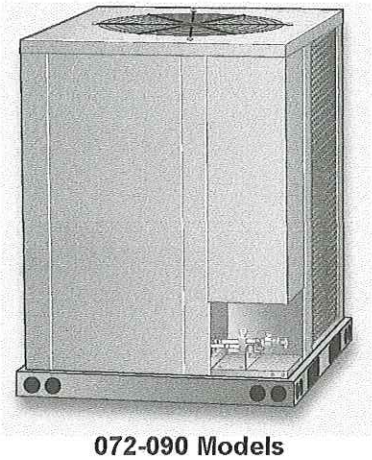
ALLIED™ Commercial

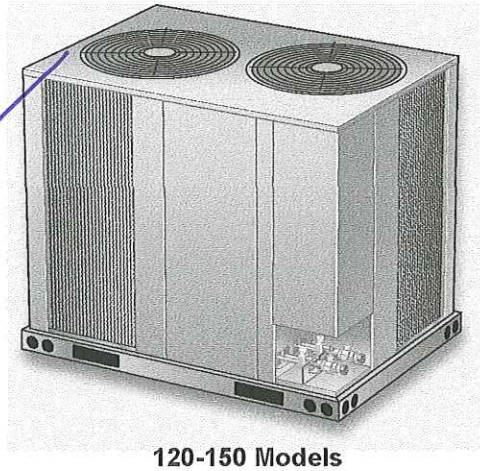
AIR CONDITIONERS
TS
T-SERIES SPLIT SYSTEM UNITS
R-410A - 60 HZ

Bulletin No. TSA-072-240 (11/2016)

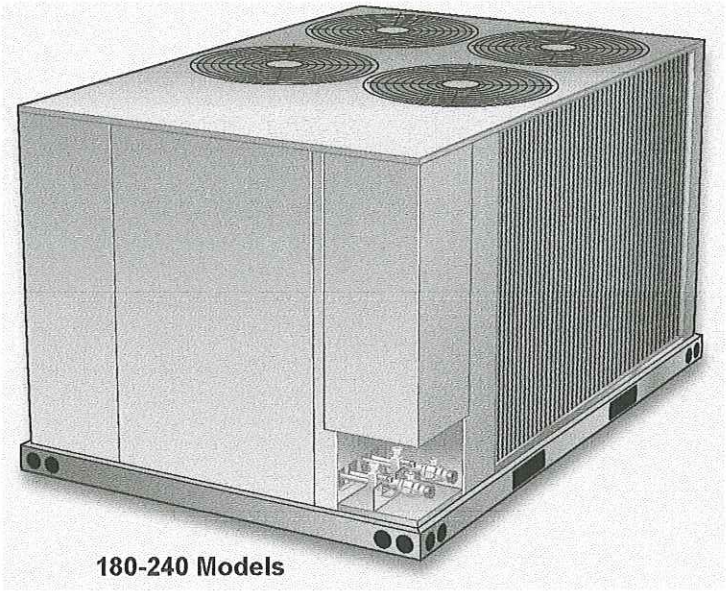
PRODUCT SPECIFICATIONS



072-090 Models



120-150 Models



180-240 Models

EER up to 11.7
6 to 20 Tons
Cooling Capacity - 71,000 to 236,000 Btuh

MODEL NUMBER IDENTIFICATION

T S A 120 S 4 S N 1 Y

Brand/Family
T = T-Series Product Line

Unit Type
S = Split System Air Conditioner

Major Design Sequence
A = 1st Generation
B = 2nd Generation

Nominal Cooling Capacity – Tons
072 = 6 Tons
090 = 7.5 Tons
120 = 10 Tons
150 = 12.5 Tons
180 = 15 Tons
240 = 20 Tons

Cooling Efficiency
S = Standard Efficiency

Refrigerant Type
4 = R-410A

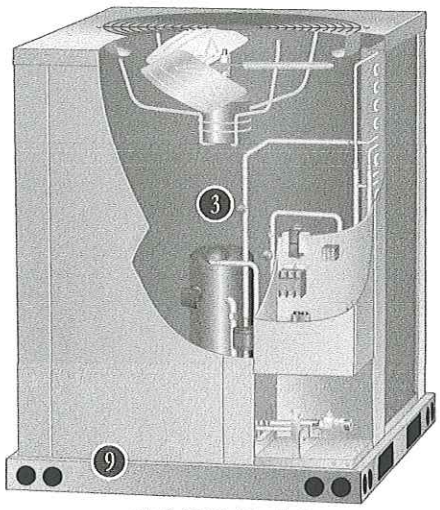
Refrigerant Circuits
S = Single Circuit
D = Dual Circuits

Part Load Capability
N = Single Stage Compressor

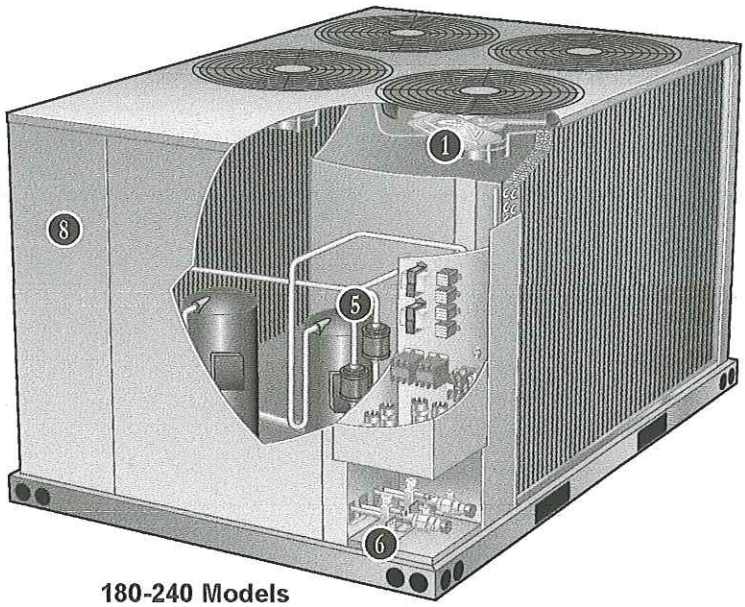
Minor Design Sequence
1 = 1st Revision
2 = 2nd Revision
3 = 3rd Revision

