electric Unit Heaters



Specifications

PART NO.	TYPE	VOLTS AC	RPM	CURRENT (AMPS)	SHAFT DIMENSIONS	STACK SIZE	ROTATION (REVERSIBLE)	ACME MIAMI	REPLACES BOHN	REPLACES ROBERTSHAW	REPLACES MARS
SM670 ^a	Sleeve	120	3000	0.55	3/16" X 1-1/4"	5/8"	CW/CCW	600, 700, 710, 4670		14001	90971
SM671	Sleeve	120	3000	0.55	3/16" X 1 1/4"	5/8"	CW/CCW			14003	
SM672 ^a	Sleeve	240	3000	0.32	3/16" X 1 1/4"	5/8"	CW/CCW	602, 702, 4672		14005	90982
SM673 ^a	Sleeve	120	3000/1550	.55/.34	3/16" X 1 1/4"	5/8"	CW/CCW	4673		14007	
SM675 ^b	Sleeve	120/240	3000	1.0/.50	3/16" X 2 3/8"	1"	CW/CCW	7502		90970	
SM676	Sleeve	120	3000	0.5	3/16" X 1 1/4"	7/8"	CW/CCW	780		14011	
SM678	Sleeve	120	3000	0.55	3/16" X 1 1/2"	1/2"	CW/CCW			14015	
SM679	Sleeve	120	3000	0.5	7/32" X 1 1/2"	5/8"	CW/CCW			14017	
SM680	Sleeve	120	3000	0.9	3/16" X 1 1/2"	1 1/8"	CW/CCW	750		14019	90970
SM681	Sleeve	120	3000/1550	.82/.21	3/16" X 1 3/8"	5/8"	CW/CCW			14021	
SM683	Sleeve	240	3000	0.25	3/16" X 1 1/4"	7/8"	CW/CCW			14025	90970
SM684	Sleeve	120	3000/1550	.82/.21	7/32" X 2 1/4"	1"	CW/CCW				
SM685	Sleeve	120	3000/1550	.82/.21	3/16" X 1 3/4"	7/8"	CW				
SM690C	Sleeve	120	3000	0.4	3/16" X 1 1/2"	5/8"	CW				
SM691	Sleeve	120	3000	.80	3/16" X 1 1/4"	5/8"	CW		5007S 5036F 5018S		
SM692	Sleeve	240	3000	.40	3/16" X 1-1/4"	5/8"	CW		5007T 5018T		
SM775	Sleeve	120/240	3000	1.0/.52	3/16" X 2-3/8"	1"	CW/CCW				

^a Includes hardware kit: 2 fan blades, mounting bracket, hub adapter, 1/4" shaft adapter, & 5/16" shaft adapter.

^b Includes hardware kit: 1 fan blade, mounting bracket, hub adapter, 1/4" shaft adapter, & 5/16" shaft adapter.
Motor shaft is 2 3/8" with breakoffs at 5/8" & 1 7/8" points.



SM6700B Motor Kit Assembly

Features/Benefits

- Replaces Acme Miami 700
- OEM replacement for Bohn, Heatcraft, Uppco, Singer, GE 33 Series.
- Kit includes reversible motor, three fan blades, hardware kit and Instructions.

Applications

- Commercial Refrigeration Evaporators



Specifications

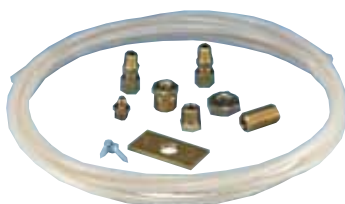
VOLTS	HERTZ	AMPS	RPM	SHAFT SIZE	STACK SIZE	BEARING TYPE
120	60	.55	3000	3/16" x 1 1/4"	5/8"	Sleeve

SM6700B

Replacement Fan Blades 3/16" Hub

FB402	4", CW, 5 wing
FB455 (Bohn 5101B)	5 9/16", CCW, 5 wing
FB550	5 1/2", CCW, 4 wing

Motor Accessories



GFK1 Grease Fitting Kit

- One time installation
- Provide easy access at hard to reach lubrication points
- Makes preventative maintenance (PM's) routine
- Eliminates need for cover removal and equipment disassembly
- Complete with 10' high pressure tubing and required fittings
- Tubing rated -60°F to 200°F

HVAC - Duct Boosters



Conforms to
UL Standard 507



DB Series Duct Boosters

For increased Air Flow in both hot and cold forced air systems, the DB Series Duct Boosters provide the easy, economical solution.

Features/Benefits

- Easy installation
- Energy savings
- Economical solution
- Fits in round, square or rectangular ducts
- Operates only when you want it
- 1 year warranty
- Motor is thermally protected
- Maximum operating temperature: 140°F (60°C)
- Maximum airstream temperature: 135°F (58°C)
- Motor thermal fuse: 150°F (64°C)

Applications

- Problem heating and cooling areas
- Low air flow areas

Installation Tools Required

- Screwdriver
- 1/2" and 1/8" sheet metal drill bits
- Sheet metal shears
- Electrical junction box (if required by code)

PART NO.	DIMENSIONS	FAN BLADE	VOLTAGE	MOTOR RATINGS	CFM
DB6	6" x 6"	5.25", 1950 rpm	115V 60Hz	.35 A, 30 Watts	250
DB6-220	6" x 6"	5.25", 1950 rpm	220V 50Hz	.25 A, 30 Watts	250
DB8	8" x 8"	7", 1750 rpm	115V 60 Hz	.75 A, 60 Watts	500
DB8-220	8" x 8"	7", 1750 rpm	220V 50 Hz	.45 A, 60 Watts	500
DB10	8" x 10"	8", 1300 rpm	115V 60 Hz	1.5 A, 120 Watts	650
DB12	9" x 12"	10", 1300 rpm	115V60 Hz	1.5 A, 120 Watts	800

Mounting Kit and Templates included.



Use the SUPCO DAVM+ to check duct operation and efficiency. Refer to page 78 for complete details.

Fan Blades



Exact Replacement Plastic Impellers



Features/Benefits

- Broan & Nutone Exact Replacement Impellers
- 3 Sizes Available

Tech Tip

- "F" Suffix on impeller hole indicates impeller will accommodate flat shaft.

Applications

- Bathroom Ventilators
- Kitchen Ventilators

PART NO.	REPLACES MFG. NO.	BLADE O.D.	HOLE I.D.
SB001	Nutone 68920	4 5/8"	.181F
FB460	Broan 9910379H	4 9/16"	.218
FB461	Broan 99110630	4 5/8"	.150

Plastic Blower Wheels



Features/Benefits

- 3 Sizes Available

Applications

- Bathroom Ventilators
- Kitchen Ventilators

PART NO.	SHAFT	ROTATION	BOTTOM DIAMETER	DEPTH	TOP DIAMETER	OEM PART NO.
FB250	1/8"	CW	2 1/2"	1"	2 11/16"	
FB325	3/16"	CW	3"	1"	3 1/4"	
FB590	1/4"	CW	5 3/4"	2"	6 1/8"	Nutone 59000A

Plastic Vent Hood Fan Blades



Features/Benefits

- 2 Sizes Available

Applications

- Ducted & Non Ducted Vent Hoods

PART NO.	SHAFT	DIAMETER	NO. BLADES	ROTATION	PITCH	Volume
FB660	7/32"	6 5/8"	5	CW	25°	High
FB665	7/32"	6 5/8"	5	CW	12°	Standard

Use with SM500 series or SM700 series that have 7/32" w/flat shaft.
Replaces Nutone 68929300 and many Broan blades.

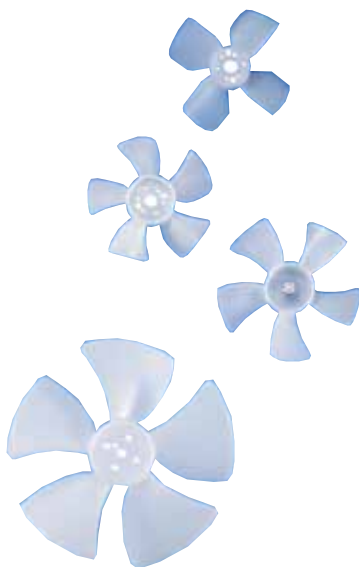
Plastic Fan Blades – General Purpose

Features/Benefits

- Celcon Plastic Construction
- Light Weight Design Reduces Bearing Wear & Vibrations
- 2 1/2" to 8" Diameter Sizes Available (1/2" increments)
- Integral Hub Available In 1/8", 3/16", 1/4" & 5/16" Sizes
- Color Coded Rotation White = CW Gray = CCW
- Eliminates Bent or Misaligned Blades
- Low Air Noise

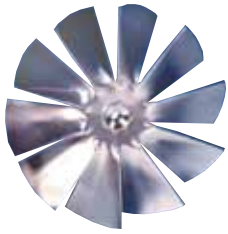
Applications

- Refrigerator & Freezer Evaporators
- Ventilators



PART NO.	SHAFT	DIAMETER	NO. OF BLADES	ROTATION
FB302	3/16"	3 1/2"	4	CW
FB350	3/16"	3 1/2"	4	CW
FB401	1/8"	4"	5	CW
FB402	3/16"	4"	5	CW
FB403	1/8"	4"	5	CCW
FB404	3/16"	4"	5	CCW
FB501	3/16"	5"	5	CW
FB504	3/16"	5"	5	CCW
FB550	3/16"	5 1/2"	4	CCW

PART NO.	SHAFT	DIAMETER	NO. OF BLADES	ROTATION
FB551	1/4"	5 1/2"	4	CCW
FB601	3/16"	6"	6	CW
FB604	3/16"	6"	4	CCW
FB650	3/16"	6 1/2"	5	CW
FB651	1/4"	6 1/2"	5	CW
FB701	1/4"	7"	5	CW
FB702	5/16"	7"	5	CW
FB703	1/4"	7"	5	CCW
FB803	1/4"	8"	5	CCW



Aluminum Fan Blades - General Purpose

Features/Benefits

- 22 Gauge Aluminum Alloy Construction
- Light Weight Design Reduces Bearing Wear & Vibration
- 4" to 6 1/2" Diameter Sizes Available (1/2" increments)
- Slotted Set Screw Hub Sizes 3/16", 7/32" & 1/4"
- Clockwise or Counter Clockwise Rotations

Applications

- Refrigerator & Freezer Evaporators
- Ventilators

Tech Tip

- Rotation is determined by facing air discharge

PART NO.	SHAFT	DIAMETER	NO. BLADES	ROTATION	PITCH
FB152	3/16"	4"	10	CCW	35
FB153	1/4"	4"	10	CCW	35
FB156	3/16"	4 1/2"	10	CW	40
FB157	1/4"	4 1/2"	10	CW	40
FB158	3/16"	4 1/2"	10	CCW	40
FB159	1/4"	4 1/2"	10	CCW	40
FB162	3/16"	5"	4	CW	19
FB163	7/32"	5"	4	CW	19
FB164	1/4"	5"	4	CW	19
FB165	3/16"	5"	4	CCW	19
FB166	7/32"	5"	4	CCW	19
FB167	1/4"	5"	4	CCW	19
FB170	3/16"	5 1/2"	4	CW	22

PART NO.	SHAFT	DIAMETER	NO. BLADES	ROTATION	PITCH
FB173	3/16"	5 1/2"	4	CCW	22
FB175	1/4"	5 1/2"	4	CCW	22
FB178	3/16"	6"	4	CW	20
FB180	1/4"	6"	4	CW	20
FB181	3/16"	6"	4	CCW	20
FB182	7/32"	6"	4	CCW	20
FB186	3/16"	6 1/2"	4	CW	20
FB187	7/32"	6 1/2"	4	CW	20
FB188	1/4"	6 1/2"	4	CW	20
FB189	3/16"	6 1/2"	4	CCW	20
FB190	7/32"	6 1/2"	4	CCW	20
FB191	1/4"	6 1/2"	4	CCW	20



Plastic Fan Blades Direct Replacement and Hub Type

Features/Benefits

- Eight Popular Direct Replacements
- Available in Hub or Shaft Mount 1/8", 3/16"
- Clockwise & Counter Clockwise Rotations

Applications

- Refrigerator & Freezer Evaporators

PART NO.	SHAFT	DIAMETER	BLADES	ROTATION	REPLACEMENT FOR
FB353	HUB	4"	4	CCW	Whpl/Cldsp 513543
FB450	1/8"	4 1/2"	5	CCW	GE WR60X114
FB455	3/16"	5 9/16"	5	CCW	Bohn 5101B
FB718G	HUB	7"	5	CW	GEM FB718 SubZero 3-15-032-0



Aluminum Condenser Fan Blades

Features/Benefits

- Aluminum Construction
- 9 Popular Sizes Available
- 6" to 10" Diameter
- Clockwise & Counter Clockwise Rotations
- 5 Blades

Applications

- Unit Bearing Motors with 1/4" x 20 Threaded Shafts

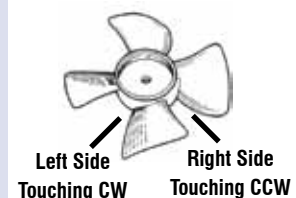
PART NO.	DIAMETER	NO. OF BLADES	ROTATION	PITCH
FB101	6"	5	CW	30°
FB103	7"	5	CCW	20°
FB104	7"	5	CW	20°
FB105	8"	5	CCW	20°
FB106	8"	5	CW	20°
FB107	8 3/4"	5	CW	20°
FB108	10"	5	CCW	29°
FB109	10"	5	CW	22°

Tech Tip

Fan Blade Rotation

To determine the blade rotation. CW – Clockwise & CCW – Counter Clockwise

1. Lay blade on a flat surface (either side up).
2. The direction of rotation is determined by observing which blade edge touches the flat surface.
3. Left side is touching the flat surface = CW.
4. Right side is touching the flat surface = CCW.



Pressure Switches



High precision control at economical prices...



Automatic Reset High, Low & Condenser Fan Cycling Pressure Switches

Features

- High Pressure SPST open on pressure rise
- Low Pressure SPST open on pressure fall
- Condenser Fan Cycling SPST open on pressure rise
- 1/4" SAE Female flare fitting with valve core depressor
- Snap acting stainless steel hermetically sealed sensor (SHP, SLP & SFC)
- Small size and light weight for direct mounting
- Excellent set point repeatability/stability
- Pressure Range: 0 to 650 PSI
- Burst Pressure: 5000 PSI

- Life @ Rated Load: 100,000 cycles
- Rated Voltage: 50/60 Hz, 24/120 / 240 Volts (6 RLA, 36 LRA)
- Temperatures: Ambient 20°F to 176°F (-30°C to 80°C). Fluid 60°F to 250°F (-50°C to 120°C).

Applications

- Refrigeration systems
- Air conditioning systems
- Heat pump systems

Specifications/Competitive Comparison

LOW PRESSURE										
PART NO.	OPEN PSI	CLOSE PSI	TOLERANCE	KLIXON	MARS	A-1	RANCO	ROBERTSHAW	JOHNSON CONTROL	GLOBAL
SLP0520	5	20	±5 PSI	PS80-K2-F0305-020-005	33329	PS-LP05-20	MPL-7001	3101-001	P100AC-1C	GLP329
SLP0530	5	30	±5 PSI	N/A	N/A	N/A	N/A	3100-002, MG20-1132	N/A	N/A
SLP1025	10	25	±5 PSI	PS80-K2-F0307-025-005	33330	PS-LP10-25	MPL-7011	3100-050	P100AP201C	GLP330
SLP1535	15	35	±5 PSI	PS80-K2-F0312-035-005	33333	N/A	MPL7002	3100-001, MG20-1026	P100AC2	N/A
SLP2045	20	45	±5 PSI	N/A	N/A	N/A	N/A	3100-003, MG20-1133	N/A	N/A
SLP2550	25	50	±5 PSI	PS80-K2-F0316-050-005	33362	PS-LP25-50	MPL-7012	MG21-2033	N/A	GLP362
SLP2565	25	65	±5 PSI	PS80-K2-F0323-065-005	33336	N/A	N/A	3101-002	N/A	N/A
SLP2580	25	80	±5 PSI	PS80-K2-F0325-080-005	33363	PS-LP25-80	MPL-7003	3101-003, 3100-051	N/A	GLP363
SLP3560	35	60	±5 PSI	N/A	N/A	N/A	MPL7004	3100-004, MG20-1593	N/A	N/A
SLP4560	45	60	±5 PSI	N/A	N/A	N/A	MPL7005	N/A	P100AP2C	N/A
SLP4080	40	80	±5 PSI	PS80-K2-F0326-080-005	33364	PS-LP40-80	MPL-7014	3101-005, 3100-052	N/A	GLP364
SLP5090	50	90	±5 PSI	PS80-K2-F0328-090-005	33339	N/A	N/A	N/A	N/A	N/A
SLP75100	75	100	±5 PSI	N/A	N/A	N/A	N/A	N/A	N/A	GLP342410A
SLP90120	90	120	±5 PSI	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HIGH PRESSURE										
PART NO.	OPEN PSI	CLOSE PSI	TOLERANCE	KLIXON	MARS	A-1	RANCO	ROBERTSHAW	JOHNSON CONTROL	GLOBAL
SHP200150	200	150	±15 PSI	PS80-K1-0334-200-150	33353	PS-HP200-150	N/A	N/A	N/A	GHP353
SHP250150	250	150	±15 PSI	PS80-K1-0336-250-150	33354	PS-HP250-150	N/A	N/A	N/A	GHP354
SHP250180	250	180	±15 PSI	N/A	N/A	N/A	MPH7101	N/A	N/A	N/A
SHP275195	275	195	±15 PSI	PS80-K1-0339-275-195	33310	N/A	MPH-7102	3100-112	P100CC9C	N/A
SHP300200	300	200	±15 PSI	PS80-K1-0341-300-200	33355	PS-HP300-200	MPH-7103	N/A	N/A	GHP355
SHP325225	325	225	±15 PSI	N/A	N/A	N/A	MPH7104	N/A	N/A	N/A
SHP325230	325	230	±15 PSI	PS80-K1-0346-325-230	33313	N/A	N/A	N/A	N/A	N/A
SHP350250	350	250	±15 PSI	PS80-K1-0348-350-250	33356, 33316	PS-HP350250	MPH-7105	3101-201, 3100-150, MG21-1125	N/A	GHP356
SHP375265	375	265	±15 PSI	PS80-K1-0353-375-265	33319	N/A	MPH-7106	3100-111	N/A	N/A
SHP400200	400	200	±15 PSI	PS80-K1-0357-400-200	33357	PS-HP400-200	N/A	3100-152	N/A	GHP357
SHP400280	400	280	±15 PSI	PS80-K1-0358-400-280	33322	N/A	N/A	N/A	N/A	N/A
SHP400300	400	300	±15 PSI	PS80-K1-0359-400-300	33358	PS-HP400-300	MPH-7107	3101-202, 3100-151, 6 MG21-112	P100CA-1C/ P100CP1C	GHP358
SHP425300	425	300	±15 PSI	PS80-K1-0360-425-300	33325	N/A	N/A	N/A	N/A	N/A
SHP425325	425	325	±15 PSI	N/A	N/A	N/A	MPH7108	3100-100/3100-203, MG21-1046	P100CA2C/ P100CP2C	N/A
SHP450250	450	250	±15 PSI	PS80-K1-0363-450-250	33359	PS-HP450-250	N/A	N/A	N/A	GHP359
SHP600475	600	475	±15 PSI	N/A	N/A	N/A	N/A	N/A	N/A	GHP361410A
SHP610420	610	420	±15 PSI	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MANUAL RESET HP										
PART NO.	OPEN PSI	CLOSE PSI	TOLERANCE	KLIXON	MARS	A-1	RANCO	ROBERTSHAW	JOHNSON CONTROL	GLOBAL
SMR375	375		±15 PSI	N/A	N/A	N/A	MPH7109	N/A	P100DC3C	N/A
SMR410	410		±15 PSI	29PSL012-24	33365	PSMF-HP410	MPH7110	3101-301, 3100-103	P100DA-1C	N/A
SMR440	440		±15 PSI	N/A	N/A	N/A	N/A	3100-104	N/A	N/A
SMR610	610		±15 PSI	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Pressure Switches

Specifications/Competitive Comparison

FAN CYCLING LP										
PART NO.	OPEN PSI	CLOSE PSI	TOLERANCE	KLIXON	MARS	A-1	RANCO	ROBERTSHAW	JOHNSON CONTROL	GLOBAL
SFC75120	75	120	±15 PSI	N/A	N/A	N/A	MPF7006	N/A	N/A	N/A
SFC110170	110	170	±15 PSI	N/A	N/A	N/A	MPF7007	N/A	N/A	N/A
SFC125265	125	265	±10 PSI	20PS116KA264G126G	33340	N/A	N/A	N/A	N/A	N/A
SFC210275	210	275	±15 PSI	20PS107KA275K210K	33341	N/A	MPF-7009	3101-101,3100-079	N/A	GFC341
SFC150225	150	225	±15 PSI	N/A	N/A	N/A	MPF-7008	N/A	P100AP3C	N/A
SFC170250	170	250	±15 PSI	N/A	N/A	N/A	N/A	N/A	P100AP4C	N/A
SFC200240	200	240	±15 PSI	N/A	N/A	N/A	N/A	3100-080	N/A	N/A
SFC200365	200	365	±15 PSI	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SFC300400	300	400	±15 PSI	N/A	N/A	N/A	MPF7010	N/A	N/A	N/A

Orange = New Items

Manual Reset High Pressure Switches

- Open on pressure rise
- 1/4" female SAE connection
- Increased reliability
- Maintenance free design
- Bistable disc
- Environmentally sealed sensors
- Safety Feature / Latching mechanism
- Line mount with mechanical fittings
- Pressure Range: 200 – 500 PSI
- Burst Pressure: 3500 PSI
- Proof Pressure: 600 PSI (Short term max over pressure)
- Life @ Rated Load: 30,000 cycles
- Rated Voltage: 50 / 60 Hz , 24 / 120 / 240 Volts (6 RLA, 36 LRA)
- Temperatures: Ambient 20°F to 176°F (-30°C to 80°C).
Fluid 60°F to 250°F (-50°C to 120°C).

Specifications/Competitive Comparison

MANUAL RESET										
PART NO.	OPEN PSI	TOLERANCE	KLIXON	MARS	A-1	RANCO	ROBERTSHAW	TECUMSEH	JOHNSON	COPELAND
SMR375	375	±15 PSI				MPH7109			P100DC3C	
SMR410	410	±15 PSI	29PSL012-24	33350	PSMF-HP410	MPH7110	3101-301	N/A 3100-103	P100DA-1C	
SMR440	440	±15 PSI	N/A		N/A	N/A	3100-104	N/A	N/A	
SMR610	610	±15 PSI								NA

Driers



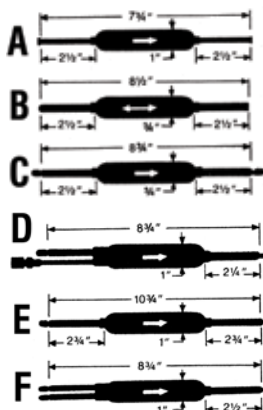
SUD Series Copper Driers

SUPCO Copper Driers are high quality, high capacity original equipment components for use on domestic and commercial refrigerators, freezers and air conditioners.

Features

- 100% XH-9 beaded molecular sieve
- Hermetically sealed
- Copper shells and end tubes
- High capacity
- Easy break off grooved ends

SIZE CHART



NOTE: All driers are compatible with all refrigerants.

SUPCO Copper Extended Driers

PART NO.	DESCRIPTION	INLET	OUTLET	DIMENSIONS (SEE CHART)
SUD103	1" Plugged Ends	1/4" O. D.	1/4" O. D.	A
SUD109	3/4" Non-Directional	1/4" O. D.	1/4" O. D.	B
SUD110	3/4" Fused Ends	1/4" O.D.	1/4" O.D.	C
SUD111	1" Charging Drier	1/4" O.D. 1/4" Flare	1/4" O.D. or Cap	D
SUD112	1" Step Down Drier	5/16" O.D.	5/16" O.D. or Cap	E
SUD113	1" Double Inlet	(2) 1/4" O. D.	1/4" O. D.	F
SUD114	1" Fused Ends	1/4" I.D. 1/4" O. D.	1/4" O.D. or Cap	G
SUD115	3/4" Charging Drier	1/4" I.D. 1/4" O. D. 1/4" Flare	1/4" O. D. or Cap	H
SUD116	1" Step Down Drier	3/16", 1/4", 5/16" I.D.	5/16" I.D. or Cap	J

Driers



S200 Series Copper Strainers

SUPCO copper strainers are specifically designed for reopened systems. Each strainer contains an oversized screen area for filtering large quantities of foreign matter from systems that were burnt out.



PART NO.	INLET	OUTLET	O.A. LENGTH	O.D.	FEED
S210	1/4"	.098 CAP	2 3/4"	3/4"	1
S211	1/4"	.125 CAP	2 3/4"	3/4"	1
S212	1/4"	1/4"	2 3/4"	3/4"	1
S213	5/16"	5/16"	2 3/4"	3/4"	1
S214	3/8"	Double Feed Cap .125	4 1/2"	5/8"	2
S215	3/8"	Triple Feed Cap .125	4 1/2"	5/8"	3
S216	3/8"	3/8"	4 1/2"	5/8"	1
S218	3/8"	.125 CAP	4 1/2"	5/8"	1
S219	3/8"	.146 CAP	5"	7/8"	4
S220	3/8"	.112 CAP	4 1/2"	7/8"	6

Solder Connection Driers

PART NO.	DESCRIPTION	INLET	OUTLET	DROPS OF WATER REMOVED				RECOMMENDED TONNAGE	
				R-12 75°	125°	R-22 75°	125°	R-12	R-22
MD5	1" Drier (No Tubes)	1/4"	CAP	37.5	34	34	32	1/3	1/2
MD6	1" Drier (No Tubes)	3/8"	CAP	37.5	34	34	32	1/3	1/2
MD7	1" Drier (No Tubes)	1/4"	1/4"	37.5	34	34	32	1/3	1/2

CSLD Series / Compact Suction Line Driers



Features/Benefits

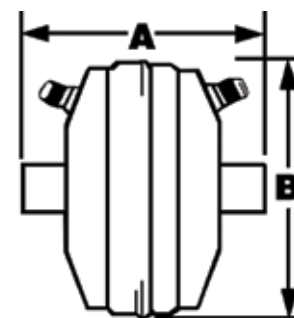
- Dual access valves
- High acid removal
- Solid copper fittings (available in solder only)
- Corrosion resistant epoxy powder paint finish

Applications

- The CSLD has a compact 14 cubic inch solid block desiccant core, designed when limited space is available.
- Compact suction line filter drier for moisture, acid and contaminant removal.
- For use with CFC, HCFC and HFC refrigerants.

Specifications

- Maximum working pressure (MWP): 500 PSIG
- Filtration: 40 microns



Nomenclature

Example: CSLD14S5

CSLD	14	S	5
Series	Unit Size Cubic Inches	S=ODF Connection	Connection Size (in 1/8)

PART NO.	CONNECTIONS SIZE & TYPE	DIMENSION IN INCHES A B		FLOW CAPACITY IN TONS REFRIGERANT (1) (FOR KW MULTIPLY TONS BY 3.5 (2))																						
				R-12				R-134a				R-22				R-407C				R-410A						
				EVAPORATOR TEMPERATURE (F)																						
				40	20	0	-20	40	20	0	-20	40	20	0	-40	40	20	0	-20	-40	40	20	0	-20	-40	
				PRESSURE DROP (PSI)																						
				2	1.5	1	0.5	2	1.5	1	0.5	3	2	1.5	1	0.5	3	2	1.5	1	0.5	3	2	1.5	1	0.5
CSLD14S4	1/2 ODF	4 7/32	4 9/16	1.3	0.9	0.5	0.3	1.3	0.9	0.5	0.3	2	1.3	0.9	0.6	0.3	2.2	1.5	1.1	0.7	0.4	1.4	0.9	0.6	0.4	0.2
CSLD14S5	5/8 ODF	4 1/2	4 9/16	2.2	1.5	0.9	0.6	2.3	1.5	0.9	0.5	3.6	2.4	1.6	1	0.5	4	2.8	1.9	1.2	0.7	2.5	1.6	1.1	0.7	0.3
CSLD14S6	3/4 ODF	4 3/8	4 9/16	3	2.1	13.7	0.8	3.1	2.1	1.3	0.7	4.9	3.2	2.2	1.4	0.7	5.5	3.7	2.7	1.7	0.9	3.3	2.2	1.5	0.9	0.5
CSLD14S7	7/8 ODF	4 9/16	4 9/16	3.2	2.2	1.5	0.8	3.3	2.2	1.4	0.7	5.2	3.4	2.3	1.5	0.8	5.8	3.9	2.8	1.9	1.1	3.6	2.3	1.6	1	0.5
CSLD14S9	1 1/8 ODF	4 27/32	4 9/16	4.4	3.1	1.9	1.1	4.5	3	1.8	1	7	4.6	3.1	2	1	7.8	5.3	3.7	2.5	1.3	4.8	3.2	2.1	1.3	0.7

PART NO.	CONNECTIONS SIZE & TYPE	FLOW CAPACITY IN TONS REFRIGERANT (FOR KW, MULTIPLY TONS BY 3.5)									
		R-502					R-404A/507				
		EVAPORATOR TEMPERATURE (F)									
		40	20	0	-20	-40	40	20	0	-20	-40
		PRESSURE DROP (PSI)									
		3	2	1.5	1	0.5	3	2	1.5	1	0.5
CSLD14S4	1/2 ODF	1.3	0.8	0.5	0.3	0.2	1.3	0.8	0.5	0.3	0.2
CSLD14S5	5/8 ODF	2.7	1.7	1.1	0.7	0.3	2.6	1.7	1.1	0.7	0.3
CSLD14S6	3/4 ODF	3.7	2.3	1.5	0.9	0.5	3.6	2.3	1.5	0.9	0.5
CSLD14S7	7/8 ODF	4	2.4	1.6	1	0.5	3.9	2.4	1.6	1	0.5
CSLD14S9	1 1/8 ODF	5.1	3.1	2	1.3	0.7	4.9	3.1	2	1.3	0.7

(1) All ratings in accordance with ARI Standard 730-86

(2) For 2 PSI P, Multiply values by 1.4

Example: 1.0 tons x 3.5 = 3.5 kW



LLD Series Liquid Line Driers

Features/Benefits

- Solid copper fittings
- Shock resistant steel construction
- High acid and moisture removal
- Corrosion resistant epoxy powder paint finish

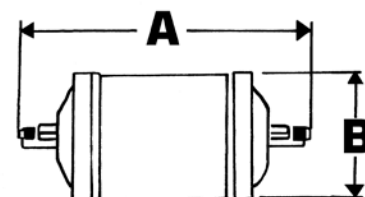
Specifications

- Desiccant Blend: Activated Alumina with Molecular Sieve
- Filtration: 40 microns
- Maximum working pressure (MWP): 680 psig all LLD Driers

Applications

Solid core liquid line filter drier ideal for use with CFC, HCFC and HFC refrigerants including R410A.

