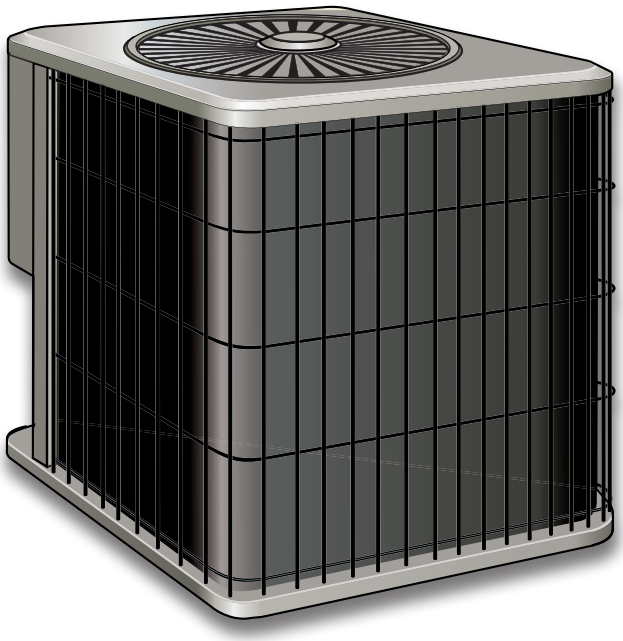
ALLIED™ Commercial

TSA

Split System Units
Standard Efficiency - R-410A - Three-Phase - 60 Hz

Bulletin No. 310838
November 2020
Supersedes May 2020

COMMERCIAL
PRODUCT SPECIFICATIONS



SEER up to 14.50
3 to 5 Tons
Cooling Capacity - 32,400 to 92,000 Btuh

MODEL NUMBER IDENTIFICATION

T S A 036 S 4 N 4 1 Y

Brand/Family
T = Product Line

Unit Type
S = Split System Air Conditioner

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

Nominal Cooling Capacity – Tons
036 = 3 Tons
042 = 3.5 Tons
048 = 4 Tons
060 = 5 Tons

Cooling Efficiency
S = Standard Efficiency

Refrigerant Type
4 = R–410A

Part Load Capability
N = No Part Load, Single Circuit

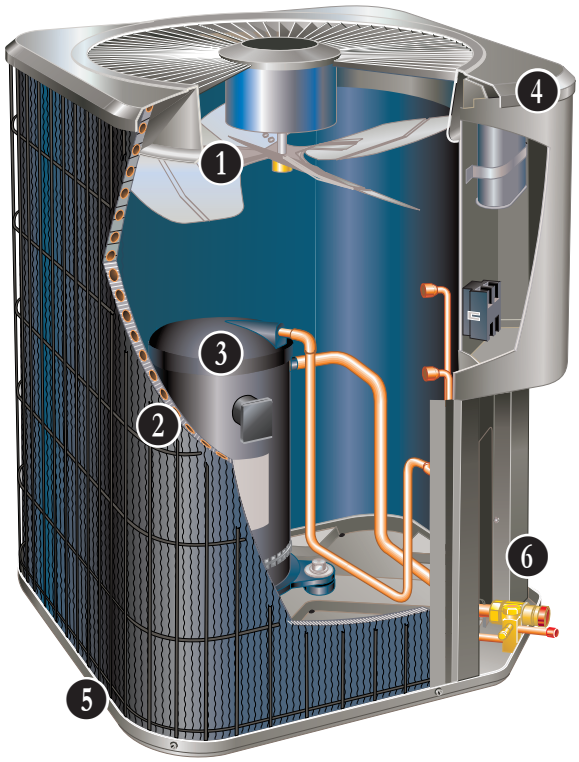
Coil Type
4 = Four-Sided

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

FEATURE HIGHLIGHTS

1. Outdoor Coil Fan
2. Copper Tube/Enhanced Fin Coil
3. Scroll Compressor
4. Heavy Gauge Steel Cabinet
5. Corrosion Resistant Base
6. Refrigerant Line Connections and Access



CONTENTS

APPROVALS AND WARRANTY

APPROVALS

- AHRI Standard 210/240 certified
- AHRI Certified system match-ups, visit www.ahridirectory.org
- Sound rated to AHRI Standard 270-2008 test conditions
- Tested in an environmental test room
- Rated According to U.S. Department of Energy (DOE) test procedures
- Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
- ETL certified (U.S. and Canada)
- ISO 9001 Registered Manufacturing Quality System

WARRANTY

- Compressor:
  - Limited five years in non-residential installations
- All other covered components:
  - Limited one year in non-residential installations

NOTE - Refer to Limited Warranty certificate included with unit for specific details.