Voltage
Y = 208/230V-3 phase-60hz
G = 460V-3 phase-60hz
J = 575V-3 phase-60hz

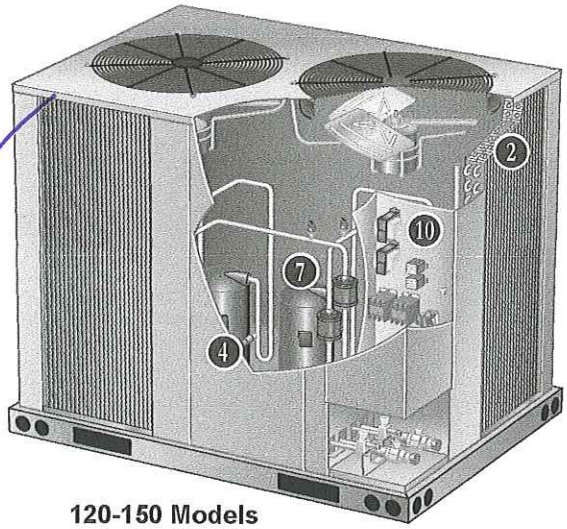
FEATURES AND BENEFITS



072-090 Models



180-240 Models



120-150 Models

CONTENTS

EQUIPMENT WARRANTY

Compressor - Limited warranty for five years in non-residential applications.

All other covered components - One year in non-residential applications.

Refer to Allied Equipment Limited Warranty certificate for specific details.

APPLICATIONS

Air conditioners are available in 6, 7.5, 10 ton (one compressor) and 10, 12.5, 15 and 20 ton (two compressors) nominal sizes.

Matching air handlers provide a wide range of cooling capacities and applications. See AHRI Ratings tables.

See Air Handlers sections for data.

Units shipped completely factory assembled, piped, and wired. Each unit is test operated at the factory insuring proper operation.

Installer must set air conditioner, connect refrigerant lines, add refrigerant charge and make electrical connections to complete job.

APPROVALS

All units tested in an ETL certified environmental testing facility.

AHRI Certified to AHRI Standard 340/360-2007.

Sound tested in accordance with test conditions included in AHRI Standard 270-95 or 370-2001.

Units and components within are bonded for grounding to meet safety standards for servicing required by UL, ULC, NEC and CEC.

All units are ETL listed.

ISO 9001 Registered Manufacturing Quality System.

FEATURES AND BENEFITS

REFRIGERATION SYSTEM

Refrigerant
Units operate with chlorine-free,ozone friendly, R-410A (field furnished).

1 Outdoor Coil Fan(s)
TSA072 and TSA090 units have one outdoor fan.
TSA120 and TSA150 units have two outdoor fans.
TSA180 and TSA240 units have four outdoor fans.

Direct drive fan(s) moves large volumes of air uniformly through entire condenser coil(s) for high refrigerant cooling capacity.

Upward discharge of air reduces operating sound levels and prevents damage to lawns, shrubs, and walkways.

Fan motors are totally enclosed, overload protected and equipped with a rain shield.

Fan service access is accomplished by removal of fan guard(s) or removal of access panel.

2 Copper Tube/Enhanced Fin Coil(s)
Units are equipped with a wrap-around "U" shaped coil (072-090-120 models) or two "L" shaped coils (150-180-240 models).

Coils are constructed of precisely spaced ripple-edge aluminum fins machine fitted to seamless copper tubes.

Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.

Fins equipped with collars that grip tubing for maximum contact area.

Flared shoulder tubing connections and machine brazed silver soldering provide tight, leakproof joints.

Long life copper tubing is corrosion-resistant and easy to field service.

Thoroughly factory tested under high pressure to ensure leakproof construction.

Completely accessible for cleaning.

3 High Pressure Switch
Shuts off unit if abnormal operating conditions cause discharge pressure to rise above setting.

Protects the compressor from excessive condensing pressure.

Manual reset.

4 Loss of Charge Switch
Shuts off unit if liquid line pressure falls below setting.

Provides loss of charge and freeze-up protection.

Automatic reset.

5 Hi-Capacity Drier(s)
Drier traps moisture or dirt that could contaminate the refrigerant system.

6 Refrigerant Lines and Service Valves
Suction and liquid lines are located on corner of unit cabinet and are made with sweat connections. See dimension drawings.

Fully serviceable suction and liquid line service valves provide complete service access to refrigerant system.

Suction valve can be fully shut off, while liquid valve can be front seated to manage refrigerant charge while servicing system. Accessible outside of unit cabinet.

7 COMPRESSORS

TSA072, TSA090 and TSA120S4S models feature a single scroll compressor. TSA120S4D, TSA150, TSA180 and TSA240 models have two scroll compressors.

Compressor features high efficiency with uniform suction flow, constant discharge flow and high volumetric efficiency and quiet operation.

Compressor consists of two involute spiral scrolls matched together to generate a series of crescent shaped gas pockets between them.

During compression, one scroll remains stationary while the other scroll orbits around it.

Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates.

As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced.

When pocket reaches the center, gas is now high pressure and is forced out of a port located in the center of the fixed scrolls.

During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle.

Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency.

Scroll compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged.

Low gas pulses during compression reduces operational sound levels.

Compressor motor is internally protected from excessive current and temperature.

Compressor is installed in the unit on resilient rubber mounts for vibration free operation.

Crankcase Heater(s) (All Models)
Crankcase heater(s) prevents migration of liquid refrigerant into compressor(s) and ensures proper compressor lubrication.

FEATURES AND BENEFITS

CABINET

8 Heavy-gauge, pre-painted steel cabinet provides superior rust and corrosion protection.

Removable panels allow access for unit servicing.

9 Heavy duty steel base channels raise the unit off of mounting surface away from damaging moisture.

Unit lifting holes and forklift slots furnished in base rails.

See dimension drawings.

10 **Control Box**
Control box located in separate compartment in unit cabinet .