- Refrigeration Compressors
- Air Conditioning Compressors
- Heat Pump Compressors



Nomenclature

Example: LLD083S

LLD	08	3	S
Series	Unit Size Cubic Inches	Connection Size (in 1/8)	S=ODF Connection (Omit for SAE)

LLD CAPACITY TABLES

PART NO.	Connection SIZE & TYPE	Dimensions in Inches A B		FLOW CAPACITY TONS @ 1 PSI Δ P (1)(4) (FOR KW, MULTIPLY TONS BY 3.5)								WATER CAPACITY / DROPS OF WATER															
												R-12				R-134a		R-22		R-407C		R-410A		R-404/507		R-502	
				R-12	R-134a	R-22	R-410A	R-407C	/507	R-502	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F			
LLD032	1/4 SAE	4 5/16	1 5/8	1.6	1.9	2.1	2.1	2	1.4	1.3	130	81	68	50	58	38	47	26	44	23	73	48	73	43	34		
LLD032S	1/4 ODF	3 3/4	1 5/8	1.9	2.3	2.5	2.5	2.4	1.7	1.6																	
LLD052	1/4 SAE	4 7/8	2 1/2	1.6	2	2.2	2.2	2.1	1.4	1.4																	
LLD052S	1/4 ODF	4 11/32	2 1/2	2.4	2.9	3.1	3.1	3.1	2.1	2																	
LLD053	3/8 SAE	5 3/16	2 1/2	3	3.7	4	4	3.9	2.7	2.6	188	117	101	76	87	57	68	39	63	34	109	73	105	71			
LLD053S	3/8 ODF	4 17/32	2 1/2	3.7	4.5	4.9	4.9	4.8	3.3	3.2																	
LLD082	1/4 SAE	5 13/16	2 1/2	1.6	2	2.2	2.2	2.1	1.4	1.4																	
LLD082S	1/4 ODF	5 1/4	2 1/2	2.5	3.1	3.4	3.4	3.3	2.2	2.2																	
LLD083	3/8 SAE	6 3/32	2 1/2	3.5	4.3	4.7	4.7	4.6	3.1	3	295	204	169	140	151	117	134	86	115	67	180	143	193	145			
LLD083S	3/8 ODF	5 7/16	2 1/2	3.4	4.2	4.6	4.6	4.5	3	3																	
LLD084	1/2 SAE	6 11/32	2 1/2	5.5	6.7	7.3	7.3	7.1	4.9	4.7																	
LLD084S	1/2 ODF	5 1/2	2 1/2	5.7	7	7.6	7.6	7.4	5.1	4.9																	
LLD162	1/4 SAE	6 19/32	2 1/2	1.6	2	2.2	2.2	2.1	1.4	1.4	615	444	359	278	314	218	309	212			385	272	427	335			
LLD163	3/8 SAE	6 7/8	2 1/2	3.6	4.4	4.8	4.8	4.7	3.2	3.1																	
LLD163S	3/8 ODF	6 7/32	2 1/2	4	4.9	5.3	5.3	5.2	3.6	3.5																	
LLD164	1/2 SAE	7 1/8	2 1/2	6.8	8.3	9	9	8.8	6	5.8																	
LLD164S	1/2 ODF	6 9/32	2 1/2	7.1	8.6	9.3	9.3	9.1	6.2	6.1	LLD305	5/8 SAE	10 3/16	3	11.3	13.8	15		14.7	10	9.7						
LLD165	5/8 SAE	7 1/2	2 1/2	9.7	11.8	12.8	12.8	12.5	8.6	8.3																	
LLD165S	5/8 ODF	6 17/32	2 1/2	10.7	13.1	14.2	14.2	13.9	9.5	9.2																	
LLD303	3/8 SAE	9 9/16	3	3.9	4.7	5.1		5	3.4	3.3																	
LLD303S	3/8 ODF	8 29/32	3								LLD304S	1/2 ODF	8 15/16	3	7.2	8.8	9.5		9.4	6.4	6.2						
LLD304	1/2 SAE	9 13/16	3	7.1	8.6	9.3		9.1	6.2	6.1																	
LLD306S	3/4 ODF	9 5/8	3	13	15.8	17.1		16.8	11.5	11.1																	
LLD307S	7/8 ODF	9 13/16	3	14.3	17.4	18.9		18.5	12.6	12.3																	
LLD309S	1 1/8 ODF	9 13/16	3	20.4	24.9	27		26.5	18	17.5																	

(1) All ratings in accordance with ARI Standard 710-86.
86° F liquid refrigerant temperature
5°F saturated vapor temperature
3.1 lbs./min./ton for R-134a
2.9 lbs./min./ton for R-22 and R-407C
4.0 lbs./min./ton for R-404A/507 and R-12
4.4 lbs./min./ton for R-502
2.7 lbs./min./ton for R-410A

(2) Water Capacities are based on:
Equilibrium Point Dryness (EPD) of:
50 parts per million for R-134a, R404-A/507, R-410A and R-407C
60 parts per million for R-22
30 parts per million for R-502
15 parts per million for R-12

(3) 20 drops of water = 1 gram = 1 cc
(4) For 2 PSI Δ P, Multiply values by 1.4

Driers

LLD LIQUID REFRIGERANT HOLDING CAPACITY - OUNCES

UNIT SIZE	R-12		R-134a		R-22		R407C		R-410A		R-404A/507		R-502	
	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
03	2.4	2.2	2.2	2	2.2	2	2.1	1.9	2	1.7	1.9	1.7	2.2	2
05	5.9	6	5.5	5.5	5.4	5.4	5.2	5	4.8	4.5	4.7	4.5	5.5	5.4
08	8	7.4	7.4	6.7	7.3	6.6	7	6.2	6.5	5.5	6.4	5.5	7.5	6.6
16	14.5	12.5	13.4	11.4	13.2	11.2	12.6	10.4	11.7	9.4	11.6	9.3	13.5	11.2
30	21.8	19.9	20.1	18.1	19.8	17.8	18.9	16.6	23.3	19.6	17.4	14.7	20.2	17.7

The LLD filter-drier is UL listed for 680 PSIG maximum working pressure for all sizes.

LLD LIQUID LINE FILTER DRIERS

FILTER DRIER	REFRIGERATION, LOW TEMP. & COMMERCIAL INSTALLATIONS			AIR CONDITIONING			
				FIELD REPLACEMENT FIELD INSTALLATIONS		& OEM SELF CONTAINED EQUIPMENT	
	R-12/134a	R-22/407C/410A	R-404A/507A	R-12/134a	R-22/407C/410A	R-12/134a	R-22/407C
032,032S,033,033S	1/4	1/4	1/4	1/2	3/4	3/4	1
052,052S	1/3	1/3	1/3	3/4	1	1	1 1/2
053,053S	1 1/2	2	2	3			
082,082S	1/2	1/2	1/2	3/4	1 1/2	1	2
0825S	1	1	1	2	3	3	4
083,083S	1	1	1	2	3	3	4
084,084S	1.5	2	1	3	5	4	7
162,162S	1	1 1/2	3/4	1	2	2	2 1/2
1625S	2	2 1/2	2	3	4	4	5
163,163S	2	4	2	4	6	5	7 1/2
164,164S	2	4	2	4	6	5	7 1/2
165,165S	3	5	2 1/2	5	7 1/2	7 1/2	10
303S	3	3	2	3	4 1/2	4	5
304,304S	3	5	3	5	7 1/2	7 1/2	9
305,305S	5	7 1/2	5	8	10	10	14
306S	7 1/2	7 1/2	5	7 1/2	12 1/2	15	20
307S	7 1/2	7 1/2	5	7 1/2	12 1/2	15	20
309S	7 1/2	10	7 1/2	10	12 1/2	15	20

SSLD Series / Suction Line Filter Driers



Features

- Dual access valves
- Solid copper fittings
- Corrosion resistant epoxy powder paint finish

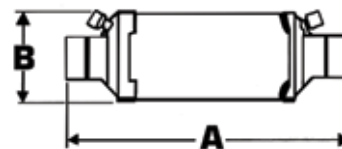
Applications

- To protect the compressor from dirt and all solid contaminants.

Specifications

- Filtration: 40 microns
- Maximum working pressure (MWP): 500 psig

SSLD Dimensions Diagram



Nomenclature

Example: SSLD167S

SSLD	16	7	S
Series	Unit Size Cubic Inch	Connection Size (in 1/8)	S=ODF Connection (omit for SAE)

Flow Capacities in Refrigerant Tons at Selected Evaporator Temperatures

PART NO.	CONNECTION SIZE & TYPE	DIMENSION IN INCHES		+40°F	+20°F	0°F	-20°F	+40°F	+20°F	0°F	-20°F	-40°F	+40°F	+20°F	0°F	-20°F	-40°F
				R-134a				R-22				R410A					
		PRESSURE DROP IN PSI															
		A	B	2	1.5	1	0.5	3	2	1.5	1	0.5	3	2	1.5	1	0.5
SSLD83	3/8 SAE	6 3/32	2 1/2	0.6	0.4	0.2	0.1	0.9	0.6	0.4	0.3	0.1	1.1	0.8	0.5	0.4	0.1
SSLD83S	3/8 ODF	5 7/16	2 1/2	0.8	0.5	0.3	0.2	1.3	0.8	0.6	0.4	0.2	1.6	1	0.8	0.5	0.3
SSLD84	1/2 SAE	6 11/32	2 1/2	1.4	0.9	0.6	0.3	2.2	1.4	1	0.6	0.3	2.7	1.8	1.3	0.8	0.4
SSLD84S	1/2 ODF	5 1/2	2 1/2	1.7	1.2	0.7	0.4	2.7	1.8	1.2	0.8	0.4	3.4	2.3	1.6	1.1	0.5
SSLD85	5/8 SAE	6 3/16	2 1/2	2.2	1.5	0.9	0.5	3.4	2.2	1.5	1	0.5	4.2	2.8	2	1.3	0.7
SSLD85S	5/8 ODF	5 3/4	2 1/2	2.4	1.6	1	0.5	3.8	2.5	1.7	1.1	0.6	4.7	3.2	2.3	1.5	0.8
SSLD164	1/2 SAE	7 1/8	2 1/2	1.5	1	0.6	0.3	2.3	1.5	1	0.7	0.4	2.9	1.9	1.3	0.9	0.5
SSLD165S	5/8 ODF	6 9/16	2 1/2	2.2	1.5	0.9	0.5	3.4	2.2	1.5	1	0.5	4.2	2.8	2	1.3	0.7
SSLD166	3/4 SAE	6 31/32	2 1/2	2.6	1.8	1.1	0.6	4.1	2.7	1.8	1.2	0.6					
SSLD166S	3/4 ODF	6 31/32	2 1/2	2.6	1.8	1.1	0.6	4.1	2.7	1.8	1.2	0.6	5.1	3.4	2.4	1.6	0.8
SSLD167S	7/8 ODF	7 1/8	2 1/2	2.7	1.8	1.1	0.6	4.6	2.8	1.9	1.1	0.6					
SSLD305	5/8 SAE	10 3/16	3	3	2	1.2	0.6	4.7	3.1	2.1	1.3	0.7	5.8	3.9	2.8	1.7	0.9
SSLD305S	5/8 ODF	9 7/32	3	2.8	1.8	1.1	0.6	4.3	2.8	1.9	1.2	0.6	5.3	3.6	2.5	1.6	0.8
SSLD306S	3/4 ODF	9 5/8	3	3.4	2.3	1.4	0.7	5.4	3.5	2.4	1.5	0.8	6.7	4.5	3.2	2	1.1
SSLD307S	7/8 SAE	9 25/32	3	3.8	2.5	1.6	0.8	5.9	3.9	2.6	1.7	0.9	7.3	5	3.5	2.3	1.2
SSLD417S													9.4	6.2	4.5	2.8	1.5
SSLD419S	1 1/8 ODF	9 15/16	3 1/2	5.4	3.6	2.2	1.2	8.5	5.5	3.8	2.4	1.3	10.6	7	5.1	3.2	1.8

Flow Capacity Chart

PART NO.	Connection SIZE & TYPE	Dimension in Inches		+40°F	+20°F	0°F	-20°F	-40°F	+40°F	+20°F	0°F	-20°F	-40°F
				R407C					R-502/R404A/R507				
		A B		Pressure Drop in psi									
				3	2	1.5	1	0.5	3	2	1.5	1	0.5
SSLD83	3/8 SAE	6 3/32	2 1/2	1	0.6	0.4	0.3	0.1	0.7	0.5	0.3	0.2	0.1
SSLD83S	3/8 ODF	5 7/16	2 1/2	1.4	0.9	0.6	0.4	0.2	1	0.7	0.5	0.3	0.1
SSLD84	1/2 SAE	6 11/32	2 1/2	2.3	1.5	1.1	0.6	0.3	1.8	1.1	0.8	0.5	0.3
SSLD84S	1/2 ODF	5 1/2	2 1/2	2.9	1.9	1.3	0.8	0.4	2.2	1.4	1	0.6	0.3
SSLD85	5/8 SAE	6 3/16	2 1/2	3.6	2.3	1.6	1	0.5	2.8	1.8	1.2	0.8	0.4
SSLD85S	5/8 ODF	5 3/4	2 1/2	4.1	2.7	1.8	1.2	0.6	3.1	2	1.3	0.8	0.4
SSLD164	1/2 SAE	7 1/8	2 1/2	2.5	1.6	1.1	0.7	0.4	1.9	1.2	0.8	0.5	0.3
SSLD165S	5/8 ODF	6 9/16	2 1/2	3.6	2.3	1.6	1	0.5	2.8	1.8	1.2	0.8	0.4
SSLD166	3/4 SAE	6 31/32	2 1/2						3.4	2.2	1.5	0.9	0.5
SSLD166S	3/4 ODF	6 31/32	2 1/2	4.4	2.9	1.9	1.3	0.6	3.4	2.2	1.5	0.9	0.5
SSLD167S	7/8 ODF	7 1/8	2 1/2						4.3	2.6	1.7	1	0.6
SSLD305	5/8 SAE	10 3/16	3	5	3.3	2.2	1.4	0.7	3.8	2.5	1.7	1	0.5
SSLD305S	5/8 ODF	9 7/32	3	4.6	3	2	1.3	0.6	3.6	2.3	1.5	1	0.5
SSLD307S	7/8 SAE	9 25/32	3	6.3	4.1	2.7	1.8	0.9	4.9	3.1	2.1	1.3	0.7
SSLD419S	1 1/8 ODF	9 15/16	3 1/2	9.1	5.9	4	2.5	1.3	6.9	4.5	3	1.9	1

All ratings in accordance with ARI standard 710-86



HP Series/Liquid Line Bi-Directional Heat Pump Driers

Features/Benefits

- 16 cubic inch drier in a 2 1/2" diameter shell
- Internal check valves allow flow and filtration in either direction.
- High moisture and acid removal
- Corrosion resistant epoxy powder paint finish
- Copeland approved for POE oils

Specifications

- Desiccant blend: 75% molecular sieve and 25% activated alumina (Bead).
- Filtration: 40 microns
- Maximum working pressure (MWP): 680 psig

Applications

- Bi directional liquid line filter driers for heat pump applications using CFC, HCFC and HFC refrigerants. Including R410A.

Nomenclature

Example: HP165S

HP	16	5	S
Series	Unit Size Cubic Inches (in 1/8)	Connection Size (Omit for SAE)	S=ODF Connection



HP CAPACITY TABLES

PART NO.	CONNECTION SIZE & TYPE	DIMENSIONS		FLOW CAPACITY TONS @ 1 PSI Δ P(1)(4)			WATER CAPACITY TONS (2) DROPS OF WATER (3)					
				(FOR KW, MULTIPLY TONS BY 3.5)			R-22		R-407C		R-410A	
		A	B	R-22	R-410A	R-407C	75°F	125°F	75°F	125°F	75°F	125°F
HP083	3/8 SAE	6.28	2.63	4.5	4.5	4.4						
HP083S	3/8 ODF	5.63	2.63	5.1	5.1	5						
HP084	1/2 SAE	6.53	2.63	6.4	6.4	6.3	159	144	106	79	85	75
HP84S	1/2 ODF	5.66	2.63	6.7	6.7	6.6						
HP163	3/8 SAE	6.97	2.63	4.6	4.6	4.5						
HP163S	3/8 ODF	6.31	2.63	5.2	5.2	5.1						
HP164	1/2 SAE	7.22	2.63	7.7	7.7	7.6	323	294	237	179	178	160
HP164S	1/2 ODF	6.34	2.63	8.1	8.1	7.9						
HP165	5/8 SAE	7.59	3.09	8.3	8.3	8.1						
HP165S	5/8 ODF	6.63	2.63	8.7	8.7	8.5						

(1) All ratings in accordance with ARI Standard 710-86.
86°F liquid refrigerant temperature.
5°F saturated vapor temperature
3.1 lbs./min./ton for R-134a
2.9 lbs./min./ton for R-22 and R-407C
4.0 lbs. min./ton for R-404A/507 and R-12
4.4 lbs./min./ton for R-502
2.7 lbs./min./ton for R-410A

(2) Water Capacities are based on: Equilibrium Point Dryness (EPD) of: 50 parts per million for R-134a, R404-A/507, R-410A and R-407C
60 parts per million for R-22
15 parts per million for R-12
30 parts per million for R-502

(3) 20 drops of water = 1 gram = 1 cc

(4) For 2 PSI Δ P, Multiply values by 1.4

HP CAPACITY TABLES

UNIT SIZE	FLOW CAPACITY - TONS @ 1 PSI		LIQUID REFRIGERANT HOLDING CAPACITY - Oz.						WATER HOLDING CAPACITY DROPS					
			R-22R		R-407		R-410A		R-22		R-407C		R-410A	
	R-22/R-410A	R-407C	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
163S	5.2	5.1												
164	6.6	6.5												
164S	7.4	7.3	10.1	9.1	9.6	8.5	9	7.6	161	141	125	87	91	55
165	8	7.8												
165S	8.3	8.1												

Driers

HERMETIC LIQUID LINE HP FILTER DRIERS

UNIT SIZE	REFRIGERATION, LOW TEMP & COMMERCIAL INSTALLATIONS			AIR CONDITIONING			
				FIELD REPLACEMENT & FIELD INSTALLATIONS		OEM: SELF CONTAINED EQUIPMENT	
	R-12/134A	R-22/407C/410A	R-404A/134A	R-12/134A	R-22/407C/410A	R-12/13A	R-22/407C
083, 083S	1	1	1	2	3	3	4
084, 084S	1.5	2	1	3	5	4	7
162, 162S	1	1.5	3/4	1	2	2	2 1/2
163, 163S	2	4	2	4	6	5	7 1/2
164, 164S	2	4	2	4	6	5	7 1/2
165, 165S	3	5	2 1/2	5	7 1/2	7 1/2	10

LIQUID REFRIGERANT HOLDING CAPACITY - OUNCES

UNIT SIZE	R-22		R-407C		R-410A	
	75°F	125°F	75°F	125°F	75°F	125°F
05	4.6	4.2	4.4	3.9	4.1	3.5
08	7.7	6.9	7.3	6.4	6.9	5.8
16	14.2	12.7	13.5	11.8	12.6	10.6
30	21.0	18.7	20.0	17.4	--	--

R-410A The HP filter-drier is UL listed for 680 PSIG maximum working pressure for all sizes.



SSG Series Moisture Indicators

Features/Benefits

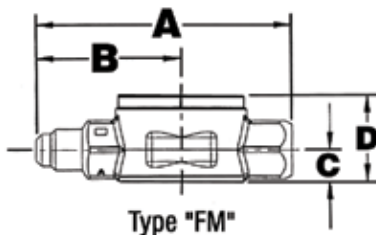
- Fully hermetic design
- 3% relative humidity indication compared to 10% paper indicators.
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures.
- Tri Color Coded
 - Blue = Dry optimal operation conditions, - Purple = Low levels of moisture indicated, - Pink = High levels of moisture detected
- Wide angle viewing high visibility window for ease of monitoring.
- All brass corrosion resistant body
- Solid copper fittings

Applications

- SUPCO's SSG is designed to provide an accurate method of determining the moisture content of a system's refrigerant.
- Unique 3% high accuracy moisture indicator for CFC, HCFC and HFC refrigerants, including R410A.

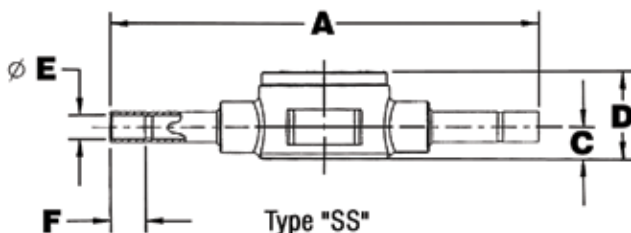
Specifications

- 3% relative humidity sensitivity
- Maximum working pressure (MWP): 680 psig



Type "FM"
Female Flare X Male Flare

PART NO.	CONNECTION SIZE & TYPE	A	B	C	D	E	F
SSGFM2	1/4 SAE	2.75 ± .03	1.19 ± .03	.34 ± .06	.937 ± .06		
SSGFM3	3/8 SAE	3.00 ± .03	1.31 ± .03	.47 ± .06	1.187 ± .06		
SSGFM4	1/2 SAE	3.22 ± .03	1.41 ± .03	.47 ± .06	1.187 ± .06		
SSGSS2	1/4 ODF	4.62 ± .10		.34 ± .06	.937 ± .06	.254 ± .002	.375
SSGSS3	3/8 ODF	4.62 ± .10		.34 ± .06	.937 ± .06	.379 ± .002	.402
SSGSS4	1/2 ODF	4.87 ± .10		.47 ± .06	1.187 ± .06	.504 ± .003	.500
SSGSS5	5/8 ODF	4.87 ± .10		.47 ± .06	1.187 ± .06	.629 ± .003	.625
SSGSS7	7/8 ODF	6.31 ± .10		.61 ± .06	1.500 ± .06	.879 ± .003	.750



Type "SS"
Tube Stub X Tube Stub

Nomenclature

Example: SSGSS3

SSG	S	3
Supco Sight Glass	Connection style Solder x Solder	Connection size (in 1/8)



Our Soft Copper Capillary Tubing is precision plug drawn with the internal diameter held to a tolerance of +/- .001. It has been thoroughly dehydrated, sealed and individually packaged.

BC Series Bullet® Restricto Cap Tubing

Fits **ANY** domestic and commercial refrigerator or room air conditioner from 1/8 H.P. to 5 H.P.

Features

- Precision Bore, Plus or Minus .001
- The Bullet Restricto Cap is consolidated into a five-pak replacement kit. It's guaranteed to provide you with uniformity on all applications.
- The five "Restricto Cap" sizes cover hundreds of applications (see chart below).
- Specification: ASTM B360

PART NO.	SIZE	LENGTH
BC1	.081 O.D. x .031 I.D.	10 FT. COIL
BC2	.093 O.D. x .040 I.D.	12 FT. COIL
BC3	.093 O.D. x .052 I.D.	12 FT. COIL
BC4	.125 O.D. x .064 I.D.	12 FT. COIL
BC5	.071 O.D. x .028 I.D.	10 FT. COIL
BC1-100	.081 O.D. x .031 I.D.	100 FT. COIL
BC2-100	.093 O.D. x .040 I.D.	100 FT. COIL
BC3-100	.093 O.D. x .052 I.D.	100 FT. COIL
BC4-100	.125 O.D. x .064 I.D.	100 FT. COIL
BC5-100	.071 O.D. x .028 I.D.	100 FT. COIL
5PAK	Five pack replacement kit.	



CTC3 Cap Tube Computer

Calculate the flow rate of a defective cap tube and duplicate that flow rate with cap tubes that have a different I.D.

Features/Benefits

- Computes inside diameter, length, refrigerant, horsepower, application and flow rate
- Shows temperature/pressure charts for 12 refrigerants
- Compact, light weight & easy to use!
- Converts Cap Tubing used with refrigerants R12, 134A, R22, and R502 only.

Added Notes

- Use R12 conversion for R416A
- Use R134 conversion for R401A, R401B, R406A, R500, R409A
- Use R502 conversion for R402B, R403B, R404A, R407C, R408A

Reference chart for Bullet® "Restricto" Capillary Tubing for All Refrigerants in Low, Medium and High Applications

NOTE: This chart is average measurements for average conditions, and may have to be "fine tuned" for exact replacement. These charts are for Fan Cooled units only. Add 10% to the length of the cap tubing for Static Cooled Units.

NOTE: Application Temperatures are Saturated Suction Temperatures (SST).

SINGLE FEED

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R416A	1/8 hp	110" # 5	84" # 5	48" # 5
	1/6 hp	71" # 5	96" # 1	72" # 1
	1/5 hp	54" # 1	36" # 1	24" # 1
	1/4 hp	43" # 1	90" # 2	60" # 2
	1/3 hp	93" # 2	72" # 2	36" # 2
	1/2 hp	96" # 3	48" # 3	90" # 4
	3/4 hp	60" # 3	92" # 4	72" # 4
	1 hp	36" # 3	84" # 4	54" # 4
	1-1/2 hp	84" # 4	60" # 4	43" # 4
	2 hp	55" # 4	40" # 4	26" # 4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R134A / R401A R401B/R406A R409A/R500	1/8 hp	121" # 5	92" # 5	53" # 5
	1/6 hp	78" # 5	106" # 1	79" # 1
	1/5 hp	59" # 1	39" # 1	26" # 1
	1/4 hp	47" # 1	99" # 2	66" # 2
	1/3 hp	102" # 2	79" # 2	39" # 2
	1/2 hp	105" # 3	52" # 3	99" # 4
	3/4 hp	66" # 3	101" # 4	79" # 4
	1 hp	39" # 3	92" # 4	59" # 4
	1-1/2 hp	92" # 4	66" # 4	47" # 4
	2 hp	61" # 4	44" # 4	29" # 4

NOTE: For Multiple Feeds with smaller HP's than those shown in the charts.

- Divide HP by number of feeds, go to Single Feed Chart, select a cap tube for the calculated HP and use that selection for each feed.
- Ex: 1 HP, LOW, R12 5 FEED USE: 1/5 HP, LOW, R12, SINGLE FEED CHART
- RESULT: 5 Feeds, 54" BC1

Cap Tubing

SINGLE FEED

REF	hp	-10 LOW	+20 MED	+45 HIGH
R22	1/8 hp	132" #5	101" #5	58" #5
	1/6 hp	86" #5	116" #1	86" #1
	1/5 hp	64" #1	42" #1	28" #1
	1/4 hp	51" #1	109" #2	72" #2
	1/3 hp	112" #2	87" #2	43" #2
	1/2 hp	115" #3	57" #3	109" #4
	3/4 hp	72" #3	111" #4	87" #4
	1 hp	42" #3	101" #4	65" #4
	1-1/2 hp	101" #4	72" #4	51" #4
	2 hp	67" #4	48" #4	32" #4
R402A/R407A R407B/R507	1/8 hp	N/A	122" #5	69" #5
	1/6 hp	104" #5	138" #1	105" #1
	1/5 hp	77" #1	50" #1	34" #1
	1/4 hp	62" #1	34" #1	86" #2
	1/3 hp	33" #1	106" #2	52" #2
	1/2 hp	31" #2	69" #3	35" #3
	3/4 hp	87" #3	37" #3	106" #4
	1 hp	52" #3	30" #3	79" #4
	1-1/2 hp	32" #3	86" #4	62" #4
	2 hp	82" #4	58" #4	37" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	1/8 hp	144" #5	111" #5	63" #5
	1/6 hp	95" #5	78" #5	95" #1
	1/5 hp	70" #1	46" #1	31" #1
	1/4 hp	56" #1	31" #1	79" #2
	1/3 hp	30" #1	96" #2	47" #2
	1/2 hp	29" #2	63" #3	32" #3
	3/4 hp	79" #3	32" #3	96" #4
	1 hp	46" #3	111" #4	72" #4
	1-1/2 hp	111" #4	79" #4	56" #4
	2 hp	74" #4	52" #4	34" #4
R410A	1/8 hp	N/A	144" #5	81" #5
	1/6 hp	123" #5	100" #5	78" #5
	1/5 hp	90" #1	60" #1	41" #1
	1/4 hp	73" #1	40" #1	101" #2
	1/3 hp	38" #1	30" #1	62" #2
	1/2 hp	37" #2	84" #3	42" #3
	3/4 hp	104" #3	44" #3	34" #3
	1 hp	62" #3	36" #3	94" #4
	1-1/2 hp	38" #3	103" #4	74" #4
	2 hp	96" #4	69" #4	45" #4

DOUBLE FEED

(All double feed caps tubes require 2 lengths of each size listed below.)

