



**Installation
Operation
Maintenance**

TTV-IOM

Library	Service Literature
Product Section	Unitary
Product	DX Fan Coil Unit
Model	TTV
Literature Type	Installation / Operation / Maintenance
Sequence	1
Date	October 2019

**Commercial
Air Cooled Split
Air Conditioners
-Indoor Units**

R22/R407C



Models **TTV250, TTV300
TTV400, TTV500
TTV600.**

Since The Trane Company has a policy of continuous product improvement. A reserves the right to change specifications and design without notice. The installation and servicing of the equipment referred to in this booklet should be done by qualified experienced technicians.

Foreword

These instructions do not attempt to cover all variations in systems, nor to 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

sufficiently covered for the purchaser's purpose, the matter should be referred to the manufacturer.

Warranty

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

due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation.

Reception

On arrival, inspect the unit before signing the delivery note. Specify any damage 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 local Trane Sales Office at the same time. The unit should be totally inspected within 15 days of delivery. If any concealed damage is discovered, stop, unpacking the shipment. Take photos of the damage material if possible. Notify the Carrier immediately by phone and

registered mail. Notify the local Trane Sales Office. Concealed damage must be reported within 15 days delivery. Check the unit nameplate to confirm that the proper unit was shipped. Available power supply must be compatible with electrical characteristics specified on component nameplates.

General Information

This manual covers the installation, operation and maintenance of the Trane TTV DX Fan Coil. These new air handler models are completely designed to incorporate a single slab coil assembly, improved application flexibility, servicing and maintenance accessibility and an improved accessory line. TTVs are of the fully vertical discharge type. They are shipped in the vertical position.

Note: "Warning" and "Caution" appear at appropriate places in this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The manufacturer assumes no liability for installations or servicing performed by unqualified personnel.

Handling

The unit will be supplied within shipping base and protective packaging over the unit casing. The packaging should be kept on the unit during handling or storage on site.

If it is necessary to remove the packaging for inspection prior to completion of on site handling, retain packaging parts and reapply them by taping in position to prevent damage to the casing. TTVs are supplied with a shipping base which is suitable for handling by a fork lift truck. If it is necessary to sling the unit, use spreader bars under the shipping base, ensure that ropes do not cause abrasion to the surface of the unit.

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MODEL NUMBER DESCRIPTION

T **T** **V** **2** **5** **0** **A** **D** **0** **1** **A** **0** **A** **A** **0** **D**
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Digit 1, 2, 3 = Airflow Configuration
 V = Vertical Discharge

Digit 4, 5, 6 = Nominal Gross Capacity (MBH)

Digit 7 = Major Design Sequence
 A = R22
 E = R407C

Digit 8 = Electrical Rating / Utilization Range
 D = 380-415V/3Ph/50Hz
 3 = 230V/3Ph/60Hz
 K = 380V/3Ph/60Hz
 4 = 460V/3Ph/60Hz

Digit 9 = Motor Control
 0 = None
 1 = DOL Starter

Digit 10 = Factory Installed Options
 0 = No Motor and Drive
 1 = 3.7 Supply Fan Motor kW
 2 = 5.5 Supply Fan Motor kW
 3 = 7.5 Supply Fan Motor kW
 4 = 11 Supply Fan Motor kW
 5 = 15 Supply Fan Motor kW

MOTOR SIZE			
MODEL	STANDARD	OVER SIZE - 1	OVER SIZE - 2
TTV250	5 hp (3.7 kW)	7.5 hp (5.5 kW)	10 hp (7.5 kW)
TTV300	7.5 hp (5.5 kW)	10 hp (7.5 kW)	15 hp (11 kW)
TTV400	7.5 hp (5.5 kW)	10 hp (7.5 kW)	15 hp (11 kW)
TTV500	10 hp (7.5 kW)	15 hp (11 kW)	20 hp (15 kW)
TTV600	15 hp (11 kW)	20 hp (15 kW)	-----

Digit 11 = Minor Design Sequence
 A = 1st Minor Design Sequence

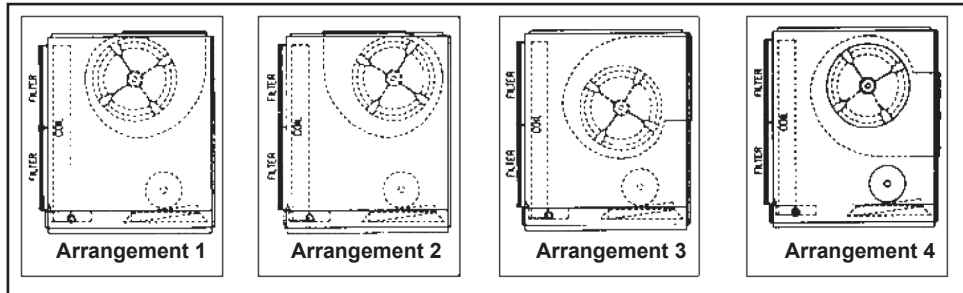
Digit 12
 0 = No Discharge Plenum
 1 = With Discharge Plenum (For Vertical Fan Arrangement)

Digit 13
 A = Internal Filter Rack ; 1" Filter
 B = External Filter Rack ; 2" Filter
 C = Internal Filter Rack ; 1" Filter with Decorative Return Air Grille

Digit 14 = Fan Arrangement
 A = Arrangement 1
 B = Arrangement 2
 C = Arrangement 3
 D = Arrangement 4

Digit 15 = Future Use
 0 = None

Digit 16 = Service
 D = 4th Service Sequence



General Data (380-415v)(50Hz)

Indoor Unit DX

UNIT MODELS		TTV250	TTV300	TTV400	TTV500	TTV600
POWER CONNECTION	V/ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
MCA¹	A	10.0	15.0	15.0	19.0	27.5
SYSTEM DATA						
Refrigerant Type		R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C
No. Refrigerant Circuits		2	2	2	2	2
Refrigerant Connection Type		Brazed	Brazed	Brazed	Brazed	Brazed
Suction Line OD	in (mm)	2 1/8 (53.98)	1 5/8 (41.28)	2 1/8 (53.98)	2 1/8 (53.98)	2 1/8 (53.98)
Liquid line OD	in (mm)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)
CASING						
Material		Galvanized & Electro-galvanized Steel				
Color		Light Gray				
Type of Insulation		PE foam 10 mm				
COIL						
Coil Size (HxL)	in (mm)	40 (1020) x 60 (1524)	46 (1173) x 60 (1524)	52 (1320) x 71 (1801)	27 (700) x 91 (2312)	30 (764) x 91 (2312)
Face Area	sq ft (m ²)	16.7 (1.55)	19.2 (1.78)	25.6 (2.38)	27 (700) x 91 (2312)	30 (764) x 91 (2312)
Tube Size OD	in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	1/2 (12.7)	1/2 (12.7)
Tube Type		Inner Grooved	Inner Grooved	Inner Grooved	Plain	Plain
Rows		3	3	3	4	4
Fin Type		Corrugated / Uncoated Fin				
Fins per inch		12	12	12	12	12
Refrigerant Flow Control		Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type		STEEL PIPE				
ELECTRIC HEATER DATA						
Heater Rating	kW	-	-	-	-	-
Heater RLA		-	-	-	-	-
FAN						
Fan Type		Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC
No. used		1	1	2	2	2
Diameter	in (mm)	15.7 (400)	15.7 (400)	15.4 (390)	17.7 (450)	17.7 (450)
Width	in (mm)	12.6 (320)	12.6 (320)	15.4 (390)	14.2 (360)	14.2 (360)
Fixed Drive Type		Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley
Fan Speed - Std.(Factory set)	rpm	828	870	923	725	780
Max. Allowable	rpm	1,100	1,100	1,200	1,000	1,000
Airflow ²	cfm (cmh)					
- Nominal		7,760 (13,180)	9,240 (15,700)	12,120 (20,590)	15,130 (25,700)	18,080 (30,720)
- Max.		8,900 (15,120)	10,600 (18,000)	13,800 (23,445)	16,700 (28,370)	21,800 (37,040)
- Min.		5,900 (10,000)	7,000 (11,890)	9,100 (15,460)	11,000 (18,690)	14,400 (24,465)
MOTOR						
Motor Type		TEFC				
No. of Motor		1	1	1	1	1
Motor hp - Std.	hp (kW)	5 (3.7)	7.5 (5.5)	7.5 (5.5)	10 (7.5)	15 (11)
Hi Static		7.5 (5.5) / 10 (7.5)	10 (7.5) / 15 (11)	10 (7.5) / 15 (11)	15 (11) / 20 (15)	20 (15)
No. of Speed		1	1	1	1	1
ESP including filters	in.wg	1	1	1.2	1.2	1.2
Motor Speed	rpm	1440	1445	1445	1450	1465
V/ph/Hz		380-415/3/50				
RLA/LRA		8.03/63	12/79	12/79	15.2/111	22/153
FILTER						
Type		Washable	Washable	Washable	Washable	Washable
No. used		8	9	9	12	9
Size (WxLxD) - Std.	in	16 x 20 x 1	4 - 15 x 20 x 1 2 - 16 x 20 x 1 1 - 16 x 25 x 1	6 - 16 x 25 x 1 3 - 20 x 25 x 1	2 - 16 x 20 x 1 6 - 16 x 25 x 1 1 - 20 x 25 x 1	3 - 20 x 20 x 1 6 - 20 x 25 x 1
DIMENSION (HxWxD)						
Crated (Shipping)	mm	1500 x 2100 x 1290	1650 x 2100 x 1290	1780 x 2390 x 1290	1900 x 2900 x 1520	1980 x 2900 x 1520
Uncrated (Net)	mm	1219 x 1808 x 1040	1372 x 1808 x 1040	1520 x 2088 x 1040	1653 x 2596 x 1275	1777 x 2596 x 1275
WEIGHT						
Crated (Shipping)	lb (kg)	886 (402)	1036 (470)	1197 (543)	1693 (768)	1834 (832)
Uncrated (Net)	lb (kg)	778 (353)	928 (421)	1073 (487)	1510 (685)	1651 (749)

¹ MCA - Minimum Circuit Ampacity ; calculated as follow : 125% of heater R.L Amps plus the fan motor R.L Amps.

² CFM is rated with standard air-dry coil.

General Data (230v)(60Hz)