All controls are pre-wired at the factory.

Control box is large enough for field installed DDC or other field supplied control modules.

Options/Accessories

Factory Installed

Corrosion Protection
Polymeric epoxy coating that is deposited by electrical transport (electrophoresis), using a process known as electrocoat (e-coat). Available for enhanced coil corrosion protection. Factory installed on the condenser coil. Painted base pan is provided with this option.

Field Installed

Combination Coil/Hail Guards
Heavy gauge steel frame painted to match cabinet with expanded metal mesh to protect the outdoor coil from damage.

CONTROLS

Options/Accessories

Field Installed

Low Ambient Control
Air conditioning units operate satisfactorily down to 30°F outdoor air temperature without any additional controls.

Low Ambient Control Kit can be field installed, allowing unit operation down to 0°F.

Thermostat
Thermostat is not furnished with unit and must be ordered extra.

SOUND DATA

[1] Unit Model No.	Octave Band Linear Sound Power Levels dB, re 10^{-12} Watts Center Frequency - HZ								[1] Sound Rating Number (dB)
	63	125	250	500	1000	2000	4000	8000	
TSA072S4S	60	65	68	73	76	72	68	63	81
TSA090S4S	56	64	69	73	77	74	70	63	81
TSA120S4S	61	70	77	82	81	77	75	71	86
TSA120S4D	65	71	77	80	80	77	72	67	85
TSA150S4D	62	68	77	80	82	78	73	65	86
TSA180S4D	66	73	80	83	83	79	74	66	88
TSA240S4D	66	73	80	85	84	80	78	74	89

NOTE - the octave sound power data does not include tonal correction.
[1] Tested according to AHRI Standard 270-2008 test conditions.

SPECIFICATIONS - 6 - 7.5 TON

General Data		TSA072S4S	TSA090S4S
	Model No.		
	Nominal Size - Tons	6	7.5
Connections (sweat)	Liquid line - in. (o.d)	(1) 5/8	(1) 5/8
	Suction line - in. (o.d)	(1) 1-1/8	(1) 1-1/8
Refrigerant (R-410A)		Factory installed R-410A holding charge (2 lb. per stage)	
	Field provided charge with 25 ft. line set	10 lbs. 0 oz.	15 lbs. 0 oz.
Condenser Coil	Net face area - sq. ft. Outer coil	29.3	29.3
	Inner coil	- - -	28.4
	Tube diameter - in. & no. of rows	3/8 - 1	3/8 - 2
	Fins per inch	20	20
Condenser Fan(s)	Diameter - in. & no. of blades	(1) 24 - 3	(1) 24 - 4
	Motor hp	(1) 1/3	(1) 1/2
	Total air volume - cfm	5100	5600
	Rpm	1075	1075
	Watts	430	580

ELECTRICAL DATA

	Line voltage data - 60 hz - 3 phase	208/230V	460V	575V	208/230V	460V	575V
	[2] Maximum Overcurrent Protection (amps)	45	20	15	50	25	20
	[3] Minimum circuit ampacity	27	14	11	35	17	13
Compressor	No. of Compressors	1	1	1	1	1	1
	Rated load amps	19	9.7	7.4	25	12.2	9
	Locked rotor amps	123	62	50	164	100	78
Condenser Fan Motor (1 phase)	No. of motors	1	1	1	1	1	1
	Full load amps	2.4	1.3	1	3	1.5	1.2
	Locked rotor amps	4.7	2.4	1.9	6	3	2.9

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

[2] HACR type circuit breaker or fuse.

[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

SPECIFICATIONS - 10 TON

General Data		TSA120S4S	TSA120S4D
	Model No.		
	Nominal Size - Tons	10	10
Connections (sweat)	Liquid line - in. (o.d)	(1) 5/8	(2) 5/8
	Suction line - in. (o.d)	(1) 1-3/8	(2) 1-1/8
Refrigerant (R-410A)		Factory installed R-410A holding charge (2 lb. per stage)	
	Field provided charge with 25 ft. line set	16 lbs. 0 oz.	18 lbs. 0 oz.
Condenser Coil	Net face area - sq. ft. Outer coil	29.3	29.3
	Inner coil	28.4	28.4
	Tube diameter - in. & no. of rows	3/8 - 2	3/8 - 2
	Fins per inch	20	20
Condenser Fan(s)	Diameter - in. & no. of blades	(2) 24 - 3	(2) 24 - 3
	Motor hp	(2) 1/3	(2) 1/3
	Total air volume - cfm	8300	8300
	Rpm	1075	1075
	Watts	830	830

ELECTRICAL DATA

	Line voltage data - 60 hz - 3 phase	208/230V	460V	575V	208/230V	460V	575V
	[2] Maximum Overcurrent Protection (amps)	70	40	25	50	25	20
	[3] Minimum circuit ampacity	43	24	18	41	21	15
Compressor	No. of Compressors	1	1	1	2	2	2
	Rated load amps (total)	30.1	16.7	12.2	18 (32)	7.8 (15.6)	5.7 (11.4)
	Locked rotor amps (total)	225	114	80	110 (220)	52 (104)	38.9 (77.8)
Condenser Fan Motor (1 phase)	No. of motors	2	2	2	2	2	2
	Full load amps (total)	2.4 (4.8)	1.3 (2.6)	1 (2)	2.4 (4.8)	1.3 (2.6)	1 (2)
	Locked rotor amps (total)	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

[2] HACR type circuit breaker or fuse.