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R416A	1/2 hp	43" #1	90" #2	60" #2
	3/4 hp	30" #1	63" #2	42" #2
	1 hp	96" #3	48" #3	90" #4
	1 1/2 hp	60" #3	92" #4	72" #4
	2 hp	36" #3	84" #4	54" #4
	2 1/2 hp	108" #4	72" #4	49" #4
	3 hp	84" #4	60" #4	43" #4
	3 1/2 hp	70" #4	54" #4	35" #4
	4 hp	55" #4	40" #4	26" #4
R134A/R401A R401B/R406B R409A/R500	1/2 hp	47" #1	99" #2	66" #2
	3/4 hp	33" #1	69" #2	46" #2
	1 hp	105" #3	52" #3	99" #4
	1 1/2 hp	66" #3	101" #4	79" #4
	2 hp	40" #3	92" #4	59" #4
	2 1/2 hp	119" #4	79" #4	53" #4
	3 hp	92" #4	66" #4	47" #4
	3 1/2 hp	77" #4	59" #4	38" #4
	4 hp	60" #4	44" #4	29" #4
R22	1/2 hp	52" #1	108" #2	72" #2
	3/4 hp	36" #1	77" #2	50" #2
	1 hp	115" #3	58" #3	108" #4
	1 1/2 hp	72" #3	110" #4	86" #4
	2 hp	43" #3	101" #4	65" #4
	2 1/2 hp	39" #3	87" #4	58" #4
	3 hp	101" #4	72" #4	52" #4
	3 1/2 hp	84" #4	64" #4	48" #4
	4 hp	66" #4	48" #4	37" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	1/2 hp	56" #1	119" #2	78" #2
	3/4 hp	39" #1	85" #2	55" #2
	1 hp	28" #2	63" #3	119" #4
	1 1/2 hp	79" #3	32" #3	94" #4
	2 hp	47" #3	110" #4	71" #4
	2 1/2 hp	43" #3	96" #4	64" #4
	3 hp	111" #4	79" #4	57" #4
	3 1/2 hp	92" #4	70" #4	46" #4
	4 hp	73" #4	53" #4	34" #4
R402A/R407A R407B/R507	1/2 hp	62" #1	32" #1	85" #2
	3/4 hp	43" #1	92" #2	60" #2
	1 hp	31" #2	70" #3	36" #3
	1 1/2 hp	87" #3	35" #3	103" #4
	2 hp	52" #3	28" #3	78" #4
	2 1/2 hp	47" #3	106" #4	70" #4
	3 hp	32" #3	86" #4	62" #4
	3 1/2 hp	101" #4	77" #4	50" #4
	4 hp	80" #4	58" #4	37" #4
R410A	1/2 hp	72" #1	37" #1	102" #2
	3/4 hp	50" #1	116" #2	70" #2
	1 hp	37" #2	83" #3	42" #3
	1 1/2 hp	102" #3	44" #3	34" #3
	2 hp	62" #3	37" #3	93" #4
	2 1/2 hp	55" #3	32" #3	81" #4
	3 hp	38" #3	101" #4	74" #4
	3 1/2 hp	118" #4	90" #4	55" #4
	4 hp	92" #4	70" #4	41" #4

TRIPLE FEED

(All triple feed cap tubes require 3 lengths of each size listed below.)

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R416A	1 hp	93" #2	72" #2	36" #2
	1 1/2 hp	96" #3	48" #3	90" #4
	2 hp	77" #3	38" #3	72" #4
	3 hp	36" #3	84" #4	54" #4
	4 hp	108" #4	63" #4	41" #4
	5 hp	86" #4	50" #4	32" #4
R134A/R401A R401B/R406A R409A/R500	1 hp	102" #2	79" #2	39" #2
	1 1/2 hp	105" #3	52" #3	99" #4
	2 hp	84" #3	42" #3	79" #4
	3 hp	40" #3	92" #4	59" #4
	4 hp	30" #3	69" #4	45" #4
	5 hp	94" #4	55" #4	35" #4
R22	1 hp	112" #2	86" #2	43" #2
	1 1/2 hp	37" #2	58" #3	108" #4
	2 hp	92" #3	46" #3	86" #4
	3 hp	43" #3	100" #4	65" #4
	4 hp	32" #3	75" #4	49" #4
	5 hp	102" #4	60" #4	39" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	1 hp	30" #1	94" #2	47" #2
	1 1/2 hp	41" #2	63" #3	32" #3
	2 hp	101" #3	50" #3	95" #4
	3 hp	47" #3	110" #4	71" #4
	4 hp	35" #3	83" #4	53" #4
	5 hp	32" #3	66" #4	43" #4
R402A/R407A R407B/R507	1 hp	33" #1	104" #2	52" #2
	1 1/2 hp	45" #2	70" #3	35" #3
	2 hp	111" #3	55" #3	104" #4
	3 hp	52" #3	31" #3	78" #4
	4 hp	38" #3	91" #4	58" #4
	5 hp	35" #3	72" #4	47" #4
R410A	1 hp	39" #1	30" #1	62" #2
	1 1/2 hp	54" #2	84" #3	42" #3
	2 hp	27" #2	66" #3	32" #3
	3 hp	62" #3	37" #3	94" #4
	4 hp	46" #3	109" #4	68" #4
	5 hp	42" #3	86" #4	56" #4

Cap Tubing

FOUR FEED (All four feed cap tubes require 4 lengths of each size listed below.)

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R416A	2 hp	96" #3	48" #3	90" #4
	3 hp	60" #3	92" #4	72" #4
	4 hp	36" #3	84" #4	54" #4
	5 hp	105" #4	67" #4	43" #4
R134A/R401A R401B/R406A R409A/R500	2 hp	105" #3	52" #3	99" #4
	3 hp	66" #3	101" #4	79" #4
	4 hp	40" #3	92" #4	59" #4
	5 hp	32" #3	74" #4	47" #4
R22	2 hp	115" #3	58" #3	108" #4
	3 hp	72" #3	110" #4	86" #4
	4 hp	44" #3	101" #4	65" #4
	5 hp	35" #3	81" #4	52" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	2 hp	29" #2	63" #3	32" #3
	3 hp	79" #3	32" #3	94" #4
	4 hp	47" #3	111" #4	71" #4
	5 hp	38" #3	89" #4	57" #4
R402A/R407A R407B/R507	2 hp	31" #2	70" #3	35" #3
	3 hp	87" #3	35" #3	103" #4
	4 hp	52" #3	31" #3	78" #4
	5 hp	42" #3	97" #4	63" #4
R410A	2 hp	34" #2	81" #3	41" #3
	3 hp	101" #3	48" #3	32" #3
	4 hp	62" #3	36" #3	92" #4
	5 hp	49" #3	30" #3	74" #4

FIVE FEED (All five feed cap tubes require 5 lengths of each size listed below.)

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R416A	2 hp	115" #3	58" #3	108" #4
	3 hp	81" #3	41" #3	77" #4
	4 hp	57" #3	87" #4	68" #4
	5 hp	36" #3	82" #4	54" #4
R134A/R401A R401B/R406B R409A/R500	2 hp	28" #2	62" #3	32" #3
	3 hp	89" #3	45" #3	84" #4
	4 hp	62" #3	95" #4	74" #4
	5 hp	40" #3	92" #4	59" #4
R22	2 hp	32" #2	70" #3	35" #3
	3 hp	97" #3	49" #3	92" #4
	4 hp	68" #3	103" #4	81" #4
	5 hp	48" #3	98" #4	65" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	2 hp	35" #2	77" #3	38" #3
	3 hp	108" #3	54" #3	101" #4
	4 hp	74" #3	114" #4	89" #4
	5 hp	53" #3	108" #4	71" #4
R402A/R407A R407B/R507	2 hp	38" #2	84" #3	42" #3
	3 hp	28" #2	59" #3	30" #3
	4 hp	81" #3	35" #3	99" #4
	5 hp	58" #3	31" #3	78" #4
R410A	2 hp	45" #2	98" #3	49" #3
	3 hp	31" #2	69" #3	35" #3
	4 hp	95" #3	40" #3	30" #3
	5 hp	67" #3	36" #3	91" #4

SIX FEED (All six feed cap tubes require 6 lengths of each size listed below.)

REF	hp	-10 LOW	+20 MED	+45 HIGH
R12/R116A	2 hp	93" #2	72" #2	36" #2
	3 hp	96" #3	48" #3	90" #4
	4 hp	82" #3	41" #3	77" #4
	5 hp	56" #3	86" #4	68" #4
R134A/R401A R401B/R406A R409A/R500	2 hp	102" #2	79" #2	39" #2
	3 hp	105" #3	52" #3	99" #4
	4 hp	90" #3	45" #3	85" #4
	5 hp	62" #3	95" #4	75" #4
R22	2 hp	112" #2	86" #2	43" #2
	3 hp	115" #3	58" #3	108" #4
	4 hp	98" #3	49" #3	92" #4
	5 hp	68" #3	103" #4	81" #4

REF	hp	-10 LOW	+20 MED	+45 HIGH
R402B/R403B R404A/R407C R408A/R502	2 hp	30" #1	94" #2	47" #2
	3 hp	29" #2	63" #3	32" #3
	4 hp	118" #3	53" #3	27" #3
	5 hp	74" #3	30" #3	89" #4
R402A/R407A R407B/R507	2 hp	33" #1	103" #2	52" #2
	3 hp	31" #2	70" #3	35" #3
	4 hp	26" #2	58" #3	30" #3
	5 hp	82" #3	33" #3	98" #4
R410A	2 hp	40" #1	31" #1	62" #2
	3 hp	37" #2	85" #3	42" #3
	4 hp	33" #2	70" #3	36" #3
	5 hp	98" #3	40" #3	32" #3

NOTE: For Multiple Feeds with smaller hp's than those shown in the charts.

- Divide hp by number of feeds, go to Single Feed Chart, select a cap tube for the calculated hp and use that selection for each feed.
- Ex: 1 hp, LOW, R12 5 FEED USE: 1/5 hp, LOW, R12, SINGLE FEED CHART
- RESULT: 5 Feeds, 54" BC1

Belts



Multi-Plus Dual Brand V-Belts

Clearly identifying RMA classic part number and dimensionally equivalent FHP number, the Multi-plus belt is designed to reduce total V-Belt investment.

- Consolidate belts sizes into a single belt line
- Able to handle classic and FHP drive applications

Applications

- HVAC
- Refrigeration
- Industrial



"A & B" Sec-



"BX" Section

"A" Section

Classical V Belts

- 1/2 inch top width
- 11/32 inch thick
- Dual Brand A & 4L

"B" Section

Classical V Belts

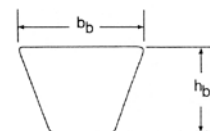
- 21/32 inch top width
- 13/32 inch thick
- Dual Brand B & 5L

"BX" Section

Cogged Multiple V Belts

- 21/32 inch top width
- 13/32 inch thick

Belt Section (Pitch)	b (Angle)	bb (Width)	hb (Height)
A	40°	.50 in	.31 in
B, BX	40°	.66 in	.41 in

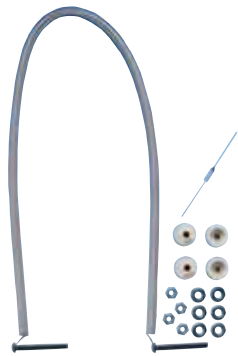


PART NO.	CROSS to L's	APPROX. OUTSIDE LENGTH	PART NO.	CROSS to L's	APPROX. OUTSIDE LENGTH	PART NO.	CROSS to L's	APPROX. OUTSIDE LENGTH	PART NO.	CROSS to L's	APPROX. OUTSIDE LENGTH	PART NO.	CROSS to L's	APPROX. OUTSIDE LENGTH
A100	4L1020	102	A65	4L670	67	B44	5L470	47	B102		105	BX66		69
A105		107	A66	4L680	68	B45	5L480	48	B104		107	BX67		70
A110		112	A67	4L690	69	B46	5L490	49	B105		108	BX70		73
A112		114	A68	4L700	70	B47	5L500	50	B106		109	BX71		74
A116		118	A69	4L710	71	B48	5L510	51	B107		110	BX75		78
A120		122	A70	4L720	72	B49	5L520	52	B110		113	BX77		80
A124		126	A71	4L730	73	B50	5L530	53	B111		114	BX78		81
A128		130	A72	4L740	74	B51	5L540	54	B112		115	BX80		83
A136		138	A73	4L750	75	B52	5L550	55	B114		117	BX81		84
A144		146	A74	4L760	76	B53	5L560	56	B115		118	BX82		85
A158		160	A75	4L770	77	B54	5L570	57	B116		119	BX83		86
A19	4L210	21	A76	4L780	78	B55	5L580	58	B118		121	BX90		93
A20	4L220	22	A77	4L790	79	B56	5L590	59	B120		123	BX93		96
A21	4L230	23	A78	4L800	80	B57	5L600	60	B124		127	BX95		98
A22	4L240	24	A79	4L810	81	B58	5L610	61	B126		129	BX96		99
A23	4L250	25	A80	4L820	82	B59	5L620	62	B128		131	BX97		100
A24	4L260	26	A81	4L830	83	B60	5L630	63	B130		133	BX99		102
A25	4L270	27	A82	4L840	84	B61	5L640	64	B133		136	BX100		103
A26	4L280	28	A83	4L850	85	B62	5L650	65	B134		137	BX103		106
A27	4L290	29	A84	4L860	86	B63	5L660	66	B135		138	BX105		108
A28	4L300	30	A85	4L870	87	B64	5L670	67	B136		139	BX112		115
A29	4L310	31	A86	4L880	88	B65	5L680	68	B140		143	BX116		119
A30	4L320	32	A87	4L890	89	B66	5L690	69	B144		147	BX120		123
A31	4L330	33	A88	4L900	90	B67	5L700	70	B152		155	BX124		127
A32	4L340	34	A89	4L910	91	B68	5L710	71	B158		161	BX128		131
A33	4L350	35	A90	4L920	92	B69	5L720	72	B162		165	BX133		135
A34	4L360	36	A91	4L930	93	B70	5L730	73	B195		198	BX136		139
A35	4L370	37	A92	4L940	94	B71	5L740	74	B210		213	BX144		147
A36	4L380	38	A93	4L950	95	B72	5L750	75	B225		227	BX150		153
A37	4L390	39	A94	4L960	96	B73	5L760	76	B240		242	BX158		161
A38	4L400	40	A95	4L970	97	B74	5L770	77	B255		257	BX162		163
A39	4L410	41	A96	4L980	98	B75	5L780	78	B270		272	BX173		176
A40	4L420	42	A97	4L990	99	B76	5L790	79	B285		287	BX180		183
A41	4L430	43	A98	4L1000	100	B77	5L800	80	B300		302	BX195		198
A42	4L440	44	A99	4L1010	101	B78	5L810	81	B315		317	BX210		213
A43	4L450	45	B23	5L260	26	B79	5L820	82	B330		332	BX225		226.5
A44	4L460	46	B24	5L270	27	B80	5L830	83	B360		362	BX240		241.5
A45	4L470	47	B25	5L280	28	B81	5L840	84	BX35		38	BX255		256.5
A46	4L480	48	B26	5L290	29	B82	5L850	85	BX36		39	BX270		271.5
A47	4L490	49	B27	5L300	30	B83	5L860	86	BX38		41	BX300		301.5
A48	4L500	50	B28	5L310	31	B85	5L880	88	BX42		45			
A49	4L510	51	B29	5L320	32	B86	5L890	89	BX43		46			
A50	4L520	52	B30	5L330	33	B87	5L900	90	BX46		49			
A51	4L530	53	B31	5L340	34	B88	5L910	91	BX48		51			
A52	4L540	54	B32	5L350	35	B89	5L920	92	BX50		53			
A53	4L550	55	B33	5L360	36	B90	5L930	93	BX51		54			
A54	4L560	56	B34	5L370	37	B91	5L940	94	BX53		56			
A55	4L570	57	B35	5L380	38	B92	5L950	95	BX55		58			
A56	4L580	58	B36	5L390	39	B93	5L960	96	BX56		59			
A57	4L590	59	B37	5L400	40	B94	5L970	97	BX58		61			
A58	4L600	60	B38	5L410	41	B95	5L980	98	BX59		62			
A59	4L610	61	B39	5L420	42	B96	5L990	99	BX60		63			
A60	4L620	62	B40	5L430	43	B97	5L1000	100	BX61		64			
A61	4L630	63	B41	5L440	44	B98	5L1010	101	BX62		65			
A62	4L640	64	B42	5L450	45	B99	5L1020	102	BX63		66			
A63	4L650	65	B43	5L460	46	B101		104	BX65		68			

We have the full product line of HVAC Belts • Please call if you need other belts.

See page 105 for Belt Adjustment Tools (BJ10)

DH Series Duct Heater Coil Kits



DH500
(DH500 Series 3/8" O.D.)



DH500FC
(5/8" O.D.)

Features/Benefits

- Nichrome heavy gauge construction.
- Welded terminal bolts for low resistance and longer life.
- Complete kits contain close wound coil to fit many applications, two male and two female bushings, terminal screws, nuts and washers to make a proper repair. The DH500 & DH500FC kits include the SUPCO STC in line series thermal cutoffs.

Tech Tip

The coil should be evenly stretched a minimum of 1 1/2 to 5 times the close wound length.

Tech Tip

When stretching coils measure length needed and stretch new coil slightly shorter. After installation, cycle with the heater on and allow full operation for 5 minutes. Any manufacturing flaws in the coil will show up quickly.

Applications

Replacement coil kits for many electric heat applications.

- Duct Heaters
- Electric Furnaces
- Air Curtains
- Strip Heaters

PART NO.	MARS PART NO.	CLOSE WOUND LENGTH	WATTAGE AT VOLTS	WATTAGE AT VOLTS
DH500*	34601	28"	5000@240	3750@208
DH500-3		23"	5000@480	
DH500FC*		12"	5000@240	3750@208
DH501	34608	22"	3500@240	2600W@208
DH502-4		18"	2000@277	
DH506	34630	26 1/2"	4000@240	
DH507		18 1/2"	3000@240	2250@208
DH520	34652	31 1/2"	6600@240	5000@208
DH534	34656	26"	6000@240	4500@208
DH560		28"	5600@240	4200@208

*Includes 306°F Thermal Cutoff SUPCO p/n STC4300



STC Series Thermal Cutoffs

Features/Benefits

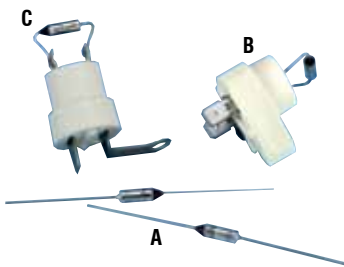
- STC thermal cutoffs are available in a range of temperature and electrical ratings to meet a variety of different applications.
- Provides reliable back up protection for temperature controlling thermostats and other over temperature conditions.
- One time operation.
- Three configurations available to accommodate in line or face plate mounting.
- Rated for continuous operating currents of up to 10 amps @ 250VAC (15 amps @ 120VAC).
- Used with the SUPCO DH series duct heaters.

THERMODISC

Applications

Manufactured as a thermal safeguard, the SUPCO STC opens the circuit if the designed temperature limit is reached.

- Duct heaters
- Electric furnaces
- Heat Pump systems
- Portable electric heaters
- Industrial equipment
- Office machines



PART NO.	T-O-D	DIVERSITEC	A-1	OPEN TEMP. °F	OPEN TEMP. °C	TYPE	REF.
STC4257	G4A01128C	HFL4257	TC4257	262°F	128°C	In Line	A
STC4283	G4A01144C		TC4283	291°F	144°C	In Line	A
STC4300	G4A01152C	HFL4300	TC4300	306°F	152°C	In Line	A
STC4333	G4A01167C	HFL4333	TC4333	333°F	167°C	In Line	A
STC4358	G4A01184C			363°F	184°C	In Line	A
STC4438	G4A01228C		TC4438	442°F	228°C	In Line	A
STC4468	G4A01240C		TC4468	464°F	240°C	In Line	A
STC5257	G4AM0600128C	HFL5257	TC5257	262°F	128°C	Face Plate Straight	B
STC5300	G4AM0600152C	HFL5300	TC5300	306°F	152°C	Face Plate Straight	B
STC5333	G4AM0600167C	HFL5333	TC5333	333°F	167°C	Face Plate Straight	B
STC5337				337°F	169°C		
STC5377	G4AM0600192C		TC5377	378°F	192°C	Face Plate Straight	B
STC6257	G4AM0600128C			262°F	128°C	Face Plate Right Angle	C
STC6300	G4AM0600152C			306°F	152°C	Face Plate Right Angle	C
STC6333	G4AM0600167C			333°F	167°C	Face Place Right Angle	C



Heaters

CH Series Compressor Heaters



Features/Benefits

- Prevents refrigerant migration which causes compressor damage.
- Entire heating band is corrosion resistant
- Installs quickly and easily
- Low power consumption
- High temperature silicone rubber element
- 30" long insulated leads

Applications

- Air Conditioning
- Heat Pumps
- Refrigeration Compressors



PART NO.	VOLTS	WATTS	GIRTH DIM. MIN.	GIRTH DIM. MAX.	COPELAND PART NO.	MARS PART NO	FITS COMPRESSOR
CH101	240	54	27 7/16"	34 1/4"		32605	Aspera: H, Bendix / Westinghouse: E,
CH101-3	480	54	27 7/16"	34 1/4"	018-0037-03	32608	
CH102	240	60	25 3/4"	32 9/16"		32609	Tecumseh: AJ, Trane: D4340/7669
CH103	240	45	24 3/4"	31 9/16"	018-0038-02	32613	Bristol: H10B, H20B, H21G, H22B, H2NG-144
CH104	240	75	41 1/2"	48 5/16"		32617	Carrier: 6A88, Fedder Chrysler 3009
CH1042	120	75	41 1/2"	48 5/16"		32619	Bristol: H106, H206, H21G, H22G
CH105	240	50	32 1/2"	39 5/16"		32621	Copeland: ZR, Trane: DE4340, 7570
CH1053	480	50	32 1/2"	39 5/16"		32624	
CH1202	120	90	30 3/16"	37"			Copeland: BR
CH135	240	45	23 7/16"	27 1/2"		32629	
CH197	240	25	13 3/4"	20 9/16"		32631	Fedders Chrysler: 2870908, Sanyo: CR151F, CR20F, CR33F

Transformers

Universal Fan Centers

Two economically priced products to choose from that cover all applications.



FC4011 & Universal FC4031

Features/Benefits

- DPDT plug-in style relay (90340)
- 40 VA transformer
- Mounts directly to 4" x 4" electrical box
- Color coded wiring for easy installation
- Universal FC4031 includes multi tap primary voltages for all applications, reduces inventory

Applications

- Provides low voltage control of line voltage fan motors and auxiliary circuits in HVAC systems



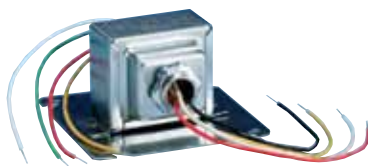
SPECIFICATIONS

PART NO.	VA	PRIMARY VAC	SECONDARY VAC	hp	CONTACTS	REPLACES JARD	REPLACES MARS	REPLACES STEVECO
FC4011	40	120	24	3/4	DPDT	4011FC	24013	90-113
FC4031	40	120/208/240	24	3/4	DPDT	4031FC	24010	90-130

T45 Universal Transformer

A versatile transformer that can be used for many different applications. Accepts input voltages of 120, 208, and 240 VAC and provides a choice of secondary voltages of 2.5, 8, 12, 16 and 24 VAC.

- 50/60 Hz Class 2
- Enclosed Frame - Plate, Foot or Knock-Out Mount



PART NO.	PRIMARY VAC	SECONDARY VAC	VA	H	W	D	MW
T45	120/208/240	2.5, 8, 12, 16 & 24	48	2 1/16"	3 1/4"	2 3/4"	2 13/16"

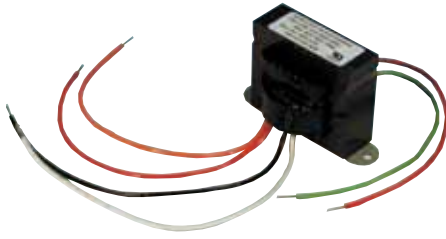
NOTE: Transformer is furnished with a 4" x 4" mounting plate, wire nuts, 1/2" conduit and 8" leads.



Control Transformers

A complete line of Control Transformers designed for HVAC/R applications.

- Foot or Multi-mount
- Output from 20 – 100 VA
- A multitude of Primary and Secondary combinations
- Circuit breakers and fuses where noted



SXT105

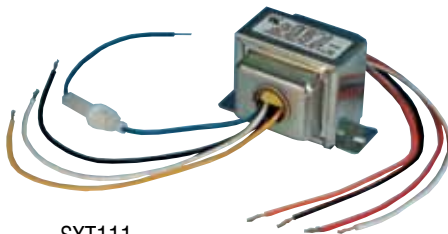
Foot Mount Transformers

PART NO.	PRIMARY V	SECONDARY V	OUTPUT VA	BREAKER/FUSE	MOUNT TYPE
SXT100R	120/208/240/480	24	100	Breaker	Foot
SXT101	120/208/240	2.5/12/24	40	Fuse	Foot
SXT103	277	24	40	No	Foot
SXT104	208/240	24	40	No	Foot
SXT105	120/208/240	24	40	No	Foot
SXT114	120/208/240	24	20	No	Foot
* SXT115	120/208/240	24	40	No	Foot
SXT116	120	24	40	No	Foot
SXT160	208/240	24	60	Fuse	Foot
SXT79R	120/208/240/480	24	75	Breaker	Foot

* Includes Metal Shroud.

Multi-Mount Transformers

PART NO.	PRIMARY V	SECONDARY V	OUTPUT VA	BREAKER/FUSE	MOUNT TYPE
SXT106	120/208/240	24	40	No	Multi
SXT111	120/208/240	2.5/12/24	40	Fuse	Multi
SXT112	120	24	40	No	Multi
SXT113	208/240	24	40	No	Multi
SXT148	120/208/240	2.5/12/24	48	No	Multi
SXT150	120/208/240	24	50	Fuse	Multi



SXT111

Cross Reference

Foot Mount

PART NO.	JARD	MARS	UEI	WHITE-RODGERS	HONEYWELL
SXT101	4032F	50355	UET101	N/A	N/A
SXT104	4021F	50353	N/A	90-T40F2	AT40A1139, AT40B1032
SXT105	4031F	50354	UET105	90-T40F3	AT40A1121, AT40A1139, AT40B1214
SXT114	2031F	50351	UET114	N/A	AT20A1123
SXT115	4031F	50354	UET115	90-T40F3	AT40A1121, AT40A1139, AT40B1214
SXT116	4011F	50352	N/A	90-T40F1	AT40A1121, AT40B1206
SXT160	6021F	50316	UET160	N/A	N/A
SXT79R	7541C	50321	UET79R	90-T75C3	AT88A1005, AT88A1021, AT88A1047
SXT100R	10041C	50341	UET100R	N/A	N/A

Multi-Mount

PART NO.	JARD PART NO.	MARS PART NO.	UEI PART NO.	WHITE-RODGERS PART NO.	HONEYWELL PART NO.
SXT106	4031M	50304	N/A	90-T40M3	AT40A1018, AT72D1683, AT72D1691, AT140A1018
SXT111	5032M	50333	UET111	N/A	N/A
SXT112	4011M	50302	UET112	90-T40M1	AT72D1683, AT140A1000
SXT113	4021M	50303	UET113	90-T40M2	AT72D1691, AT140A1026
SXT148	5032M	50333	N/A	N/A	N/A
SXT150	5031M	50314	UET150	90-T50M3	AT87A1106, AT87A1007, AT87A1049, AT87A1056, AT150A1007

Sequencers

THERMODISC



Features/Benefits

- Direct replacement for most fan & heat sequencing functions.
- 24 volt input control
- Contacts designated M1 – M2 of a multi timing sequencer will turn on first and turn off last, as required by UL and CSA for electric heating applications.
- Five second on delay between all subsequent stages, unless they function together.

Applications

The SUPCO Q Series Thermodisc Sequencers are field proven for controlling the operation of heating elements and/or blower motors in electric, gas or oil heat systems.

- Electric Furnaces
- Heat Pumps
- Gas Furnaces
- Oil Furnaces

Recommended Sequencer Packages for Electric Heating

Note 1: Auxiliary Contacts: In the above recommended packages, during the ON cycle, the auxiliary contacts complete the control circuit to subsequent 15S sequencers when more than one 15S sequencer is required. The auxiliary contacts may be any contacts in the first 15S sequencer except those marked M1-M2.

