



Installation Manual

TTD/TTT

Multi-Split System
Condensing Unit
18,000-54,000 Btuh
Models 50/60 Hz



50 Hz Models Cooling Only

TTD 518 AB
TTD 521 AB
TTD 524 AB
TTD 524 DB
TTD 527 AB
TTD 527 DB
TTD 530 AB
TTD 530 DB
TTD 533 AB
TTD 533 DB
TTD 536 AB
TTD 536 DB
TTD 542 AB
TTD 542 DB
TTD 545 AB
TTD 548 AB
TTD 548 BB
TTD 548 DB
TTD 551 AB
TTD 554 AB
TTD 554 DB

TTT 527 AB
TTT 530 AB
TTT 533 AB
TTT 536 AB
TTT 536 DB
TTT 542AB
TTT 542DB
TTT 545AB
TTT 548AB
TTT 548BB
TTT 554AB
TTT 554DB

60 Hz Models Cooling Only

TTD 518 A1
TTD 521 A1
TTD 524 A1
TTD 527 A1
TTD 530 A1
TTD 536 A1
TTD 536 D1

TTT 527 A1
TTT 530 A1
TTT 533 A1
TTT 536 A1
TTT 536 D1



General Information

General Information

This Installation Manual is given as a guide to good practice in the installation by the installer of TTD/TTT mini-split system. Installation procedures should be performed in the sequence that they appear in this manual.

For installing the unit to operate properly and reliably, it must be installed in accordance with these instructions. Also, the services of a qualified service technician should be employed, through the maintenance contract with a reputable service company.

Read this Installation Manual completely before installing and operating the system.

About this Manual

Cautions appear at appropriate places in this Instruction Manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The Trane Company assumes no liability for installations or servicing performed by unqualified personnel. All phases of the installation of this air conditioning system must conform to all national, provincial, state and local codes.

About the Unit

These TTD/TTT units are assembled, pressure tested, dehydrated, charged and run tested before shipment.

Reception

On arrival, inspect the unit before signing the delivery note. Specify any damage of the unit on the delivery note, and send a registered letter of protest to the last carrier of the goods within 72 hours of delivery. Notify the dealer at the same time.

The unit should be totally inspected within 7 days of delivery. If any concealed damage is discovered, send a registered letter of protest to the carrier within 7 days of delivery and notify the dealer.

Warning

Warnings are provided at appropriate places in this manual to indicate to installers, operators and service personnel of potentially hazardous situations which, if not avoided, COULD result in death or serious injury.

Caution

Cautions are provided at appropriate places in this manual to indicate to installers, operators, and service personnel of potentially hazardous situations which, if not avoided, MAY result in minor or moderate injury or malfunction of the unit.

Your personal safety and the proper operation of this unit require that you follow them carefully. The Trane Company assumes no liability for installations or servicing performed by unqualified personnel.

Warranty

Warranty is based on the general terms and conditions by country. The warranty is void if the equipment is modified or repaired without the written approval of The Trane Company, if the operating limits are exceeded or if the control system or the electrical wiring is modified.

Damage due to inappropriate installation, lack of knowledge or failure to comply with the manufacturer's instructions, is not covered by the warranty obligation. If the installation does not conform to the rules described in Installation Manual, it may entail cancellation of warranty and liabilities by The Trane Company.

Important

This document is customer property and is to remain with unit. Please place in service information pack upon completion of work. These instructions do not cover all variations in systems, nor do they provide for every possible contingency to be met in connection with installation. Should further information be desired or should particular problems arise which are not covered sufficiently in this manual, the matter should be referred to your authorized Trane dealer.



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Valid System Combinations

Outdoor Unit Model	Indoor Unit Nominal Capacity (Btu/hr)	
	System # 1	System # 2
	TTD518AB	9000
TTD521AB	9000	12000
TTD524AB	12000	12000
TTD524DB	9000	15000
TTD527AB	9000	18000
TTD527DB	12000	15000
TTD530AB	12000	18000
TTD530DB	15000	15000
TTD533AB	15000	18000
TTD533DB	9000	24000
TTD536AB	18000	18000
TTD536DB	12000	24000
TTD539AB	9000	30000
TTD539DB	15000	24000
TTD542AB	18000	24000
TTD542DB	12000	30000
TTD545AB	15000	30000
TTD548AB	18000	30000
TTD548BB	24000	24000
TTD548DB	12000	36000
TTD551AB	15000	36000
TTD554AB	18000	36000
TTD554DB	24000	30000