Indoor Unit DX

UNIT MODELS		TTV250	TTV300	TTV400	TTV500	TTV600
POWER CONNECTION		V/ph/Hz	230/3/60	230/3/60	230/3/60	230/3/60
MCA¹		A	16.6	23.8	23.8	29.8
SYSTEM DATA						
Refrigerant Type		R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C
No. Refrigerant Circuits		2	2	2	2	2
Refrigerant Connection Type		Brazed	Brazed	Brazed	Brazed	Brazed
Suction Line OD	in (mm)	2 1/8 (53.98)	2 1/8 (53.98)	1 5/8 (41.28)	2 1/8 (53.98)	2 1/8 (53.98)
Liquid line OD	in (mm)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)
CASING						
Material		Galvanized & Electro-galvanized Steel				
Color		Light Gray				
Type of Insulation		PE foam 10 mm				
COIL						
Coil Size (HxL)	in (mm)	40 (1020) x 60 (1524)	46 (1173) x 60 (1524)	52 (1320) x 71 (1801)	27 (700) x 91 (2312) 27 (700) x 91 (2312)	30 (764) x 91 (2312) 30 (764) x 91 (2312)
Face Area	sq ft (m ²)	16.7 (1.55)	19.2 (1.78)	25.6 (2.38)	34.8 (3.24)	38.0 (3.53)
Tube Size OD	in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	1/2 (12.7)	1/2 (12.7)
Tube Type		Inner Grooved	Inner Grooved	Inner Grooved	Plain	Plain
Rows		3	3	3	4	4
Fin Type		Corrugated / Uncoated Fin				
Fins per inch		12	12	12	12	12
Refrigerant Flow Control		Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type		STEEL PIPE				
ELECTRIC HEATER DATA						
Heater Rating	kW	-	-	-	-	-
Heater RLA		-	-	-	-	-
FAN						
Fan Type		Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC
No. used		1	1	2	2	2
Diameter	in (mm)	15.7 (400)	15.7 (400)	15.4 (390)	17.7 (450)	17.7 (450)
Width	in (mm)	12.6 (320)	12.6 (320)	15.4 (390)	14.2 (360)	14.2 (360)
Fixed Drive Type		Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley
Fan Speed - Std.(Factory set)	rpm	828	870	923	725	780
Max. Allowable	rpm	1,100	1,100	1,200	1,000	1,000
Airflow ²	cfm (cmh)					
- Nominal		7,760 (13,180)	9,240 (15,700)	12,120 (20,590)	15,130 (25,700)	18,080 (30,720)
- Max.		8,900 (15,120)	10,600 (18,000)	13,800 (23,445)	16,700 (28,370)	21,800 (37,040)
- Min.		5,900 (10,000)	7,000 (11,890)	9,100 (15,460)	11,000 (18,690)	14,400 (24,465)
MOTOR						
Motor Type		TEFC				
No. of Motor		1	1	1	1	1
Motor hp - Std.	hp (kW)	5 (3.7)	7.5 (5.5)	7.5 (5.5)	10 (7.5)	15 (11)
Hi Static		7.5 (5.5) / 10 (7.5)	10 (7.5) / 15 (11)	10 (7.5) / 15 (11)	15 (11) / 20 (15)	20 (15)
No. of Speed		1	1	1	1	1
ESP including filters	in.wg	1	1	1	1.2	1.2
Motor Speed	rpm	1730	1740	1740	1740	1755
V/ph/Hz		230/3/60				
RLA/LRA		13.30/95.0	19.0/135.0	19.0/135.0	23.80/170.0	35.50/260.0
FILTER						
Type		Washable	Washable	Washable	Washable	Washable
No. used		8	9	9	12	9
Size (WxLxD) - Std.	in	16 x 20 x 1	4 - 15 x 20 x 1 2 - 16 x 20 x 1 1 - 16 x 25 x 1 2 - 15 x 25 x 1	6 - 16 x 25 x 1 3 - 20 x 25 x 1	2 - 16 x 20 x 1 6 - 16 x 25 x 1 1 - 20 x 25 x 1 3 - 25 x 25 x 1	3 - 20 x 20 x 1 6 - 20 x 25 x 1
DIMENSION (HxWxD)						
Crated (Shipping)	mm	1500 x 2100 x 1290	1650 x 2100 x 1290	1780 x 2390 x 1290	1900 x 2900 x 1520	1980 x 2900 x 1520
Uncrated (Net)	mm	1219 x 1808 x 1040	1372 x 1808 x 1040	1520 x 2088 x 1040	1653 x 2596 x 1275	1777 x 2596 x 1275
WEIGHT						
Crated (Shipping)	lb (kg)	886 (402)	1036 (470)	1197 (543)	1693 (768)	1834 (832)
Uncrated (Net)	lb (kg)	778 (353)	928 (421)	1073 (487)	1510 (685)	1651 (749)

¹ MCA - Minimum Circuit Ampacity ; calculated as follow : 125% of heater R.L Amps plus the fan motor R.L Amps.

² CFM is rated with standard air-dry coil.

General Data (380-415v)(60Hz)

Indoor Unit DX

UNIT MODELS		TTV250	TTV300	TTV400	TTV500	TTV600
POWER CONNECTION		V/ph/Hz	380-415/3/60	380-415/3/60	380-415/3/60	380-415/3/60
MCA¹		A	10.1	14.4	14.4	18.0
SYSTEM DATA						
Refrigerant Type		R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C
No. Refrigerant Circuits		2	2	2	2	2
Refrigerant Connection Type		Brazed	Brazed	Brazed	Brazed	Brazed
Suction Line OD		in (mm)	2 1/8 (53.98)	2 1/8 (53.98)	1 5/8 (41.28)	2 1/8 (53.98)
Liquid line OD		in (mm)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)
CASING						
Material		Galvanized & Electro-galvanized Steel				
Color		Light Gray				
Type of Insulation		PE foam 10 mm				
COIL						
Coil Size (HxL)		in (mm)	40 (1020) x 60 (1524)	46 (1173) x 60 (1524)	52 (1320) x 71 (1801)	27 (700) x 91 (2312)
					27 (700) x 91 (2312)	30 (764) x 91 (2312)
Face Area		sq ft (m ²)	16.7 (1.55)	19.2 (1.78)	25.6 (2.38)	34.8 (3.24)
Tube Size OD		in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	1/2 (12.7)
Tube Type			Inner Grooved	Inner Grooved	Inner Grooved	Plain
Rows			3	3	3	4
Fin Type					Corrugated / Uncoated Fin	
Fins per inch			12	12	12	12
Refrigerant Flow Control			Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size		in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type					STEEL PIPE	
ELECTRIC HEATER DATA						
Heater Rating		kW	-	-	-	-
Heater RLA			-	-	-	-
FAN						
Fan Type			Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC
No. used			1	1	2	2
Diameter		in (mm)	15.7 (400)	15.7 (400)	15.4 (390)	17.7 (450)
Width		in (mm)	12.6 (320)	12.6 (320)	15.4 (390)	14.2 (360)
Fixed Drive Type			Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley
Fan Speed - Std.(Factory set)		rpm	828	870	923	725
Max. Allowable		rpm	1,100	1,100	1,200	1,000
Airflow ²		cfm (cmh)				
- Nominal			7,760 (13,180)	9,240 (15,700)	12,120 (20,590)	15,130 (25,700)
- Max.			8,900 (15,120)	10,600 (18,000)	13,800 (23,445)	16,700 (28,370)
- Min.			5,900 (10,000)	7,000 (11,890)	9,100 (15,460)	11,000 (18,690)
MOTOR						
Motor Type					TEFC	
No. of Motor			1	1	1	1
Motor hp - Std.		hp (kW)	5 (3.7)	7.5 (5.5)	7.5 (5.5)	10 (7.5)
Hi Static			7.5 (5.5) / 10 (7.5)	10 (7.5) / 15 (11)	10 (7.5) / 15 (11)	15 (11) / 20 (15)
No. of Speed			1	1	1	1
ESP including filters		in.wg	1	1	1	1.2
Motor Speed		rpm	1730	1740	1740	1740
V/ph/Hz					380-415/3/60	
RLA/LRA			8.05/57.5	11.5/81.71	11.5/81.71	14.41/102.89
						21.49/157.
FILTER						
Type			Washable	Washable	Washable	Washable
No. used			8	9	9	12
Size (WxLxD) - Std.		in	16 x 20 x 1	4 - 15 x 20 x 1	6 - 16 x 25 x 1	2 - 16 x 20 x 1
				2 - 16 x 20 x 1	3 - 20 x 25 x 1	6 - 16 x 25 x 1
				1 - 16 x 25 x 1		1 - 20 x 25 x 1
				2 - 15 x 25 x 1		3 - 25 x 25 x 1
DIMENSION (HxWxD)						
Crated (Shipping)		mm	1500 x 2100 x 1290	1650 x 2100 x 1290	1780 x 2390 x 1290	1900 x 2900 x 1520
Uncrated (Net)		mm	1219 x 1808 x 1040	1372 x 1808 x 1040	1520 x 2088 x 1040	1653 x 2596 x 1275
WEIGHT						
Crated (Shipping)		lb (kg)	886 (402)	1036 (470)	1197 (543)	1693 (768)
Uncrated (Net)		lb (kg)	778 (353)	928 (421)	1073 (487)	1510 (685)

¹ MCA - Minimum Circuit Ampacity ; calculated as follow : 125% of heater R.L Amps plus the fan motor R.L Amps.

² CFM is rated with standard air-dry coil.

General Data (460V)(60Hz)

Indoor Unit DX

UNIT MODELS		TTV250	TTV300	TTV400	TTV500	TTV600	
POWER CONNECTION		V/ph/Hz	460/3/60	460/3/60	460/3/60	460/3/60	
MCA¹		A	8.3	11.9	11.9	14.9	
SYSTEM DATA							
Refrigerant Type		R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C	R22 / R407C	
No. Refrigerant Circuits		2	2	2	2	2	
Refrigerant Connection Type		Brazed	Brazed	Brazed	Brazed	Brazed	
Suction Line OD		in (mm)	2 1/8 (53.98)	2 1/8 (53.98)	1 5/8 (41.28)	2 1/8 (53.98)	
Liquid line OD		in (mm)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	7/8 (22.23)	
CASING							
Material		Galvanized & Electro-galvanized Steel					
Color		Light Gray					
Type of Insulation		PE foam 10 mm					
COIL							
Coil Size (HxL)		in (mm)	40 (1020) x 60 (1524)	46 (1173) x 60 (1524)	52 (1320) x 71 (1801)	27 (700) x 91 (2312)	30 (764) x 91 (2312)
Face Area		sq ft (m ²)	16.7 (1.55)	19.2 (1.78)	25.6 (2.38)	34.8 (3.24)	38.0 (3.53)
Tube Size OD		in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	1/2 (12.7)	1/2 (12.7)
Tube Type			Inner Grooved	Inner Grooved	Inner Grooved	Plain	Plain
Rows			3	3	3	4	4
Fin Type			Corrugated / Uncoated Fin				
Fins per inch			12	12	12	12	12
Refrigerant Flow Control			Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size		in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type			STEEL PIPE				
ELECTRIC HEATER DATA							
Heater Rating		kW	-	-	-	-	
Heater RLA			-	-	-	-	
FAN							
Fan Type			Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC	Centrifugal FC
No. used			1	1	2	2	2
Diameter		in (mm)	15.7 (400)	15.7 (400)	15.4 (390)	17.7 (450)	17.7 (450)
Width		in (mm)	12.6 (320)	12.6 (320)	15.4 (390)	14.2 (360)	14.2 (360)
Fixed Drive Type			Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley	Belt and Pulley
Fan Speed - Std. (Factory set)		rpm	828	870	923	725	780
Max. Allowable		rpm	1,100	1,100	1,200	1,000	1,000
Airflow ²		cfm (cmh)					
- Nominal			7,760 (13,180)	9,240 (15,700)	12,120 (20,590)	15,130 (25,700)	18,080 (30,720)
- Max.			8,900 (15,120)	10,600 (18,000)	13,800 (23,445)	16,700 (28,370)	21,800 (37,040)
- Min.			5,900 (10,000)	7,000 (11,890)	9,100 (15,460)	11,000 (18,690)	14,400 (24,465)
MOTOR							
Motor Type			TEFC				
No. of Motor			1	1	1	1	
Motor hp - Std.		hp (kW)	5 (3.7)	7.5 (5.5)	7.5 (5.5)	10 (7.5)	15 (11)
Hi Static			7.5 (5.5) / 10 (7.5)	10 (7.5) / 15 (11)	10 (7.5) / 15 (11)	15 (11) / 20 (15)	20 (15)
No. of Speed			1	1	1	1	1
ESP including filters		in.wg	1	1	1.2	1.2	1.2
Motor Speed		rpm	1730	1740	1740	1740	1755
V/ph/Hz			460/3/60				
RLA/LRA			6.65/47.5	9.5/67.5	9.5/67.5	11.9/85	17.75/130
FILTER							
Type			Washable	Washable	Washable	Washable	Washable
No. used			8	9	9	12	9
Size (WxLxD) - Std.		in	16 x 20 x 1	4 - 15 x 20 x 1	6 - 16 x 25 x 1	2 - 16 x 20 x 1	3 - 20 x 20 x 1
				2 - 16 x 20 x 1	3 - 20 x 25 x 1	6 - 16 x 25 x 1	6 - 20 x 25 x 1
				1 - 16 x 25 x 1		1 - 20 x 25 x 1	
				2 - 15 x 25 x 1		3 - 25 x 25 x 1	
DIMENSION (HxWxD)							
Crated (Shipping)		mm	1500 x 2100 x 1290	1650 x 2100 x 1290	1780 x 2390 x 1290	1900 x 2900 x 1520	1980 x 2900 x 1520
Uncrated (Net)		mm	1219 x 1808 x 1040	1372 x 1808 x 1040	1520 x 2088 x 1040	1653 x 2596 x 1275	1777 x 2596 x 1275
WEIGHT							
Crated (Shipping)		lb (kg)	886 (402)	1036 (470)	1197 (543)	1693 (768)	1834 (832)
Uncrated (Net)		lb (kg)	778 (353)	928 (421)	1073 (487)	1510 (685)	1651 (749)

¹ MCA - Minimum Circuit Ampacity ; calculated as follow : 125% of heater R.L Amps plus the fan motor R.L Amps.

² CFM is rated with standard air-dry coil.

WARNING: OPEN AND LOCK UNIT DISCONNECT TO PREVENT INJURY OR DEATH FROM ELECTRIC SHOCK OR CONTACT WITH MOVING PARTS BEFORE ATTEMPTING ANY INSTALLATION OR MAINTENANCE.