FEATURES

APPLICATIONS

- 3 through 5 tons
- Three-phase power supply
- Sound levels as low as 76 dBA
- Vertical air discharge
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils
- Shipped completely factory assembled, piped and wired
- Factory test operated

REFRIGERATION SYSTEM

R-410A Refrigerant
- Non-chlorine, ozone friendly
- Unit is factory pre-charged

1 Outdoor Coil Fan
- Direct drive fan
- Vertical air discharge
- Louvered steel top fan guard
- Totally enclosed fan motor
- Rain shield
- Ball bearings
- Inherently protected

High Capacity Liquid Line Drier
- Factory installed in the liquid line
- Drier traps moisture or dirt
- 100% molecular-sieve, bead type

High Pressure Switch
- Protects the system from high pressure conditions
- Manual reset

2 Copper Tube/Enhanced Fin Coil
- Ripple-edged aluminum fins
- Copper tube construction
- Lanced fins for maximum fin surface exposure
- Fin collars grip tubing for maximum contact area
- Flared shoulder tubing connections
- Silver soldering construction.
- Factory tested under high pressure
- Entire coil is accessible for cleaning.
- PVC coated steel wire coil guard with mesh covering furnished

Optional Accessories

Expansion Valve Kits
- Field installed on certain indoor units
- See TXV Usage table
- Chatleff-style fitting

Refrigerant Line Kits
- Refrigerant lines are shipped refrigeration clean
- Lines are cleaned, dried, pressurized and sealed at factory
- Suction line fully insulated
- Lines are stubbed at both ends

NOTE - Not available for 060 models. Must be field fabricated.

FEATURES

COMPRESSOR

3 Scroll Compressor

- High efficiency with uniform suction flow
- Constant discharge flow, high volumetric efficiency and quiet operation
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Muffler in discharge line reduces operating sound levels
- Compressor is installed in the unit on resilient rubber mounts for vibration free operation

Scroll Compressor Operation

- Two involute spiral scrolls matched together 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 the pocket reaches the center, gas is now at 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
- 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

Compressor Crankcase Heater

- Protects against refrigerant migration that can occur during low ambient operation

Optional Accessories

Compressor Sound Cover

- A reinforced vinyl compressor cover containing a 1-1/2 inch thick batt of fiberglass insulation.
- All open edges are sealed with a one-inch wide hook and loop fastening tape.

CABINET

4
- Heavy gauge steel cabinet
- Five station metal wash process
- Powder paint finish for superior rust and corrosion protection
- Control box is conveniently located with all controls factory wired
- Corner patch plate allows compressor access
- Drainage holes provided in base section

Unit Base

- Durable zinc-coated base section resists rust and corrosion

6 Refrigerant Line Connections, Electrical Inlets, Service Valves

- Sweat connection suction and liquid lines
- Located on corner of unit cabinet
- Suction valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system
- Refrigerant line connections and field wiring inlets are located in one central area of cabinet for easy access
- See dimension drawing

Optional Accessories

Hail Guards

- Heavy-gauge steel construction
- Painted to match cabinet
- Surrounds unit on all four sides
- Prevent damage to the coil

Unit Stand-Off Kit

- Black high density polyethylene feet
- Raises unit off mounting surface
- Four feet furnished per order number

FEATURES

CONTROLS

Optional Accessories

Compressor Low Ambient Cut-Off Switch
- Non-adjustable switch (low ambient cut-out)
- Prevents compressor operation when outdoor temperature is below 35°F

Compressor Time-Off Control
- Kit prevents compressor short-cycling
- Allows time for suction and discharge pressure to equalize
- Permits compressor start-up in an unloaded condition
- Automatic reset
- Five minute delay between compressor shut-off and start-up

Indoor Blower Off Delay Relay Kit
- Delays indoor blower-off time during the cooling cycle

Low Ambient Kit
- Heat pump can operate in the cooling mode down to 45°F outdoor air temperature without additional controls
- Two low ambient control options are available for field installation:
  1. Low Ambient Control Kit (30°F)
  2. Low Ambient Control (0°F)
     Requires Speed Control and Weatherproof Kit (ordered separately). Available for 208/230V models only.