Outdoor Unit Model	Indoor Unit Nominal Capacity (Btu/hr)		
	System # 1	System # 2	System # 3
	TTT527AB	9000	9000
TTT530AB	9000	9000	12000
TTT533AB	9000	12000	12000
TTT533DB	9000	9000	15000
TTT536AB	12000	12000	12000
TTT536BB	9000	12000	15000
TTT536DB	9000	9000	18000
TTT539DB	9000	12000	18000
TTT542AB	12000	15000	18000
TTT542DB	12000	12000	18000
TTT545AB	12000	15000	18000
TTT548AB	12000	12000	24000
TTT548BB	15000	15000	18000
TTT554AB	12000	12000	30000
TTT554DB	12000	18000	24000



Installation Requirements

1. Copper Tubing

Copper tubing, fittings and insulation to interconnect the suction (S) (wide tube) and liquid (L) (narrow tube) refrigerant lines between the indoor and outdoor units can be purchased locally. It is necessary to purchase the following items:

- Purchase equal lengths of both tubes and insulation required. Cut the appropriate tube lengths, 30 to 40 cm (12 to 16 in.) longer on each one to deepen vibration between units. Wall thickness of copper tube should be 0.8 mm (0.0314 in.). Both tubes must be well insulated with proper insulation materials.
- The length of wiring will determine the wire size. See local codes, refer to section of electrical installation.

2. Additional Materials

- Saddles or clamps to hold refrigerant tubing.
- Insulated clamps or staples for connecting wire. See local codes.
- Refrigeration oil and tape (armored).
- Putty or similar filter.

Table 2

Indoor Unit		507-509	512	518
Item		O.D. mm (in.)	O.D. mm (in.)	O.D. mm (in.)
Deoxidized Annealed Copper Tube	(L *)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)
	(S *)	9.52 (3/8)	12.7 (1/2)	12.7 (1/2)
Foamed Polyethylene		Diameter: According to O.D. of copper tube	Diameter: According to O.D. of copper tube	Diameter: According to O.D. of copper tube
Insulation		Thickness: No less than 8 mm (0.3 in)	Thickness: No less than 8 mm (0.3 in)	Thickness: No less than 8 mm (0.3 in)
Insulated Copper Wire		Length required to make electrical wiring	Length required to make electrical wiring	Length required to make electrical wiring

*On Cooling Mode

Location and Preparation of Units

1. Choose a place as cool as possible. The place should be well ventilated and the inlet air should not hotter than the outside temperature (max 45°C or 113°F).
2. Avoid the vicinity of heat sources, exhaust fan, etc.
3. Avoid direct sunlight, provide awnings if necessary.
4. The unit should be set on a level reinforced concrete pad to avoid the effect humidity. The minimum height of the concrete pad should be 100 mm. (4"). Unit shall be fixed securely to the concrete pad with bolts (not supplied) to prevent abnormal noise and vibration.
5. The concrete pad must be positioned a minimum of 200 mm. (8") from any well and surrounding shrubbery.
6. Minimum clearance on the inlet air side of the unit must be 250 mm. (10") : 1200 mm. (48") on the discharge air side of the unit and 250 mm. (10") on the tubing side of the unit (Figure 1).
7. When the unit is mounted on a roof, be sure the roof will carry the unit's weight. Vibration isolation is recommended to prevent transmission to the building structure.

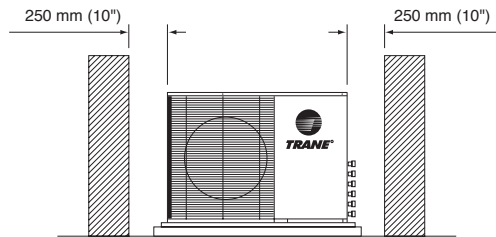
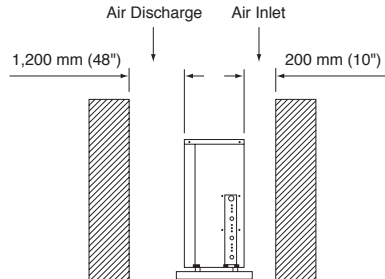


Figure 1

Note

The Multi-Split System (Outdoor) Unit should be installed as close to the indoor units as possible.