The general location of the air handler is normally selected by the architect, contractor, and/or buyer. For proper installation the following items must be considered.

1. Available power supply must agree with electrical data on component nameplate.
2. Air handlers shipped wired for 380 - 450 Volt application.
3. If external accessories are installed on the unit, additional clearance must be provided.
4. All duct work should be properly insulated to prevent condensation and heat loss.

Note: It is recommended that the outline drawings on page be studied and dimensions properly noted and checked against selected installation site.

Important: *If adding external accessories to the unit, additional clearance must be considered for the overall space needed.*

For Installation of accessories available for this air handler, follow the instructions packed with each accessory.

Lifting Recommendations

Before preparing the unit for lifting, the center of gravity should be determined for lifting safety. Because of the placement of internal components, the unit weight may be unevenly distributed.

WARNING: ON SITE LIFTING EQUIPMENT MUST BE CAPABLE OF LIFTING THE WEIGHT OF THE UNIT WITH AN ADEQUATE SAFETY FACTOR. THE USE OF UNDER-CAPACITY LIFTING DEVICES MAY RESULT IN PERSONAL INJURY OR DEATH AND CAUSE DAMAGE TO THE UNIT.

The unit can be moved using a forklift of suitable capacity. For lifting the unit into an elevated mounting position, run lifting straps or slings under the unit and attach securely to the lifting device. Use spreader bars to protect the unit casing from damage. Test lift the unit to determine proper balance and stability.

Caution: *Use spreader bars to prevent straps from damaging the unit. Install the bar between lifting straps, both underneath the unit and above the unit. This will prevent the straps from crushing the unit cabinet or damaging the unit finish.*

All units must be mounted level to assure proper drainage and operation.

Vertical - Floor Mounting

It is generally recommended that the unit be mounted on a sub-base so that adequate height can be provided for a condensate drain trap. However if adequate drainage can be provided, the unit may be mounted directly on the floor. It is recommended that either a polyurethane or thin rubber gasket be applied to the unit base to prevent paint damage and subsequent corrosion.

Before installing any unit make sure proper preparation has been made at each unit location for piping and electrical connections.

Allow adequate space for the unit and free air or service clearance. All TTVs can be installed back to the wall. Service clearance required is 1m at both left and right hand sides of the TTV, 1m in front of the coil is minimum recommended airflow clearance.

(c) Coil piping connections

All refrigerant piping connection are made inside the unit, to prevent from shipping damage. Connections to outdoor units can be made from the left or right hand side of the TTV.

Caution: *Protect adjacent surfaces from heat damage, when brazing around the air handler.*

Caution: *These air handlers are shipped with a holding charge of N₂ until refrigerant lines are ready to be connected.*

All refrigerant piping should be insulated. As TXVs, sensing bulbs and equalizing lines are easily damage by heat, ensure sufficient cooling [with damp cloth] is given when brazing in suction / liquid lines to outdoor unit. Sight glass are not factory provided. Braze in to the liquid line outside the TTV.

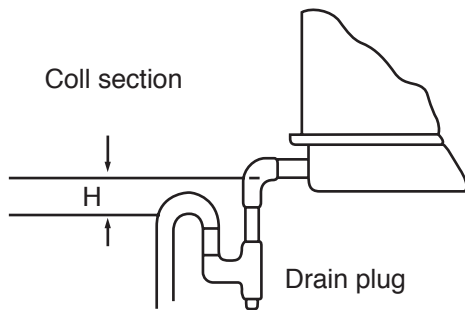
Important: *Ensure that the refrigerant lines passing through the cabinet are not resting on sharp sheet metal edges.*

Installation, brazing, leak testing, and evacuation of refrigeration lines are covered in the installation instructions packaged with the outdoor unit. Read the instruction before beginning installation of refrigerant lines.

Condensate Drain Connections

These air handlers come standard with insulated drain pans. The drain can be run through the right hand or left hand connections on the unit sides as required.

Figure 1 - Condensate Drain Evacuation U-trap



'H': This dimension must be 15 mm at least plus total static pressure.

Filters

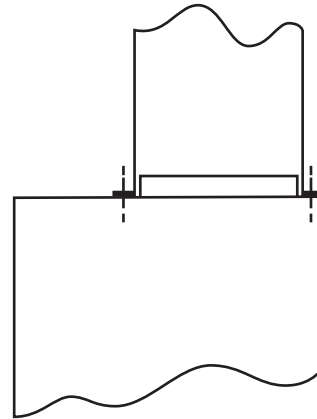
Air handlers are shipped with 1" washable filters installed in the unit. For filter dimensions, refer to page 2. Filters shall be accessible from the front coil access panel. With ducted return systems ensure sufficient access is given for filter change. Optional side access filter rack allows side access and 2" filter capability.

Duct Connections

The supply and return ducts should be connected to the unit with flame retardant duct connectors and the use of flexible connectors is recommended for all duct connections in order to reduce vibration transmission. The return duct should be sized to the same dimensions as the return inlet of the unit.

If rigid ductwork is to be attached to the fan section, it must be flanged and fitted with screws into the fan section discharge face as shown in Figure 2.

Figure 2 : Duct Connection



Electrical Connections

WARNING: WHEN INSTALLING OR SERVICING THIS EQUIPMENT, ALWAYS EXERCISE BASIC SAFETY PRECAUTIONS TO AVOID THE POSSIBILITY OF ELECTRIC SHOCK THAT COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH.

1. All electrical lines, sizing, protection and grounding must be in accordance with the National Electric Code and local codes.
2. If conduit is used, isolate whenever vibration transmission may cause a noise problem within the building structure.
3. Ensure all connections are tight and no wires exposed.
4. All accessories must be installed and wired according to the instructions packaged with that accessory.

Operation / Start-Up

Preparation

Perform the following checks and inspections before operating the unit:

Inspection Checklist

- Duckwork connections are complete and insulated.
- Coil connections are complete and tight.
- Condensate drain pan connections are complete and tight.
- Electrical connections completed. Wiring is correct and in accordance with the wiring diagram, with all connections secure.
- Ground connection completed.
- Check and retighten if necessary set screws on the drive, fan pulley, fan bearings and wheel.
- Rotate fan by hand, to ensure that it runs freely and that there is no interference.
- Check that fan is centrally located in the housing, axially and radially.
- Check and retighten, if necessary, drive and bearing bolts, motor clamp plate bolts and isolator bolts.
- Check to ensure that pulley are correctly aligned and that shafts are parallel.
- Check belt tension as per instruction given in the maintenance section.

Start-Up Procedures

After completing all installation work, the unit may be started and the following checks and adjustments performed:

- a. Measure the motor voltage and amps on all phases to insure proper operation. Compare these readings with the motor nameplate.
- b. Disconnect load and start motor to check the direction of rotation. If the rotation need to be changed, stop the motor completely and change the direction of rotation.
- c. After connecting the load, the motor should start quickly and run smoothly. If it does not, the power supply should be switched off at once and all connections, as well as the power supply, be re-checked before re-starting.
- d. In the event of excessive vibrations or unusual noises, the motor should be disconnected from the load and checked for poor alignment, loose mounting bolts, etc.
- e. When the motor has been operated under load for a short period of time, check that the operating current tally with the nameplate current.

Maintenance

WARNING: DISCONNECT ELECTRICAL POWER SOURCE AND SECURE IN DISCONNECTED POSITION BEFORE SERVICING THE UNIT. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY OR DEATH FROM ELECTRICAL SHOCK.

Monthly Inspection

1. Check condition of air filters and replace them if necessary.
2. Check the drain pan to be sure that it is clean and free to carry the flow of condensate through the drain line.
3. Check the coil surface for cleanliness. Clean if necessary.

Yearly Inspection

1. Replace filters.
2. Check coil surface. Clean by vacuuming or flushing with cold water. Do not use steam or hot water. High pressure may damage coil.
3. Carry out checks as detailed in inspection checklist in the Operation Section.
4. Inspect the condition of the evaporator fan belt and replace if necessary. The belts fitted to TTV units cannot achieve design performance without the correct tensioning.
5. Check condition of vibration isolators, replace if there is any sign of wear, loosening or material deterioration.
6. Check fan bearings for noisy operation and excessive lubricant leakage. Replace if necessary.
7. Inspect the condensate drain pan and condensate piping to make sure they are clear and will carry away all water.
8. Inspect the control panel wiring to make sure connections are tight and insulation is intact.

Change / Clean Filters

Change or clean air filters at least twice a year. Filters will require more frequent care under high load conditions or dirty air. A clogged air filters reduces airflow, cooling capacity and increases energy usage.

To clean permanent filters, remove the filter media and wash it in water to remove dust, dirt and lint; allow to dry thoroughly before re-installing in the units. Do not rub or wring.

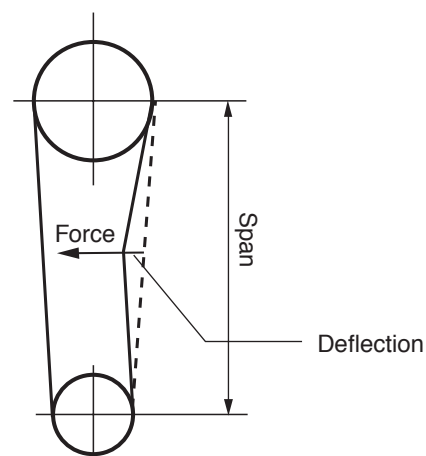
Permanent filters can also be cleaned by blowing with compressed air in opposite direction of filter airflow.

Belt Maintenance

Clean fan belts and pulleys with a dry cloth. Oil and grease must be kept off belts. The use of a belt dressing is not recommended. When replacing belts, use a matched set.

Do not force belts onto pulleys, but adjust motor position to allow mounting and then re-tighten.

Figure 3 : Belt Tension Measurement



To measure belt tension, use a belt tensioner as shown in Figure 3. Determine actual deflection by depressing one belt with the belt tensioner and then adjust the belt tension to the correct pounds force and tighten all setscrews to the proper torques.

Evaporator Fan Motor

Continuity test

Open the unit isolating switch and remove the leads from the terminals of the motor. Test continuity of the windings by placing the probes of an ohmmeter against each two terminal combinations. Meter readings should be obtained across any two of the three terminals and each of the readings should be approximately equal.

Earthed motor

Place one of the test leads of an insulation tester or megger against bare metal and another on each of the motor terminals in turn. The reading obtained should be in the range 2 megohm to infinity. If the reading is substantially below this range an earthed winding is indicated.

Unit supply voltage.

Voltage at the unit terminals must be within plus or minus 10% of the nominal nameplate rating. Measure the voltage while the motor is starting to determine if the voltage drops below the minimum value during starting surge. Check voltage at motor terminals rather than at the isolation switch to determine if the main supply, loose terminals or defective wiring is causing voltage problems.

Voltage imbalance

Voltage unbalance on three phase systems can cause motor overheating and eventual failure. Maximum allowable imbalance is 2.5%. Voltage imbalance is defined as the sum of the deviation of the three voltages from the average without regard to sign, divided by twice the average voltage, e.g. if the three measured voltages are 380, 398 and 400, the average voltage will be:

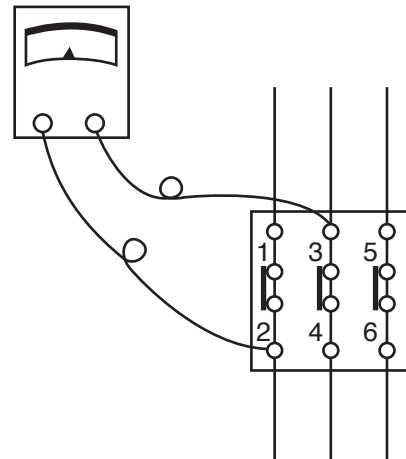
$$\frac{398+400+380}{3} = 393V$$

Then the percentage imbalance will be

$$\frac{100 \times (393-380) + (398-393) + (400-393)}{2 \times 393} = 3.2\%$$

In this example, 3.2% imbalance is not acceptable and the local electricity board should be notified to correct it. This much voltage imbalance could result in as much as 20% current imbalance and an increase in the motor winding temperature. This results in decrease motor life.