[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

SPECIFICATIONS - 12.5 - 20 TON

		TSA150S4D	TSA180S4D	TSA240S4D
General Data	Model No.			
	Nominal Size - Tons	12.5	15	20
Connections (sweat)	Liquid line - in. (o.d)	(2) 5/8	(2) 5/8	(2) 5/8
	Suction line - in. (o.d)	(2) 1-1/8	(2) 1-1/8	(2) 1-3/8
Refrigerant (R-410A)		Factory installed R-410A holding charge (2 lb. per stage)		
Field provided charge with 25 ft. line set		19 lbs. 0 oz.	27 lbs. 0 oz.	33 lbs. 0 oz.
Condenser Coil	Net face area - sq. ft. Outer coil	34.2	58.7	58.7
	Inner coil	33.3	57.7	57.7
	Tube diameter - in. & no. of rows	3/8 - 2	3/8 - 2	3/8 - 2
	Fins per inch	20	20	20
Condenser Fan(s)	Diameter - in. & no. of blades	(2) 24 - 4	(4) 24 - 3	(4) 24 - 3
	Motor hp	(2) 1/2	(4) 1/3	(4) 1/3
	Total air volume - cfm	10,300	16,600	16,600
	Rpm	1075	1075	1075
	Watts	1130	1660	1660

ELECTRICAL DATA

Line voltage data - 60 hz - 3 phase	208/230V	460V	575V	208/230V	460V	575V	208/230V	460V	575V
[2] Maximum Overcurrent Protection (amps)	60	30	25	90	40	30	100	50	40
[3] Minimum circuit ampacity	49	25	20	66	33	25	78	43	32
Compressor No. of Compressors	2	2	2	2	2	2	2	2	2
Rated load amps (total)	19 (38)	9.7 (19.4)	7.4 (14.8)	25 (50)	12.2 (24.4)	9 (18)	30.1 60.2)	16.7 (33.4)	12.2 (24.8)
Locked rotor amps (total)	123 (246)	62 (124)	50 (100)	164 (328)	100 (200)	78 (156)	225 (450)	114 (228)	80 (160)
Condenser Fan Motor (1 phase) No. of motors	2	2	2	4	4	4	4	4	4
Full load amps (total)	3 (6)	1.5 (3)	1.2 (2.4)	2.4 (9.6)	1.3 (5.2)	1 (4)	2.4 (9.6)	1.3 (5.2)	1 (4)
Locked rotor amps (total)	6 (12)	3 (6)	2.9 (5.8)	4.7 (18.8)	2.4 (9.6)	1.9 (7.6)	4.7 (18.8)	2.4 (9.6)	1.9 (7.6)

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

[2] HACR type circuit breaker or fuse.

[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

OPTIONS / ACCESSORIES

Item		Catalog No.	072S4S	090S4S	120S4S	120S4D	150S4D	180S4D	240S4D
CABINET									
Combined Coil/Hail Guards	T2GARD51L-1	13T29	X	X					
	T2GARD51M11	13T30			X	X			
	T2GARD51M21	13T32					X		
	T2GARD51N-1	13T37						X	X
Corrosion Protection		Factory	O	O	O	O	O	O	O
CONTROLS									
Low Ambient Control (0°F)	T2CWKT01LM1-	44W17	X	X	X				
	T2CWKT02M-1-	44W18				X	X		
	T2CWKT03N-1-	44W19						X	X

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.

O - Factory Installed with extended lead time.

X - Field Installed

AHRI SYSTEM MATCHES

Model	Cooling Btuh	EER	IEER	Air Handler	Expansion Device	AHRI Reference
TSA072S4S	71,000	11.20	12.50	TAA072S4S	Factory TXV	3288534
TSA090S4S	89,000	11.20	12.10	TAA090S4D	Factory TXV	3288545
TSA090S4S	92,000	11.30	12.30	TAA120S4D	Factory TXV	3288546
(2)TSA090S4S	172,000	11.00	11.40	TAA180S4D	Factory TXV	3293561
TSA120S4S	113,000	11.20	11.40	TAA120S4D	Factory TXV	3288550
(2)TSA120S4S	222,000	11.00	11.30	TAA240S4D	Factory TXV	3293565
TSA120S4D	115,000	11.20	11.40	TAA120S4D	Factory TXV	3288549
TSA150S4D	136,000	11.00	11.20	TAA120S4D	Factory TXV	3288551
TSA150S4D	136,000	11.00	11.20	TAA150S4D	Factory TXV	3288552
TSA150S4D	142,000	11.20	11.20	TAA180S4D	Factory TXV	3288553
TSA180S4D	190,000	11.40	13.30	[1] (2)TAA090S4D	Factory TXV	3293572
TSA180S4D	178,000	11.00	11.50	TAA180S4D	Factory TXV	3288554
TSA180S4D	190,000	11.60	12.10	TAA240S4D	Factory TXV	3748430
TSA240S4D	236,000	11.30	13.20	[1] (2)TAA120S4D	Factory TXV	3293573
TSA240S4D	232,000	11.00	11.20	TAA240S4D	Factory TXV	3288555

NOTES - Units with capacity of 65,000 Btuh or greater are AHRI Certified to AHRI Standard 340/360: 95°F outdoor air temperature, 80°F db/67°F wb entering evaporator air (minimum external duct static pressure) with 25 ft. of connecting refrigerant lines.

[1] These matches with two indoor units cannot share common supply or return ductwork.

WEIGHT DATA

Model No.	Net		Shipping	
	lbs.	kg	lbs.	kg
072	305	138	325	147
090	355	161	375	170
120S	465	211	490	222
120D	480	218	505	229
150	535	243	560	254
180	775	352	800	363
240	865	392	890	404

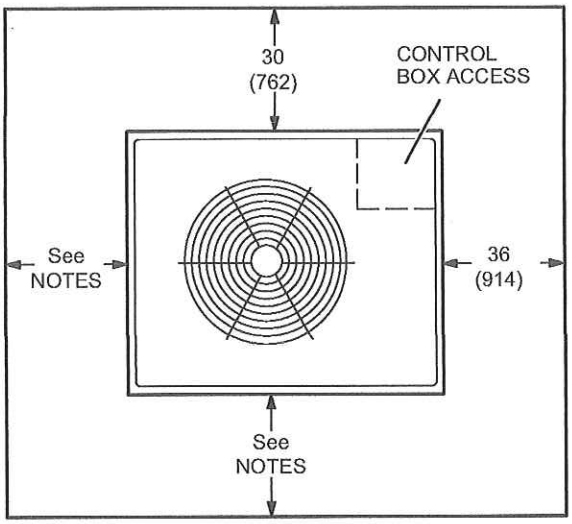
OPTIONS / ACCESSORIES

COMBINED COIL/HAIL GUARDS

T2GARD20L-1	40	18	45	20
T2GARD20M-1	45	20	50	23
T2GARD21M-1	45	20	50	23
T2GARD20N-1-	90	41	100	45

UNIT CLEARANCES - INCHES (MM)

TSA072 and TSA090



NOTES:

Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. (610 mm) must be maintained between two units.