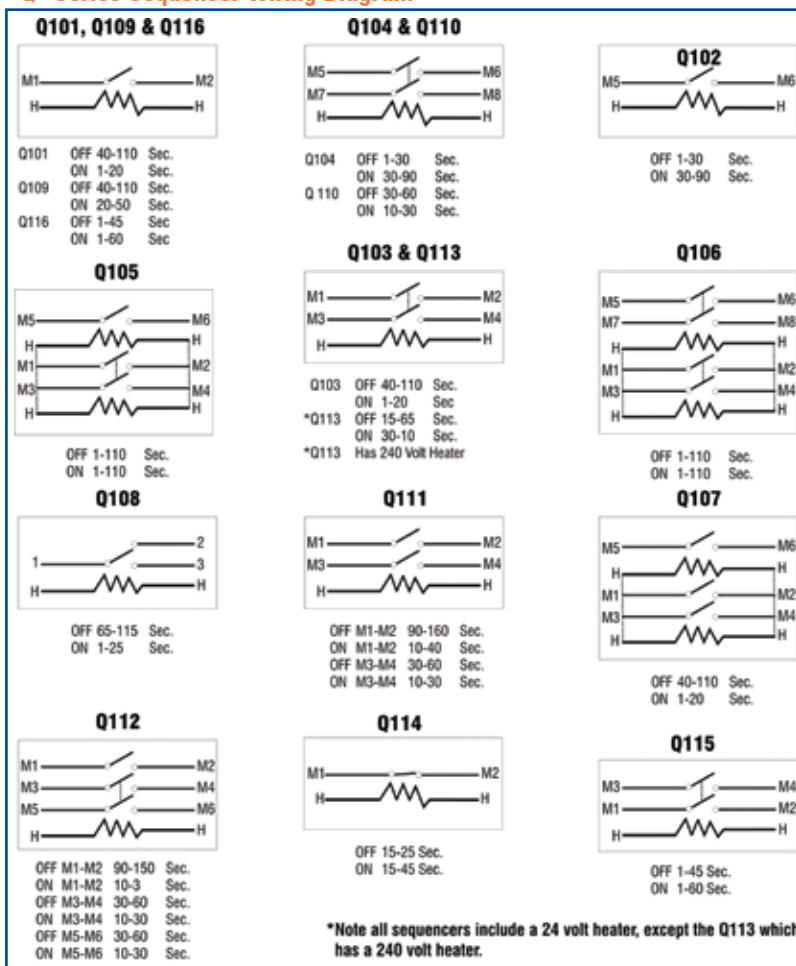
Note 2: Fan Interlock: The recommended combinations which contain more than one 15S sequencer include an extra set of contacts for fan interlock. (These are the first contacts of the second and third 15S sequencers.) A fan interlock is required by Underwriters Laboratories in order to guarantee that the fan will stay on until all elements are de-energized. All of the M1-M2 contacts of each 15S unit would be wired to the fan so that during the OFF cycle, the fan would stay energized regardless of the timing sequence of each package.

Note 3: Main Contacts, Electrical Ratings: 7FLA, 4LRA, 240 VAC inductive or 30A, 240 VAC resistive or 30A, 240 VAC total of inductive or resistive, with 7FLA, 240 VAC maximum inductive.

Note 4: Control Voltage on Heater Terminals (H): 24 VAC nominal (heater rated for 30 VAC/NEMA Class II circuit).



"Q" Series Sequencer Wiring Diagram



Cross Reference

PART NO.	GEM	GLOBAL	MARS	WATSCO	KLIXON	W/R	INTERSTATE ELECTRIC I-9	ZETTLER	OEM
Q101	GS101	24ZC-1	33241	TDR10	6000AONI-98	24A34-1	IES24A34-1	ZC24A341-1	***
Q102	GS102	24ZC-2	33242	TDR15	6000AONI-97	24A34-2	IES24A34-2	ZC24A34-2	***
Q103	GS103	24ZC-3	33244	TDR20	6000AONI-87	24A34-3	IES24A34-3	ZC24A34-3	Janitrol BT1256504 ICP/Carrier HQ1056789
Q104	GS104	24ZC-4	33245	TDR25	6000AONI-86	24A34-4	IES24A34-4	ZC24A34-4	***
Q105	GS105	24ZC-5	33232	TDR30	51172-32	24A34-5	IES24A34-5	ZC24A34-5	***
Q106	GS106	24ZC-6	33233	***	51172-22	24A34-6	IES24A34-6	ZC24A34-6	***
Q107	GS107	***	***	***	***	***	***	***	***
Q108	GS108	***	***	***	***	***	***	***	Goodman B13707-38
Q109	***	***	***	***	***	***	***	***	Janitrol BT1256500
Q110	***	***	***	***	***	***	***	***	Weatherking 422311608
Q111	***	***	***	***	***	***	***	***	Weatherking 422311606
Q112	***	***	***	***	***	***	***	***	Weatherking 422311607
Q113	***	***	33265	***	6000E4	***	***	***	***
Q114	***	***	***	***	***	***	***	***	Coleman 7670-307,308 308,130,913,101
Q115	***	***	33246	***	6000EOM	24A52-1	***	***	***
Q116	***	***	33243	***	6000AOM	24A51-1	***	***	***

*Note all sequencers include a 24 volt heater, except the Q113 which has a 240 volt heater.

Thermostats



Gas Furnace Limits and Plenum Thermostats

THERMODISC

- Direct OEM Replacements
- Economical
- Use 36T Electrical Ratings (page 42)



Plenum Thermostats

PART NO.	DESCRIPTION	OPEN °F	CLOSE °F	BOARD WIDTH	BOARD HEIGHT	INSERTION LENGTH	BDP	GOODMAN	LENNOX	YORK
							BRYANT DAY & NIGHT PAYNE	AIR-EASE ARMSTRONG CONCORD MAGIC CHEF	CORSAIR RUUD WEATHER KING	
SHL501	L170-40 SPST	170°F	130°F	1.88"	2.8"	3.12"	HH12ZA174A HH12ZA176A P331-2203			
SHL502	L180-30 SPST	180°F	150°F	1.88"	2.8"	3.12"	HH12ZA178A	B1370001		
SHL503	L190-40 SPST	190°F	150°F	1.88"	2.8"	3.12"	HH12ZA189 HH12ZB190 HH12ZA193A P331-2205			
SHL504	L240-40 SPST	240°F	200°F	1.88"	2.8"	3.12"	HH12ZA240 HH12ZA252A P331-2217			
SHL505	L140-40 SPST	140°F	100°F	1.88"	2.8"	1.87"	HH12ZB140			025-29041-005
SHL506	L170-40 SPST	170°F	130°F	1.88"	2.8"	1.87"	HH12ZB170		47-25349-02	SWT1258
SHL507	L140-30 SPST	140°F	110°F	1.88"	2.8"	3.12"	HH12ZA140	87F16		025-29041-005
SHL508	L190-20 SPST	190°F	170°F	1.88"	2.8"	3.12"	HH12ZB190 HH12ZA193 HH12ZA189 P331-2005	B1370913	47-21711-03	SWT1260 025-29041-006
SHL509	L240-30 SPST	240°F	210°F	1.88"	2.8"	3.12"	HH12ZB240 HH12ZA240 HH12ZA252 P331-2217	B1370903		
* SHL510	L150-20 SPST	150°F	130°F	1.625"	1.44"	3.12"	HH12ZB150		47-25349-03	
* SHL511	L160-20 SPST	160°F	140°F	1.625"	1.44"	3.12"	HH12ZB160	1370908S	47-21711-07	
* SHL512	L170-20 SPST	170°F	150°F	1.625"	1.44"	3.12"	HH12ZB170		47-25350-06	
* SHL513	L170-40 SPST	170°F	130°F	1.88"	2.94"	3.12"	HH12ZB170	26H66		SWT1258
* SHL514	L180-40 SPST	180°F	140°F	1.88"	2.94"	3.12"	HH12ZB180	37H73		
* SHL515	L200-40 SPST	200°F	160°F	1.88"	2.94"	3.12"	HH12ZB200 HH12ZA199 HH12ZA201	49L03	47-25349-05	SWT1260 025-29041-006
* SHL516	L210-40 SPST	210°F	170°F	1.88"	2.94"	3.12"	HH12ZB210			
* SHL517	L220-40 SPST	220°F	180°F	1.88"	2.94"	3.12"	HH12ZB220 HH12ZA219 HH12ZA223 48NHT042 620BE 0122			SWT1273
* SHL518	L250-40 SPST	250°F	210°F	1.88"	2.94"	3.12"	HH12ZB250 HH12ZA251 P331-2208	B1370012S		SWT1261 SWT1272
SHL519	L155-30 SPST	155°F	125°F	1.88"	2.8"	7.12"		B1370006 B1370908S		

* Includes gasket

Manual Reset Limit Control* - Open on Rise



PART NO.	DESCRIPTION	OPEN	CLOSE	PART NO.	DESCRIPTION	OPEN	CLOSE
SHM125	Limit - Open on Rise	125	Manual	SHM190	Limit - Open on Rise	190	Manual
SHM130	Limit - Open on Rise	130	Manual	SHM200	Limit - Open on Rise	200	Manual
SHM160	Limit - Open on Rise	160	Manual	SHM290	Limit - Open on Rise	290	Manual
SHM170	Limit - Open on Rise	170	Manual	SHM350	Limit - Open on Rise	350	Manual
SHM180	Limit - Open on Rise	180	Manual				

* Adapter Flange Plate included with each thermostat. * Use 60T Electrical Ratings (page 42)

Thermostats

Rollout Switches

THERMODISC

Features/Benefits

- Auto and Manual Reset
- Offered in a broad temperature range to cover most heating applications

Applications

- Automatic or Manual Rollout safety in gas fired furnaces, unit heater and roof top units.



Small Flush Mount SPST Limit Thermostats (Flush Mount Automatic Rollout)

PART NO.	TERMINALS	CUT OUT	CUT IN	DIFFERENTIAL
SLF130VA	Vertical 1/4"	130	115	15
SLF155VA	Vertical 1/4"	155	115	40
SLF158VB	Vertical 3/16"	158	118	40
SLF165VA	Vertical 1/4"	165	125	40
SLF170VA	Vertical 1/4"	170	130	40
SLF185VB	Vertical 3/16"	185	145	40
SLF190HA	Horizontal 1/4"	190	150	40
SLF194HB	Horizontal 3/16"	194	154	40
SLF194VB	Vertical 3/16"	194	154	40
SLF200HA	Horizontal 1/4"	200	160	40
SLF200VA	Vertical 1/4"	200	160	40
SLF210HA	Horizontal 1/4"	210	170	40
SLF222-VA	Vertical 1/4"	222	182	40

Small Flush Mount SPST Limit Thermostats (Flush Mount Automatic Rollout)

PART NO.	TERMINALS	CUT OUT	CUT IN	DIFFERENTIAL
SLF230HA	Horizontal 1/4"	230	190	40
SLF230HB	Horizontal 3/16"	230	190	40
SLF250HA	Horizontal 1/4"	250	200	50
SLF252VB	Vertical 3/16"	252	202	50
SLF255VA	Vertical 1/4"	255	205	50
SLF260HA	Horizontal 1/4"	260	210	50
SLF275HB	Horizontal 3/16"	275	225	50
SLF275VB	Vertical 3/16"	275	225	50
SLF280HB	Horizontal 3/16"	280	230	50
SLF300HB	Horizontal 3/16"	300	250	50
SLF300VA	Vertical 1/4"	300	250	50
SLF330VA	Vertical 1/4"	330	280	50

* Use 36T Electrical Ratings Page 42



Automatic Rollouts - SPST Limit Thermostats

PART NO.	TERMINALS	CUT OUT	CUT IN	DIFFERENTIAL
SLS120	45° angle 1/4"	120	105	15
SLS130	45° angle 1/4"	130	115	15
SLS140	45° angle 1/4"	140	100	40
SLS145	45° angle 1/4"	145	105	40
SLS150	45° angle 1/4"	150	110	40
SLS155	45° angle 1/4"	155	115	40
SLS160	45° angle 1/4"	160	120	40
SLS165	45° angle 1/4"	165	125	40
SLS170	45° angle 1/4"	170	130	40
SLS175	45° angle 1/4"	175	135	40
SLS180	45° angle 1/4"	180	140	40

* Use 36T Electrical Ratings Page 42

Automatic Rollouts - SPST Limit Thermostats

PART NO.	TERMINALS	CUT OUT	CUT IN	DIFFERENTIAL
SLS200	45° angle 1/4"	200	160	40
SLS250	45° angle 1/4"	250	200	50
SLS255	45° angle 1/4"	255	205	50
SLS265	45° angle 1/4"	265	215	50
SLS275	45° angle 1/4"	275	225	50
SLS285	45° angle 1/4"	285	235	50
SLS295	45° angle 1/4"	295	245	50
SLS300	45° angle 1/4"	300	250	50
SLS300HB	Horizontal 3/16"	300	250	50
SLS350	45° angle 1/4"	350	300	50



* Use 36T Electrical Ratings Page 43

Manual Rollouts - SPST Limit Thermostats

PART NO.	TERMINALS	CUT OUT	CUT IN	PART NO.	TERMINALS	CUT OUT	CUT IN
SRL130	Vertical 1/4"	130	Manual	SRL250	Vertical 1/4"	250	Manual
SRL135	Vertical 1/4"	135	Manual	SRL260	Vertical 1/4"	260	Manual
SRL220	Vertical 1/4"	220	Manual	SRL300	Vertical 1/4"	300	Manual
SRL230	Vertical 1/4"	230	Manual	SRL350	Vertical 1/4"	350	Manual
SRL240	Vertical 1/4"	240	Manual	SRL300ICP		300	Manual

SRL Series X Ref

PART NO.	REPLACES OEM	OEM P/N	PART NO.	REPLACES OEM	OEM P/N
SRL130	Rheem/Ruud Weatherking	47-22453-01	SRL260	Nordyne	626350
SRL135	Rheem/Ruud Weatherking	47-22453-02	SRL300	Nordyne	626343
SRL220	Nordyne	626354		Rheem/Ruud Weatherking	47-22861-02
SRL230	Nordyne	626353	SRL300ICP	ICP	1013102
SRL240	Nordyne	626355	SRL350	Goodman	B13701-54
SRL250	Nordyne	626352			

* Use 36T Electrical Ratings Page 42

HVAC Flush Mount Adjustable Airstream Thermostats

PART NO.	5/16" AIRSTREAM INSERT	ADJUSTABLE RANGE	DIFFERENTIAL	BRAND	GEM NO.
HF757	Fan Close on Rise	70 180	30	White Rodgers	757-1
HL758	Limit Open on Rise	110 200	30	White Rodgers Carrier	758-1 HH680316

Thermostats

THERMODISC



Adjustable AT Series

- Series covers almost 95% of heater and dryer applications
- Dial knob
- 40° adjustable range
- 1/4" quick connect terminals
- Use 60T Electrical Ratings (page 42)



AT

Adjustable Thermostats

PART NO.	ADJUSTABLE		DIFFERENTIAL
	STANDARD MOUNT	RANGE	
AT012		135 175	40
AT013		175 215	40
AT014		210 250	40
AT015		250 290	40

Open on temperature rise

Adjustable Airflow Thermostats

PART NO.	ADJUSTABLE		DIFFERENTIAL
	STANDARD MOUNT	RANGE	
AT021		90 130	40
AT022		140 180	40

Close on temperature rise

Fan Control* - Close on Rise

PART NO.	DESCRIPTION	CUT OUT	CUT IN	DIFFERENTIAL
SHF90	Fan	80	90	10
SHF110	Fan	90	110	20
SHF110DC	Fan - Deep Cup	90	110	20
SHF120	Fan	110	120	10
SHF130	Fan	115	130	15
SHF140	Fan	120	140	20
SHF150	Fan	130	150	20
SHF160	Fan	140	160	20
SHF170	Fan	150	170	20
SHF180	Fan	160	180	20
SHF200	Fan	180	200	20
SHF250	Fan	220	250	30

*Adapter Flange Plate included with each thermostat.

*Use 60T Electrical Ratings Page 42



SHF



SHL

Limit Control* - Open on Rise

PART NO.	DESCRIPTION	CUT OUT	CUT IN	DIFFERENTIAL
SHL120	Limit - Open on Rise	120	110	10
SHL140	Limit - Open on Rise	140	100	40
SHL150	Limit - Open on Rise	150	110	40
SHL160	Limit - Open on Rise	160	120	40
SHL170	Limit - Open on Rise	170	130	40
SHL180	Limit - Open on Rise	180	140	40
SHL190	Limit - Open on Rise	190	150	40
SHL200	Limit - Open on Rise	200	160	40
SHL210	Limit - Open on Rise	210	130	80
SHL230	Limit - Open on Rise	230	190	40
SHL250	Limit - Open on Rise	250	210	40
SHL300	Limit - Open on Rise	300	250	50
SHL325	Limit - Open on Rise	325	275	50

*Adapter Flange Plate included with each thermostat.

*Use 60T Electrical Ratings Page 42

Deep Cup Limit Thermostats

PART NO.	RANGE		DIFFERENTIAL	BRAND	OEM NO.
	OPEN°F	CLOSE°F			
L135DC	135	120	15	Electrolux	5308013213
L145DC	145	125	20	Electrolux	5308015847
L210DC	210	170	40	Armstrong	01851A-025 18J37 1851A 18J3701

*Use 60T Electrical Ratings Page 42



L135DC

HVAC Flush Mount Staging Thermostats

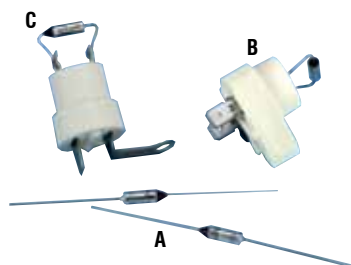
PART NO.	DESCRIPTION	OPEN	CLOSE	DIFFERENTIAL
FL50	HVAC Staging Thermostat	50	35	15
FL60	HVAC Staging Thermostat	60	45	15



FL50

Thermostats

THERMODISC



Thermal Cut Outs

PART NO. 15 AMP SERIES 1	PART NO. 25 AMP SERIES 2	OPEN TEMP. °C	OPEN TEMP. °F	STYLE	PART NO. 15 AMP SERIES 1	PART NO. 25 AMP SERIES 2	OPEN TEMP. °C	OPEN TEMP. °F	STYLE
STC4162	STC8162	72	162	A	STC4358		184	363	A
STC4170	STC8170	77	170	A	STC4438	STC8438	226	438	A
STC4183	STC8183	84	183	A	STC4468	STC8468	242	468	A
STC4199	STC8199	93	199	A	STC5257	STC85257	125	257	B
STC4208	STC8208	98	208	A	STC5283	STC85283	139	283	B
STC4220	STC8220	104	220	A	STC5300	STC85300	149	300	B
STC4228	STC8228	109	228	A	STC5333	STC85333	167	333	B
STC4242	STC8242	117	242	A	STC5377	STC85377	192	377	B
STC4250	STC8250	121	250	A	STC6257	STC86257	125	257	C
STC4257	STC8257	125	257	A	STC6283	STC86283	139	283	C
STC4283	STC8283	139	283	A	STC6300	STC86300	149	300	C
STC4300	STC8300	149	300	A	STC6333	STC86333	167	333	C
STC4333		167	333	A	STC6377	STC86377	192	377	C
	STC8378	192	378	A					

Series 1 Maximum Wattage 1800W @ 120V / 2400W @ 240

Series 2 Maximum Wattage 1800W @ 120V / 6000W @ 240



THERMODISC

Thermal Cut Outs

PART NO.	TERMINALS	°C	°F	STYLE	PART NO.	TERMINALS	°C	°F	STYLE
STF4170	QC. 1/4"	77	170	36T	STF4249B	QC. 3/16"	121	249	36T
STF4183	QC. 1/4"	84	183	36T	STF4262	QC. 1/4"	128	262	36T
STF4208	QC. 1/4"	98	208	36T	STF4291B	QC. 3/16"	144	291	36T
STF4221	QC. 1/4"	105	221	36T	STF4305	QC. 1/4"	152	305	36T
STF4230	QC. 1/4"	110	230	36T	STF4305B	QC. 3/16"	152	305	36T
STF4242	QC. 1/4"	117	242	36T					

*Maximum Wattage 1800W @ 120V/2400W @ 240

Exact Replacement Commercial Refrigeration Defrost Thermostats

Exact Replacement Commercial Refrigeration Defrost Thermostats



- Surface Mount
- 2 wire heater limit
- 75°F - 40°F range
- SPST
- Resistive Amps: 25
- Volts AC: 120/240

PART NO.	OPEN	CLOSE	MOUNT	REPLACES
SL5708	75°F	40°F	Surface	Bohn, Larkin, Chandler, Climate Control 5708L & 4752C



- Surface Mount
- 3 wire fan and defrost terminator 55°F - 35°F range
- SPDT
- Resistive Amps: 25
- Volts AC: 120/240

PART NO.	OPEN	CLOSE	MOUNT	REPLACES
SL5709	55°F	35°F	Surface	Bohn, Larkin, Chandler, Climate Control 5709L & 4751C



- Tube Mount
- 3 wire defrost control
- 55°F - 35°F range
- SPDT
- Resistive Amps: 25
- Volts AC: 120/240

PART NO.	OPEN	CLOSE	MOUNT	REPLACES
SL79002	55°F	30°F	Tube	Russell 103079002



- Surface Mount
- 3 wire defrost control
- 45°F - 30°F range
- SPDT
- Restrictive Amps: 25
- Volts AC: 120/240

PART NO.	OPEN	CLOSE	MOUNT	REPLACES
SL79005	65°F	30°F	Surface	Russell 103079005

Thermostats

THERMODISC



Flush Mount SPST Thermostats

PART NO.	DESCRIPTION	OPEN	CLOSE	DIFFERENTIAL	BRAND	REFERENCE
FL135	Flush Mount SPST	135	120	15	Whirlpool	295419
					Maytag	C2735801
FL15020	Flush Mount SPST	150	110	20	Maytag	302850
FL15040	Flush Mount SPST	150	110	40	Maytag	302850
FL155	Flush Mount SPST	155	125	30	Maytag	303036
						305865
FL190	Flush Mount SPST	190	180	10	Maytag	300858
FL200	Flush Mount SPST	200	160	40	Electrolux	5308015856
					Franklin	F136204
					Whirlpool	688474
FL205	Flush Mount SPST	205	165	40	Electrolux	5308013695
						5308950121
					Maytag	303396
						338471
						341196
					Whirlpool	279048
						660036
FL220	Flush Mount SPST	220	180	40	Maytag	301451
						303395
FL225	Flush Mount SPST	225	185	40	Maytag	62641
						510701
FL240	Flush Mount SPST	240	190	50	Maytag	305169
FL260	Flush Mount SPST	260	210	50	GE	WE4X5099
						WE4X5176
					Whirlpool	4452223
FL285	Flush Mount SPST	285	235	50	Electrolux	5303281113
FL320	Flush Mount SPST	320	270	50	Electrolux	5307531201
						7525560
FL350-50	Flush Mount SPST	350	300	50	Maytag	40113801

*Use 60T Electrical Ratings Page 42



Flush Mount SPDT Thermostats

PART NO.	DESCRIPTION	OPEN	CLOSE	DIFFERENTIAL	BRAND	REFERENCE
FLD135	Flush Mount SPDT	135	120	15	Maytag	61372M
						R099113
FLD205	Flush Mount SPDT	205	165	40	Whirlpool	279048
						341247
						660036

*Use 60T Electrical Ratings Page 42



SFPC Freeze Protection Control

- Protects air conditioning evaporator coil from freezing.
- Opens 35°F/Close 50°F
- Fits 7/8" O.D. Tubing
- Replaces: Trol-A-Temp FPC
- Includes clip to fit 7/8" O.D. tubing

Thermostats



General Purpose

L & LD Series

- Open on rise
- Close when temperature differential is reached
- 1/4" quick disconnect terminals

Applications

- Most home laundry dryers
- Fan and Limit Applications



THERMODISC

"L" Series , Single Pole - Single Throw

PART NO.	°DIFF.	OPEN (°F)	CLOSE (°F)	PART NO.	°DIFF.	OPEN (°F)	CLOSE (°F)
L120	10	120	110	L190	40	190	150
L125	10	125	115	L200	40	200	160
L130	15	130	115	L205	40	205	165
L135	15	135	120	L225	40	225	185
L140	20	140	120	L240	40	240	200
L145	20	145	125	L250	40	250	210
L150	20	150	130	L260	40	260	220
L155	20	155	135	L270	40	270	230
L160	20	160	140	L290	40	290	250
L165	20	165	145	L300	40	300	260
L170	20	170	150	L320	40	320	280
L175	20	175	155	L340	40	340	300
L180-20	20	180	160				
L180-40	40	180	140				

Use 60T Electrical Ratings Below

"LD" Series, Single Pole - Double Pole

PART NO.	DESCRIPTION	OPEN	CLOSE	DIFFERENTIAL
LD120	SPDT Thermostats	120	105	15
LD130	SPDT Thermostats	130	115	15
LD135	SPDT Thermostats	135	120	15
LD140	SPDT Thermostats	140	120	20
LD145	SPDT Thermostats	145	125	20
LD155	SPDT Thermostats	155	135	20
LD170	SPDT Thermostats	170	150	20
LD190	SPDT Thermostats	190	170	20
LD200	SPDT Thermostats	200	160	40
LD210	SPDT Thermostats	210	170	40
LD225	SPDT Thermostats	225	185	40
LD240	SPDT Thermostats	240	200	40
LD270	SPDT Thermostats	270	230	40
LD290	SPDT Thermostats	290	250	40
LD305	SPDT Thermostats	305	265	40

Use 60T Electrical Ratings Below



T1121



T1124



T1122



T1125



1123

Terminal Adapters

PART NO.	DESCRIPTION	WHERE USED
T1121	2 to 1 Terminal Adapter	1/4" QC Female to 2 Male 1/4" QC Chair Terminal
T1122	2 to 1 Terminal Adapter	1/4" QC Female to 2 Male 1/4" QC Side by Side Terminal
T1123	Screw to Terminal Adapter	8 - 10 Stud to 1/4" QC Terminal
T1124	Terminal to Screw Adapter	1/4" QC Female to Screw Right Angle Terminal
T1125	2 to 1 Terminal Adapter	1/4" QC Female to 1/4" QC Male Piggyback Terminal

Typical Electrical Ratings

36T Electrical Ratings

VAC	Resistive	Motor Rating (Inductive)		Pilot Duty
	(Non-Inductive)	Full Load	Locked Rotor	
120	15A	3A	12A	125 VA
240	10A	1.5A	6A	125 VA

350°F Max Ambient Temperature

60T Electrical Ratings

VAC	Resistive	Motor Rating (Inductive)		Pilot Duty
	(Non-Inductive)	Full Load	Locked Rotor	
120	25A	14A	72A	125 VA
240	25A	10A	60A	125 VA

350°F Max Ambient Temperature

IG Series

Flat Hot Surface Furnace Igniters



SUPCO's IG series flat hot surface igniters offer dependable ignition in all heating applications; including furnaces, boilers, rooftops, unit heaters, water heaters, swimming pool heaters and many other types of heating equipment. The SUPCO Flat Igniters offer an efficient, stronger more reliable hot surface Silicon Carbide (SiC) composition that uses a unique manufacturing process, compared to the existing Silicon Carbide design that has been used in heating equipment for years.