Figure 4 : Contactor test Procedure



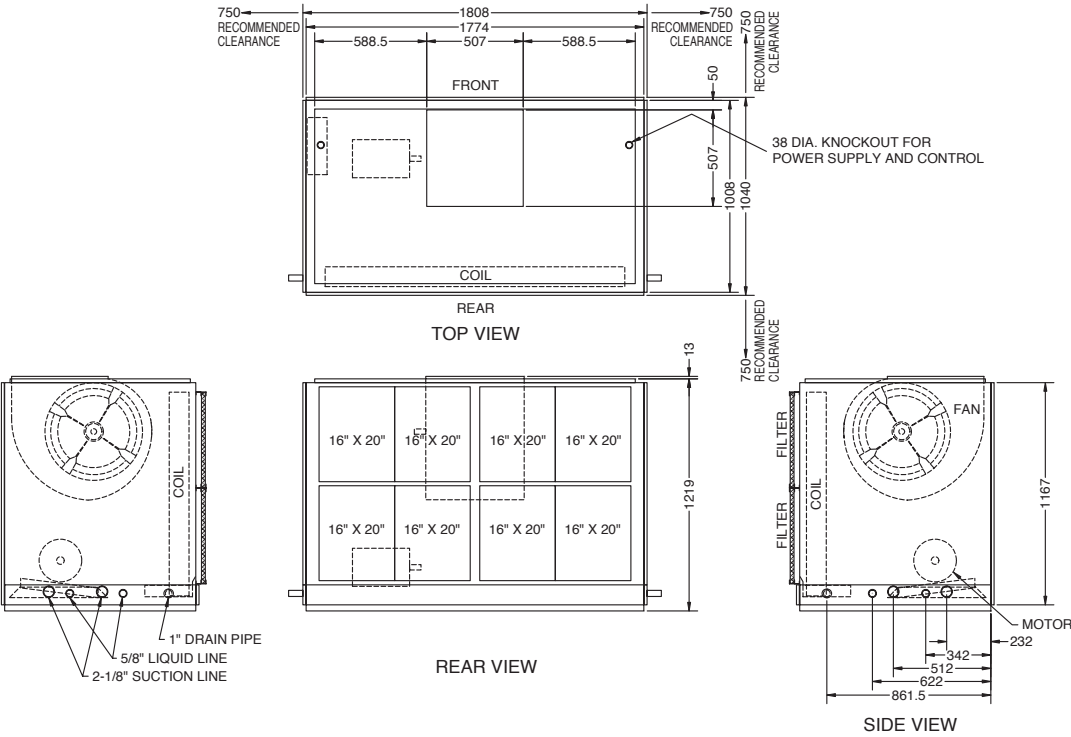
Contactor

1. Inspect the contacts. If they appear to be pitted or burned replace the contactor.
2. Using the ohmmeter, test continuity of the contactor holding coil. If the coil does not test continuous, replace it.
3. To test the contactor for continuous circuit:
 - a. Remove the fan motor leads from the contactor.
 - b. Energise the contactor.
 - c. Visually note if the contacts are closed or test with a voltmeter across terminal, 1-4, 1-6 and 3-2 (see figure 4)
4. Test for voltage drop:
 - a. With the fan motor connected to the contactor, energise the contactor.
 - b. Take readings across terminals 1-2, 3-4 and 5-6.
 - c. A zero voltage reading indicates no voltage drop. If any reading is obtained, a voltage drop exists and should be corrected. Inspect the contacts and replace if necessary.