48 in. (1219 mm) clearance required on top of unit.

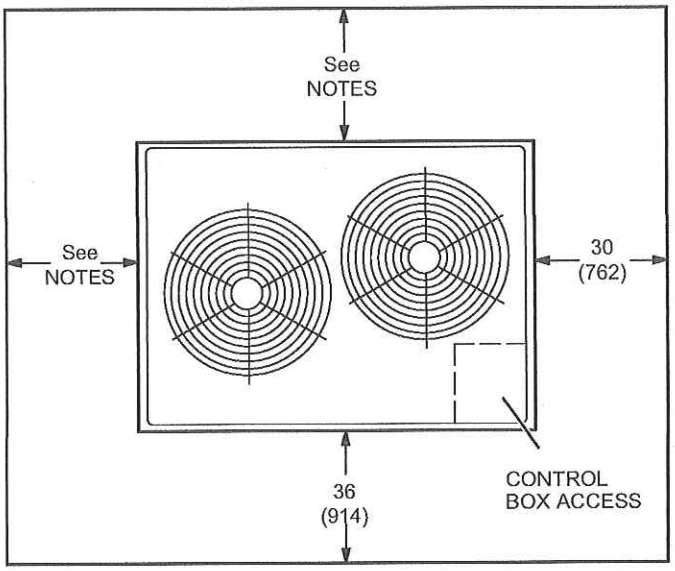
TSA120 and TSA150

NOTES:

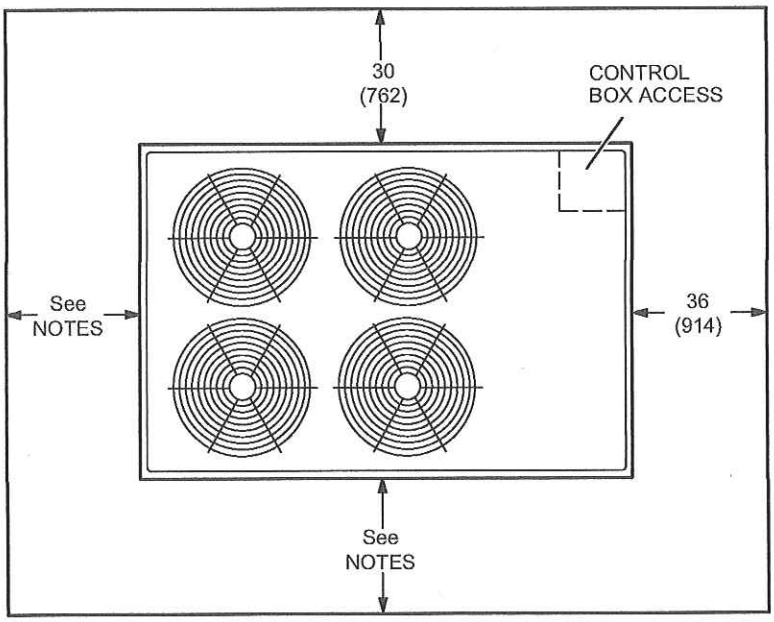
Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. (610 mm) must be maintained between two units.

48 in. (1219 mm) clearance required on top of unit.



TSA180 and TSA240



NOTES:

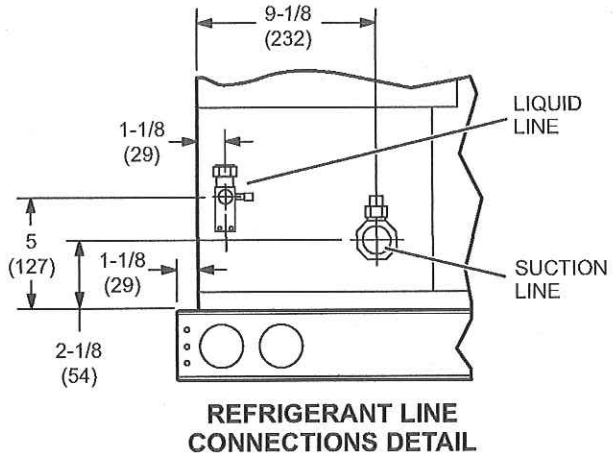
Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. (610 mm) must be maintained between two units.

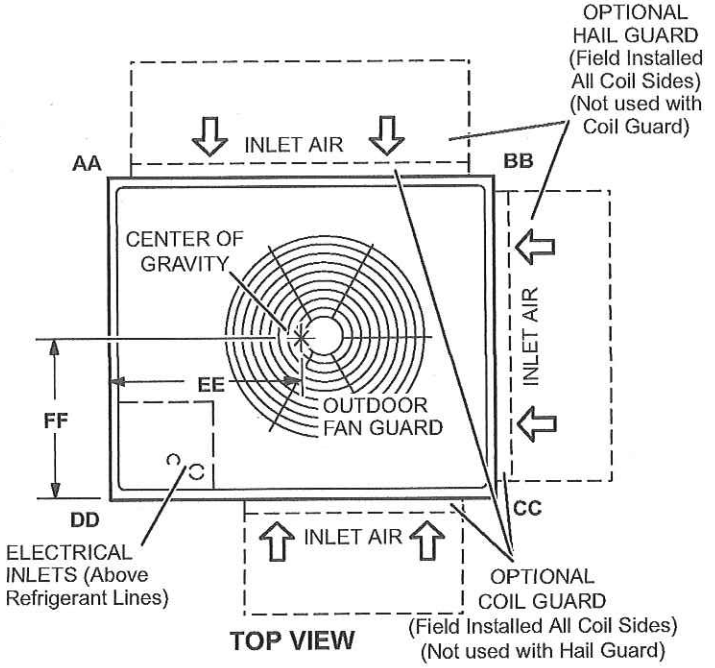
48 in. (1219 mm) clearance required on top of unit.