Specifications

- Time to temperature (1800° F): <17 seconds @ 102 VAC
- Voltage: 120 VAC
- Amperage: 3.5 – 5 AMPS @ 132 VAC maximum
- Cold Resistance: 40 - 100 OHMS @ 75°F +/- 10°F

Features/Benefits

- Faster time to temperature response
- Stronger more durable design
- More robust in transit
- Higher resistance to oxidation
- Prolonged life
- 18 gauge nickel copper high temperature fiberglass insulated lead wires
- All kits include the necessary hardware, instructions (where applicable) and cross reference information for easy installation.
- Lower power consumption
- Superior gas lighting ability

Product Information

UNIVERSAL KITS	ROBERTSHAW	CERAMIC BLOCK	TERMINAL CONNECTOR
IG4000	41-402	W	N/A
	41-403	M	N/A
	41-404	M	D
	41-405	D	N/A
	41-407	M	B
	41-408	W	C
	41-409	M	D
	41-410	W	B
	41-412	NM	D
	41-414	NM	D
	41-1090	W	N/A
	41-238	W	N/A
	41-242	W	N/A
IG402K	41-402	W	N/A
	41-408	W	C
	41-410	W	B
	41-411	W	C
IG403K	41-403	M	N/A
	41-404	M	D
	41-407	M	B
	41-409	M	D
EXACT KITS			
IG401	41-401	A	A
IG405	41-405	D	N/A
IG406	41-406	Y	N/A
IG412	41-412	NM	D
IG414	41-414	NM	D



IG4000



IG402K



IG403K



IG401



IG405



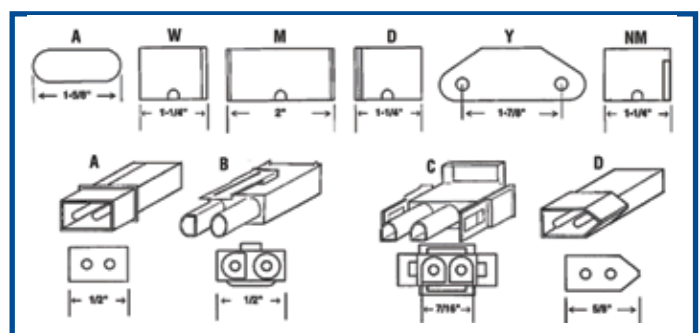
IG406



IG412



IG414



Furnace Igniters

IG402K Cross Reference

OEM	P/N	Robertshaw P/N	Exact	Functional
American Road Equipment	201W	41-402		X
Armstrong Air	38322B001	41-402		X
Claire Brothers	C-238	41-402		X
Claire Brothers	C-242	41-402		X
Coleman	1474-051	41-402		X
Coleman	1474-052	41-402		X
DMO Industries	20834	41-402		X
Dornback Furnace	271 W	41-402		X
Enerco Tech	10399	41-402		X
Evcon	1474-051	41-402		X
Evcon	1474-052	41-402		X
HUPP Industries	9050	41-402		X
Majestic	75-92-104	41-402		X
Majestic	75-92-105	41-402		X
Metzger	201N	41-402		X
Metzger	201W	41-402		X
Mor Flo	3200618	41-402		X
Nordyne	105141000	41-402		X
Nordyne	632-0880	41-402		X
Nordyne	632-0770	41-402		X
Norton	201K	41-402		X
Norton	201L	41-402		X
Norton	201N	41-402		X
Norton	201R	41-402		X
Norton	201W	41-402		X
Norton	271N	41-402		X
Norton	271W	41-402		X
Rheem	62-22441-01	41-408	X	
Rheem	62-22441-01	41-402		X
Rheem	62-22868-02	41-411	X	
Rheem	62-22868-82	41-411	X	
Rheem	62-22868-93	41-411	X	
Rheem	62-22868-2	41-411	X	
Roberts Gordon	90436600	41-402		X
Superior Fireplace	94851	41-402		X
Trane Company	B144676P01	41-410	X	
Trane Company	B340039P01	41-408	X	
Trane Company	340039P01	41-402		X
Trane Company	IGN23	41-402		X
Trane Company	IGN34	41-408	X	
Wayne Home Equipment	62821-001	41-402		X
Wayne Home Equipment	62821-002	41-402		X
White, LB	120-07549	41-402		X
White LB Company	120-07549	41-402		X
White Rodgers	767A-357	41-402		X
White Rodgers	767A-365	41-402		X
White Rodgers	767A-366	41-402		X
White Rodgers	767A-377	41-408		X
Williamson	9050	41-402		X

IG403K Cross Reference

OEM	P/N	Robertshaw P/N	Exact	Functional
Carrier Corp	LH33ZS001A	41-409	X	
Carrier Corp	LH33ZS002	41-409	X	
Ducane	20015201	41-409	X	
Norton	201	41-403		X
Norton	271	41-403		X
Raypak	600915	41-403		X
Roberts Gordon	90434300	41-409		X
Snyder General	1380672	41-409	X	
Snyder General	1380680	41-409	X	
Snyder General	1380654	41-403		X
Trane Company	B138196P01	41-403		X
Trane Company	IGN26	41-409	X	
Trane Company	IGN26	41-403		X
Trane Company	IGN30	41-407	X	
Trane Company	IGN30	41-403		X
Weil McLain	511-330-139	41-409	X	
Weil McLain	511-330-193	41-403		X
Weil McLain	511-330-190	41-404	X	

Supco Flat Igniter Cross Reference

PART NO. P/N	OEM	OEM P/N	Robertshaw P/N	Exact	Functional
IG401	Amana	B1336102	41-401	X	
IG401	Amana	D99182	41-401	X	
IG401	Amana	10041601	41-401	X	
IG401	Norton	201A	41-401	X	
IG401	Norton	271A	41-401	X	
IG401	Trianco-Heatmaker	2600-359	41-401	X	
IG401	White Rodgers	767A309	41-401	X	
IG401	White Rodgers	767A356	41-401	X	
IG405	Detroit Radiant	201D	41-405	X	
IG405	Norton	201D	41-405	X	
IG405	Norton	271P	41-405	X	
IG405	Smith HB	50018	41-405	X	
IG405	Viessman	9302094	41-405	X	
IG405	White Rodgers	767A361	41-405	X	
IG405	York International	025-27766-000	41-405	X	
IG405	York International	025-27774-000	41-405	X	
IG405	York International	025-29043-000	41-405	X	
IG405	York International	025-29050-000	41-405	X	
IG405	White Rogers	767A-361	41-405	X	
IG406	American Appliance	271B	41-406	X	
IG406	Comfort Zone	150114-04-01	41-406	X	
IG406	Mor Flo	3200580	41-406	X	
IG406	Mor Flo	3210401	41-406	X	
IG406	Norton	201J	41-406	X	
IG406	Norton	201M	41-406	X	
IG406	Norton	201N	41-406	X	X
IG406	Norton	201Y	41-406	X	
IG406	Norton	271M	41-406	X	
IG406	Norton	271Y	41-406	X	
IG406	Perfection Schwank	108803-G1	41-406	X	
IG406	Weil McLain	511-330-188	41-406	X	
IG406	Weil McLain	511-330-148	41-406	X	
IG406	White Rogers	767A-374			
IG412	Goodman	B1401009S	41-412	X	
IG412	Goodman	B1401009	41-412	X	
IG412	Intercity Products	1009604	41-412	X	
IG412	White Rogers	767A-373	410412	X	
IG414	Arcoaire	1096048	41-414	X	
IG414	Arcoaire	1380680	41-414	X	
IG414	Comfortmaker	1096048	41-414	X	
IG414	Heil	1096048	41-414	X	
IG414	Intercity Products	1096048	41-414	X	
IG414	Norton	271NM	41-414	X	
IG414	Tempstar	1096048	41-414	X	
IG414	White Rogers	767A-384	41-414	X	

Note: Partial Cross Reference. Contact SUPCO for complete Cross Reference.

Igniter Facts and Fiction

- Fact:** SUPCO's Igniters are made from high density silicon carbide. They are fragile and must be treated with care during installation.
- Fiction:** Handling an igniter with bare hands will cause premature failure.
- Fact:** Premature failure of an igniter can be caused by excess vibration, incorrect voltage or improper installation.
- Fiction:** Round igniter designs cannot be used to replace flat igniters.
- Fact:** By using proper mounting hardware, a round igniter can be used in place of an original flat igniter.
- Fiction:** If the replacement igniter looks the same as the original, it will work in the application.
- Fact:** Igniters differ in their ability to handle current (amps) and each is designed for a specific OEM application. Consult the cross reference information in this catalog sheet to identify the correct replacement.
- Fiction:** Testing for a good igniter is done by measuring its Resistance (Ohms).
- Fact:** The test of an igniter is done by measuring the current draw (amps) of the ignition circuit.
- Fiction:** A visual inspection of an igniter will identify whether it is operable.
- Fact:** Hairline cracks cannot be seen, and will cause improper operation of the igniter. It is recommended to use a current (amp) test.

Silicon Nitride Universal Furnace Igniters - 120 Volt

Silicon Nitride (SiNi) igniters offer the ultimate in durability and cycle life. Choose from three (3) Universal 120 V SiNi igniters to upgrade your ignition control system.



Features/Benefits

- Silicon Nitride technology for strong, durable operation and performance
- Easy installation: kits include igniter, mounting brackets, hardware, instructions & cross reference
- Universal replacements, reduces SKU's
- Replaces hundreds of OEM & competitors igniters
- Longer igniter life (non porous construction)
- Low energy consumption uses half the power
- Low energy consumption uses half the power of Silicon Carbide igniters
- Superior gas lighting ability, faster time to temperature response than Silicon Carbide igniters
- 120 volt full line voltage igniters no power supply module required

Applications

(Various types of gas fired equipment)

- Furnaces
- Boilers
- Unit Heaters
- Water Heaters

Note: Silicon Nitride HSI igniters CANNOT be used in Direct Sense Applications!



SSN4000

SSN4000 Ultimate Mini Universal Silicon Nitride Igniter-120 Volt

- Miniature design
- Life rated to 200,000 cycles
- 3 year warranty

Specifications

Operating Voltage	115 VAC Min 102-132 VAC
Time To Temperature	1800°F (982°C) <10 Seconds @ 115 VAC & 75°F ±10°F Ambient
Steady Temperature	2366°F (1297°C)
Cold Resistance	46 Ohms @ 75°F ±10°F
Steady Current	.53Amps @ 115 VAC
High Temperature Wire Leads	6" 20 AWG 572°F (300C) UL1332
Life Cycles	>200,000



SSN3000

SSN3000 Heavy Duty Universal Silicon Nitride Igniter - 120 Volt

- Robust design
- Life rated to 50,000 cycles
- 2 year warranty

Specifications for SSN3000/SSN3016

Operating Voltage	115 VAC Min 102-132 VAC
Time To Temperature	1800°F (982°C) <17 Seconds @ 102 VAC & 75°F ±10°F Ambient
Steady Temperature	2366°F (1297°C)
Cold Resistance	10 Ohms @ 75°F ±10°F
Steady Current	<4.25 Amps @ 132 VAC
High Temperature Wire Leads	24" 18 AWG 842°F (450C) UL512B
Life Cycles	>50,000



SSN2000

SSN2000 Universal Silicon Nitride Igniter - 120 Volt

- Economic design
- Life rated to 50,000 cycles
- 1 year warranty
- CSA Approved

Specifications

Operating voltage	120 VAC (±10-15%)
Time to 2102°F (1150°C)	<17 seconds @ 120 VAC
Steady temperature	2156°F-2426°F (1180°C-1330°C) @ 120 VAC
Cold resistance	15-30 Ohms @ 77°F (25°C)
Steady current	1.3 Amps (±0.3 Amps @ 120 VAC)
High temperature wire leads	20 AWG UL10362 482°F
Life cycles	>50,000

A universal replacement igniter kit that replaces over 100 igniters and incorporates the durable and energy saving Silicon Nitride (Si3N4) technology.



SSN3016

SSN3016 Direct Replacement Silicon Nitride Igniter - 120 Volt

- Robust Design
- Stronger Physical Durability
- <17 sec Time to Temp
- Replaces **Goodman** Igniters- B140105, B1401009
- >50,000 cycles
- 2 year warranty

Furnace Igniters

SSN4000 Cross Reference

Amana 10735002 10755002 B138196P01 B144676P02 B340039P01 B144676P01 American Standard IGN0030 Arcoaire See ICP Armstrong 383322B001 Barnett Brass 661924 661926 661927 661928 Carrier LH33ZS001A LH33ZS002 LH33ZS003 LH33ZS004 Clare Bros C238 C238-1 C242 Coleman/Evcon 14740511 14740512 Detroit/Brant Radiant 201D	DMO/Olsen ECR Ind 26789 20834 Dornback 271W Ducane 20015201 Enerco Tech 10399 EZ Flow 62374 GE/Hot Point WG37X11 WG37X34 Giant PV 526000125 FC067 626000025 GMO 20834 Goodman/Janitrol B1193939 B11726-06 B1401009 Grimsby Stove ZCO-350 John Woods/GSW PV 86483 71082 HB Smith Johnstone	50018 1148245 9050 101344 Heatmaker 2400-048 2400-286 2600-359 3079-100 9330-102 Hupp Ind 9050 ICP/Heil WG37X34 Comfortmaker/Arcoaire Tempstar/Keeprite Snyder General 1009980 1096048 1009604 1001344 1380680 1148145 1096047 1380654 1380672 1148245 John Woods/GSW PV 6905332 3260618 Johnstone	L37-698 L37-699 L37-700 L37-812 L37-814 L37-815 L37-816 L40-765 LB White Co 120-07549 Lennox 33J3701 96P01 36N77 98P77 98P78 Majestic 75-92-104 75-92-105 Metzger 201N 201W 271R Mor Flo 3200618 Nordyne/Tappan Frigidaire/Philco 271A Intertherm/Miller 201R 903758 201 105141000 271 RH622286893 271NM Olsen 26789 Raypak	Frigidaire/Philco 50015 600915 Rheem 62-22441-01 62-22668-93 62-212868-82 62-22868-02 903758 632-3811 632-3540 Norton 101M 201D 201K 201L 201M 201P 201W 271M 271N 271P 271R 271RS 271W 201A 271A 201R 201 271 271NM Olsen 26789 Raypak	11120-100-1402 11120-100-1403 11120-100-1405 11120-100-1407 11120-100-1408 11120-100-1409 Surface Igniter FC007 FC024 FC035 FC046 FC050 FC051 FC055 Superior Fireplace 94851 Temp Controls 9302-094 Trane 3400339P01 B340039P01 B12996P01 B144676P01 B144676P02 B138196P01 IGN21 IGN26 IGN28 IGN30 IGN34 B144676P01 B144676P02 Trane	B138196P01 IGN21 IGN23 IGN26 IGN28 IGN30 IGN34 Trianco Heatmaker 2600-359 Viessmann 9302-093 9302-094 Wayne Home Equipment 62821-001 62821-002 Weil McLain 29074 511-330-139 511-330-193 511-330-190 Whirlpool 99794323 99794328 White LB Co 120-07549 White Rodgers	767A-301 767A-303 767A-306 767A-309 767A-350 767A-352 767A-353 767A-354 767A-356 767A-364 767A-366 767A-370 767A-371 767A-372 Williamson 9050 York 025-32626-000 473-12509-001 373-09154-700 025-27774-000 025-29043-000 025-29050-000 025-27766-000 025-30277-000 025-32638-002 025-32625-000 025-31801-000 373-05342-700 025-27766-000
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SSN3000 Cross Reference

Amana 10735002 10755002 B138196P01 B144676P02 B340039P01 B144676P01 American Appliance 271B American Standard IGN0030 American Water Heater 6905032 Arcoaire See ICP Armstrong 383228001 38322B001 Barnett Brass 661924 661927 661928 Carrier LH33ZS001A LH33ZS002 LH33ZS003 LH33ZS004 Clare Bros C238 C238-1 C242 Coleman/Evcon 14740511 14740512	Detroit/Brant Radiant 14740512 201D DMO/Olsen/ECR Ind 26789 20834 Dornback 271W Ducane 20015201 Enerco Tech 10399 EZ Flow 62374 GE/Hot Point WG37X11 WG37X34 Giant PV 526000125 526000025 GMO Industries 20834 Goodman/Janitrol B1172606 B1193939 B1401009 Grimsby Stove ZCO-350 John Woods/GSW PV 86483 71082 HB Smith Johnstone	50018 1148245 9050 101344 ICP/Heil/Arcoaire/ Keeprite Comfortmaker/ Tempstar Snyder General 1009980 1096048 109604 1001344 1380680 1148145 1096047 1380654 1380672 1148245 Integra 6905032 3260618 Johnstone L37-698 L37-699 L37-700 L37-812 L37-814 L37-816 120-07549	Lennox 33J3701 96P01 36N77 98P77 98P78 Majestic 75-92-104 75-92-105 75-92-104 95-92-105 Mars 67930 Metzger 201N 201W 271 Mor-Flo 3200618 Nordyne/Tappan Frigidaire/Philco 903110 105141000 632-0880 902661 902694 903758 632-3811 Norton 101M 201D 201K	Norton 201L 201M 201P 201W 271M 271N 271P 271R 271RS 271W 201A 271A 201R 201 271 271NM Olsen 26789 Raypak 600915 Rheem/Rudd 62-22868-93 62-22441-01 62-22868-82 Roberts Gordon 90434300 90436600	Robertshaw/ Uniline 41-238 41-242 41-402 41-403 41-404 41-405 41-407 41-408 41-409 41-410 41-412 41-1090 41-402N 41-403N 41-404N 41-405N 41-407N 41-409N 41-410N 41-412N Surface Igniter FC007 FC011 FC014 FC018 FC020 FC021 FC022 FC023 FC024 FC025 FC027	Surface Igniter FC028 FC029 FC030 FC032 FC034 FC035 FC037 FC040 FC041 FC045 FC046 FC048 FC050 FC051 Starlite 11120-100-1402 11120-100-1403 11120-100-1405 11120-100-1407 11120-100-1408 11120-100-1409 Superior Fireplace 94851 Temp Controls 9302-094 Trane 3400339P01 B340039P01 B12996P01 B144676P01 B144676P02 B138196P01 IGN21 IGN26	Trane IGN28 IGN30 IGN34 B144676P01 B144676P02 B138196P01 IGN21 IGN23 IGN26 IGN28 IGN30 IGN34 Trianco Heatmaker 2600-359 Viessmann 9302-093 9302-094 Wayne Home Equipment 62821-001 62821-002 Weil McLain 29074 511-330-139 511-330-193 511-330-190 Whirlpool 99794323 99794328 White LB Co 120-07549	White Rodgers 767A-301 767A-303 767A-306 767A-309 767A-350 767A-352 767A-353 767A-354 767A-356 767A-364 767A-365 767A-366 767A-370 767A-371 767A-372 Williamson 9050 York 025-32626-000 473-12509-001 373-09154-700 025-27774-000 025-29043-000 025-27766-000 025-30277-000 025-29050-000 025-27766-000 025-32638-002 025-31801-000 373-05342-700 025-27766-000
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SSN2000 Cross Reference

American Appliance 271B American Road Equip 201W Arcoaire 1096048 Carrier Corp 1380680 Armstrong Air 38322B001 Carlin 87197S LH33ZS001A LH33ZS002 Clare Brothers C238 C242 Coleman 1474-051 174-052	Comfortmaker 1096048 Comfort Zone 150114-04-01 Detroit Radiator 201D 20015201 DMO Industries 20834 Dornback Furnace 271W Ducane 20015201 Enerco Tech 10399 Evcon 1474-051 1474-052 Goodman 10401009 B1401018S	HB Smith 50018 Heil 1096048 Hupp Industries 9050 ICP 1009604 1096048 3200618 Igniters Direct FC007 HSIURK120V LB White 120-07549 Majestic 75-92-104 75-92-105	Mars 67930 67931 67932 Metzger 201W Mor Flo 3200618 3210401 3200618 Nordyne 105141000 632-0770 632-0880 902661 902694 903110 FC007	Norton 201, 201D, 201J, 201K, 201L 201M, 201N, 201R, 201W 201Y, 271, 271D, 271M 271N, 271NM, 271P 271W, 271Y Perfection Schwank 108803-G1 Raypak 600915 Rheem 62821-001 62-22868-82 62-22868-93 Roberts Gordon 90434300 90436600 Robertshaw 41-402, 41-403, 41-404 41-405, 41-406, 41-407, 41-408	Robertshaw 41-409, 41-410, 41-411 41-412, 41-413, 41-414 Snyder General Tempstar 380654 1380672 1380680 Superior Fireplace 94851 Tempstar 1096048 1148245 Trane 340039P01, B138196P01 B144676P01, B144676P02 B340039P01, IGN21 IGN23, IGN26, IGN30, IGN34 Viessman 9302-094	Wayne Home Equip 62-22441-01 62-22441-02 Weil McLain 511-330-139 511-330-190 511-330-193 White LB Co 120-07549 White Rodgers 21D64-2 767A-301 767A-303 737A-306 767A-310 767A-311 767A-350 767A-353 767A-354	White Rodgers 767A-361 767A-364 767A-365 767A-366 767A-370 767A-371 767A-372 767A-373 767A-374 767A-375 767A-376 767A-377 767A-382 767A-383 767A-384 F767A-357 F767-A361 F767-A365 767A-357	Williamson 9050 York Intl 025-27766-000 025-27774-000 373-05342-700 025-29043-000 025-29050-000 025-32625-000 025-32626-000 025-33241-000 373-05342-700 473-12509-001
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Furnace Igniters

SSN24 - Silicon Nitride Universal 24 VOLT Igniter & Flame Rod Assembly Kit



Features/Benefits

- Silicon Nitride design for strong, durable operation and performance.
- Low energy consumption.
- Backward compatible with all 24 Volt Honeywell 1st & 2nd generation Smart Valves.
- Specifically used with the Honeywell Smart Valve™
- CSA approved
- Pre-assembled SiNi igniter & Ni Chrome flame rod, mounting clip, instructions and cross reference.

Applications

- Furnaces, boilers, unit heaters, hot water heaters, fireplaces, pool heaters and spas that utilize the Honeywell Smart Valve.

Specifications

Operating Voltage	24 VAC + / - 10 - 15 %
Time To Reach 1800 F (982 C)	< 3 Seconds @ 24 VAC
Cold Resistance	4 - 6 Ohms @ 75 F (24 C)
Steady Current	0.8 - 1.2 Amps
Life Cycles	200,000

Uses & Replacements

Used In Honeywell Smart Valves™	Replaces Flame Rod Assemblies
SV9500	1009524
SV9500M2603	1149856
SV9500M2674	42640001
SV9500M2682	Q3400A
SV9501M2528	Q3400A1016
SV9600	Q3400A1024
SV9600H	Q3400A1040
SV9401	Q3450
SV9402	Q3480
SV9403	Q3620
SV9501	Mars
SV9502	68012
SV9503	Igniters Direct
SV9601	AFN643
SV9602	

SIG Series Round Furnace Igniters

Utilizing a spiral design, SUPCO's full line of igniters have greater physical strength and longer life. Including mounting hardware, where necessary, direct replacement of original equipment parts is easy (Including round and flat original parts). Choose the igniter for your application. For 115 - 120V applications.



SIG1100

SIG1100 - Universal Round Furnace Igniter Kit

Designed to replace over 170 part numbers including Robertshaw, Norton and many other original equipment manufacturers.

- Engineered Reaction Bonded Silicon Carbide Design
- Greater Physical Strength
- Lower Power Consumption
- Superior Gas Lighting Ability
- Easy Installation
- Minimizes Inventory
- Replaces SIG1000

SIG100 Series

Exact Replacement Hot Surface Igniters

- Replaces Exact OEM Hot Surface Igniters
- Highest density silicone carbide - greater physical strength
- Double helix spiral design - requires less current to light
- Easy installation - no modifications or adapters necessary

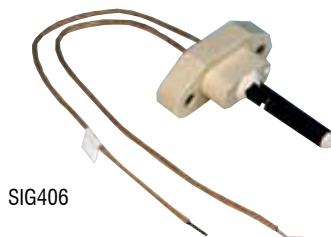


SIG102

SIG400 Series

Direct Replacement Hot Surface Igniters

- Strong design using more silicon carbide with deeper crystallization.
- Non-positional, double helix design - smoother ignition
- New slip fit kits, slide-in lock and go!



SIG406

PART NO.	GEM
SIG100	IG100
SIG101	IG101
SIG102	IG102
SIG104	
SIG106	IG106
SIG107	IG107
SIG108	IG108
SIG109	IG109
SIG111	IG111

PART NO.	ROBERTSHAW
SIG401	41-401
SIG402	41-402
SIG403	41-403
SIG405	41-405
SIG406	41-406
SIG407	41-407
SIG408	41-408
SIG1100	41-409
SIG410	41-410
	41-411
SIG414	41-414

Furnace Igniters

OEM Cross Reference for Furnace Igniters

OEM NO.	DIRECT REPL.	FUNCT. REPL.	OEM NO.	DIRECT REPL.	FUNCT. REPL.	OEM NO.	DIRECT REPL.	FUNCT. REPL.	OEM NO.	DIRECT REPL.	FUNCT. REPL.	OEM NO.	DIRECT REPL.	FUNCT. REPL.
American Road Equipment			14740052		SIG1000	John Woods Power			Perfection Schwank			Tappan (roof top system)		
201W		SIG1000	14740511	SIG102	SIG1000	86483	GR412		108803-61	SIG406		632-320A		SIG1000
Amana			14740521	SIG102	SIG1000	L.B. White			Polaris			Trane / GE		
10735002	SIG102	SIG414	EZ-Flo			120-07549	SIG100		6901800	SIG401		340039P01		SIG1000
10041601		SIG414	62374	SIG107		Lennox / Aire-Ease / American Air			6903767	SIG401		B138196P01	SIG100	
767A-356		SIG414	G.S.W.			Armstrong / Concord / Magic Chef			6903768	SIG401		B1446676P01		SIG1000
B1336101		SIG414	71082	GR412		33J3701	SIG1000		Raypak			B144676P02	SIG100	
B1336102		SIG414	86483	GR412		Lochinvar			600915	SIG100		B340039P01		SIG1000
B14010-15S			Gem Products			PLT2400	SIG104	SIG1000	Rheem (Water Heater)			IGN21	SIG100	
D99182		SIG414	SIG100	SIG100		PLT3400	SIG104		AP12553	GR412		IGN23		SIG1000
D9918201		SIG414	SIG1000		SIG1000	Majestic			AP12554	GR412		IGN26		SIG1000
D9918202		SIG414	SIG101	SIG101	SIG1000	75-92-104	SIG402	SIG1000	75-07-061	GR412		IGN30		SIG1000
D9918202A		SIG414	SIG102	SIG102	SIG1000	75-92-105	SIG402	SIG1000	Rheem / Corsair / Ruud / Weather King			IGN34		SIG1000
R0156525		SIG414	SIG104	SIG104	SIG1000	201W	SIG402	SIG1000	62-22441-01	SIG402	SIG1000	Trianco / Heatmaster		
R0157462		SIG414	SIG106	SIG406		Mor-Flo			62-22441-01	SIG408	SIG1000	2400-048	SIG401	
American Appliance			Giant Water Heater (Power Vent)			3200580	SIG402	SIG1000	62-22441-01		SIG1000	2400-286	SIG401	
6901800	SIG406		56000125		SIG1000	3200618	SIG402	SIG1000	62-22441-01		SIG1000	2600-359	SIG401	
6903767	SIG406		Glow Core			3210401	SIG406		62-22868-82		SIG1000	3079-100	SIG401	
271B	SIG406		1950001	SIG406		Nordyne / Frigidaire / Tappan / Philco / Intertherm / Miller			62-22868-92		SIG1000	933-102	SIG401	
American Water Heater			1950006	SIG104	SIG1000	902661	SIG101	SIG1000	62-22868-93	SIG408		Viessman		
6901800	SIG401		HSRK7	SIG406		902694	SIG101	SIG1000	SP10972	SIG108	SIG1000	9302-083	SIG100	
6903767	SIG401		Goodman / Janitrol			9031100	SIG104	SIG1000	Roberts Gordon			9302-094	SIG100	
6903768	SIG401		10735002	SIG102	SIG414	105141000		SIG1000	90434300		SIG1000	Wayne Home Equipment		
Armstrong Air			10041601		SIG414	632-0770		SIG1000	90436600	SIG402	SIG1000	62821-001	SIG100	
38322B001		SIG1000	767A-356		SIG414	632-0880		SIG1000	Robertshaw / Eaton / Invensys			62821-002	SIG100	
Brant Radiant			B1336101		SIG414	RH62286892	SIG102	SIG1000	41-238		SIG1000	Weil Mclain		
201D		SIG1000	B1336102		SIG414	RH62286893	SIG102	SIG1000	41-242		SIG1000	511-330-139	SIG100	
Carrier / Payne / Day & Night / Bryant / BDP			B14010-15S	SIG414		Norton			41-401	SIG401		511-330-188	SIG406	
LH333S001A	SIG100		B1401009		SIG107	101M	SIG409	SIG1000	41-402	SIG402	SIG1000	511-330-190	SIG100	
LH333S002	SIG100		D99182		SIG414	101W		SIG1000	41-403	SIG403	SIG1000	511-330-193	SIG100	
LH333S003	SIG100		D9918201		SIG414	201	SIG403	SIG1000	41-405	SIG405	SIG1000	White-Rogers		
LH333S004	SIG100		D9918202		SIG414	201A	SIG401		41-406	SIG406		767A-301	SIG100	
Claire Bros			D9918202A		SIG414	201D	SIG405	SIG1000	41-407	SIG407	SIG1000	767A-303	SIG100	
C-238	SIG102	SIG1000	R0156525		SIG414	201J	SIG406		41-408	SIG408	SIG1000	767A-306	SIG100	
C-238-1	SIG102	SIG1000	R0157462		SIG414	201K	SIG402	SIG1000	41-409	SIG409	SIG1000	767A-309		SIG1000
C-242		SIG1000	Grimsby Stove			201L	SIG402	SIG1000	41-410	SIG410	SIG1000	767A-310		SIG1000
C-263		SIG1000	ZCO-035	SIG102	SIG1000	201M	SIG406		41-412	SIG107		767A-311		SIG1000
Coleman			H.B. Smith			201N	SIG402	SIG1000	Snyder General			767A-350	SIG100	
1474-051		SIG1000	50018	SIG100		201P		SIG1000	1380654	SIG100		767A-353	SIG100	
1474-052		SIG1000	Hupp Industries			201R		SIG1000	1380672	SIG100		767A-354	SIG100	
1474-511	SIG102	SIG1000	09050		SIG1000	201W	SIG402	SIG1000	1380680	SIG100		767A-356		SIG1000
1474-521	SIG102	SIG1000	ICP (International Comfort Products)			201Y	SIG406		Suburban			767A-357	SIG100	
Comfort Zone			1096047	SIG107		271	SIG403	SIG1000	10098002	SIG402	SIG1000	767A-361	SIG100	
150114-04-01		SIG1000	Integra			271A	SIG401		Superior Fireplace			767A-364		SIG1000
Detroit			3260618	SIG402	SIG1000	271B	SIG406		94851		SIG1000	767A-365		SIG1000
201D		SIG1000	6905032	SIG402	SIG1000	271D		SIG1000	Surface Igniter / Carborundum			767A-366		SIG1000
DMO Industries			Intercity/Arco/Comfortmaker/Heil/Heil-Quaker/ICP Commercial/Tempstar			271J	SIG406		FC007	SIG101	SIG1000	Williamson		
20834	SIG102	SIG1000	1001344	SIG405	SIG1000	271M	SIG406		FC035	SIG101	SIG1000	9050	SIG102	SIG1000
26789		SIG1000	1009604	SIG107		271N	SIG402	SIG1000	FC035 KI	SIG101	SIG1000	York / Borg Warner / Frazier-Johnson / Luxaire		
Dornback			100-9980	SIG102	SIG1000	271P	SIG406		FC046	SIG102	SIG1000	025-27766-000		SIG1000
271W		SIG1000	1096048		SIG414	271R	SIG405	SIG1000	FC046 KI	SIG102	SIG1000	025-27774-000	SIG100	
Ducane			1148245	SIG405	SIG1000	271W	GR412		FC047	SIG104	SIG1000	025-27776-000	SIG100	
20015201	SIG100		1096047	SIG107		271Y	SIG406		FC047 KI	SIG104	SIG1000	025-29043-000	SIG100	
Enerco Tech			Olsen Industries			501A	GR412		FC050		SIG1000	025-29050-000	SIG100	
10399		SIG1000	20834	SIG102	SIG1000	Evcon			FC050 KI	SIG405	SIG1000	025-32625-000	SIG102	SIG1000
Evcon			26789		SIG1000	14740051		SIG1000	FC053	SIG401		025-32626-000	SIG102	SIG1000
14740051		SIG1000	YF009			YF009 KI			FT001	SIG100		373-05342-700	SIG102	SIG1000
			YF009 KI			YF009 KI			FT001 KI	SIG100		373-09154-700	SIG102	SIG1000
			YF009 KI			YF009 KI			FT001 KI	SIG100		473-12509-001	SIG102	SIG1000

Wall Thermostats



A Division of SUPCO

Thermostats...loaded with features, designed for value!