Connection of Refrigerant Tubing

- The principal concerns in refrigeration tubing are:
 - Uniform oil return to the compressor.
 - Pressure drops and their effect on system capacity.
 - Tube routing and isolation to avoid line breakage, vibration and sound transmission. Regarding this, the interconnecting refrigerant lines should be simple and shorter as much as possible.

2. Flare Connections

The units reported in this manual employ the flare method to interconnect refrigerant tubes between indoor and outdoor units (Figure 2).

- The tube end of all refrigerant tubes should be flared, the tube should be cut and deburred. Be sure no copper scraps fall in to the tube.
- Be sure to fit a cap to the open end of the tube to keep it free of dust and moisture.
- Avoid bending the tube. If it is necessary, bend it gently, with a radius of more than 3 or 4 cm. (1 1/2 in. or 1 5/8 in.)
- Cut approximately 30 to 50 cm. (12 in. to 20 in.) longer than estimated tubing length.
- Before flaring remember to fit the nut.
- Ream with tube end downward to avoid copper scraps inside the tube.
- Remove the flare caps on the tube end.
- Connect the tubes by aligning the centers of both flares and turn the flare nuts by hand 3 or 4 turns (Figure 3).

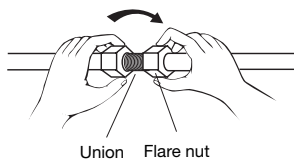


Figure 3

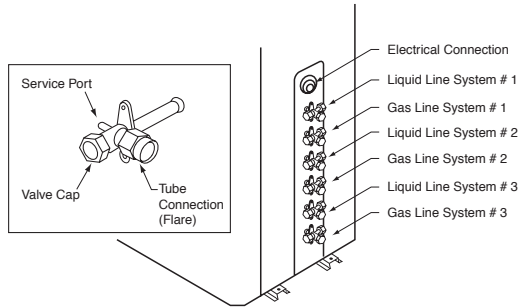


Figure 2

- Insulate both lines, liquid (narrow tube) and suction (wide tube), to prevent heat loss and wet floor due to dripping of chilled condensation. Apply proper insulation material, minimum thickness should be 8 mm (1/3 in.) (Figure 4).

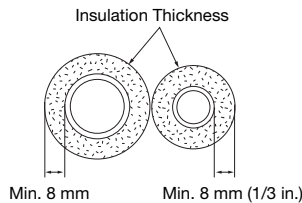


Figure 4

Note

Do not try to bend the tube after installation.

- Finish with armoring tape. Also see section of condensate drain piping.

Note

Apply refrigeration oil on flare and union surfaces before connecting them. This will reduce refrigerant leakage.

- Check the tubing connections and refrigerant lines before applying specified torque. Fasten flare nuts as recommended below.

Table 3

Tube Diameter		Tightening Torque
mm.	in.	kg - cm lbs - in.
6.35	(1/4)	150 - 200 (130 - 170)
9.52	(3/8)	350 - 400 (300 - 340)
12.70	(1/2)	500 - 550 (430 - 470)

Condensate Drain Piping

1. The drain hose should come straight down the wall to a level where runoff will not stain the wall.
2. There should be no traps and avoid putting the end of the hose in water.
3. To avoid damage to the floor or furniture when the drain hose is placed in the room, insulate the hose with foamed polyethylene or equivalent.
4. After completing refrigerant lines, wiring and drain connection, bind the tubing, wiring and drain pipe (check if local codes permit it) into a bundle by using tape at 100 or 200 mm (4 in. or 8 in.) intervals. Make sure the drain tube is at the bottom of the bundle (Figure 5).

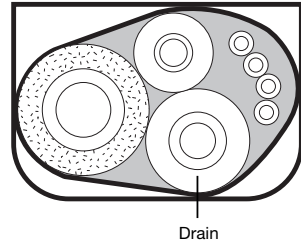


Figure 5

System Evacuation and Purging

The outdoor unit is factory charged. Unit nameplate charge is the total required system charge with 7.5 meters of interconnecting lines. Since the outdoor unit will not have to be evacuated unless charge has been completely lost, leave the suction and liquid shut-off valves closed.