DIMENSIONS - INCHES (MM) - TSA072 AND TSA090

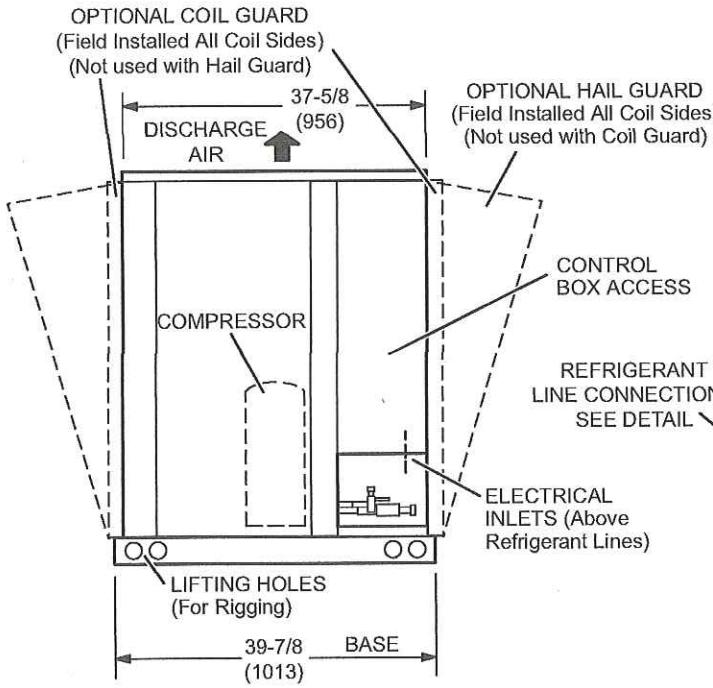
Model No.	CORNER WEIGHTS								CENTER OF GRAVITY			
	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
TSA072S4S	73	33	67	30	78	35	85	39	33	584	18-1/2	470
TSA090S4S	86	39	93	42	92	42	85	39	25	635	20-1/4	514