All CTC Thermostats Feature

User Friendly Programs and Features

- **Attractive Styling**
Blends well in any residential application.
- **Overheat Protection**
Prevents lock-up in the heat mode by not allowing heat to come on if temperature is over 95 degrees.
- **Static Protection**
Handles electrical spikes of up to 20,000 volts that could otherwise damage the system.

**See Selection Guide
On Page 54**

All CTC Digital and Programmable Thermostats

Features:

- Latching relays for system compatibility
- Soft touch keypad
- Low battery indicator
- INDIGLO® Backlight
- Easy, front load battery access
- 2 AA batteries included
- °F/°C selector
- 3 year warranty

Are Compatible With:

- 24 VAC heat/cool, heat only or cool only systems
 - Gas, electric or oil systems
 - Millivolt systems
 - 2 wire hydronic systems
- (Not for use with 110/220V systems)**

Have These Specifications:

- 20-30 VAC, 50/60 Hz
- Current draws 0.1 to 1.5 amps
- Temperature set range: 45°F to 95°F (7°C to 35°C)
- Operating differential +/- 1° F
- Compressor protection: 4 min. delay on break

Touchscreen



43855

**Universal Touchscreen Programmable Conventional Thermostat
3 Heat/2 Cool Thermostat/Multi-Stage Heat Pump with Optional Humidity Control**



Additional Features:

- Pre-programmed with easy to change presets
- Simultaneous Time and Temperature visibility for easy programming
- Large, easy to read display for clear, wide angle viewing
- Auto season changeover, ambi touch display glows red in heat mode and blue in cool mode.
- Humidity sensing control
- Refresh programmable fan
- Keyboard lock
- Filter Monitor
- Energy Monitor
- "System On" indicators
- Auto heat recovery
- Patented "Home Today" override
- Temporary and Vacation Hold override with Programmable Hold
- AC or battery powered. 3 AA batteries included
- Low battery warning

Also Compatible With Most:

- Up to three-stage heat/two-stage cool conventional
 - Single-stage heat pumps
 - AC or hardwired
- (Not for use with 110/220V systems)**

Additional Specifications:

- Current draws 2.0 Amps max per terminal. 4.0 Amps max overall.
- Temperature display limits: 15°F to 99°F (-9°C to 37°C)
- Terminations: RH, RC/R, C, Y1, Y2, W1, W2, W3, E, O, B, G, L, H
- Product dimensions: 6"W x 4 5/8"H x 1 3/8"D

Digital



43054

For Conventional Systems and Single-Stage Heat Pumps with Blue Back Light

Additional Features:

- Electronic digital accuracy
- Large, easy-to-read LCD
- Filter change indicator
- No programming required
- No leveling required

Additional Specifications:

- 43054 Terminations: RC/O, RH/B, Y, W, G, R
- Bimetal freeze protection

43055

Has the same specifications as 43054, and includes a convenient Remote Control.

- Remote wireless up to 100 feet away





A Division of SUPCO

Wall Thermostats



43057 ● Digital Heat Pump Thermostat

Additional Features:

- Filter monitor
- AC powered with non-volatile memory to maintain user settings-no batteries required
- Refresh programmable fan mode
- Residential cooling fan delay, user selectable
- Adjustable 1st and 2nd stage span adjustment
- Staging timer
- Heat/Cool auto cutoff
- Bi-metal freeze protection

Also Compatible With Most:

- Two-stage heat pumps with 2 heat/2 cool, gas or electric auxiliary heat conventional
- Two-stage heat pumps with 2 heat/1 cool, gas or electric auxiliary heat conventional
- Single-stage heat pumps
- Not for use with 110V/220V systems

Additional Specifications:

- Terminals: R, B, W2, E, G, O, Y2, Y1, L, C
- Electrical Rating: 20-30 VAC, 50/60 Hz
- Current Draw: 1 Amp max load/terminal, 2.5 Amp max load all
- Compressor protection 3.5 min. delay on break
- Product Dimensions: 4 7/8"W x 4 3/8"H x 1 3/8"D



43058

43058 ● For Multi-Stage Heat Pump/ Conventional Two-Stage Heat/ Cool Thermostat With Auto Season Changeover



43658

43658 Remote Sensor (Sold Separately)

Additional Features:

- Energy Monitor
- Filter Monitor
- No programming required
- "System On" indicators
- Keyboard lock
- Auto heat recovery
- AC powered with 2 AAA battery backup
- Optional hardwire remote sensors (43658)

Additional Specifications:

- Display temperature limits: 40° to 95°F
- Terminations: R, Y1, Y2, W1, W2, E, O, B, G, L, C
- Remote Sensor Terminations: RS1+, RS1-, RS2+, RS2-
- Conventional two-stage heat/cool systems (Not for use with 110V/220V systems)
- Multi-stage heat/cool

Also Compatible With Most:

- Two-stage heat pumps with 2 heat/2 cool
- Two-stage heat pumps with 2 heat/1 cool
- Single-stage heat pumps

Programmable



43154 ● 5 Day/2 Day Programming, 4 Periods Per Day For Conventional Heat/Cool or Single-Stage Heat Pump Systems

Additional Features:

- Adjustable cycle rate
- Pre-programmed
- Easy "Front Load" battery access
- Mechanical low temperature protection
- Filter Monitor
- Up-opening door
- Two-stage low battery warning with fail safe protection

Also Compatible With Most:

- Single-stage heat pumps

Additional Specifications:

- Terminations: G, RC, RH, Y/O, WB, Y1



43168 ● 5 Day/2 Day, 5-1-1 Day or 7 Day Programmable Multi Stage Heat Pump Thermostat

Additional Features:

- Blue back light
- Filter Monitor
- AC powered with non-volatile memory to maintain user settings-no batteries required
- Refresh programmable fan mode
- Residual cooling fan delay, user selectable
- Adjustable 1st and 2nd stage span adjustment
- Staging timer
- Heat/Cool auto cutoff
- Bi-metal freeze protection
- Pre-Programmed
- Easy "Front Load" battery case
- Latching relay outputs



Also Compatible With Most:

- Two-stage heat pumps with 2 heat/2 cool, gas or electric auxiliary heat
- Two-stage heat pumps with 2 heat/1 cool, gas or electric auxiliary heat
- Single-stage heat pumps
- Not for use with 110V/220V systems

Additional Specifications:

- Terminations: R, B, W2, E, G, O, Y2, Y1, L, C



Wall Thermostats



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43355 ●
7 Day Programming, 4 Programs Per Day



Additional Features:

- Adjustable cycle rate
- Pre-programmed
- Easy "Front Load" battery access
- Energy and filter use monitors
- Up-opening door
- Daylight Savings key
- Temporary and vacation overrides
- Programmable Hold
- Home Today Override
- Two-stage low battery warning with fail safe protection

Also Compatible With Most:

- Single-stage heat pumps

Additional Specifications:

- Terminations: G, RC, RH, Y/O, W/B, Y1



43503 ●
7 Day Programming, 4 Programs Per Day
With Auto Season Changeover



Additional Features:

- Auto Programming
- Keyboard lock
- Easy Front Load battery access
- Energy and filter use monitors
- Patented Home Today temporary override
- Vacation Hold override

Additional Specifications:

- Terminations: RC, RH, W, Y/Y1, G, O/B



43558

43558 ●
7 Day Programming, 4 Programs
Per Day For Multi-Stage Heat Pump/
Conventional Two-Stage Heat/Cool With
Auto-Season Changeover



Additional Features:

- Energy Monitor
- "System On" indicators
- Keyboard lock
- Auto heat recovery
- Preprogrammed
- Filter Monitor
- Temporary/Vacation overrides
- Programmable Hold
- Home Today override
- Auto season changeover
- Optional hardwire remote sensors (43658)
- AC powered with 2 AAA battery backup

Also Compatible With Most:

- Two-stage heat pumps with 2 heat/2 cool
- Two-stage heat pumps with 2 heat/1 cool
- Single-stage heat pumps
- Conventional two-stage heat/cool systems (Not for use with 110V/220V systems)
- Multi-stage heat/cool

Additional Specifications:

- Terminations: R, Y1, Y2, W1, W2, E, O, B, G, L, C



43658

43658 Remote Sensor (Sold Separately)



43665

43665 ●
7 Day Programming,
4 Programs Per Day &
Optional Remote Sensing



Additional Features:

- Pre-programmed with easy-to-change presets
- Programmable fan
- Keyboard lock
- Energy and filter use monitors
- Patented Home Today™ temporary override
- Temporary and vacation hold override with programmable hold
- Daylight saving key
- Tri-lingual English, Spanish, French display
- Mechanical low temperature protection

Also Compatible With Most:

- Single-stage heat pumps

Additional Specifications:

- Terminations: G, W/B, Y/O, R/C, RC1, RH, Y1
- Remote Sensor Terminations: Wireless
- Product Dimensions: 6 1/8"W x 5 1/8"H x 1 1/2"D



43758
Wireless Remote Sensor
(optional)





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Wall Thermostats

Mechanical

All models offer our “quiet switching” mercury bulb design and require no additional sub-base for heating, cooling or heating/cooling installation. All deliver maximum performance at a value price! All Mechanical Thermostats have a one year warranty.



43004 – Horizontal



43005 – Vertical

Heating/Cooling Thermostats

43004 – Horizontal ●

- For use with most 4 or 5 wire 24 VAC systems and single-stage heat pumps
- Adjustable heat anticipator
- Terminations: RC, RH, W, Y, G, O, B

43005 – Vertical



43320 – Vertical

Cooling Only Thermostat

43320 – Vertical ●

- For use with most 2 wire 24 VAC systems
- Fixed cooling anticipator
- Terminations: RC, Y



43309 – Horizontal



43359 – Horizontal

Heating Only Thermostats

43309 – Horizontal ●

- For use with most 2 wire 24 VAC and millivolt systems
- Adjustable heat anticipator
- Terminations: RH, W

43359 – Horizontal

- 3 wire heat zone control
- Adjustable heat anticipator
- Terminations: R, Y, W

Wall Thermostat Features



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Mechanical		Adjustable Heat Anticipator	Quiet Switching	Most Gas, Oil or Electric	24 VAC Nominal	Millivolt	Terminals
43320	Vertical Cool Only		●		●		RC, Y
43309	Horizontal Heat Only	●	●	●	●	●	RH, W
43359	Horizontal Heat Zone Control		●	●	●	●	R, Y, W
43004	Horizontal Heat Cool	●	●	●	●		RH, RC, G,
43005	Vertical Heat Cool	●	●	●	●		RH, RC, G,

Y, W, O, B

Y, W, O, B

Digital		Large LCD Digital Accuracy	Easy to Read Display	Filter Change Indicator	Low °F/°C Readout	No Battery Powered	Heat/Cool & Battery Indicator	Leveling Required	Heat Only Systems	Terminals	Remote Sensor Terminals
43054	Electronic w/ Blue Night-Light	●	●	●	●	●	●	●	●	RC/O, RH/B, Y, W, G, R	
43055	Electronic w/Blue Night-Light w/Remote	●	●	●	●	●	●	●	●	RC/O, RH/B, Y, W, G, R	
43057	Digital Multi-Stage Heat Pump/Conventional	●	●	●	●		●	●	●	R, B, W2, E, G, O, Y2 Y1, L, C	RS1+ RS1- RS2+ RS2-
43058	Digital Multi-Stage	●	●	●	●	Battery Backup	●	●	●	R, Y1, Y2, W1, W2,	RS1+ RS1-

Programmable		Program Flexibility	Programs Per Day	Pre Programmed	Auto Recovery	Filter Change Indicator	°F/°C Readout	Temporary & Vacation Overrides	Home Today Override	Energy Monitor	Battery Powered	Auto Changeover	Keyboard Lock	Single-Stage Heat Heat Pump	Terminals	Remote Sensor Terminals
43154	Programmable w/Blue Night-Light	5+2	4	●	●	●	●	●		●	●			●	RC, RH, Y/O, W/B, Y1, G	
43168	Programmable Multi-Stage Heat Pump	5+2 5+1+1 7	4	●	●	●	●	●	●	●			●	●	R, B, W2, W G, O, Y2, Y1, L, C	
43355	Programmable w/Blue Night-Light	7	4	●	●	●	●	●	●	●	●	●		●	RC, RH, Y/O, W/B, Y1, G	
43503	Programmable w/AutoSeason Changeover	7	4	●	●	●	●	●	●	●	●	●	●	●	W, RH, RC, G, Y/Y1, O/B	
43558	Programmable Multi-Stage Heat Pump/Conventional	7	4	●	●	●	●	●	●	●	Battery Backup	●	●	●	R, Y1, Y2, W1, W2, E, O, B, G, L, C	RS1+ RS1- RS2+ RS2-
43665	Programmable w/AutoSeason Changeover			●	●	●	●	●	●	●	●	●	●	●	G, W/B, Y/O RC, RCI, RH, Y1	WIRELESS
43855	Touchscreen Programmable 3H/2C Conventional Heat Pump			●	●	●	●	●	●	●	●	●	●	●	RH, RC/R, C, Y1, Y2, W1 W2, W3, E O, B, G, L, H	

Thermostats Guards

SUPCO offers a complete line of metal and plastic thermostat guards for the HVAC industry. Manufactured with the highest quality materials and production standards to ensure rugged dependability and attractive appearance.

Metal Thermostat Guards

- 18-22 Gauge Steel
- Baked Enamel Finish
- Louvered Cover
- Maximum Protection

Plastic Thermostat Guards

- Hi-Impact Plastic
- Clear
- Opaque
- Bronze

All Models

- Locking Key
- Mounting hardware
- Vertical or Horizontal Mounting



Designer Series
BTG-DK



Universal Series
BTG-U02



Elite Series
BTG-EK



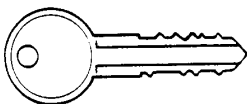
Classic Series
BTG-O



Regal Series
BTG-RK



Sentinal Series
BTG-54VL



F336

PART NO.	DESCRIPTION	INSIDE DIMENSIONS SOLID BASE (H x W x D)	INSIDE DIMENSIONS RING BASE (H x W x D)
Designer			
BTG-DK	Clear Plastic	4 1/4" x 7 5/8" x 2 1/8"	4 1/8" x 7-1/16" x 2-1/4"
BTG-DB2	Bronze Plastic	4 1/4" x 7 5/8" x 2 1/8"	4 1/8" x 7-1/16" x 2-1/4"
BTG-DO	Opaque Plastic	4 1/4" x 7 5/8" x 2 1/8"	4 1/8" x 7-1/16" x 2-1/4"
Universal			
BTG-UK2	Clear Plastic	8 1/4" x 5 3/8" x 3 1/2"	8 1/8" x 4 5/8" x 3-5/8"
BTG-UB2	Bronze Plastic	8 1/4" x 5 3/8" x 3 1/2"	8 1/8" x 4 5/8" x 3-5/8"
BTG-U02	Opaque Plastic	8 1/4" x 5 3/8" x 3 1/2"	8 1/8" x 4 5/8" x 3-5/8"
BTG-UM	Metal	8 1/4" x 5 3/8" x 3 1/2"	-
BTG-UWM	Metal	-	6 3/4" x 4 1/2" x 3 9/16"
Elite			
BTG-EK	Clear Plastic	3 7/8" x 3 1/2" x 2 1/2"	-
BTG-EO	Opaque Plastic	3 7/8" x 3 1/2" x 2 1/2"	-
BTG-EM	Metal	3 7/8" x 3 1/2" x 2 1/2"	-
Classic			
BTG-K	Clear Plastic	5 1/4" x 4 3/8" x 3"	5 1/4" x 4 5/8" x 3 1/4"
BTG-O	Opaque Plastic	5 1/4" x 4 3/8" x 3"	5 1/4" x 4 5/8" x 3 1/4"
BTG-KM	Metal	5 1/4" x 4 3/8" x 3"	-
BTG-KWM	Metal	-	5 1/4" x 4 5/8" x 3 1/4"
Regal			
BTG-RK	Clear Plastic	6 3/8" x 3 1/2" x 3"	6 3/8" x 3 1/2" x 3 1/4"
BTG-RB2	Bronze Plastic	6 3/8" x 3 1/2" x 3"	6 3/8" x 3 1/2" x 3 1/4"
BTG-RO	Opaque Plastic	6 3/8" x 3 1/2" x 3"	6 3/8" x 3 1/2" x 3 1/4"
BTG-RM	Metal	6 3/8" x 3 1/2" x 3"	-
BTG-RWM	Metal	-	6 3/8" x 3 1/2" x 3 1/4"
Sentinal			
BTG-54VL	Metal Hinged	6 1/4" x 4 1/4" x 3 1/8"	-
BTG-54VLW	Metal Hinged	-	6" x 3 3/4" x 3 1/8"
F336	Replacement Key	Fits All Models	

Service & Installation Products

LI'L Popper Control Board Circuit Breaker

The POP3 or POP5 provide a temporary emergency fix for control boards that continue to blow fuses or that are shorted out.

Product Information

PART NO.	Voltage	DESCRIPTION
POP3	24	3 amp control board circuit breaker
POP5	120/240	5 amp control board circuit breaker

Features/Benefits

- Two common sizes to choose from: 3 or 5 amp
- Includes quick setting thermal cut out.
- Self-adhesive backing for easy temporary installation
- Keeps homeowner and/or building owner up and running with no inconvenient down time until the original control board can be replaced.

Applications

- Gas Fired Equipment
- Boilers
- Pool Heaters
- Furnaces
- Unit Heaters
- Hot Tubs
- Roof Top Units
- Water Heaters
- Fireplaces

Tech Tip

- SUPCO recommends using the Li'L Popper as a **"temporary fix"** only, until the original control board can be replaced.



ECAP321 High Efficiency PVC Flue Cap

The affordable approach to flue pipe problems starts at the TOP! The ECAP321 PVC Flue Cap protects today's high efficiency furnaces from dirt, moisture and other debris.



Features/Benefits

- Protection for high efficiency furnaces
- Universal flue cap fits 1.5", 2" and 3" PVC pipe
- Reduces draft inducer motor rust
- Helps to eliminate pressure switch service calls
- Resistant to UV radiation and oxidative degradation
- CSA approved for use in 90% AFUE heating applications

Applications

- 90% high efficiency furnaces with a PVC flue pipe
- Used for vertical or horizontal venting applications



Anti-Vibration Pads

SUPCO offers four different types of Anti Vibration Pads that provide vibration dampening and leveling of HVAC/R, Appliance and Industrial equipment.

Features/Benefits

- Three different types include Rubber & Cork, All Rubber and ISO Cube.
- Made of the highest quality elastomeric materials.
- Oil, chemical & age resistant padding.
- Maximum load capacity
 - 50 psi for Rubber & Cork and All Rubber.
 - 180 psi for the ISO Cube.

Applications

- Air Conditioners
- Heat Pumps
- Furnaces
- Boilers
- Air Handlers
- Compressors
- Ice Machines
- Refrigerators
- Washers
- Dryers
- Dishwashers
- Stoves & Ovens
- Presses
- Machinery
- Shelving

Specifications

- Pull Strength: 6.5 Mpa
- Extension Rate Until Broken: 310%
- Permanent Distortion Rate Until Broken: 12%

General Description

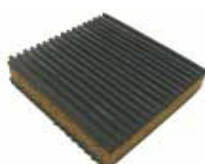
PART NO.	DESCRIPTION	CARTON QTY.
RUBBER & CORK ANTI VIBRATION PAD		
SP2C	2" x 2" x 7/8" Rubber/Cork Pad	48
SP3C	3" x 3" x 7/8" Rubber/Cork Pad	36
SP4C	4" x 4" x 7/8" Rubber/Cork Pad	24
SP6C	6" x 6" x 7/8" Rubber/Cork Pad	24
SP12C	12" x 12" x 7/8" Rubber/Cork Pad	12
SP18C	18" x 18" x 7/8" Rubber/Cork Pad	6
ALL RUBBER ANTI VIBRATION PAD		
SP2	2" x 2" x 3/8" All Rubber Pad	48
SP3	3" x 3" x 3/8" All Rubber Pad	36
SP4	4" x 4" x 3/8" All Rubber Pad	24
SP6	6" x 6" x 3/8" All Rubber Pad	24
SP18	18" x 18" x 3/8" All Rubber Pad	6
ISO CUBE ANTI VIBRATION PAD		
SIS018	18" x 18" x 3/4" ISO Cube	6



ISO Cube



All Rubber



Rubber & Cork



The Hard Start Pioneer...

Your Source For All Hard Starts

With the constant changes in compressor technologies, hard start development has evolved from simple Positive Temperature Coefficient (PTC) Technology through 2 and 3 wire Potential Relay Technology. Trust **SUPCO-the Hard Start-Pioneer**-to provide the choice that fits your application.

SPP Series

The first 2-wire Hard Start utilizing PTC Technology, still provides field proven reliability.



SPPE "E Class" Series

Economical Potential Relay Technology, with the comfort of a backup safety.



SK3W Series

3-Wire Potential Relay Technology, for the closest OEM equivalent, with easy installation.



High Torque Series

SUPCO's Ultimate Hard Start, combining unequalled current handling ability and high energy capacity.

40 Amp electronic potential relay (EPR) provides superior performance for low voltage applications.



See Pages 2-3 for more details

URCO Ultimate Series

Newly Designed for Systems with or without Run Capacitors, the URCO Series provides the **ULTIMATE** in protection for all SUPCO's Ultimate Hard Start, combining unequalled current handling ability and high energy capacity.

- Pre-wired to work in systems with or without a run capacitor
- Provides High Torque Start
- Reduces Truck Stock - This is the only one you need!
- 1/4" push-on terminals for run capacitor
- 90° Fusite connector for compressor
- Including wiring diagram
- Includes wire nuts



See Page 59 for more details

English Conversion Factors & Data

To Convert Measurements

From	To	Multiply By
Cubic Feet	Cubic Inches	1728.
Cubic Inches	Cubic Feet	0.00058
Cubic Feet	Gallons	7.480
Gallons	Cubic Feet	0.1337
Cubic Inches	Gallons	0.00433
Gallons	Cubic Inches	231.
Barrels	Gallons	42.
Gallons	Barrels	0.0238
Imperial Gallons	U.S. Gallons	1.2009
U.S. Gallons	Imperial Gallons	0.8326
Feet	Inches	12.
Inches	Feet	0.0833
Square Feet	Square Inches	144.
Square Inches	Square Feet	0.00695
Short Tons	Pounds	2000.
Liters	U.S. Gallons	0.2642

To Convert Pressure (at 32° F)

From	To	Multiply By
Inches of Water	Pounds per Sq. Inch	0.03612
Pounds per Sq. Inch	Inches of Water	27.686
Feet of Water	Pounds o Sq. Inch	0.4334
Pounds per Sq. Inch	Feet of Water	2.307
Inches of Mercury	Pounds per Sq. Inch	0.4912
Pounds per Sq. Inch	Inches of Mercury	2.036
Atmospheres	Pounds per Sq. Inch	14.696
Pounds per Sq. Inch	Atmospheres	0.06804

To Convert Power

From	To	Multiply By
Horsepower	Metric Horsepower	1.014
Horsepower	Ft./Power per Minute	33000.
Horsepower	Kilowatts	0.746
Kilowatts	Horsepower	1.3404
British Thermal Units	Foot/Pounds	778.177
Foot/Pounds	British Thermal Units	0.001285
British Thermal Units	Horsepower Hours	0.0003927
Horsepower Hours	British Thermal Units	2544.1
British Thermal Units	Kilowatt Hours	0.0002928
Kilowatt Hours	British Thermal Units	3415.
Watt Hours	British Thermal Units	3.415

Volume-Weight Conversions

wt. lbs.

1 Cubic Foot of Water.....	62.4*
1 Cubic Inch of Water.....	0.0361*
1 Gallon of Water	8.33*
1 Cubic Foot of Air	.075+
1 Cubic Inch of Steel	0.284
1 Cubic Foot of Brick (Building)	112-120
1 Cubic Foot of Concrete	120-140
1 Cubic Foot of Earth	70-120

* at 32° F

+ at 70° F. -29.92" Hg.

English to Metric Conversion Factors

To Convert Measurements

From	To	Multiply By
Cubic Feet	Cubic Centimeters	28317.0
Cubic Inches	Cubic Centimeters	16.387
Cubic Feet	Liters	28.32
Gallons	Liters	3.7854
Cubic Inches	Liters	0.0164
Gallons	Cubic Centimeters	3785.4
Barrels	Cubic Meters	1.0551
Imperial Gallons	Cubic Meters	0.0045461
U.S. Gallons	Cubic Meters	0.0037854
Feet	Meters	0.3048
Inches	Meters	0.0254
Square Feet	Square Meters	0.0929
Square Inches	Square Centimeters	6.452
Ton (Short, 2000 lb.)	Kilograms	907.2
Liter	Cubic Meters	0.001
Pounds	Kilograms	0.45359

To Convert Pressure (at 32° F)

From	To	Multiply By
Inches of Water	Newton/Sq. Meter	249.082
Pounds per Sq. Inch	Newton/Sq. Meter	6894.8
Feet of Water	Newton/Sq. Meter	2988.98
Pounds per Sq. Inch	Kilograms/Sq. Cent	0.07031
Inches of Mercury	Newton/Sq. Meter	3386.4
Pounds per Sq. Inch	Dyne/Sq. Cent.	68948.0
Atmospheres	Newton/Sq. Meter	101325.0
Pascal	Newton/Sq. Meter	1.0

To Convert Energy, Heat and Power

From	To	Multiply By
Horsepower	Watt	745.7
British Thermal Units	Joule	1054.35
Foot-Pounds	Joule	1.3558
British Thermal Units	Calorie	252.0
British Thermal Units	Watt-Second	1054.35
Watt-Second	Joule	1.0
Calorie	Joule	4.184
Watt-Hours	Joule	3600.0
Kilocalorie/Minute	Watt	69.73
Ton (Refrigeration)	Watt	3516.8
BTU/Hour	Watt	0.29288
BTU/In./Hr. Ft. (2) ° F	Watt/Meter K	0.14413
BTU/Hr. at 10° F TD	Kcal/Hr. at 6° C. TD	0.252
BTU/Hr. at 15° F TD	Kcal/Hr. at 8° C. TD	0.252

Volume-Weight Conversions

Wt. Kilograms

1 Cubic Foot of Water.....	28.3*
1 Cubic Inch of Water.....	0.0164*
1 Gallon of Water	3.788
1 Cubic Foot of Air	0.034+
1 Cubic Inch of Steel	0.1288
1 Cubic Foot of Brick (Building)	51-54
1 Cubic Foot of Concrete	54-64
1 Cubic Foot of Earth	32-54

* at 32° F

+ at 70° F. -29.92" Hg.

Single Phase Heating Element Conversion Chart

240 Volts	208 Volts	120 Volts
6000 Watts	4500 Watts	1500 Watts
5000 Watts	3750 Watts	1250 Watts
4000 Watts	3000 Watts	1000 Watts
3000 Watts	2250 Watts	750 Watts
2500 Watts	1875 Watts	625 Watts
2000 Watts	1500 Watts	500 Watts

**Always use a higher voltage element to replace a lower voltage element
To calculate the wattage at a lower voltage see formula's below.**

Convert 480V to 240V, Multiply wattage at 480V times 25%.

Convert 240V to 208V, Multiply wattage at 240V times 75%.

Convert 240V to 120V, Multiply wattage at 240V times 25%.

Convert 208V to 120V, Multiply wattage at 208V times 33%.

For use in single phase 60hz. applications only.

Ohms Law Wheel



This chart shows four ways to figure each value:

Amps (I), Volts (E), Ohms (R), or Watts (W)

Example:

A 4800 watt electric heat element is connected to a 240 volt circuit. How many Amps (I) does it draw?

Solution:

Locate Amps section of chart-
 $\frac{\text{Watts (W)}}{\text{Volts (E)}} = \text{Amps (I)}$

Thus $4800 / 240 = 20$ Amps. Carried further, what is the resistance?

$\frac{\text{Volts}^2 (E^2)}{\text{Watts (W)}} = \text{Ohms (R)}$ $240 \times 240 / 4800 = 12$ Ohms

Horse Power - Ampere Table

Approximate Horsepower		120 Volts		240 Volts	
		Full Load	Locked Rotor	Full Load	Locked Rotor
1/4	AC	4.4	26.4	2.2	13.2
	DC	—	—	—	—
1/4	AC	5.8	34.8	2.9	17.4
	DC	2.9	29.0	1.5	15.0
1/3	AC	7.2	43.2	3.6	21.6
	DC	3.6	36.0	1.8	18.0
1/2	AC	9.8	58.8	4.9	29.4
	DC	5.2	52.0	2.6	26.0
3/4	AC	13.8	82.8	6.9	41.4
	DC	7.4	74.0	3.7	37.0
1	AC	16.0	96.0	8.0	48.0
	DC	9.4	94.0	4.7	47.0
1 1/2	AC	20.0	120.0	10.0	60.0
	DC	13.2	132.0	6.6	66.0
2	AC	24.0	144.0	12.0	72.0
	DC	17.0	170.0	8.5	85.0
3	AC	34.0	204.0	17.0	102.0
	DC	25.0	250.0	12.2	122.0
5	AC	56.0	366.0	28.0	168.0
	DC	—	—	20.0	200.0
7 1/2	AC	80.0	480.0	40.0	240.0
	DC	—	—	29.0	290.0

* Locked rotor ratings shown are 6 times full load on AC and 10 times full load on DC. The above chart is offered as a guide only, as all motors do not necessarily come within the maximum ratings shown in the chart.