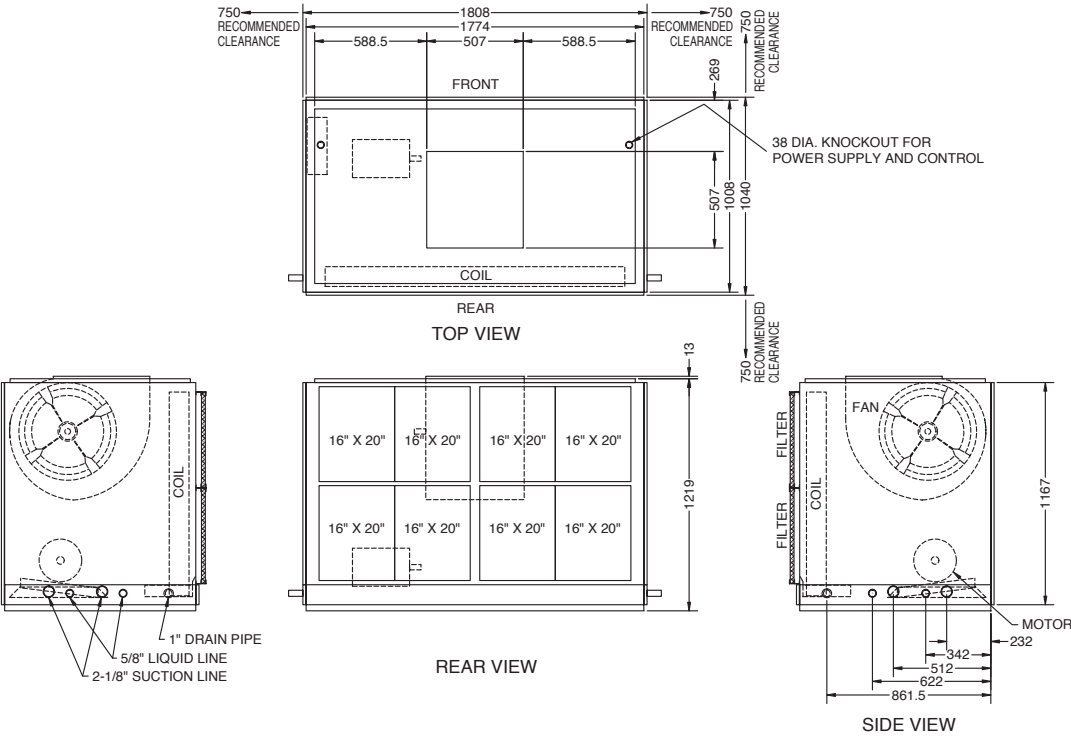
Dimensional Data DX Air Handling unit

TTV 250

FAN ARRANGEMENT 1



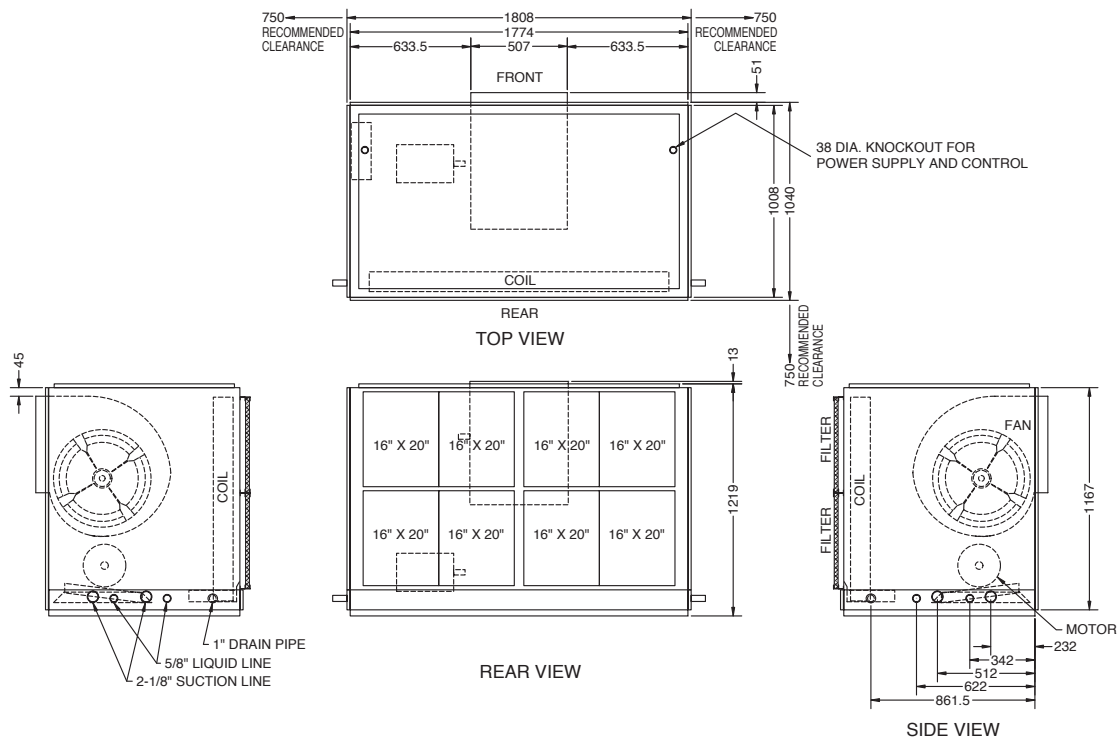
FAN ARRANGEMENT 2



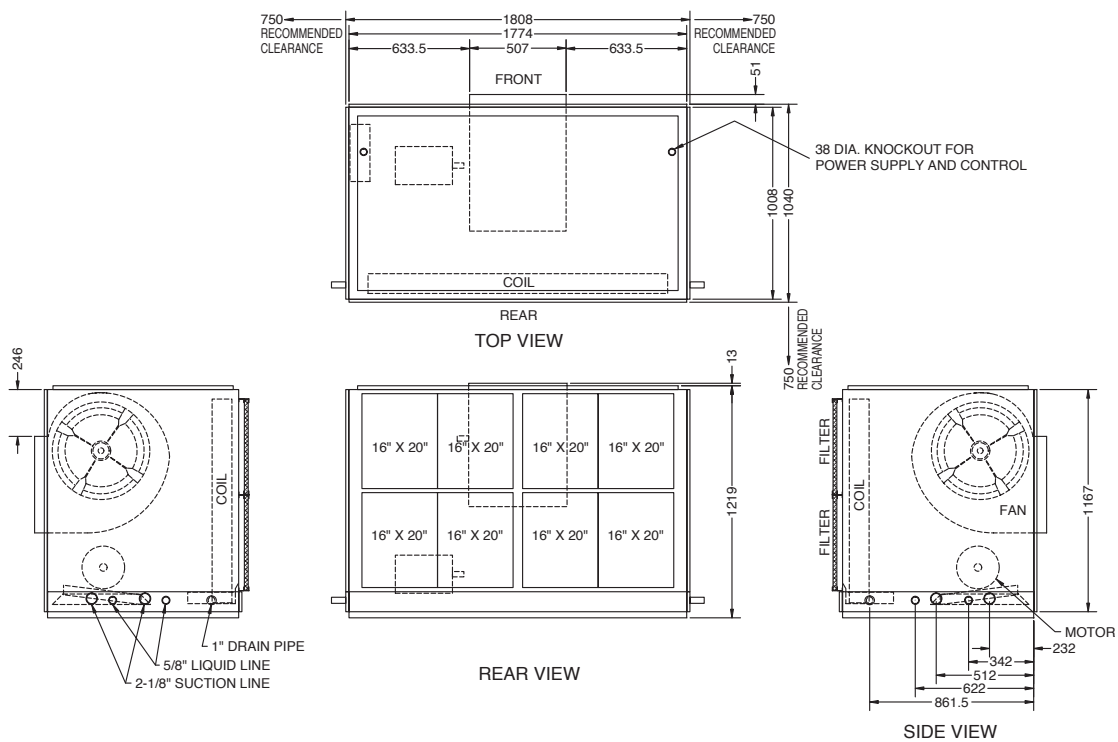
Dimensional Data DX Air Handling unit

TTV 250

FAN ARRANGEMENT 3



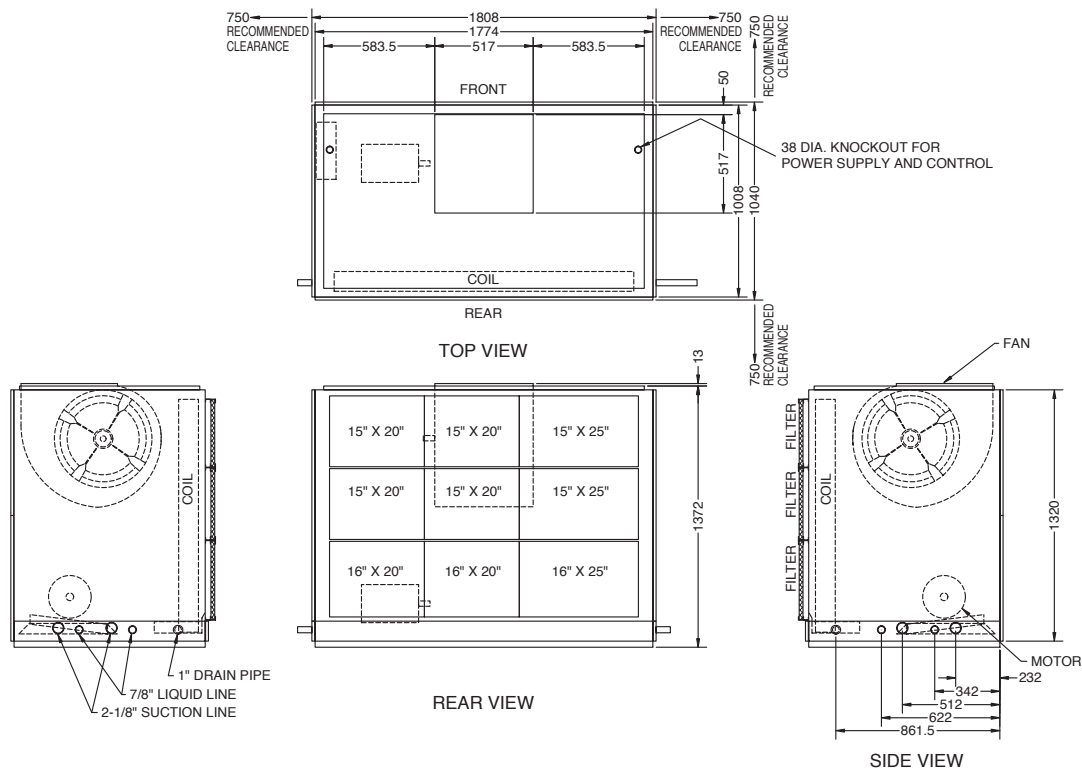
FAN ARRANGEMENT 4



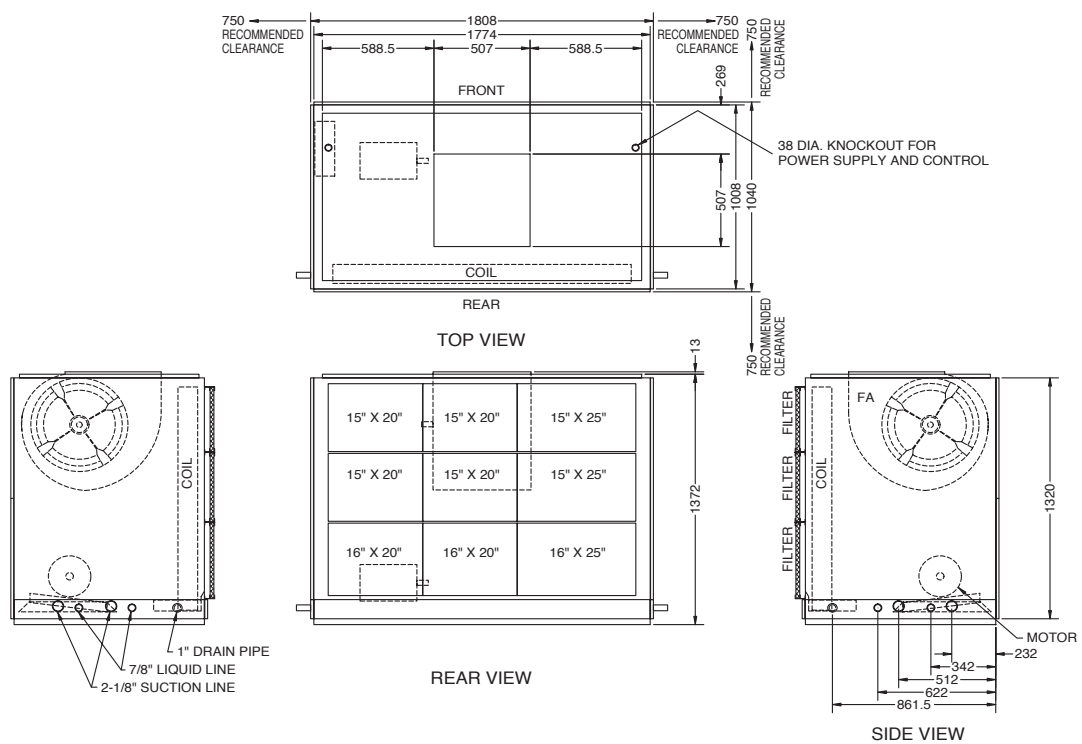
Dimensional Data DX Air Handling unit

TTV 300

FAN ARRANGEMENT 1



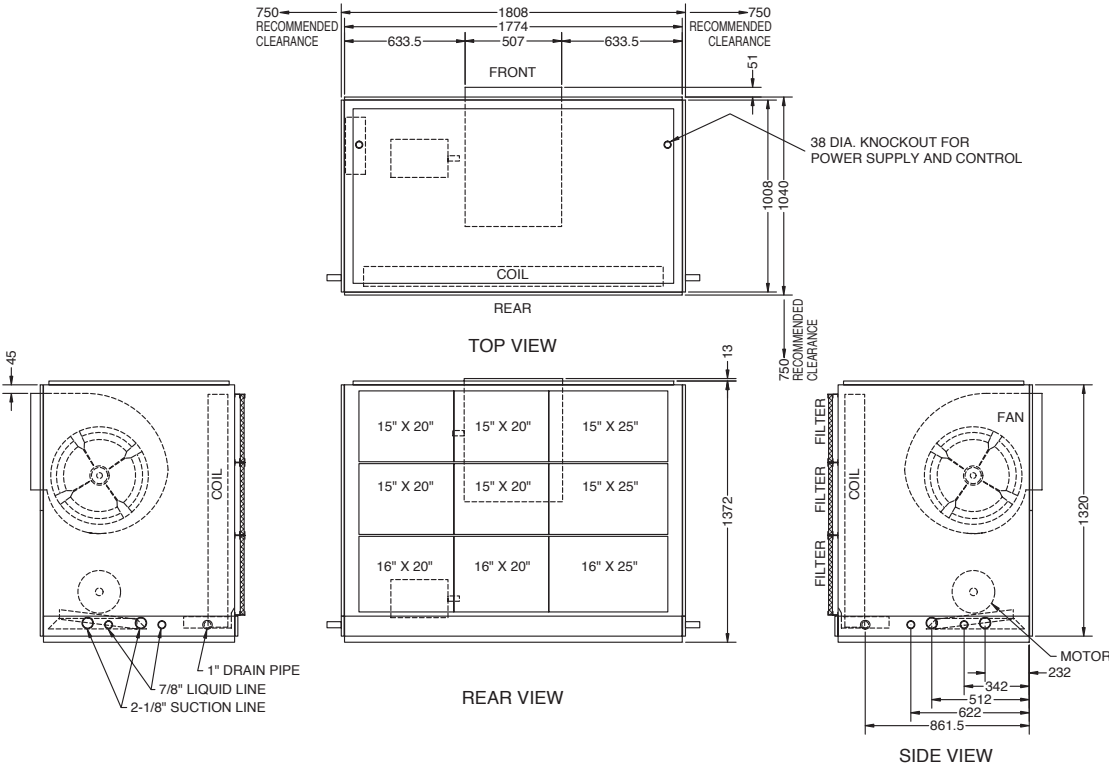
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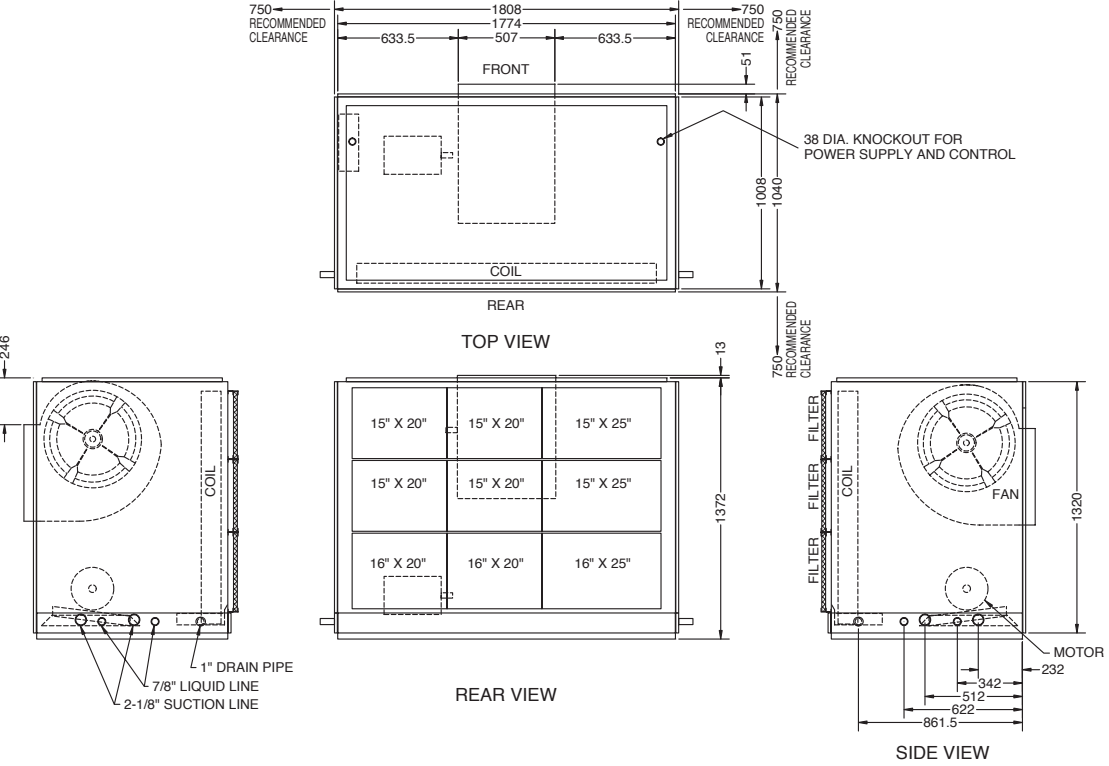
Dimensional Data DX Air Handling unit

TTV 300

FAN ARRANGEMENT 3



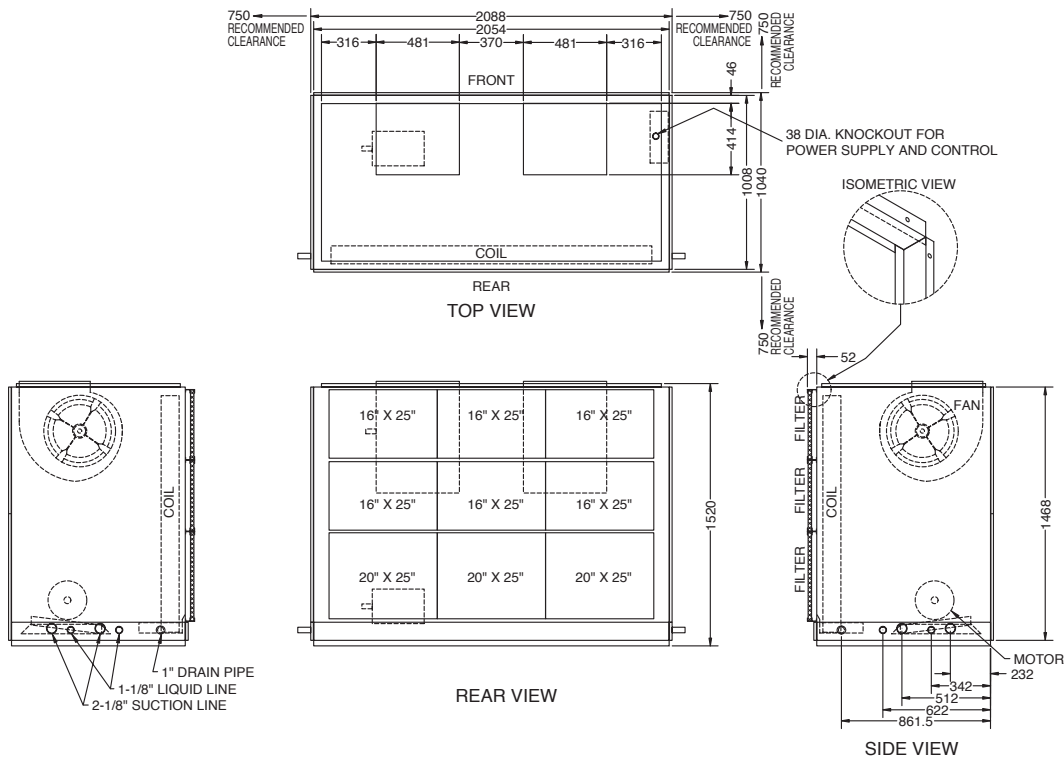
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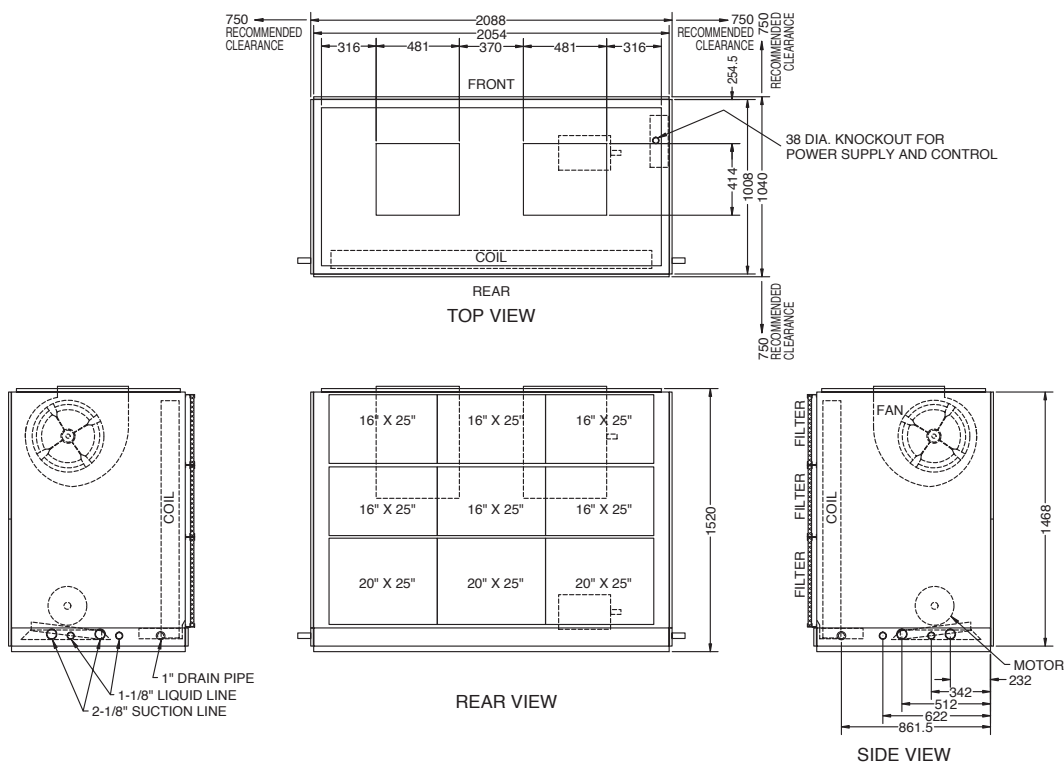
Dimensional Data DX Air Handling unit