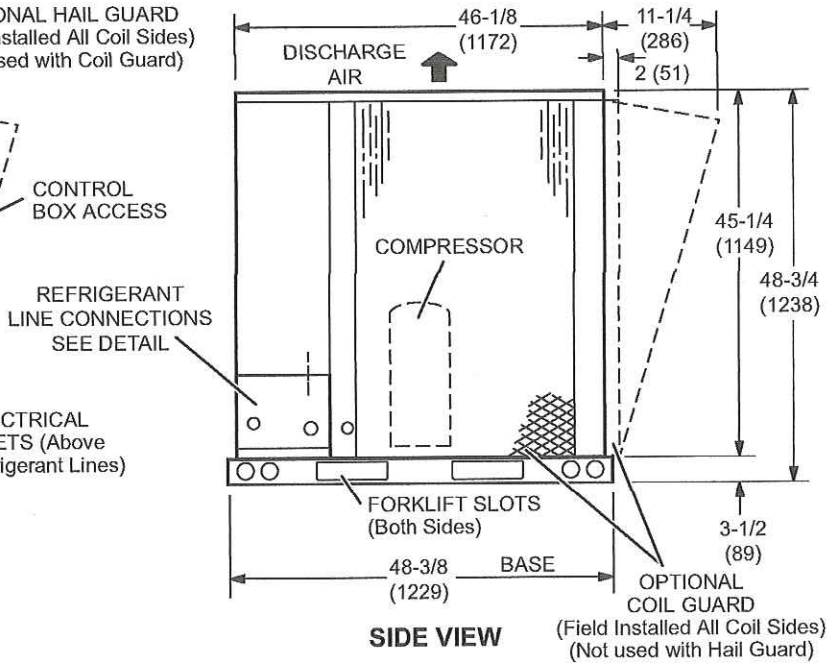
REFRIGERANT LINE CONNECTIONS DETAIL



TOP VIEW



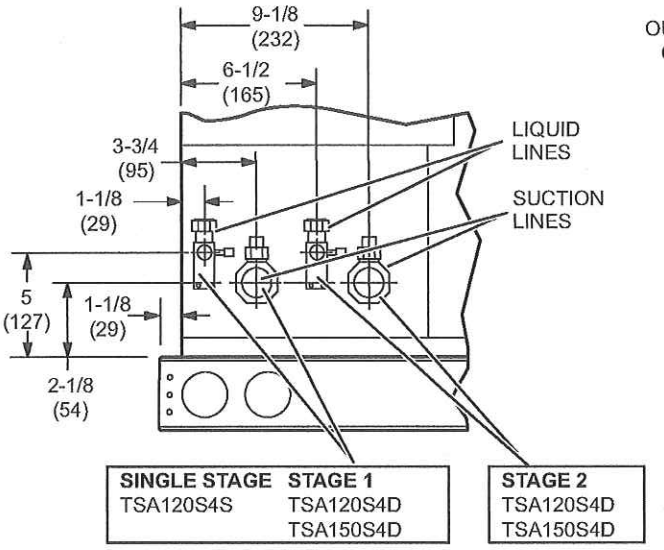
FRONT VIEW



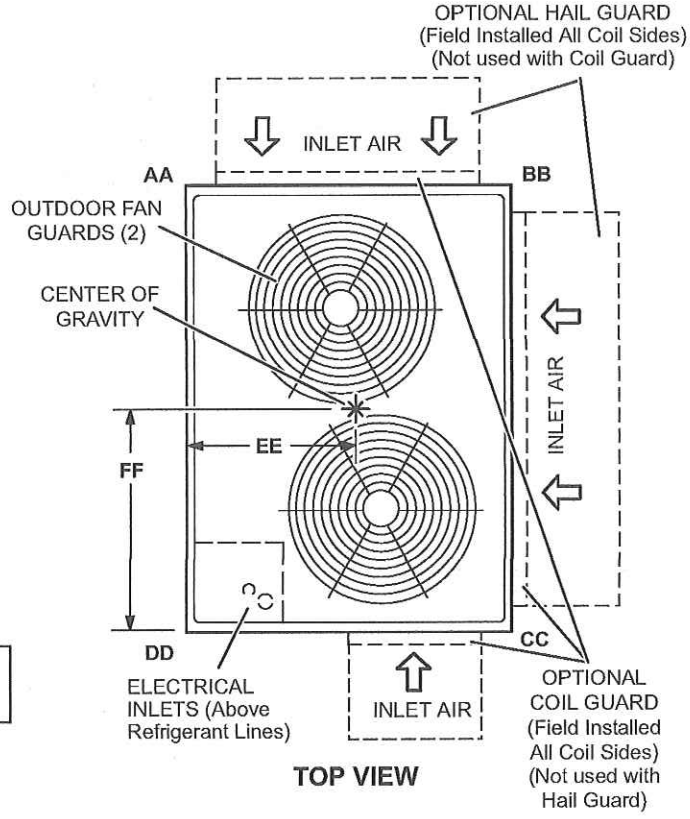
SIDE VIEW

DIMENSIONS - INCHES (MM) - TSA120 AND TSA150

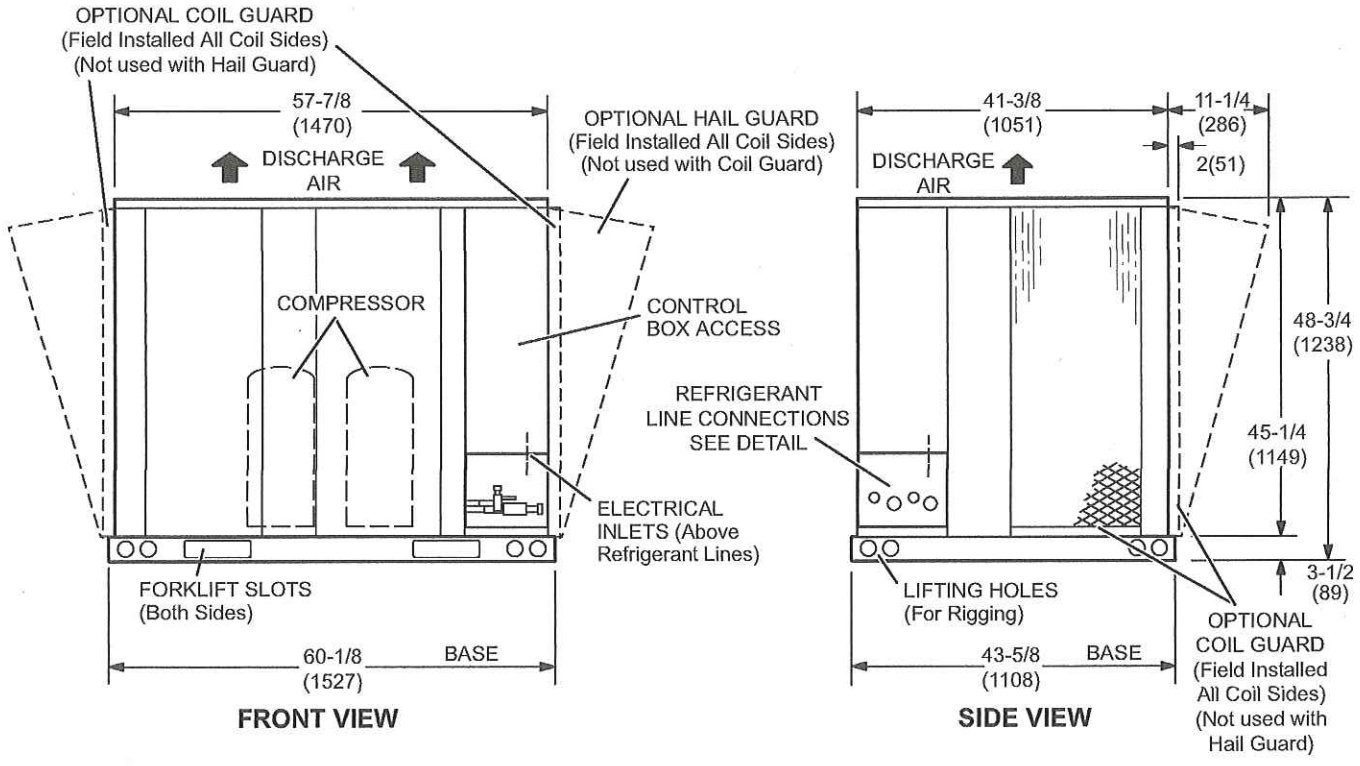
Model No.	CORNER WEIGHTS								CENTER OF GRAVITY			
	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
TSA120S4S	136	62	121	55	96	44	108	49	20-1/2	521	33-1/2	851
TSA120S4D	120	54	112	51	124	56	133	60	21	533	28-1/2	724
TSA150S4D	152	69	117	53	117	53	152	69	19	483	30	762