1. Upon completion of installation, evacuate the refrigerant lines and indoor coil (Figure 6).
2. Evacuate unit until the gauge reads 350 microns or evacuate at least one hour for one system.
3. Close off valve to vacuum pump and observe the micron gauge. If gauge pressure rised above 500 microns in one (1) minute, then evacuation is incompleted or system is leaking.
 - Attach appropriate hose from manifold gauge to suction and liquid line valves service ports.
 - Attached center hose of manifold gauges to vacuum pump.

Note

Unnecessary switching of hoses and complete evacuation of all lines leading to sealed system can be accomplished by placing a "T" in manifold center hose and connecting branch hose to cylinder of R-22.

Note

Evacuate unit 2 and 3 in the same manner explained above. This completes system evacuation with a vacuum pump and the air conditioner is ready for actual operation.

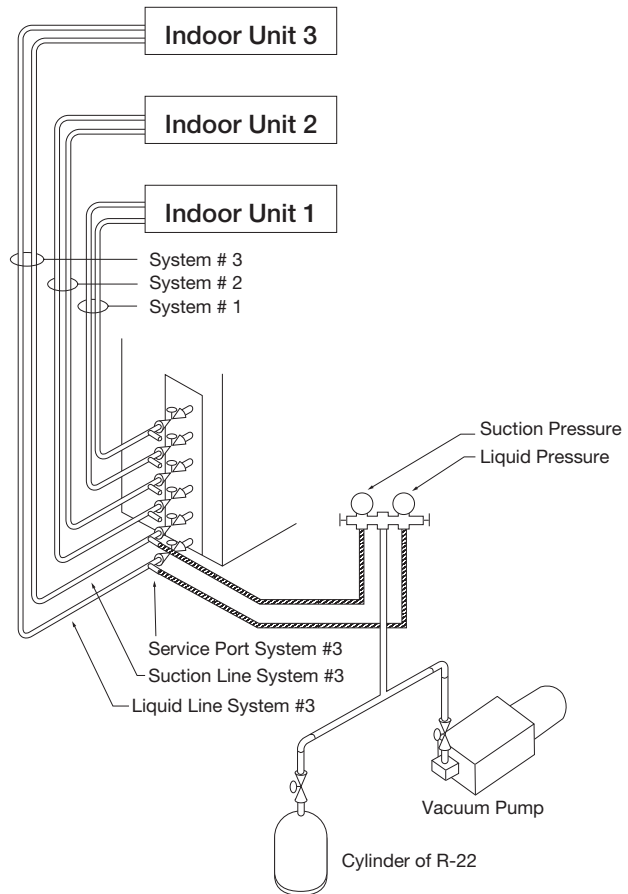


Figure 6



Electrical Installation

Wiring and grounding must comply with national and local codes.

Wiring

Important Safeguards:

- Check the unit nameplate for electrical rating. Be sure wiring is according to local codes and wiring system diagram.
- A power supply disconnect and a circuit breaker for overcurrent protection should be provided in the exclusive line.
- Connect all units electrically with ground.
- Wiring should not touch refrigerant tubing, compressor or moving parts.
- The manufacturer will have no responsibility for the problems caused by unauthorized change in the internal wiring.
- Connect wiring firmly.
- Use recommended wire length and size.

Note

- Each country has their own field wiring rules and regulations. Be sure the installation complies with local electrical codes.
- Nameplate ratings on indoor units are for "one-to-one" system installations only.

Checking the system before start up

Once the unit is installed, a check of the system is recommended before starting the units.

- Check that field connections are correctly made.
- Check that units are correctly installed and there is no tool or debris near or on top of the unit.
- Check the tubing and the connections for leaks.
- Check that unit has a proper ground wiring.
- Check for proper voltage and fuse size.
- Check electrical wire size used is as specified.
- Check all field wiring for tight connection.
- Make sure that electrical wires inside the unit do not contact with refrigerant pipes.
- Start the system and carefully observe operation.