NOTE - Freezestat should be installed on compressors equipped with a low ambient kit.

Freezestat
- Installs on or near the vapor line of the indoor coil or on the suction line
- Senses suction line temperature and cycles the compressor off when suction line temperature falls below it's setpoint
- Opens at 29°F and closes at 58°F

Thermostat
- For thermostat options, see Optional Conventional Temperature Control Systems on page 6

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SPECIFICATIONS

General Data	Model No.	TSA036S4	TSA042S4	TSA048S4	TSA060S4
	Nominal Tonnage	3	3.5	4	5
Connections (sweat)	Liquid line o.d. - in.	3/8	3/8	3/8	3/8
	Suction line o.d. - in.	7/8	7/8	7/8	1-1/8
[1] **Refrigerant (R-410A) furnished**		5 lbs. 9 oz.	6 lbs. 6 oz.	7 lbs. 8 oz.	10 lbs. 0 oz.
Outdoor Coil	Net face area sq. ft. Outer coil	13.22	16.33	21.00	18.67
	Net face area sq. ft. Inner coil	- - -	- - -	- - -	17.96
	Tube diameter - in.	5/16	5/16	5/16	5/16
	Number of rows	1	1	1	2
	Fins per inch	26	26	26	22
Outdoor Fan	Diameter - in.	18	22	22	22
	Number of blades	4	4	4	4
	Motor hp	208/230V - 1/5 460/575V - 1/6	1/4	1/4	1/4
	Cfm	2400	3500	3670	3600
	Rpm	1090	825	825	830
	Watts	185	310	295	285
Shipping Data - lbs. 1 package		135	178	194	218

ELECTRICAL DATA

Line voltage data - 60 hz - 3ph	208/230V	460V	575V	208/230V	460V	208/230V	460V	575V	208/230V	460V	575V
[2] Maximum overcurrent protection (amps)	20	15	15	30	15	30	15	15	35	15	15
[3] Minimum circuit ampacity	14.2	7.8	5.3	18.6	8.4	18.8	8.8	7.0	21.3	10.7	8.3
Compressor Rated load amps	10.4	5.8	3.8	13.5	6	13.7	6.2	4.8	15.6	7.8	5.8
Locked rotor amps	73	38	36.5	88	44	83.1	41	30.4	110	52	35.5
Power factor	.85	.84	.83	.88	.83	.90	.92	.88	.90	.91	.90
Condenser Fan Motor Full load amps	1.1	.55	.55	1.7	1.0	1.7	1.0	1.0	1.7	1.0	1.0
Locked rotor amps	1.9	1.1	1.1	3.1	2.3	3.1	2.3	2.3	3.1	2.3	2.3

OPTIONAL ACCESSORIES - ORDER SEPARATELY

Compressor Low Ambient Cut-Off Switch		**45F08**	•	•	•	•
Compressor Sound Cover		**18J42**	•	•	•	•
Compressor Time-Off Control		**47J27**	•	•	•	•
Freezestat	3/8 in. tubing	**93G35**	•	•	•	•
	5/8 in. tubing	**50A93**	•	•	•	•
Hail Guards	24 x 24 x 28 in.	**14X09**	•			
	28 x 28 x 28 in.	**14X16**		•		
	28 x 28 x 36 in.	**14X14**			•	
	28 x 28 x 32 in.	**14X19**				•
Indoor Blower Off Delay Relay		**58M81**	•	•	•	•
Loss of Charge Switch		**84M23**	•	•	•	•
[4] **Low Ambient Kit (Fan Cycling) (30°F)**		**34M72**	•	•	•	•
[4] **Low Ambient Control (0°F) 208/230V only**	Speed Control	**X5867**	•	•	•	•
	Weatherproof Kit	**56N41**	•	•	•	•
Refrigerant Line Sets	L15-65-30, L15-65-40, L15-65-50		•	•	•	
	Field Fabricate					•
Unit Stand-Off Kit		**94J45**	•	•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