TTV 400

FAN ARRANGEMENT 1



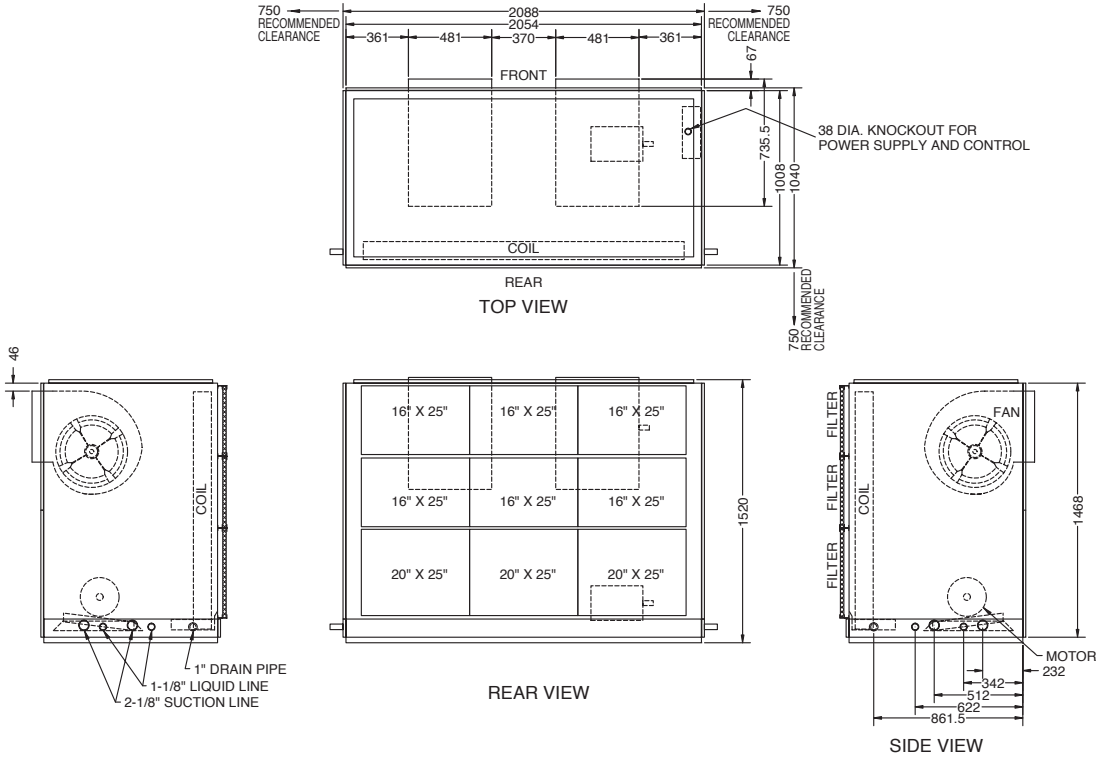
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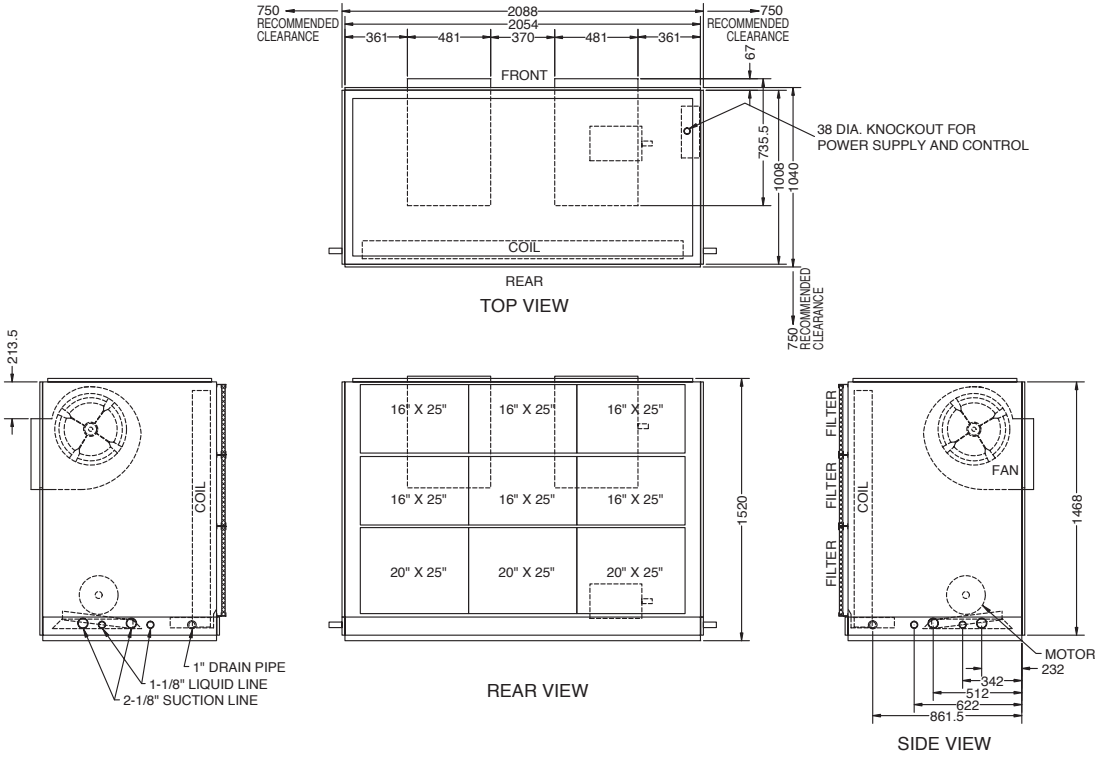
Dimensional Data DX Air Handling unit

TTV 400

FAN ARRANGEMENT 3



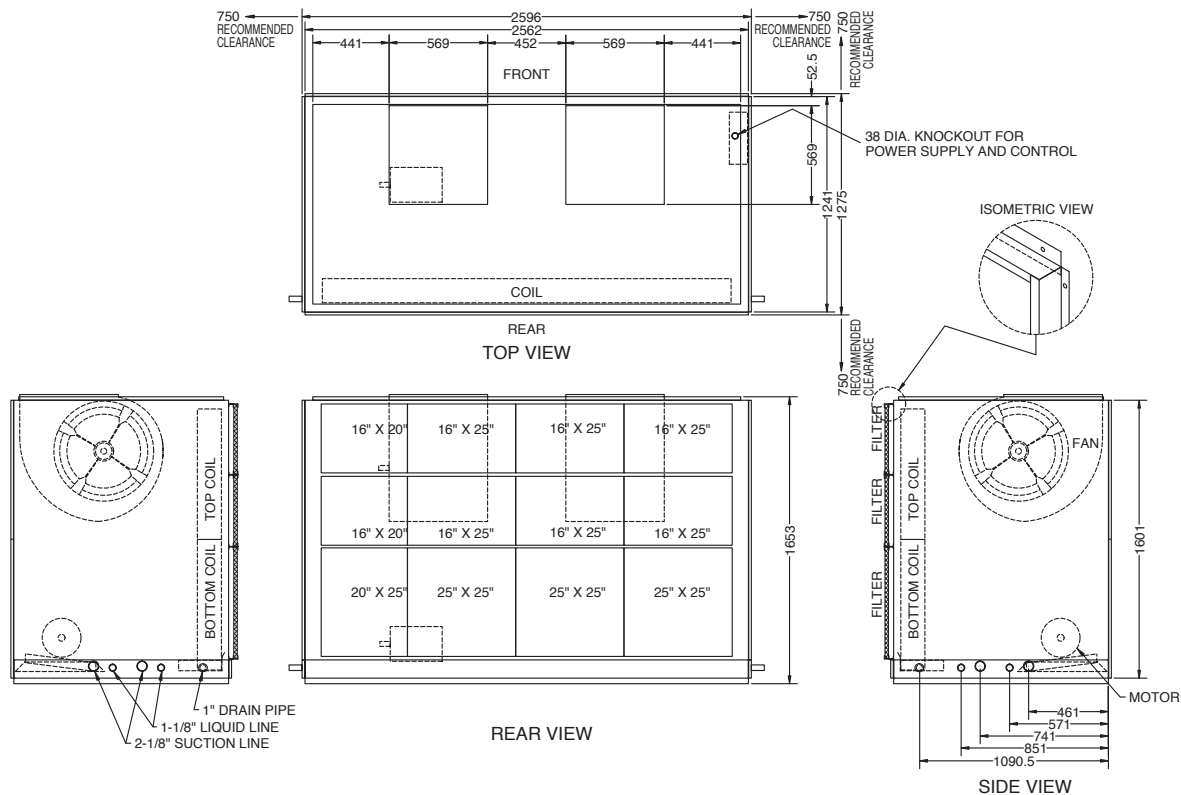
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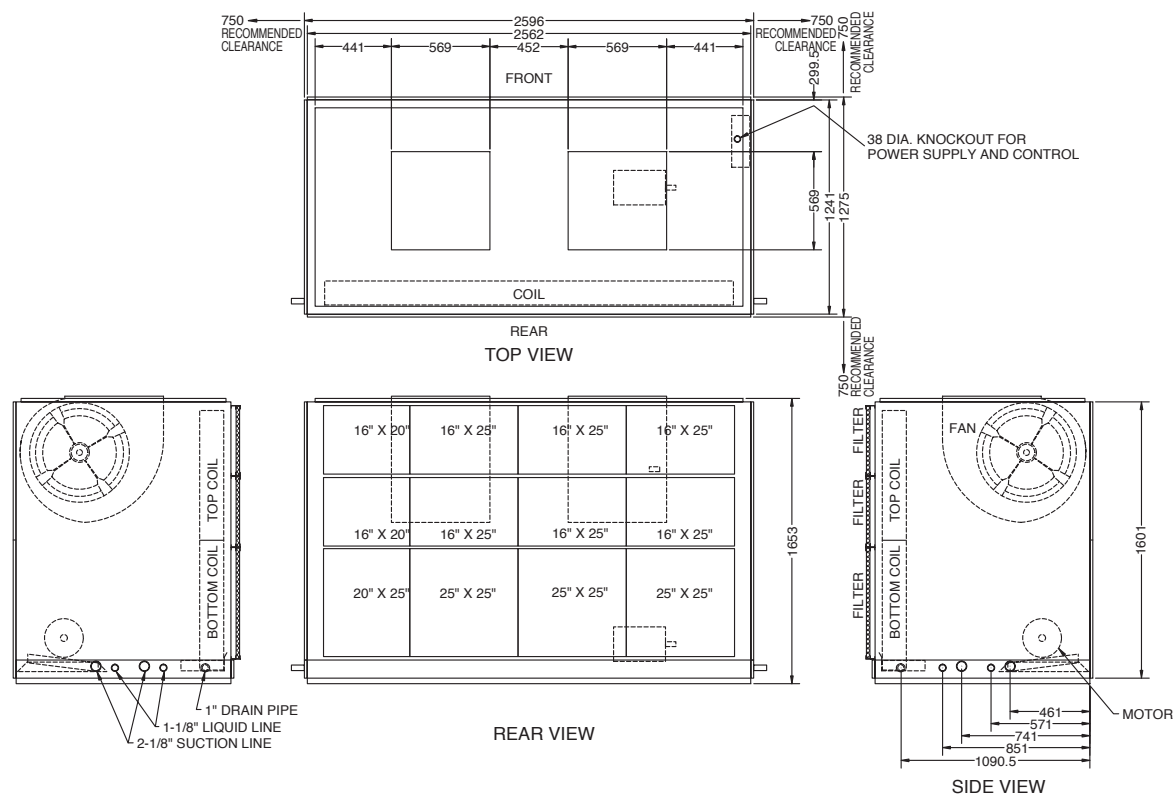
Dimensional Data DX Air Handling unit