REFRIGERANT LINE CONNECTIONS DETAIL



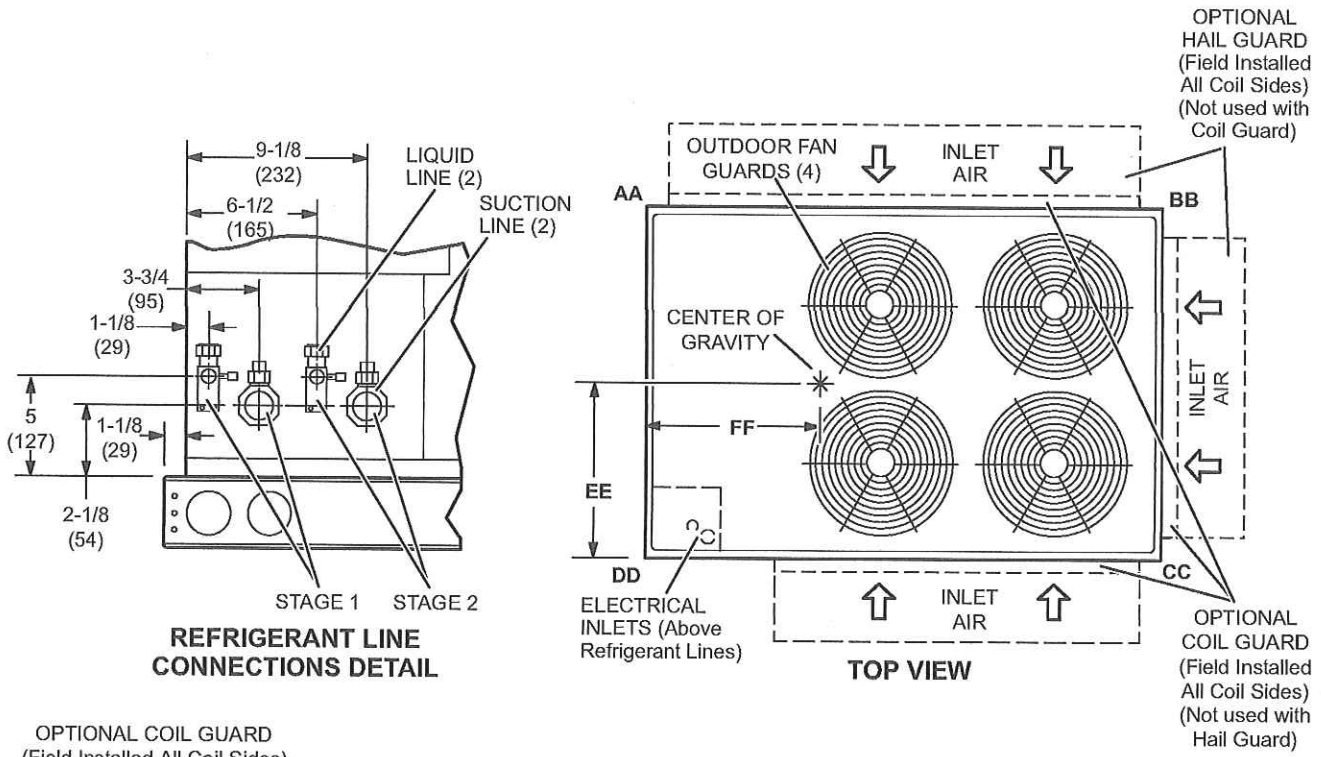
TOP VIEW

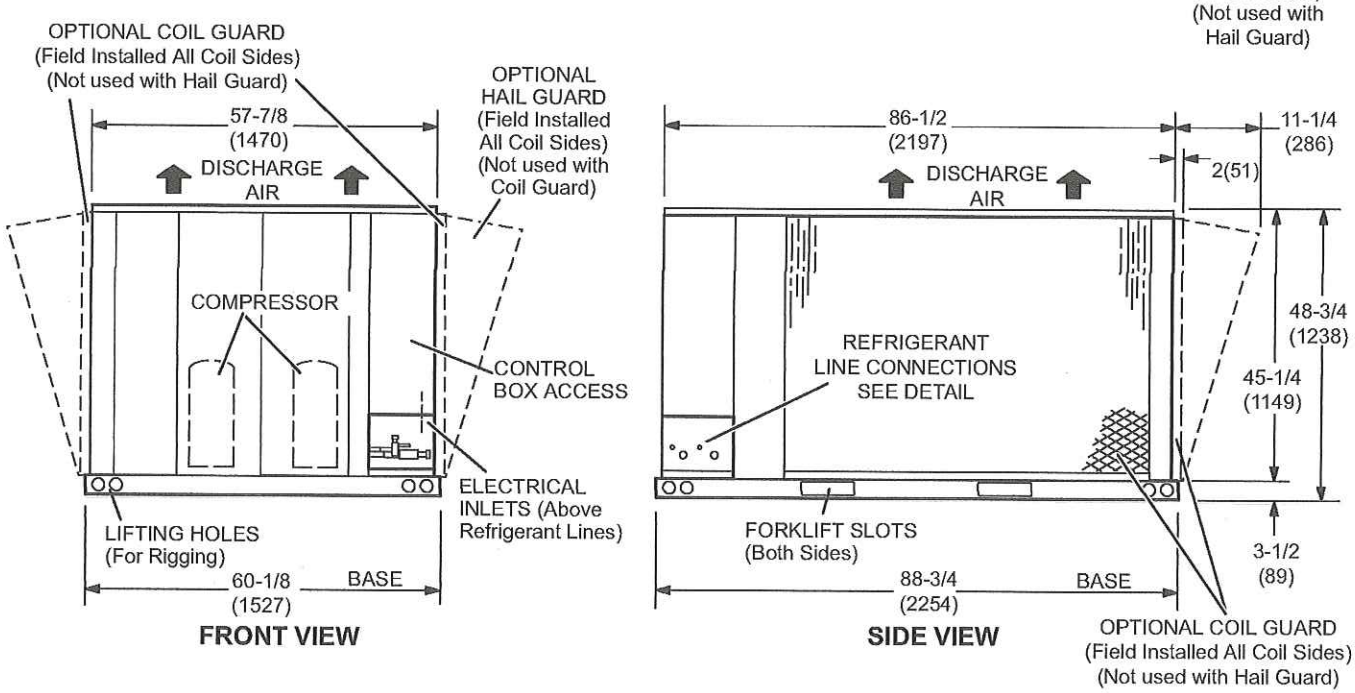


FRONT VIEW **SIDE VIEW**

DIMENSIONS - INCHES (MM) - TSA180 AND TSA240

Model No.	CORNER WEIGHTS								CENTER OF GRAVITY			
	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
TSA180S4D	223	101	166	75	178	81	238	108	29	737	38	965
TSA240S4D	265	120	197	89	197	89	265	120	30	762	38	965





REVISIONS

Sections	Description of Change
Specifications	Refrigerant charge updated for all models.

ALLIED™ Commercial

Visit us at www.allied-commercial.com

For the latest technical information, visit us at www.allied-commercial.com

Contact us at 1-800-738-4000

NOTE - Due to Allied Commercial ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability.
Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.
Installation and service must be performed by a qualified installer and servicing agency.