Matching Table

Outdoor Unit Model	Indoor Unit Capacity (System#1) - MBH												Indoor Unit Capacity (System#2) - MBH												Indoor Unit Capacity (System#3) - MBH											
	Convertible, Concealed				High-Wall				Convertible, Concealed				High-Wall				Convertible, Concealed				High-Wall															
	12	15	18	24	30	36	9	12	15	18	24	30	12	15	18	24	30	36	12	15	18	24	30	36	9	12	15	18	24	30	36					
TTD518AB0E	✓					✓																														
TTD527AB0E	✓						✓																													
TTD527AB0E																																				
TTD527AB0E																																				
TTD527AB0E																																				
TTD527AB0E																																				
TTD527AB0E																																				
TTD530AB0E	✓																																			
TTD530DB0E	✓																																			
TTD530DB0E	✓																																			
TTD533AB0E	✓																																			
TTD533DB0E	✓																																			
TTD536AB0E	✓																																			
TTD536AB0E																																				
TTD536DB0E	✓																																			
TTD539AB0E	✓																																			
TTD539DB0E	✓																																			
TTD542AB0E	✓																																			
TTD542DB0E	✓																																			
TTD542DB0E	✓																																			
TTD545AB0E	✓																																			
TTD545DB0E	✓																																			
TTD548AB0E	✓																																			
TTD548AB0E																																				
TTD548DB0E	✓																																			
TTD554AB0E	✓																																			
TTD554DB0E	✓																																			
TTD554DB0E																																				
TTT527AB0E	✓																																			
TTT530AB0E	✓																																			
TTT533AB0E	✓																																			
TTT533DB0E	✓																																			
TTT536AB0E	✓																																			
TTT536AB0E																																				
TTT536BB0E	✓																																			
TTT536DB0E	✓																																			
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TTT548BB0E																																				
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Wiring Diagram

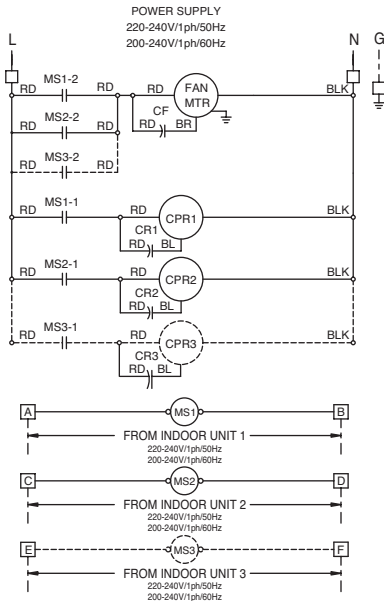
Models
50 Hz

TTD518AB
TTD521AB
TTD524AB
TTD524DB
TTD527AB
TTD527DB
TTD530AB
TTD530DB
TTD533AB
TTD533DB
TTD536AB
TTD536DB
TTD542AB
TTD542DB

Models
60 Hz

TTT521AB
TTT527AB
TTT530AB
TTT533AB
TTT536AB
TTT536DB
TTT542AB
TTT542DB
TTD518A1
TTD521A1
TTD524A1
TTD524D1
TTD527A1
TTD527D1
TTD530A1
TTD530D1
TTD533A1
TTD533D1
TTD536A1
TTD536D1
TTD542A1
TTD542D1

WIRING DIAGRAM 220-240V/1/50 Hz, 200-240V/1/60 Hz TTD518-542/TTT527-542 CONDENSING UNIT

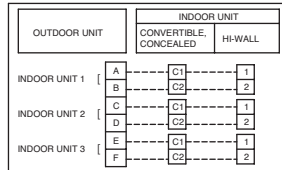


LEGEND

- CPR1,2,3 COMPRESSOR # 1,2,3
- CF COMPRESSOR RUN CAPACITOR # 1,2,3
- CR1,2,3 FAN MOTOR
- FAN MTR FAN MOTOR
- FC FAN CONTACTOR
- MS1,2 COMPRESSOR MOTOR CONTACTOR # 1,2,3
- TERMINAL
- JUNCTION
- ⊗ IDENTIFIED TERMINAL
- COIL
- TERMINAL BOARD BY OTHER
- TERMINAL BOARD BY FACTORY
- FIELD WIRING
- FACTORY WIRING
- APPLIES TO UNIT WITH 3 COMPRESSORS
- RELAY CONTACT NORMALLY OPEN
- CAPACITOR