TTV 500

FAN ARRANGEMENT 1



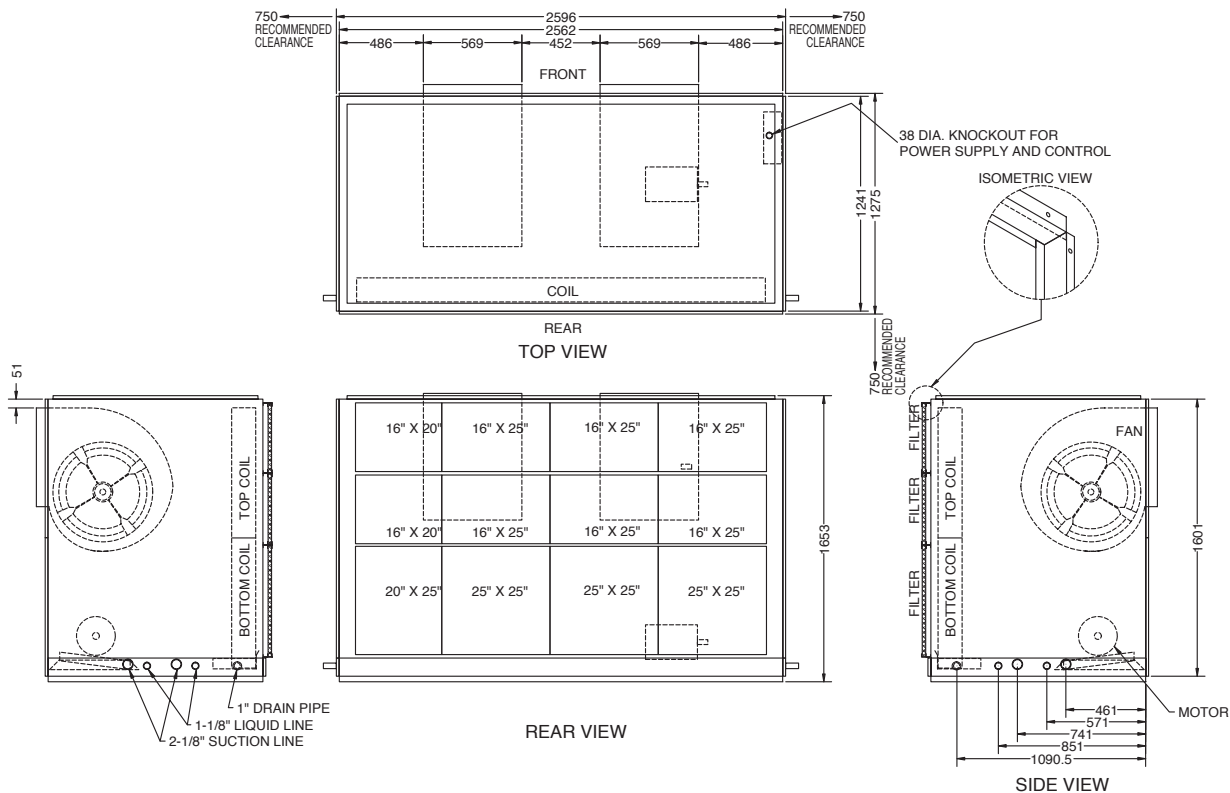
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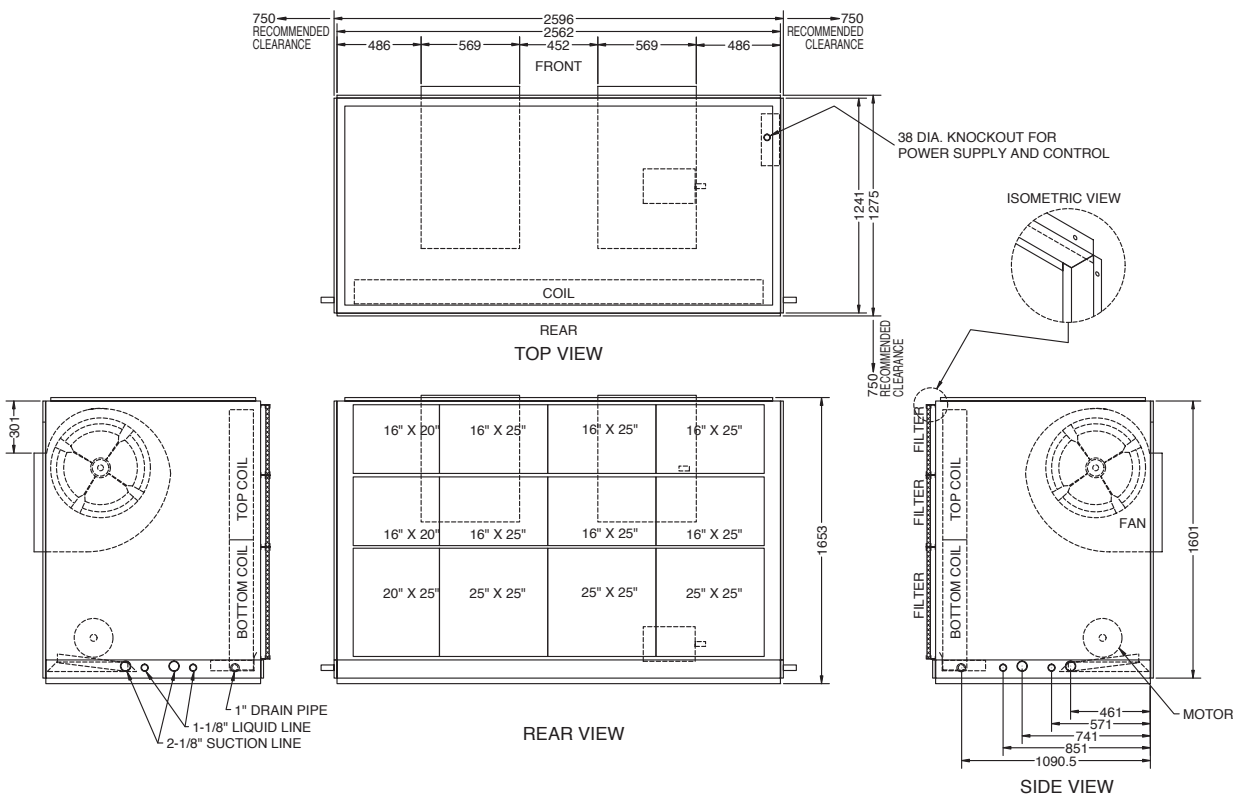
Dimensional Data DX Air Handling unit

TTV 500

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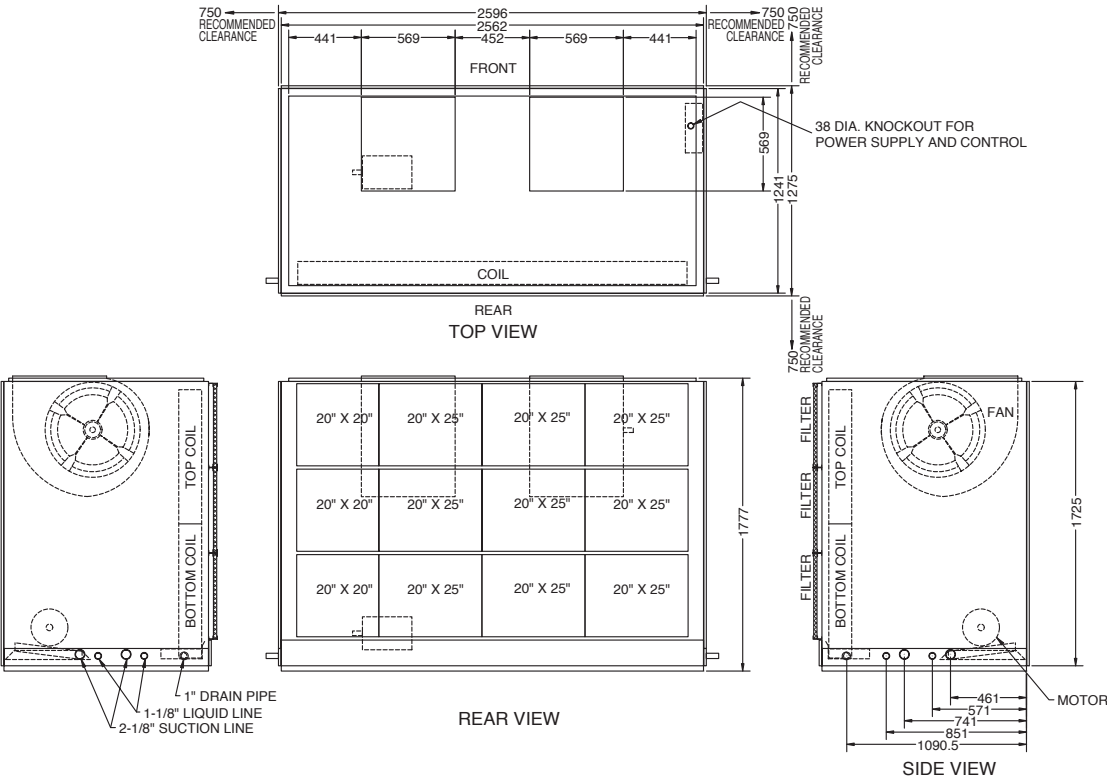
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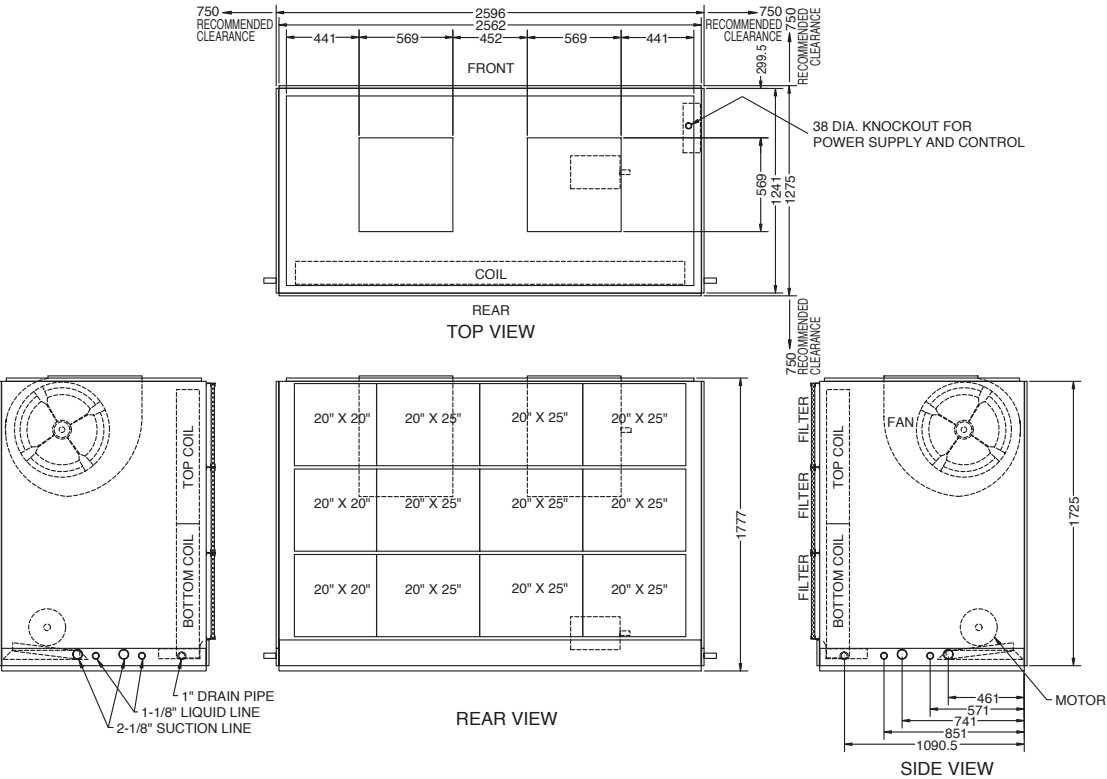
Dimensional Data DX Air Handling unit