Thermal Units		
Latent heat of ice	= 144 BTU/lb	= 288,000 BTU/ton
1 ton refrigeration	= 12,000 BTU/hr	= 288,000/24 hours
1 British Thermal Unit (BTU)		= .252 kcal
1 kilo - calorie (kcal)		= 3.97 BTU
1 BTU/lb		= 0.555 kcal/kg
1 watt		= 1.8 BTU/lb
		= 1 kcal/kg°C.
		= 3.413 BTU/hr
Heat, Energy, Work		
1 ft lb	= .001285 BTU	= 0.13826 kg-meter
1 joule	= 1 watt - second	= .000948 BTU
1 BTU	= 778.1 ft lb	= .252 kcal
1 KCAL	= 3.968 BTU	= 1000 cal
1 hp-hr	= .746 kw-hr	= 2544.7 BTU
1 kw-hr	= 1.341 hp-hr	= 3413 BTU
1 boiler horsepower	= 33479 BTU/hr	= Evaporation of 34.5 water/hr at 212° F.

Approximate Temperature Guide

Application	Average Temperature	Difference Between Coil and Room
Wet produce walk-in	40°	10°
Dry produce walk-in	40°	13°
Produce cases	40°	18°
Mortuary vaults - Blower coil	32° to 35°	18°
Enclosed service meat case	35°	15°
Open shelf service meat case	29°	25°
Dairy case	35° to 38°	25°
Freezer cases - General	-5° to -10°	10°
Ice cream - Holding	-15°	10°
Ice cream - Dipping		
Vanilla	8°	10°
Chocolate	6°	10°
Fruit	4°	10°
Soda fountains - Fruits and syrup	35° to 38°	10°
Air conditioning	75°	40°
Fruit boxes	50° to 55°	20°
Water chillers - Air conditioning	45°	10°
Water coolers - Drinking	38° to 50°	10°
Refrigerators	35°	20°
Biscuit cases	35°	20°
Milk coolers	40°	10°
Work rooms	35° to 50°	10° to 20°

Temperature Conversion Chart

Fahrenheit	Celsius	Fahrenheit	Celsius
500	260.0	150	65.6
475	246.1	145	62.8
450	232.2	140	60.0
425	218.3	135	57.2
400	204.4	130	54.4
390	198.8	125	51.7
380	193.3	120	48.9
370	187.8	115	46.1
360	182.2	110	43.3
350	176.7	105	40.6
340	171.1	100	37.8
330	165.6	95	35.0
320	160.0	90	32.2
310	154.4	85	29.4
300	148.9	80	26.7
290	143.3	75	23.9
280	137.8	70	21.1
270	132.2	65	18.3
260	126.7	60	15.6
250	121.1	55	12.8
245	118.3	50	10.0
240	115.6	45	7.2
235	112.8	40	4.4
230	110.0	35	1.7
225	107.2	32	0.0
220	104.4	30	-1.1
215	101.7	25	-3.9
212	100.0	20	-6.7
210	98.9	15	-9.4
205	96.1	10	-12.2
200	93.3	5	-15.0
195	90.6	0	-17.8
190	87.8	-5	-20.6
185	85.0	-10	-23.3
180	82.2	-15	-26.1
175	79.4	-20	-28.9
170	76.7	-25	-31.7
165	73.9	-30	-34.4
160	71.1	-35	-37.2
155	68.3	-40	-40.0

Conversion Factors:

Fahrenheit to Celsius: Degrees Fahrenheit minus 32 x 5/9 (0.556)

Celsius to Fahrenheit: Degrees Celsius times 9/5 (1.8) plus 32

Decimal Equivalents

Inch Fraction	Inch Decimal	Millimeters
1/16	0.0625	1.588
5/64	0.07812	1.984
3/32	0.09375	2.381
7/64	0.10937	2.778
1/8	0.1250	3.175
9/64	0.14062	3.572
5/32	0.15625	3.969
11/64	0.17187	4.366
3/16	0.1875	4.763
13/64	0.20312	5.159
7/32	0.21875	5.556
15/64	0.23437	5.953
1/4	0.2500	6.350
17/64	0.26562	6.747
9/32	0.28125	7.144
19/64	0.29867	7.541
5/16	0.3125	7.938
21/64	0.32812	8.334
11/32	0.34375	8.731
23/64	0.35937	9.128
3/8	0.3750	9.525
25/64	0.39062	9.922
13/32	0.40625	10.319
27/64	0.42187	10.716
7/16	0.4375	11.113
29/64	0.45312	11.509
15/32	0.46875	11.906
31/64	0.48437	12.303
1/2	0.5	12.700
33/64	0.51652	13.097
17/32	0.53125	13.494
35/64	0.54687	13.891
9/16	0.5625	14.288
37/64	0.57812	14.684
19/32	0.59375	15.081
39/64	0.60937	15.478
5/8	0.625	15.875
41/64	0.64062	16.272
21/32	0.65625	16.669
43/64	0.67187	17.066
11/16	0.6875	17.463
45/64	0.70312	17.859
23/32	0.71875	18.256
47/64	0.73437	18.653
3/4	0.750	19.050
49/64	0.76562	19.447
25/32	0.78125	19.884
51/64	0.79687	20.241
13/16	0.8125	20.638
53/64	0.82812	21.034
27/32	0.84375	21.431
55/64	0.85937	21.828
7/8	0.875	22.225
57/64	0.89062	22.622
29/32	0.90625	23.019
59/64	0.92187	23.416
15/16	0.9375	23.813
61/64	0.95312	24.209
31/32	0.96875	24.606
63/64	0.98437	25.003
	1.000	25.400

Refrigerant Temperature Pressure Chart

Figures = Vacuum Black Figures = Vapor (PSIG)

Bold Figures = Liquid (PSIG)

°F	R-12	R-134a	R-401A	R-409A	R-22	R-410A	R-502	R-404A	R-507	R-402A	R-408A	R-717
-50	15.4	18.4	18.5	—	6.2	5.8	0.2	0.0	0.9	1.2	2.4	14.3
-48	14.6	17.7	17.7	—	4.8	6.9	0.7	0.8	1.7	2.1	1.0	13.1
-46	13.8	17.0	17.0	—	3.4	8.0	1.5	1.6	2.6	2.9	.3	12.1
-44	12.9	16.2	16.0	—	2.0	9.2	2.3	2.5	3.5	3.9	1.1	11.0
-42	11.9	15.4	15.0	13.7	0.5	10.4	3.2	3.4	4.5	4.9	1.9	9.9
-40	11.0	14.5	14.5	12.9	0.5	11.7	4.1	5.5	5.5	5.9	2.8	8.7
-38	10.0	13.7	13.5	12.0	1.3	13.0	5.0	6.5	6.5	6.9	3.7	7.4
-36	8.9	12.8	12.5	11.0	2.2	14.4	6.0	7.5	7.6	8.0	4.6	6.1
-34	7.8	11.8	11.5	10.0	3.0	15.9	7.0	8.6	8.7	9.2	5.6	4.7
-32	6.7	10.8	10.6	9.0	4.0	17.3	8.1	9.7	9.9	10.3	6.6	3.2
-30	5.5	9.7	9.0	7.9	4.9	18.9	9.2	10.8	11.1	11.6	7.6	1.6
-28	4.3	8.6	8.3	6.8	5.9	20.5	10.3	12.0	12.4	12.8	8.7	0.0
-26	3.0	7.7	7.0	5.6	6.9	22.2	11.5	13.2	13.7	14.1	9.8	0.6
-24	1.6	6.2	6.0	4.4	7.9	23.9	12.7	14.5	15.0	15.5	11.0	1.7
-22	0.3	4.9	4.5	3.2	9.0	25.7	14.0	15.8	16.4	16.9	12.2	2.6
-20	0.6	3.6	3.5	1.9	10.1	27.5	15.3	17.1	17.8	18.4	13.5	3.6
-18	1.3	2.3	2.0	.5	11.3	29.4	16.7	18.5	19.3	19.9	14.7	4.6
-16	2.1	0.8	0.5	.5	12.5	31.4	18.1	20.0	20.9	21.5	16.1	5.6
-14	2.8	0.3	0.4	1.2	13.8	33.5	19.5	21.5	22.5	23.1	17.5	6.7
-12	3.7	1.1	1.4	2.0	15.1	35.6	21.0	23.0	24.1	24.8	18.9	7.9
-10	4.5	1.9	2.2	2.8	16.5	37.8	22.6	24.6	25.8	26.5	20.4	9.0
-8	5.4	2.8	3.1	3.6	17.9	40.0	24.2	26.3	27.6	28.3	22.0	10.3
-6	6.3	3.6	3.9	4.4	19.3	42.4	25.8	28.0	29.4	30.2	23.6	11.6
-4	7.2	4.5	4.8	5.3	20.8	44.8	27.5	29.8	31.3	32.1	25.2	12.9
-2	8.2	5.5	5.7	6.2	22.4	47.3	29.3	31.6	33.2	34.1	26.9	14.3
0	9.2	6.5	6.7	7.2	24.0	49.8	31.1	33.5	35.2	36.1	28.7	15.7
2	10.2	7.5	8.0	8.2	25.6	52.5	32.9	34.8	37.3	38.1	30.5	17.2
4	11.2	8.5	8.8	9.2	27.3	55.2	34.9	37.4	39.4	40.4	32.3	18.8
6	12.3	9.6	9.9	10.2	29.1	58.0	36.9	39.4	41.6	42.6	34.3	20.4
8	13.5	10.8	11.0	11.3	30.9	60.9	38.9	41.6	43.8	44.9	36.3	22.1
10	14.6	12.0	12.2	12.5	32.8	63.9	41.0	43.7	46.2	47.3	38.3	23.8
12	15.8	13.1	13.4	13.6	34.7	67.0	43.2	46.0	48.5	49.7	40.4	25.6
14	17.1	14.4	14.6	14.8	36.7	70.2	45.4	48.3	51.0	52.5	42.6	27.5
16	18.4	15.7	15.9	16.1	38.7	73.4	47.7	50.7	53.5	54.8	44.9	29.4
18	19.7	17.0	17.2	17.4	40.9	76.8	50.0	53.1	56.1	57.5	47.2	31.4
20	21.0	18.4	18.6	18.7	43.0	80.2	52.5	55.6	58.8	60.2	49.5	33.5
22	22.4	19.9	20.0	20.0	45.3	83.8	54.9	58.2	61.5	63.0	52.0	35.7
24	23.9	21.4	21.5	21.5	47.6	87.4	57.5	60.9	64.3	65.9	54.5	37.9
26	25.4	22.9	23.0	22.9	49.9	91.2	60.1	63.6	67.2	68.9	57.1	40.2
28	26.9	24.5	24.6	24.4	52.4	95.1	62.8	66.5	70.2	72.0	59.8	42.6
30	28.5	26.1	26.2	26.0	54.9	99.0	65.6	69.4	73.3	75.1	62.5	45.0
32	30.1	27.8	27.9	27.6	57.5	103.1	68.4	72.3	76.4	78.3	65.3	47.6
34	31.7	29.5	29.6	29.2	60.1	107.3	71.3	75.4	79.6	81.6	68.2	50.2
36	33.4	31.3	31.3	30.9	62.8	111.6	74.3	78.5	82.9	85.0	71.2	52.9
38	35.2	33.2	33.2	32.7	65.6	116.0	77.4	81.8	86.3	88.5	74.2	55.7
40	36.9	35.1	35.0	34.5	68.5	120.5	80.5	85.1	89.8	92.1	77.4	58.6
42	38.8	37.0	37.0	36.3	71.5	125.1	83.8	88.5	93.4	95.7	80.6	61.6
44	40.7	39.1	39.0	38.2	74.5	129.9	87.0	91.9	97.0	99.5	83.9	64.5
46	42.7	41.1	41.0	40.2	77.6	134.8	90.4	95.5	100.8	103.4	87.3	67.9
48	44.7	43.3	43.1	42.2	80.7	139.8	93.9	99.2	104.6	107.3	90.7	70.9
50	46.7	45.5	45.3	44.3	84.0	144.9	97.4	102.9	108.6	111.4	94.3	74.5
52	48.8	47.7	60.0	63.6	87.3	150.2	101.0	109.0	112.6	120.0	99.4	77.7
54	51.0	50.1	62.0	66.2	90.8	155.6	104.8	113.0	116.7	124.0	103.0	81.5
56	53.2	52.3	65.0	68.9	94.3	161.1	108.6	117.0	121.0	129.0	107.1	85.0
58	55.4	55.0	68.0	71.6	97.9	166.7	112.4	121.0	125.3	133.0	111.0	89.0
60	57.7	57.5	70.0	74.5	101.6	172.5	116.4	125.0	129.7	138.0	113.5	92.9
62	60.1	60.1	73.0	77.3	105.4	178.5	120.4	130.0	134.3	142.0	119.2	96.9
64	62.5	62.7	76.0	80.3	109.3	184.5	124.6	134.0	139.0	147.0	123.5	100.7
66	65.0	65.5	79.0	83.3	113.2	190.7	128.8	139.0	143.7	152.0	127.0	105.3
68	67.6	68.3	82.0	86.4	117.3	197.1	133.2	144.0	148.6	157.0	132.0	109.3
70	70.2	71.2	85.0	89.5	121.4	203.6	137.6	148.0	153.6	160.4	135.1	114.1
72	72.9	74.2	89.0	92.8	125.7	210.3	142.2	153.0	158.7	168.0	141.5	118.7
74	75.6	77.2	92.0	96.0	130.0	217.1	146.8	158.0	163.9	173.0	146.2	123.4
76	78.4	80.3	95.0	99.4	134.5	224.0	151.5	164.0	169.3	179.0	151.0	128.3
78	81.3	83.5	99.0	102.9	139.0	231.1	156.3	169.0	174.7	184.0	156.0	133.2
80	84.2	86.8	102.0	106.4	143.6	238.4	161.2	174.0	180.3	190.0	159.4	138.3
82	87.2	90.2	106.0	110.0	148.4	245.9	166.2	180.0	186.0	193.6	166.4	143.6
84	90.2	93.6	109.0	113.7	153.2	253.5	171.4	185.0	191.9	202.0	171.0	149.0
86	93.3	97.1	113.0	117.4	158.2	261.2	176.6	191.0	197.8	208.0	177.0	154.5
88	96.5	100.7	117.0	121.2	163.2	269.2	181.9	197.0	203.9	214.0	182.0	160.1
90	99.8	104.4	121.0	125.1	168.4	277.3	187.4	203.0	210.2	220.0	186.4	165.9
92	103.1	108.2	125.0	129.1	173.7	285.5	192.9	209.9	216.6	227.0	194.2	171.9
94	106.5	112.1	129.0	133.2	179.1	294.0	198.6	215.0	223.1	234.0	200.1	178.0
96	110.0	116.1	133.0	137.4	184.6	302.6	204.3	222.0	229.8	240.0	206.2	184.2
98	113.5	120.1	138.0	141.6	190.2	311.4	210.2	229.0	236.6	247.0	212.3	190.6
100	117.2	124.3	142.0	146.0	195.9	320.4	216.2	235.0	243.5	254.0	216.6	197.2
102	120.9	128.5	146.0	150.4	201.8	329.6	222.3	242.0	250.6	261.0	225.1	203.4
104	124.7	132.9	151.0	154.9	207.7	339.0	228.5	249.0	257.9	269.0	231.6	210.2
106	128.5	137.3	156.0	159.5	213.8	348.5	234.9	256.0	265.3	276.0	238.3	217.3
108	132.4	142.8	160.0	164.2	220.0	358.3	241.3	264.0	272.9	284.0	245.2	224.4
110	136.4	146.5	165.0	169.0	226.4	368.2	247.9	271.0	280.6	292.0	250.0	232.3
112	140.5	151.3	170.0	173.9	232.8	378.3	254.6	279.0	288.6	299.0	259.2	239.3
114	144.7	156.1	175.0	178.8	239.4	388.7	261.5	286.0	296.6	307.0	266.0	247.0
116	148.9	161.1	180.0	183.9	246.1	399.2	268.4	294.0	304.9	316.0	273.0	254.8
118	153.2	166.1	185.0	189.1	252.9	410.0	275.5	302.0	313.3	324.0	281.0	262.9
120	157.7	171.3	191.0	194.3	259.9	420.9	282.7	311.0	321.9	332.0	286.8	271.7
122	162.2	176.6	196.0	199.7	267.0	432.1	290.1	319.0	330.7	341.0	296.9	279.5
124	166.7	182.0	202.0	205.2	274.3	443.5	297.6	328.0	339.7	350.0	304.9	288.0
126	171.4	187.5	207.0	210.8	281.6	455.1	305.2	336.0	348.9	359.0	313.0	296.8
128	176.2	193.1	213.0	216.5	289.1	466.9	313.9	345.0	358.2	368.0	321.3	305.7
130	181.0	198.9	219.0	222.3	296.8	478.9	320.8	354.0	367.8	377.0	327.4	315.0
132	185.9	204.7	225.0	228.2	304.6	491.2	328.9	364.0	377.6	387.0	338.3	324.2
134	191.0	210.7	231.0	234.2	312.5	503.7	337.1	373.0	387.5	394.6	347.1	333.7
136	196.1	216.8	237.0	240.8	320.6	516.4	345.4	383.0	397.7	406.0	356.0	343.5
138	201.3	223.0	243.0	246.5	328.9	529.4	353.9	392.0	408.1	416.0	365.0	353.4
140	206.6	229.4	250.0	252.9	337.3	542.5	362.6	402.0	418.7	426.0	371.9	365.0
142	212.0	235.8	256.0	259.3	345.8	556.0	371.4	413.0	429.6	436.0	383.7	373.9
144	217.5	242.4	263.0	265.9	354.5	569.6	380.4	423.0	440.6	447.0	393.3	384.

Refrigerant Temperature Pressure Chart

°C	°F	R-12	R-134A	R-401A	R-22	R-410A	R-502	R-404A	R-507
-46	-50	15.4	18.4	18.5	6.2	5.8	0.2	0.0	0.9
-44	-48	14.6	17.7	17.7	4.8	6.9	0.7	0.8	1.7
-43	-46	13.8	17.0	17.0	3.4	8.0	1.5	1.6	2.6
-42	-44	12.9	16.2	16.0	2.0	9.2	2.3	2.5	3.5
-41	-42	11.9	15.4	15.0	0.5	10.4	3.2	3.4	4.5
-40	-40	11.0	14.5	14.5	0.5	11.7	4.1	5.5	5.5
-39	-38	10.0	13.7	13.5	1.3	13.0	5.0	6.5	6.5
-38	-36	8.9	12.8	12.5	2.2	14.4	6.0	7.5	7.6
-37	-34	7.8	11.8	11.5	3.0	15.9	7.0	8.6	8.7
-36	-32	6.7	10.8	10.6	4.0	17.3	8.1	9.7	9.9
-34	-30	5.5	9.7	9.0	4.9	18.9	9.2	10.8	11.1
-33	-28	4.3	8.6	8.3	5.9	20.5	10.3	12.0	12.4
-32	-26	3.0	7.7	7.0	6.9	22.2	11.5	13.2	13.7
-31	-24	1.6	6.2	6.0	7.9	23.9	12.7	14.5	15.0
-30	-22	0.3	4.9	4.5	9.0	25.7	14.0	15.8	16.4
-29	-20	0.6	3.6	3.5	10.1	27.5	15.3	17.1	17.8
-28	-18	1.3	2.3	2.0	11.3	29.4	16.7	18.5	19.3
-27	-16	2.1	0.8	0.5	12.5	31.4	18.1	20.0	20.9
-26	-14	2.8	0.3	0.4	13.8	33.5	19.5	21.5	22.5
-24	-12	3.7	1.1	1.4	15.1	35.6	21.0	23.0	24.1
-23	-10	4.5	1.9	2.2	16.5	37.8	22.6	24.6	25.8
-22	-8	5.4	2.8	3.1	17.9	40.0	24.2	26.3	27.6
-21	-6	6.3	3.6	3.9	19.3	42.4	25.8	28.0	29.4
-20	-4	7.2	4.5	4.8	20.8	44.8	27.5	29.8	31.3
-19	-2	8.2	5.5	5.7	22.4	47.3	29.3	31.6	33.2
-18	0	9.2	6.5	6.7	24.0	49.8	31.1	33.5	35.2
-17	2	10.2	7.5	8.0	25.6	52.5	32.9	34.8	37.3
-16	4	11.2	8.5	8.8	27.3	55.2	34.9	37.4	39.4
-14	6	12.3	9.6	9.9	29.1	58.0	36.9	39.4	41.6
-13	8	13.5	10.8	11.0	30.9	60.9	38.9	41.6	43.8
-12	10	14.6	12.0	12.2	32.8	63.9	41.0	43.7	46.2
-11	12	15.8	13.1	13.4	34.7	67.0	43.2	46.0	48.5
-10	14	17.1	14.4	14.6	36.7	70.2	45.4	48.3	51.0
-9	16	18.4	15.7	15.9	38.7	73.4	47.7	50.7	53.5
-8	18	19.7	17.0	17.2	40.9	76.8	50.0	53.1	56.1
-7	20	21.0	18.4	18.6	43.0	80.2	52.5	55.6	58.8
-6	22	22.4	19.9	20.0	45.3	83.8	54.9	58.2	61.5
-4	24	23.9	21.4	21.5	47.6	87.4	57.5	60.9	64.3
-3	26	25.4	22.9	23.0	49.9	91.2	60.1	63.6	67.2
-2	28	26.9	24.5	24.6	52.4	95.1	62.8	66.5	70.2
-1	30	28.5	26.1	26.2	54.9	99.0	65.6	69.4	73.3
0	32	30.1	27.8	27.9	57.5	103.1	68.4	72.3	76.4
1	34	31.7	29.5	29.6	60.1	107.3	71.3	75.4	79.6
2	36	33.4	31.3	31.3	62.8	111.6	74.3	78.5	82.9
3	38	35.2	33.2	33.2	65.6	116.0	77.4	81.8	86.3
4	40	36.9	35.1	35.0	68.5	120.5	80.5	85.1	89.8
6	42	38.8	37.0	37.0	71.5	125.1	83.8	88.5	93.4
7	44	40.7	39.1	39.0	74.5	129.9	87.0	91.9	97.0
8	46	42.7	41.1	41.0	77.6	134.8	90.4	95.5	100.8
9	48	44.7	43.3	43.1	80.7	139.8	93.9	99.2	104.6
10	50	46.7	45.5	45.3	84.0	144.9	97.4	102.8	108.6
11	52	48.8	47.7	60.0	87.3	150.2	101.0	109.0	112.6
12	54	51.0	50.1	62.0	90.8	155.6	104.8	113.0	116.7
13	56	53.2	52.3	65.0	94.3	161.1	108.6	117.0	121.0
14	58	55.4	55.0	68.0	97.9	166.7	112.4	121.0	125.3
16	60	57.7	57.5	70.0	101.6	172.5	116.4	125.0	129.7
17	62	60.1	60.1	73.0	105.4	178.5	120.4	130.0	134.3
18	64	62.5	62.7	76.0	109.3	184.5	124.6	134.0	139.0
19	66	65.0	65.5	79.0	113.2	190.7	128.8	139.0	143.7
20	68	67.6	68.3	82.0	117.3	197.1	133.2	144.0	148.6
21	70	70.2	71.2	85.0	121.4	203.6	137.6	148.0	153.6
22	72	72.9	74.2	89.0	125.7	210.3	142.2	153.0	158.7
23	74	75.6	77.2	92.0	130.0	217.1	146.8	158.0	163.9
24	76	78.4	80.3	95.0	134.5	224.0	151.5	164.0	169.3
26	78	81.3	83.5	99.0	139.0	231.1	156.3	169.0	174.7
27	80	84.2	86.8	102.0	143.6	238.4	161.2	174.0	180.3
28	82	87.2	90.2	106.0	148.4	245.9	166.2	180.0	186.0
29	84	90.2	93.6	109.0	153.2	253.5	171.4	185.0	191.9
30	86	93.3	97.1	113.0	158.2	261.2	176.6	191.0	197.8
31	88	96.5	100.7	117.0	163.2	269.2	181.9	197.0	203.9
32	90	99.8	104.4	121.0	168.4	277.3	187.4	203.0	210.2
33	92	103.1	108.2	125.0	173.7	285.5	192.9	209.0	216.6
34	94	106.5	112.1	129.0	179.1	294.0	198.6	215.0	223.1
36	96	110.0	116.1	133.0	184.6	302.6	204.3	222.0	229.8
37	98	113.5	120.1	138.0	190.2	311.4	210.2	229.0	236.6
38	100	117.2	124.3	142.0	195.9	320.4	216.2	235.0	243.5
39	102	120.9	128.5	146.0	201.8	329.6	222.3	242.0	250.6
40	104	124.7	132.9	151.0	207.7	339.0	228.5	249.0	257.9
41	106	128.5	137.3	156.0	213.8	348.5	234.9	256.0	265.3
42	108	132.4	142.8	160.0	220.0	358.3	241.3	264.0	272.9
43	110	136.4	146.5	165.0	226.4	368.2	247.9	271.0	280.6
44	112	140.5	151.3	170.0	232.8	378.3	254.6	279.0	288.6
46	114	144.7	156.1	175.0	239.4	388.7	261.5	286.0	296.6
47	116	148.9	161.1	180.0	246.1	399.2	268.4	294.0	304.9
48	118	153.2	166.1	185.0	252.9	410.0	275.5	302.0	313.3
49	120	157.7	171.3	191.0	259.9	420.9	282.7	311.0	321.9
50	122	162.2	176.6	196.0	267.0	432.1	290.1	319.0	330.7
51	124	166.7	182.0	202.0	274.3	443.5	297.6	328.0	339.7
52	126	171.4	187.5	207.0	281.6	455.1	305.2	336.0	348.9
53	128	176.2	193.1	213.0	289.1	466.9	312.9	345.0	358.2
54	130	181.0	198.9	219.0	296.8	478.9	320.8	354.0	367.8
56	132	185.9	204.7	225.0	304.6	491.2	328.9	364.0	377.6
57	134	191.0	210.7	231.0	312.5	503.7	337.1	373.0	387.5
58	136	196.1	216.8	237.0	320.6	516.4	345.4	383.0	397.7
59	138	201.3	223.0	243.0	328.9	529.4	353.9	392.0	408.1
60	140	206.6	229.4	250.0	337.3	542.5	362.6	402.0	418.7
61	142	212.0	235.8	256.0	345.8	556.0	371.4	413.0	429.6
62	144	217.5	242.4	263.0	354.5	569.6	380.4	423.0	440.6
63	146	223.1	249.2	269.0	363.3	583.6	389.5	434.0	451.9
64	148	228.8	256.0	277.0	372.3	597.7	398.9	444.0	462.0
66	150	234.6	263.0	283.0	381.5	612.1	408.4	449.0	475.3

The E Class Advantage

Are Compressor Hard Start Devices Needed?

Compressor hard start devices are a luxury item for service technicians to use in rectifying a myriad of compressor start problems. It is true that the majority of hard start device applications result from the marginal voltages delivered by electric utilities during peak demand periods. As the predominant application is air conditioning, the hard start device can serve as an insurance policy for compressor starts when voltages drop to 90% of rated line conditions. The ability to ensure a compressor start under low voltage conditions can serve to minimize the number of “nuisance” service calls and allow a service contractor to focus on true problem events.

As the air conditioning industry has expanded and diversified, numerous types and models of air conditioning units and compressors have entered the marketplace. This diverse proliferation has resulted in the need to provide a one-size-fits-all compressor start device. Investigations recently undertaken by SUPCO indicate that a start device should be closely matched to the compressor, and a one size for all approach may actually cause damage to a compressor if applied incorrectly. All SUPCO technology employs the appropriate safeguards to ensure against compressor damage due to misapplied start devices. This situation does not exist for most other start device manufacturers.

General Function

It is pertinent to discuss the general application and function of a hard start device. A capacitor in conjunction with a switching device (typically a relay) is introduced across the start windings of a single-phase compressor. Figure 1. illustrates the typical wiring arrangement for a 2-wire and a 3-wire connection.

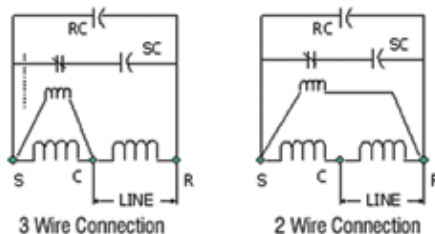


Figure 1. Wiring Configurations

When the compressor is called upon to start, the start capacitor provides a voltage boost to the start winding of the motor (effectively simulating the phasor lead/lag of a three-phase motor) and causes the motor rotor to turn. At some point, when the capacitor is released from the start winding, the motor continues to run.

In a 3 wire configuration, the potential relay opens at a manufacturer's specified voltage across the start winding of the motor, effectively removing the start capacitor from the circuit. A third wire is necessary to connect to the run winding. In a 2 wire configuration, the potential relay and start capacitor are connected across the run and start winding. The potential relay opens at a specified increment above line voltage, thus removing the start capacitor from the circuit. There is no need for a third wire.

The size of the capacitor significantly impacts the characteristics of the start winding. Figure 2. shows the generalized impedances for the compressor motor and start devices. As such, the start capacitor should be carefully matched to the specific compressor.

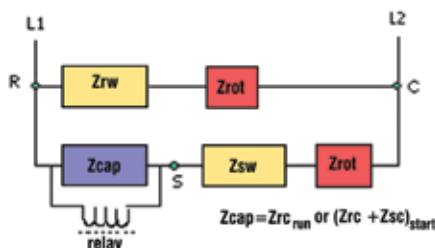


Figure 2.

2 Wire Potential Relay Equivalent Circuit

Hard Start Technology

Two main types of start devices exist in the marketplace today. SUPCO has developed a full range of products in both types to provide a customer with all applicable choices. Both types have their own desirable applications and each have specific advantages. The two types of start devices discussed below are

1. PTC – Positive Temperature Coefficient devices
2. Potential Relay devices – voltage sensing and current sensing

PTC Devices

The PTC device has been successfully employed in a number of applications for many years. SUPCO models SPP, SPP5, SPP6, SPP7S employ PTC technology to ensure that the start capacitor has dropped from the start circuit after an appropriate amount of time has elapsed. This device utilizes a ceramic element with a predictable thermal response to the introduction of electric current. As current is introduced across the start windings, the PTC element begins to warm. When the PTC device reaches approximately 250° F (corresponding to 0.6-0.8 seconds), the resistance in the element increases and creates an open switch that releases the start winding from the circuit. The 0.6-0.8 seconds that the PTC device allows the start windings to be engaged is generally enough time to enable the compressor to start. The advantage of this device is its simplicity. A two-wire connection between the run and start terminals on the compressor is all that is required to provide reliable starts in most cases.