COLOR CODE

- BL BLUE
- BLK BLACK
- BR BROWN
- GR GRAY
- OR ORANGE
- RD RED
- WH WHITE
- YL YELLOW



NOTES

1. LOW VOLTAGE WIRING TO BE 18 AWG MINIMUM
2. POWER WIRING AND GROUNDING OF EQUIPMENT MUST COMPLY WITH LOCAL CODES
3. USE COPPER CONDUCTORS ONLY



Wiring Diagram

Models
50 Hz

TTD545AB
TTD548AB
TTD548BB
TTD548DB
TTD551AB
TTD554AB
TTD554DB

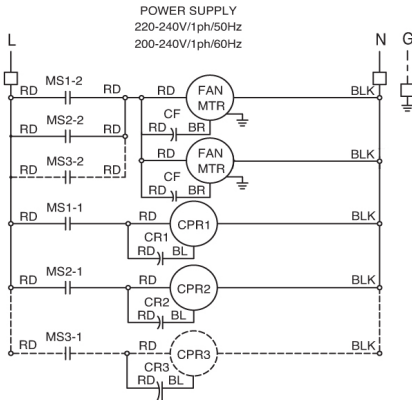
TTT545AB
TTT548AB
TTT548DB
TTT554AB
TTT554DB

Models
60 Hz

TTD545A1
TTD548A1
TTD548B1
TTD548D1
TTD554A1
TTD554D1

TTT545A1
TTT548A1
TTT548D1
TTT554A1
TTT554D1

WIRING DIAGRAM
220-240V/1/50 Hz, 200-240V/1/60 Hz
TTD545-554/TTT545-554 CONDENSING UNIT

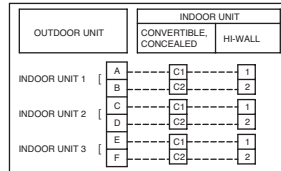


LEGEND

- CPR1,2,3 COMPRESSOR # 1,2,3
- CF FAN CAPACITOR
- CR1,2,3 COMPRESSOR RUN CAPACITOR # 1,2,3
- FAN MTR FAN MOTOR
- FC FAN CONTACTOR
- MS1,2 COMPRESSOR MOTOR CONTACTOR # 1,2,3
- TERMINAL
- ⊙ JUNCTION
- ⊗ IDENTIFIED TERMINAL
- ⊙ COIL
- TERMINAL BOARD BY OTHER
- TERMINAL BOARD BY FACTORY
- - - - - FIELD WIRING
- _____ FACTORY WIRING
- - - - - APPLIES TO UNIT WITH 3 COMPRESSORS
- ⏏ RELAY CONTACT NORMALLY OPEN
- ⏏ CAPACITOR

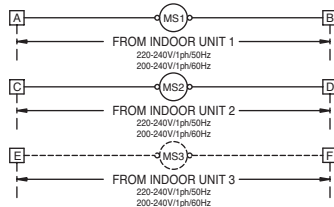
COLOR CODE

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- BLK BLACK
- BR BROWN
- GR GRAY
- OR ORANGE
- RD RED
- WH WHITE
- YL YELLOW



NOTES

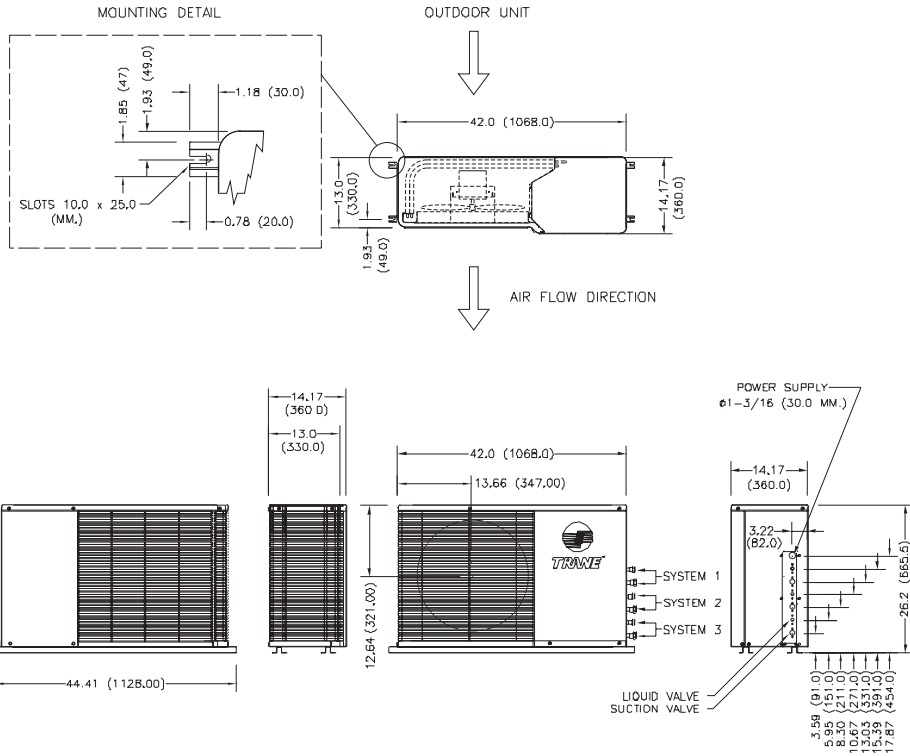
1. LOW VOLTAGE WIRING TO BE 18 AWG MINIMUM
2. POWER WIRING AND GROUNDING OF EQUIPMENT MUST COMPLY WITH LOCAL CODES
3. USE COPPER CONDUCTORS ONLY