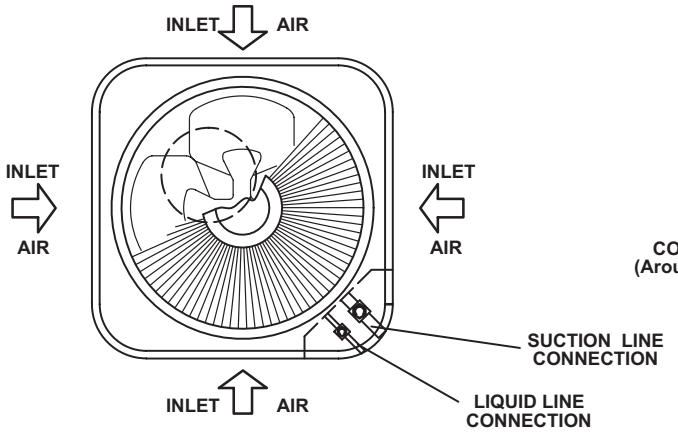
[1] Refrigerant charge sufficient for 15 ft. length of refrigerant lines.

[2] HACR type circuit breaker or fuse.

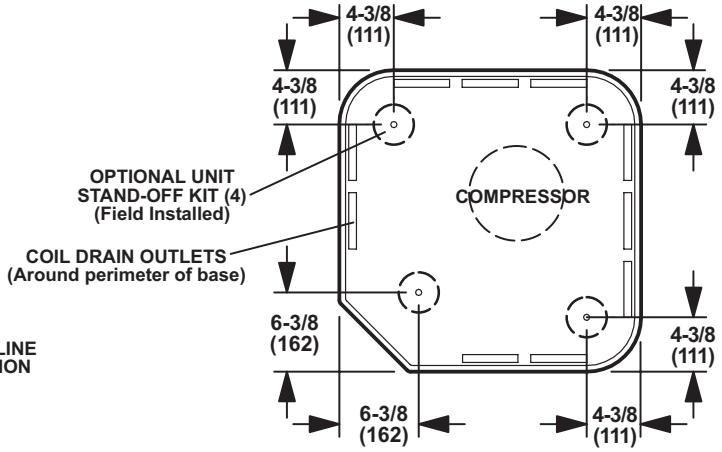
[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[4] Freezestat is recommended with Low Ambient Control.