However, this device has several limitations that should be considered if the application is critical.

- The PTC device has no ability to sense whether the compressor has actually started.
- The amount of time provided for a start boost is dictated solely by the temperature of the ceramic device, which has warmed due to the introduction of the starting current.
- If the compressor does not start before the temperature threshold has been reached, it will not start until the PTC device cycles through a cool-down period (usually 2 - 3 minutes). Many view this start approach as an appropriate safety measure. The PTC effectively limits the continued unsuccessful cycling of the start windings that can often result in a motor burnout. Others will argue that a start device should be able to re-cycle immediately. If this feature is desired, a PTC is not the correct start device application.

Potential Relay Devices

The Potential Relay start device has recently been the subject of considerable attention in the market place. Several manufacturers are promoting products with a variety of technologies. The primary distinction between the potential relay devices relates to a voltage sensing or current sensing capability.

The voltage sensing method monitors start winding developed voltage and actuates a mechanical or electronic potential relay to disengage the start capacitor. The electronic potential relay is inherently more reliable and precise than the older type mechanical potential relay. SUPCO employs voltage sensing technology with an electronic potential relay.

The current sensing approach senses current through the run winding and drops the start capacitor out of the circuit based upon a threshold value. Both methods have proven effective in providing devices that are able to “sense” when a compressor has started and thus providing more reliable compressor starts in marginal conditions. However, the current sensing method must employ an internal fuse to protect the motor from potential damage and is more difficult to connect than the 2-wire voltage sensing approach.

Capacitor Size

The proliferation of potential relay type devices has resulted in the notion that one capacitor can be employed to start all compressors. That is, use the biggest capacitor and give the compressor a “big kick” to get it started. The sensing characteristic will drop the capacitor out of the start circuit when necessary and thus the compressor will not be harmed. This idea, however, is flawed. The use of a capacitor that is too large for the impedance characteristics of the windings in some compressors can actually result in significant compressor damage. Recent investigations indicate that this situation is particularly evident in voltage sensing devices.

Figure 3. shows a successful compressor start. The run-start and start-common voltages increase to a maximum value and the total supply current drops to operating conditions when the start device is dropped from the circuit. While Figure 4. shows an unsuccessful (locked rotor) compressor start. In this figure, the run-start voltage never increases to a point indicating motor start. The total supply current remains at a maximum and the motor never starts.

Figure 3. Good Start

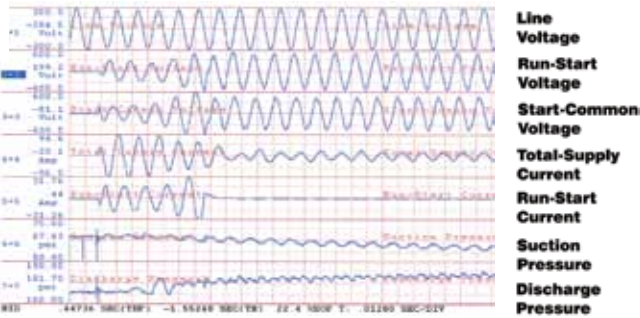
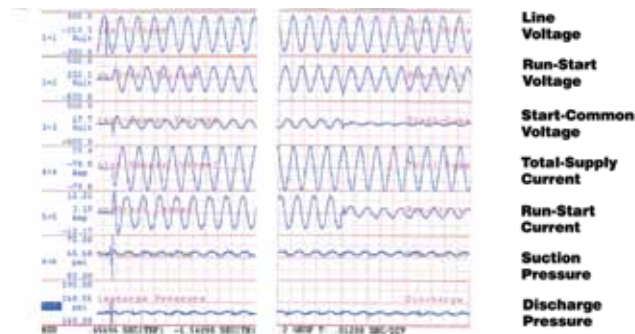
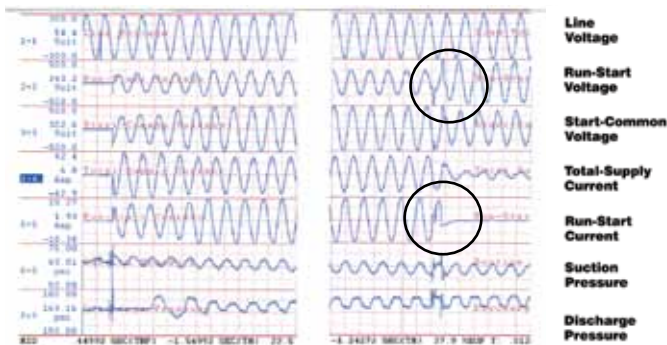


Figure 4. No Start



If the start capacitor is too large for the application, the capacitor can actually mask the developed voltage in the start windings and keep the start capacitor in the circuit continuously. Figure 5. illustrates a compressor start with a capacitor that is too large. The motor is actually running, but the run-start voltage is suppressed below the trigger voltage of the start device. As a result, the start capacitor remains in the circuit as the motor runs. A secondary, fail-safe method is necessary to ensure that the start device is ultimately removed from the circuit. This event can be seen at the end of the time duration of the run-start current highlighted in Figure 5.

Figure 5. Start with Oversized Capacitor with Safety Timing Circuit



A start device that fails to remove the start capacitor from the circuit has the potential to cause premature failure of the start windings in the compressor.

Figure 6 shows the same compressor start using an oversized capacitor without a safety timing circuit. The run-start voltage is suppressed by the combined characteristics of the motor windings and the extra large capacitor. It never reaches the prescribed threshold voltage defined by the internal relay for removing the start capacitor from the circuit. The total supply current remains near the locked rotor value even after the motor has started (as highlighted in Figure 6).



Figure 6. Start with Oversized Capacitor with out Safety Timing Circuit

If the capacitor is never removed from the start windings, premature winding failure could occur. As such, care should be taken when selecting capacitor sizes for an application. Care should also be taken regarding products that tout a “bigger capacitor is better” approach to compressor starting. SUPCO E-Class devices provide a secondary timing safety device to ensure that the start capacitor is dropped from the circuit in a fail-safe mode. Figure 5. also shows that the start winding voltage drops appropriately after the start capacitor has been removed in a SUPCO E-Class device.

The E Class Advantage

Compressor start devices are available in a variety of forms. Specific applications call for specific products. SUPCO is one of very few manufacturers in the marketplace who provide a complete line of start devices to fit any application. PTC devices fulfill and will continue to fulfill specific needs in the industry. Potential relay devices can be found in a wide assortment. Care should be employed in selecting potential relay devices to ensure that all state-of-the-art developments are included in the product. The SUPCO E-Class Series comprise the most advanced developments in start device technology:

1. Voltage sensing technology that monitors for motor start (current sensing devices require internal fuse protection).
2. A 2-wire connection that simplifies installation
3. A secondary timing circuit that ensures that the capacitor is not permanently left in the start winding circuit
4. A fully electronic device – minimizing the limitations of mechanical devices and secondary fusing associated with triac devices
5. A start device matched with an appropriately sized capacitor to cover the range of compressors for the intended application (one size does not fit all)

The use of compressor start devices results from a need to ensure that a compressor (usually air conditioning) will start under voltage conditions that are less than ideal. As discussed, several options exist in the market to address compressor start concerns. Start devices exist in many forms for specific applications. SUPCO provides a full range of products in all relevant technologies to effectively match the proper start device to the application. Care should be taken to utilize a device that meets the requirements of the job. Extra caution should be observed when employing the “one-size-fits-all” and “a bigger capacitor is better” approach to applying a start device. Consult SUPCO, a manufacturer with a complete product range, to ensure the greatest success in the start device application.

SUPCO HT Series Cross Reference to Potential Relay & Start Capacitor Combinations

110/220/330 V Capacitor	(88/106) & (108/130) μ F	(124/149) & (130/157) μ F (145/175), (161/193), (189/227) μ F	(216/259) & (270/324) μ F
Mars Potential Relay & Start Cap	SUPCO	SUPCO	SUPCO
63	HT70	HT80	HT100
64	HT70	HT80	HT100
65	HT70	HT80	HT100
66	HT70	HT80	HT100
67	HT70	HT80	HT100
68	HT70	HT80	HT100
69	HT70	HT80	HT100
70	HT70	HT80	HT100
71	HT70	HT80	HT100
Copeland Potential Relay & Start Cap	SUPCO	SUPCO	SUPCO
040-0001-00	HT70	HT80	HT100
040-0001-01	HT70	HT80	HT100
040-0001-03	HT70	HT80	HT100
040-0001-04	HT70	HT80	HT100
040-0001-05/940-0001-71	HT70	HT80	HT100
040-0001-08	HT70	HT80	HT100
040-0001-09	HT70	HT80	HT100
040-0001-10/940-0001-72	HT70	HT80	HT100
040-0001-11/040-0001-51	HT70	HT80	HT100
040-0001-12/040-0001-64	HT70	HT80	HT100
040-0001-17/040-0001-53	HT70	HT80	HT100
040-0001-18/040-0001-63	HT70	HT80	HT100
040-0001-19/040-0001-54	HT70	HT80	HT100
040-0001-20/040-0001-55	HT70	HT80	HT100
040-0001-22/940-0001-75	HT70	HT80	HT100
040-0001-23/940-0001-76	HT70	HT80	HT100
040-0001-24/940-0001-77	HT70	HT80	HT100
040-0001-25	HT70	HT80	HT100
040-0001-27/940-0001-78	HT70	HT80	HT100
040-0001-30	HT70	HT80	HT100
040-0001-31/040-0001-52	HT70	HT80	HT100
040-0001-34/040-0001-68	HT70	HT80	HT100
040-0001-35/040-0001-59	HT70	HT80	HT100
040-0001-36/040-0001-58	HT70	HT80	HT100
040-0001-37/040-0001-70	HT70	HT80	HT100
040-0001-38/040-0001-60	HT70	HT80	HT100
040-0001-41/040-0001-80	HT70	HT80	HT100
040-0001-43/940-0001-84	HT70	HT80	HT100
040-0001-46/940-0001-85	HT70	HT80	HT100
040-0001-48/940-0001-48	HT70	HT80	HT100
040-0001-49/940-0001-49	HT70	HT80	HT100
040-0001-50/940-0001-50	HT70	HT80	HT100
040-0001-51/940-0001-51	HT70	HT80	HT100
040-0001-52/9400001-52	HT70	HT80	HT100
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040-0001-70	HT70	HT80	HT100
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040-0001-72	HT70	HT80	HT100
040-0001-73	HT70	HT80	HT100
040-0001-74	HT70	HT80	HT100
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040-0001-76	HT70	HT80	HT100
040-0001-77	HT70	HT80	HT100
040-0001-78	HT70	HT80	HT100
040-0001-79/940-0001-79	HT70	HT80	HT100
040-0001-80/940-0001-80	HT70	HT80	HT100
040-0001-82	HT70	HT80	HT100
040-0001-83	HT70	HT80	HT100
040-0001-84	HT70	HT80	HT100
040-0001-85	HT70	HT80	HT100

SUPCO HT Series Cross Reference to Potential Relay & Start Capacitor Combinations

110/220/330 V Capacitor	(88/106) & (108/130) μ F	(124/149) & (130/157) μ F	(145/175), (161/193), (189/227) μ F	(216/259) & (270/324) μ F
Copeland Potential Relay & Start Cap	SUPCO	SUPCO	SUPCO	SUPCO
040-0001-85	HT70	HT80	HT100	HT100
040-0001-86	HT70	HT80	HT100	HT100
040-0001-87	HT70	HT80	HT100	HT100
040-0001-88	HT70	HT80	HT100	HT100
040-0001-89	HT70	HT80	HT100	HT100
040-0007-00	HT70	HT80	HT100	HT100
040-0007-02	HT70	HT80	HT100	HT100
040-0007-04/940-0007-04	HT70	HT80	HT100	HT100
040-0046-00/940-0046-18	HT70	HT80	HT100	HT100
040-0046-01/940-0046-19	HT70	HT80	HT100	HT100
040-0046-02	HT70	HT80	HT100	HT100
040-0046-05/999-9999-99	HT70	HT80	HT100	HT100
040-0046-07	HT70	HT80	HT100	HT100
040-0046-08/940-0046-20	HT70	HT80	HT100	HT100
040-0046-09/940-0046-21	HT70	HT80	HT100	HT100
040-0046-10/940-0046-10	HT70	HT80	HT100	HT100
Tecumseh Potential Relay & Start Cap	SUPCO	SUPCO	SUPCO	SUPCO
P82960	HT70	HT80	HT100	HT100
P82961	HT70	HT80	HT100	HT100
P82962	HT70	HT80	HT100	HT100
P82963	HT70	HT80	HT100	HT100
P82964	HT70	HT80	HT100	HT100
P82965	HT70	HT80	HT100	HT100
P82966	HT70	HT80	HT100	HT100
P82967	HT70	HT80	HT100	HT100
P82968	HT70	HT80	HT100	HT100
P82969	HT70	HT80	HT100	HT100
P82970	HT70	HT80	HT100	HT100
P82972	HT70	HT80	HT100	HT100
P82973	HT70	HT80	HT100	HT100
Bristol Potential Relay & Start Cap	SUPCO	SUPCO	SUPCO	SUPCO
650058	HT70	HT80	HT100	HT100
650097	HT70	HT80	HT100	HT100
650143	HT70	HT80	HT100	HT100
650153	HT70	HT80	HT100	HT100
650155	HT70	HT80	HT100	HT100
650160	HT70	HT80	HT100	HT100
650169	HT70	HT80	HT100	HT100
350304	HT70	HT80	HT100	HT100
650409	HT70	HT80	HT100	HT100
650410	HT70	HT80	HT100	HT100
650512	HT70	HT80	HT100	HT100
650567	HT70	HT80	HT100	HT100
650568	HT70	HT80	HT100	HT100
650569	HT70	HT80	HT100	HT100
650570	HT70	HT80	HT100	HT100
650571	HT70	HT80	HT100	HT100
650855	HT70	HT80	HT100	HT100
650879	HT70	HT80	HT100	HT100
650887	HT70	HT80	HT100	HT100
650889	HT70	HT80	HT100	HT100
650919	HT70	HT80	HT100	HT100
650926	HT70	HT80	HT100	HT100
650929	HT70	HT80	HT100	HT100
650942	HT70	HT80	HT100	HT100
950943	HT70	HT80	HT100	HT100
650944	HT70	HT80	HT100	HT100
650945	HT70	HT80	HT100	HT100
650946	HT70	HT80	HT100	HT100
650947	HT70	HT80	HT100	HT100
650948	HT70	HT80	HT100	HT100
650949	HT70	HT80	HT100	HT100
650950	HT70	HT80	HT100	HT100
650951	HT70	HT80	HT100	HT100
650959	HT70	HT80	HT100	HT100
650962	HT70	HT80	HT100	HT100
650965	HT70	HT80	HT100	HT100
650968	HT70	HT80	HT100	HT100
650971	HT70	HT80	HT100	HT100
650972	HT70	HT80	HT100	HT100
650975	HT70	HT80	HT100	HT100
650976	HT70	HT80	HT100	HT100
650977	HT70	HT80	HT100	HT100
650978	HT70	HT80	HT100	HT100
650979	HT70	HT80	HT100	HT100

SUPCO HT Series Cross Reference to Potential Relay & Start Capacitor Combinations

110/220/330 V Capacitor	(88/106) & (108/130) μ F	(124/149) & (130/157) μ F	(216/259) & (270/324) μ F
White Rodgers/RBM Potential Relay & Start Cap Cross Reference To Supco			
90-1	HT70	HT80	HT100
90-2	HT70	HT80	HT100
90-3	HT70	HT80	HT100
90-4	HT70	HT80	HT100
90-5	HT70	HT80	HT100
90-6	HT70	HT80	HT100
90-7	HT70	HT80	HT100
90-8	HT70	HT80	HT100
90-9	HT70	HT80	HT100
90-10	HT70	HT80	HT100
90-11	HT70	HT80	HT100
90-12	HT70	HT80	HT100
90-13	HT70	HT80	HT100
90-14	HT70	HT80	HT100
90-15	HT70	HT80	HT100
90-16	HT70	HT80	HT100
90-17	HT70	HT80	HT100
90-18	HT70	HT80	HT100
90-19	HT70	HT80	HT100
90-20	HT70	HT80	HT100
90-21	HT70	HT80	HT100
90-22	HT70	HT80	HT100
90-23	HT70	HT80	HT100
90-24	HT70	HT80	HT100
90-25	HT70	HT80	HT100
90-26	HT70	HT80	HT100
90-27	HT70	HT80	HT100
90-40	HT70	HT80	HT100
90-41	HT70	HT80	HT100
90-63	HT70	HT80	HT100
90-64	HT70	HT80	HT100
90-65	HT70	HT80	HT100
90-66	HT70	HT80	HT100
90-67	HT70	HT80	HT100
90-68	HT70	HT80	HT100
90-69	HT70	HT80	HT100

SUPCO To OEM Cross Reference

SUPCO	Kickstart	Coleman/Fraser Johnson/Luxaire/Source One	
HT70	KS8	024-32005-000	
HT80	TO5	024-31994-000	
HT90	MP1	N/A	
HT100	KS1	024-31995-000	
SUPCO	Intercity Products	Maneurop/Danfoss	Rheem/Ruud
HT70	N/A	N/A	42KS8
HT80	1160725	N/A	42-102004-02-00
HT90	N/A	7305543	N/A
HT100	N/A	N/A	42-102004-01-00
SUPCO	Trane	Whirlpool	York
HT70	N/A	8088840	N/A
HT80	CPT00697	8088838	161485
HT90	N/A	N/A	N/A
HT100	KIT2786	8088839	N/A
SUPCO	Goodman	Lennox	
HT70	N/A	N/A	
HT80	TO5	89P36	
HT90	N/A	N/A	
HT100	KS1	77N48	

SUPCO To Wholesale Cross Reference

SUPCO	Kickstart	Barsco	Fidelitone
HT70	KS8	N/A	N/A
HT80	TO5	3370020	96--TO-5P
HT90	MP1	N/A	N/A
HT100	KS1	33770010	N/A
SUPCO	Insko	Johnson Supply	Johnstone
HT70	4680110	N/A	B13-545
HT80	4680500	509950	B11-947
HT90	N/A	N/A	B12-856
HT100	4680098	509710	B12-855
SUPCO	Protech		
HT70	42-KS8		
HT80	42-TO5		
HT90	N/A		
HT100	42-KS1		

SCM/SCMPLUS - Surge Protector Installation, Warranty & Connected Equipment Guarantee Information

INSTALLATION INSTRUCTIONS:

*Note: The SCMPLUS uses an LED diagnostics connected at each phase wire to indicate power, ground and surge protection activity.
LED Sequence

1 LED = 120 VAC L-G operation

2 LED = 240 VAC L-L operation

These devices do not protect electronic appliances such as TV's, computers, microwaves, etc. They only protect dedicated electromechanical devices such as air conditioners. If whole house protection is required use SUPCO p/n DTK-WH5. Which will protect AC power, coaxial and two telephone lines.

WIRING DIAGRAM:

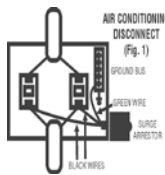
These devices include two black wires and one green wire. A surge protector works by shunting the voltage surge to ground. A good ground is imperative. The National Electric Code (NEC) maximum resistance at ground is 25 ohms.

240 Volt Wiring	120 Volt Wiring
Black to Hot	Black to Hot
Black to Hot	Black to Neutral
Green to Ground	Green to Ground

A/C Disconnect Installation (For HVAC Applications): (Fig. 1)

Although the SCM or SCMPLUS can be installed at the main breaker panel, SUPCO recommends installation at the service disconnect for the A/C condenser. The surge arrester is a simple three (3) wire installation that should take no more than 5 minutes to complete.

1. Turn off the main power to the service disconnect and meter test for safety.
2. Remove a knockout from the disconnect.
3. Remove the retaining ring from the nipple on the SCM or SCM PLUS.
4. Feed the nipple and wire into the service disconnect.
5. Re-secure with the retaining ring.
6. Route the green wire to the Grounding lug and secure.
7. Securely 'Piggyback' them



Once power is restored the green LED will light (SCM PLUS Only) to indicate SURGE PROTECTION PRESENT.

Electrical Panel Installation: (Fig. 2)

1. Turn off main breaker
2. Remove the front cover from the panel.
3. Remove 3/4" knockout on side of panel box.
4. Mount unit through the knockout to the side of the panel.
5. Secure green wire to the grounding bus.
6. Connect the black wires to the load side of the closest two pole breaker.
7. Connected wiring must be kept short.
8. Replace front cover of panel box.

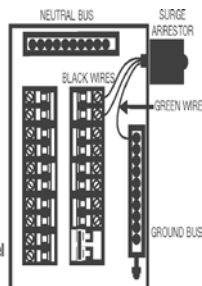
INSTALLATION TIPS:

1. Never sharply bend the surge arrester wires during termination. Offer the surge as straight a pathway to ground as possible.
2. Always keep the surge arrester wires as short as possible to increase the effectiveness and response time of the unit.
3. Always keep the protector at least 3 ft. from the equipment that you want to protect. This allows response time for the protector to do its job before the transient gets to the protected equipment.

FOR FURTHER INFORMATION
CONTACT TECHNICAL SUP-

PORT AT
1-800-333-9125

Electrical Panel
(Fig. 2)



LIMITED LIFETIME WARRANTY FOR STANDARD INDOOR RESIDENTIAL AND COMMERCIAL SURGE PROTECTORS

Thank you for choosing a SUPCO surge protection product to protect your equipment. You will be pleased to know that SUPCO surge arrestors will proved you with years of security and protection.

LIMITED LIFETIME WARRANTY AGAINST MANUFACTURING DEFECTS; SUPCO warrants these surge arrestors to be free of all defects in workmanship or material for the lifetime of the original purchaser, and that SUPCO will repair or replace any defective unit. Warranty registration must be filled out complete and mailed to SUPCO within 15 days of installation.

SUPCO surge arrestors are designed to dissipate the damaging effects of momentary voltage spikes or other transient power surges including impulses from lightning. They are not warranted against direct lightning, continuous over voltage, over current nor dropped neutrals.

Proper Installation:

SUPCO AC surge arrestors must be connected in accordance with SUPCO's installation instructions. Building wiring must conform to National Electric Code or Canadian Electric Code. All wires leading into the protected equipment must pass through a single SUPCO surge arrester.

CONNECTED EQUIPMENT GUARANTEE SUPCO SCM & SCMPLUS

Connected Equipment Guarantee:

SUPCO will replace or pay to repair, up to \$500 per occurrence* with a lifetime cap of \$10,000, any electromechanical or motor-driven appliance that is damaged by a voltage surge passing through the surge protector to the equipment. The SUPCO Surge Protector must show signs of surge damage or be operating outside of design specifications. In order to be eligible for this connected equipment coverage the surge protector must be installed in the immediate vicinity of the equipment being protected. For instance, an A/C compressor unit must be protected inside the compressor box or no further away than the disconnect. The inside air handler may be protected at the nearest panel box but inside the same building.

Period of coverage: 3 years from date of installation.

*** \$500 per occurrence for the SCM.**

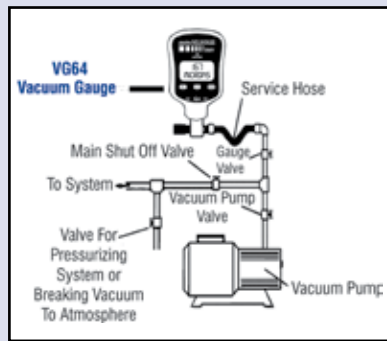
*** \$1000 per occurrence for the SCMPLUS.**

Claim Procedure:

If you want to make a claim you must first contact customer service at 1-800-333-9125 for a return authorization number to return the defective surge protector. You must notify SUPCO at this time if you believe you have a connected equipment claim. SUPCO will send you an information packet to be completed and returned within 20 days. SUPCO reserves the right to inspect the damaged equipment. Once SUPCO has determined that you are entitled to compensation for your claim, SUPCO will at its option, pay the present fair market value of the damaged equipment, send you replacement equipment or pay for the cost of the repair. All of the foregoing is subject to a cap of \$500.00 per occurrence for the SCM and \$1000.00 per occurrence for the SCMPLUS, with a lifetime cap of \$10,000 for both.

Commercial Refrigeration Condensate Evaporator Pans Cross Reference

SUPCO NO.	FISHER EVAPOWAY P/N	BIRMINGHAM
CP801	DM04T-1S	840111
CP804	DM10M-S1	810134
CP804-240	DM10M-3S	***
CP802	DM08S-1S	880111
CP804HD	DM10W-1D	810114
CP804HD-240	DM10W-3D	***
CP807	DM10W-1S	***
CP815	DM15WW-1D	815134
CP807-240	DM10W-3	810244
CP815-240	DM15WW-3	815244
CP816	DM05W1D	850114
CP817	DM10W2D	810214
CP818	DM10W2S	***
CP819	DM15W1D	815114
CP820	DM15W2D	815214
CP821	DM15WW2D	815234



Application Note: CONNECTING THE VG64 TO THE VACUUM SYSTEM

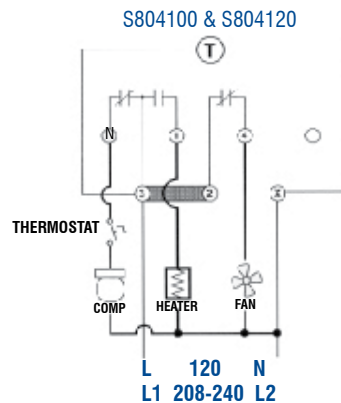
A vacuum gauge should be connected to the vacuum system at the vacuum port. The "Auxiliary Port" is primarily for cleaning and should normally be closed with the supplied cap. It is possible to connect the vacuum gauge in-line, however, it may restrict flow and increase the evacuation time.

CHECKING HVAC SYSTEMS FOR LEAKS CHECKING HVAC SYSTEMS FOR

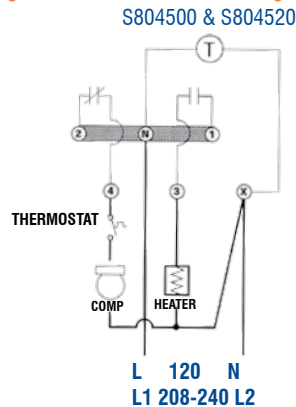
When checking a system for leaks use only copper tubing and a vacuum proof valve. Generally, standard hoses will not hold a vacuum. If using the blank-off valve on the vacuum pump check it for leaks periodically. At the beginning of the test the vacuum gauge reading may increase due to a system equalization. The vacuum reading should hold after a minimum of 5 minutes. If the reading continues to increase it may indicate a leak in the system.

Commercial Defrost Control Wiring Diagrams

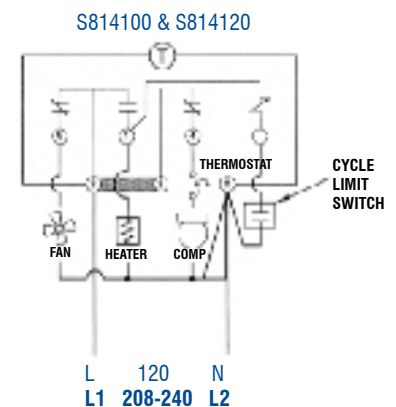
Wiring Diagrams Electric Heat Defrosting S8041 & S8045 Series



Fan and compressor loads not to exceed 2 hp. Heater not to exceed 4000 watts at 120V AC or 8000 watts at 240V AC.

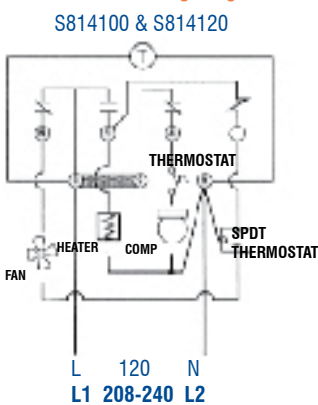


Heater not to exceed 4000 watts at 120V AC or 8000 watts at 240V AC.

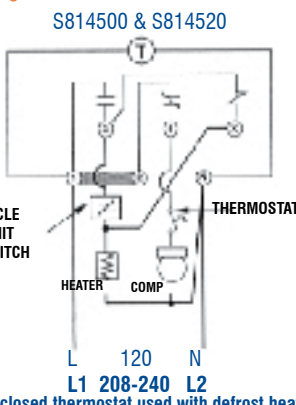


Wiring using 120V or 240V single phase line with auxiliary fan circuit.

Wiring Diagrams Electric Heat Defrosting S8141 & S8145 Series

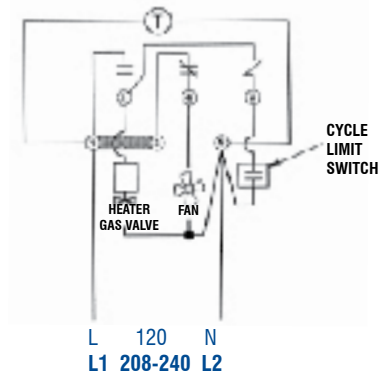


Wiring using differential of SPDT thermostat to delay fan after defrosting.



Normally closed thermostat used with defrost heater. Wiring using 120V or 240V single phase line compressor voltage common to timer.

Wiring Diagrams Hot Gas Defrosting S8145Series S814500 & S814520



Wiring using 120V or 240V single phase line compressor thermostat closed during defrost.