Dimensional Data

Model
TTT521



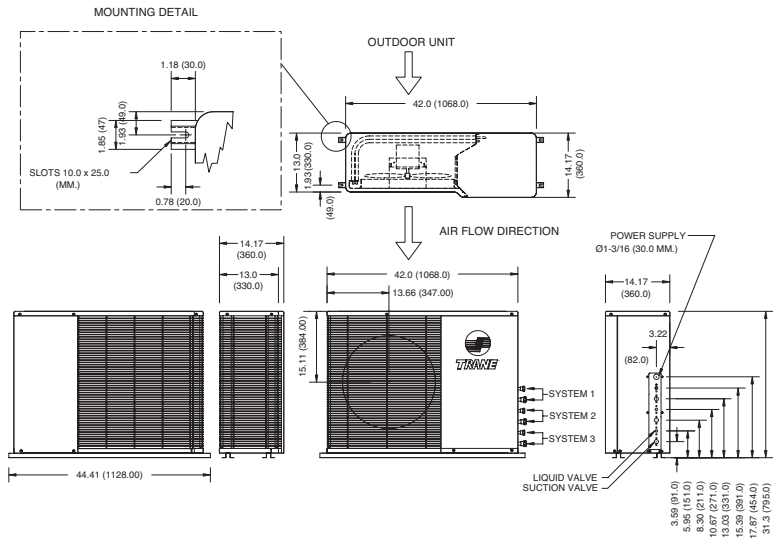


Dimensional Data

OUTLINE DRAWING

Model

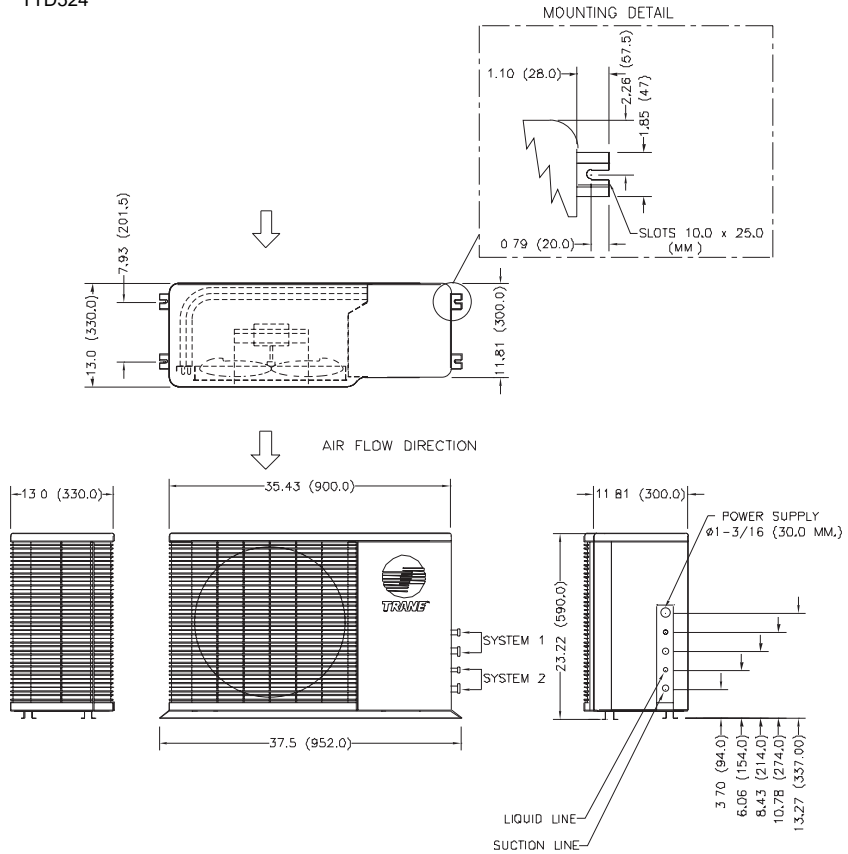
TTD527	TTT527
TTD530	TTT530
TTD533	TTT533
TTD536	TTT536
TTD539	TTT539
TTD542	TTT542