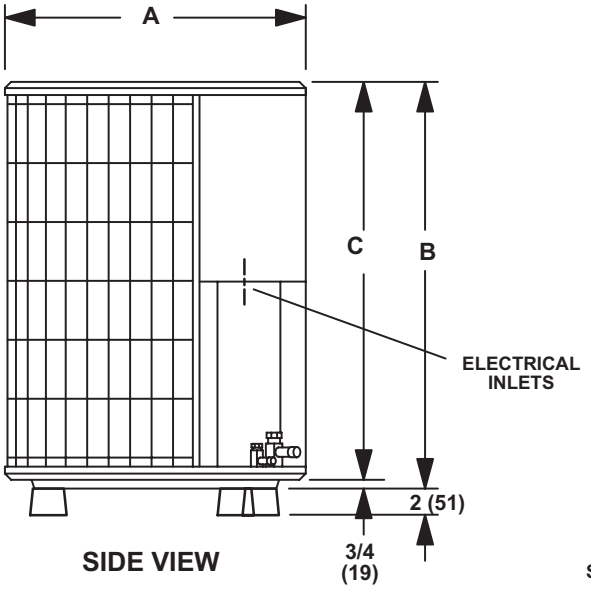
DIMENSIONS



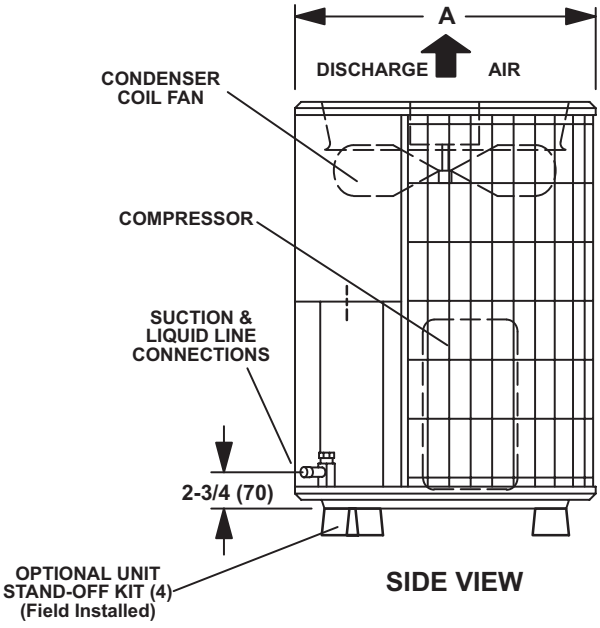
TOP VIEW



TOP VIEW BASE SECTION



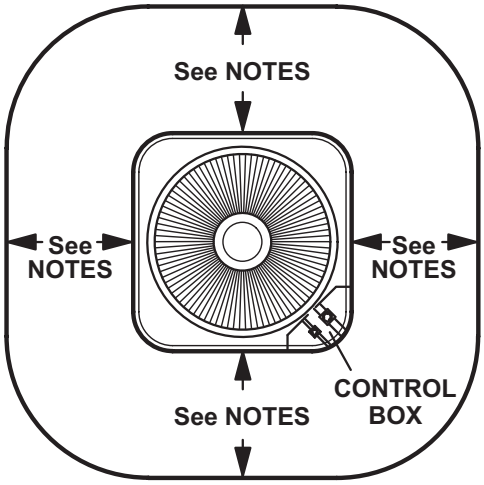
SIDE VIEW



SIDE VIEW

Model No.	A		B		C	
	inches	mm	inches	mm	inches	mm
TSA036S4	24-1/4	616	29-1/4	743	28-1/2	724
TSA042S4	28-1/4	718	29-1/4	743	28-1/2	724
TSA048S4	28-1/4	718	37-1/4	946	36-1/2	927
TSA060S4	28-1/4	718	33-1/4	845	32-1/2	826

INSTALLATION CLEARANCES



NOTES:

Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.

Clearance to one of the other three sides must be 36 in. (914 mm)

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. must be maintained between two units.

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

SOUND DATA

[1] Unit Model	Octave Band Sound Power Levels dBA, re 10^{-12} Watts Center Frequency - HZ							[1] Sound Rating Number (dBA)	[2] Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
TSA036S4	70.5	67.5	69.5	72.5	69.5	63	59	76	69	64	58	55	44
TSA042S4	74	76.5	76.5	75.5	72	68	63.5	80	73	68	62	59	48
TSA048S4	73.5	76	76	76.5	72.5	69.5	64.5	80	73	68	62	59	48
TSA060S4	73.5	74.5	77	75	72	69	64.5	80	73	68	62	59	48

NOTE - the octave sound power data does not include tonal correction.

[1] Tested according to AHRI Standard 270-2008 test conditions.

[2] Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.

TXV USAGE

Use this table for C35, CH23, CH35 and CR33 Field Installed TXV Match-Ups.

Model No.	Thermal Expansion Valve (TXV)
TSA036S4	**12J19**
TSA042S4	**12J20**
TSA048S4	**12J20**
TSA060S4	**12J20**

CX35 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV.

C35 and CH35 coils - Replace the factory installed RFC orifice with the expansion valve listed.

CR33 and CH23 coils - Use the expansion valve listed.

AHRI STANDARD 210/240

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity. Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.

TXV SUBSTITUTION

A general guide for replacing the factory installed TXV if the indoor unit (coil/air handler) is larger or smaller than the outdoor unit.

Outdoor Unit		Indoor Unit		TXV Furnished	TXV Replacement
Size	Tons	Size	Tons		
036	3	24	2	**12J18**	**12J19**
036	3	30	2.5	**12J18**	**12J19**
042	3.5	24	2	**12J18**	**12J20**
042	3.5	30	2.5	**12J18**	**12J20**
042	3.5	30/36	3	**12J19**	**12J20**
042	3.5	36	3	**12J19**	**12J20**
048	4	30/36	2.5/3	**12J19**	**12J20**
048	4	36	3	**12J19**	**12J20**

TXV Ranges:

12J18 - 1.5 to 2.5 ton systems - Use on 2.5 ton (030) and lower systems.

12J19 - 3 ton systems - Use down to 2 ton (024) systems.

12J20 - 3.5 to 5 ton systems - Use down to 3 ton (036) systems.

REVISIONS

Sections	Description of Change
TXV Substitution	Updated.

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Contact us at 1-800-448-5872

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.