TTV 600

FAN ARRANGEMENT 1



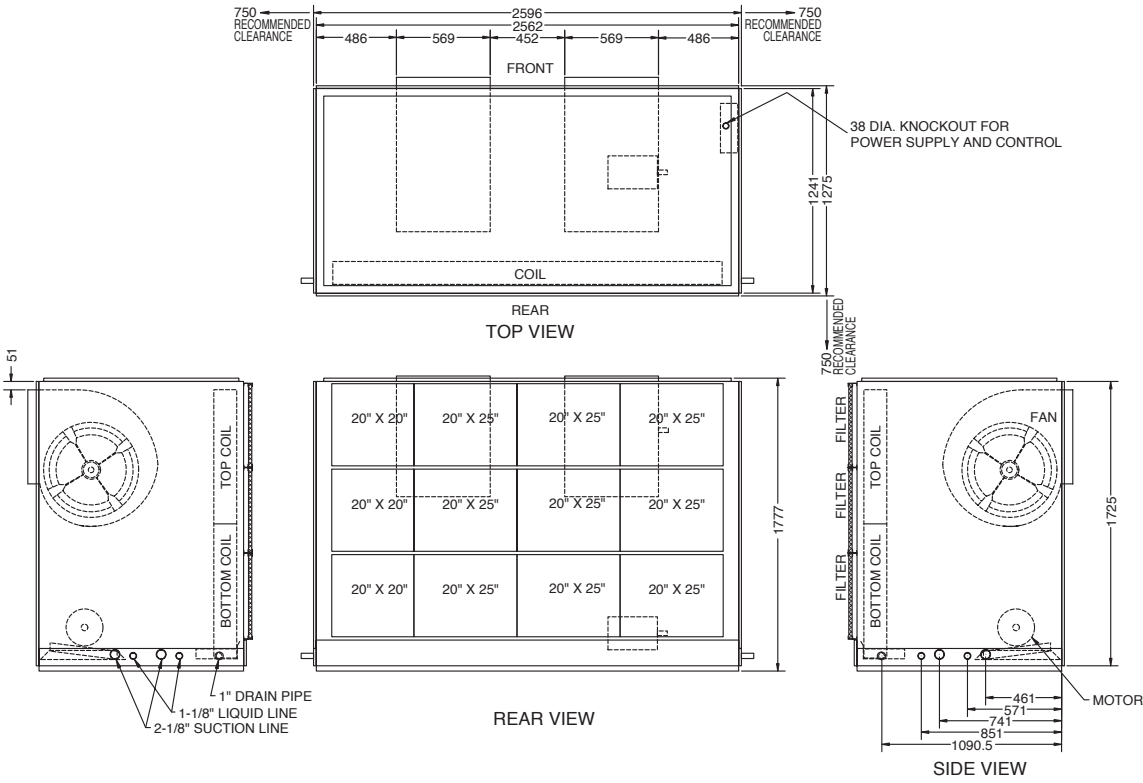
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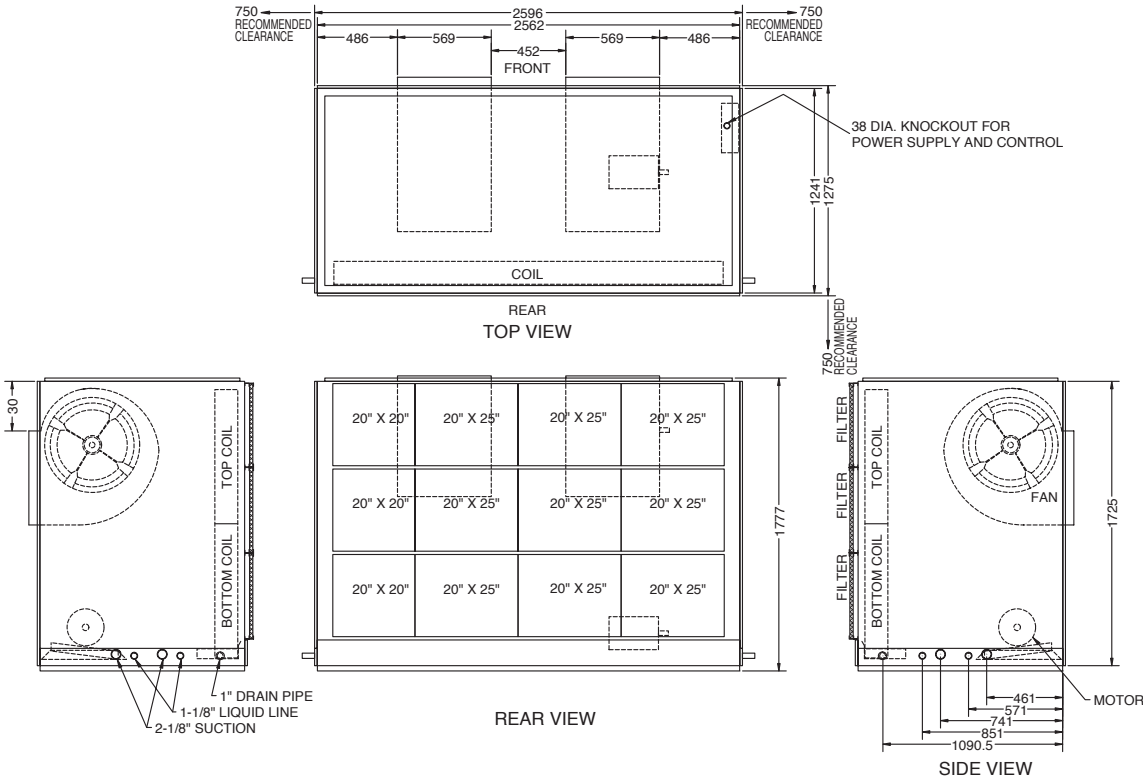
Dimensional Data DX Air Handling unit

TTV 600

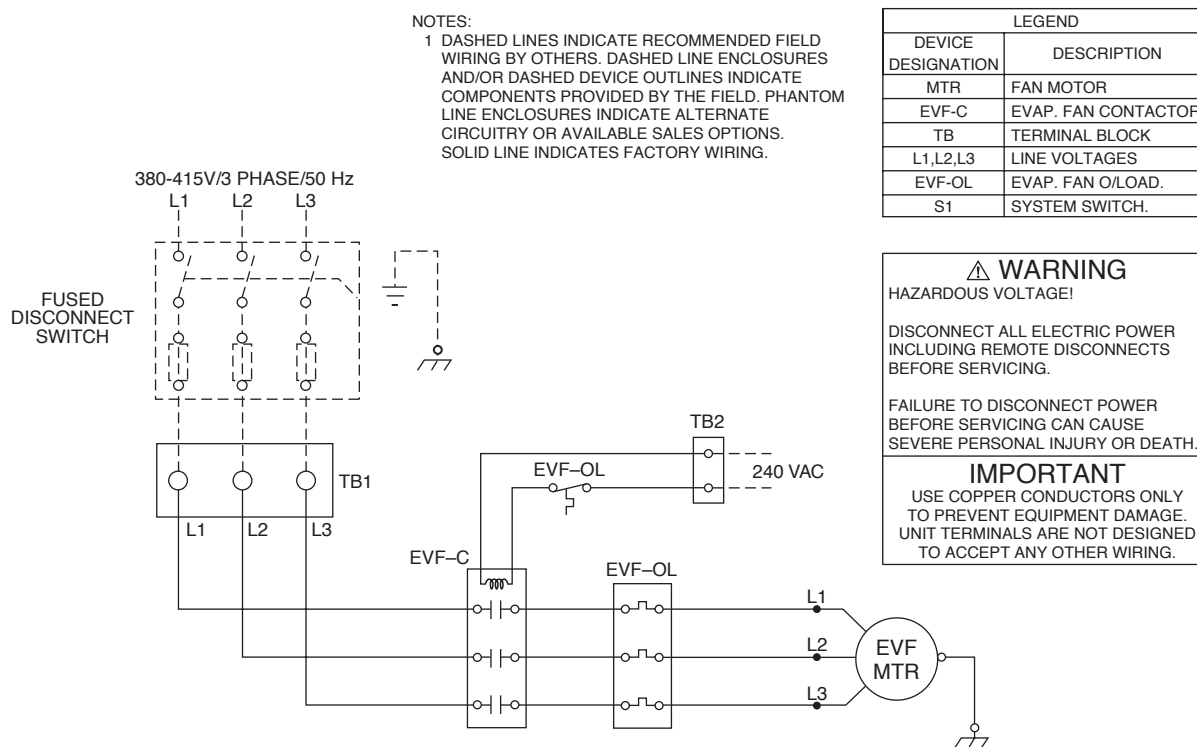
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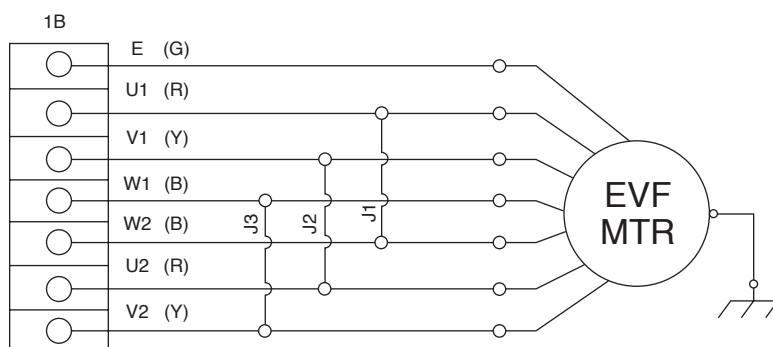
FAN ARRANGEMENT 4



WITH DOL STARTER



WITHOUT STARTER



TB = TERMINAL BLOCK
 EVF MTR = EVAPORATOR FAN MOTOR

NOTE:

- FOR DOL STARTING, TERMINATION INTO TERMINALS U1 , V1 & W1 ONLY
- FOR STAR-DELTA STARTING, REMOVED JUMPERS J1 , J2 & J3 AND TERMINATE INTO TERMINALS U1 , V1 , W1 , U2 , V2 & W2.

MODEL	MOTOR SIZE		
	STANDARD	OVER SIZE - 1	OVER SIZE - 2
TTV250	5 hp (3.7 kW)	7.5 hp (5.5 kW)	10 hp (7.5 kW)
TTV300	7.5 hp (5.5 kW)	10 hp (7.5 kW)	15 hp (11 kW)
TTV400	7.5 hp (5.5 kW)	10 hp (7.5 kW)	15 hp (11 kW)
TTV500	10 hp (7.5 kW)	15 hp (11 kW)	20 hp (15 kW)
TTV600	15 hp (11 kW)	20 hp (15 kW)	-----

Note

Note

Note



005



Trane (Thailand)
1126/2 Vanich Building 2, 30-31th floor
New Petchburi Road, Makkasan
Ratchathewi, Bangkok, 10400

Amair Limited
999/1 Mu 9, Bangna-Trad K.M. 19
Bangchalong, Bangplee
Samutprakarn, 10540

www.tranethailand.com

Literature Order Number: TTV-IOM (Rev.B)

Date: October 2019

Supersedes: TTV-IOM1106

Stocking Location: Bangkok, Thailand

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.