Dimensional Data

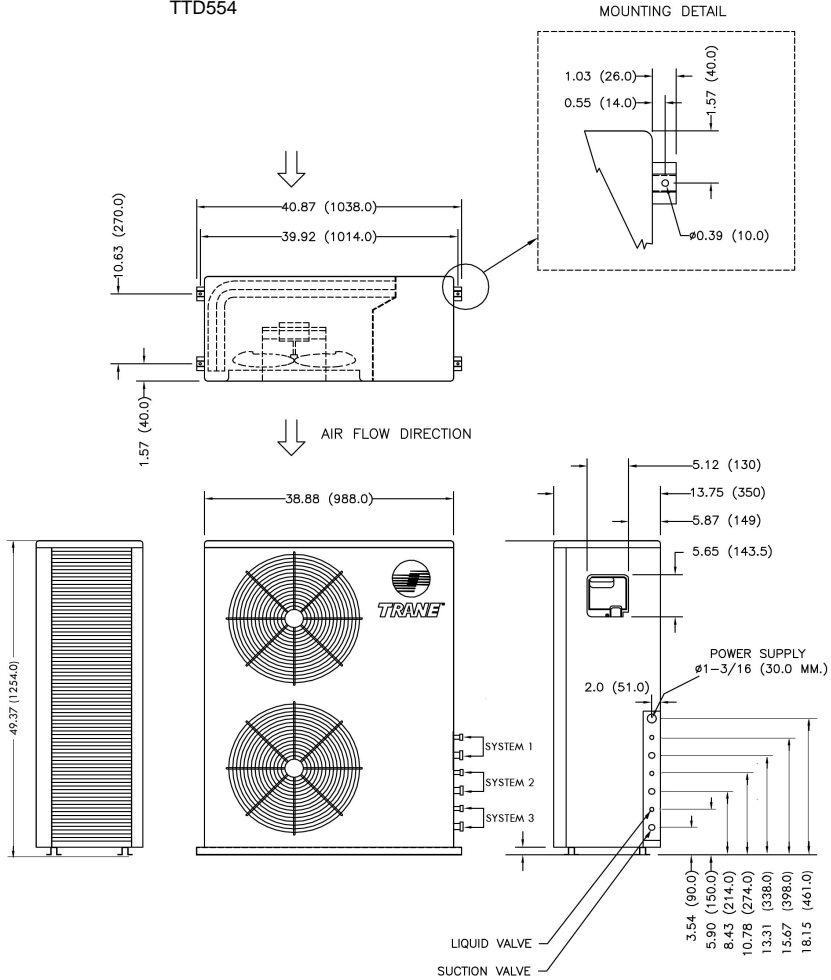
Model
TTD518
TTD521
TTD524



Dimensional Data

Model

TTD545	TTT545
TTD548	TTT548
TTD551	TTT554
TTD554	



- NOTE**
- 1) SUCTION AND LIQUID LINE ARE FLARE TYPE CONNECTIONS.
 - 2) DIMENSIONS : INCHES (MILIMETERS) ; 1 IN. = 25.40 MM.



Note



Note



บริษัท แอมแอร์ จำกัด
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 อำเภอบางพลี จังหวัดสมุทรปราการ 10540

Trane
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For more information, contact your local district office

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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this publication.