

Chilled Water DOAS Fan Powered Terminal Units





- Dedicated Outdoor Air Supply
- Primary Air Inlet Connection with FlowStar™ Probe

- Non-Condensing Cooling Coil (sensible cooling)
- Hot Water (Option)

- Integral Drip Tray

DOAS TERMINAL UNITS FEATURES AND BENEFITS

MINIMUM VENTILATION CONTROL

The DOAS unit provides the Designer, Owner and Occupant with a series fan powered terminal unit which includes an integral chilled water sensible only coil at the plenum air inlet. The primary air inlet is sized to provide conditioned, dehumidified air from a DOAS (dedicated outside air system) air handler, continuously measuring and controlling to minimum ventilation rates. The coil provides sensible cooling capacity and control at the zone level.

Optional hot water reheat is available to meet comfort needs without additional secondary systems.

APPLICATION SPECIFIC COILS

Care must be taken when sizing DOAS terminal units and coils to ensure proper operation and reliable occupant comfort. Johnson Controls manufactures the chilled and hot water coils allowing for flexibility for job specific design requirements.

INTEGRAL DRIP TRAY

Factory installed drip tray in case sensible cooling coil temporarily experiences non-design conditions.

ENERGY EFFICIENT SOLUTIONS

ECM motors are standard to optimize fan energy use with latest energy efficient motor technology. Available with a remote or manual speed adjustment for addressing multiple control strategies.


PATENTED FlowStar™ INLET SENSOR

The industry's best – FlowStar™ is a multi-axis center averaging airflow sensor with external balancing taps.

MODEL	UNIT SIZE	FAN CFM	OUTSIDE AIR (25%)		FAN HP	VOLTS	F.L.A.	3-PHASE NEUTRAL AMPS
			CFM	MIN ? Ps				
TCL-CC-X	0608	200	50	0.01	1/3	120	5.0	N/A
		300	75	0.01				
		500	125	0.01		277	2.6	5.4
		700	175	0.02				
		900	225	0.04				
	0609	300	75	0.01	1/3	120	5.0	N/A
		500	125	0.01				
		700	175	0.02		277	2.6	5.4
900		225	0.04					
TCS-CC-X	0619	400	100	0.01	1/2	120	7.7	N/A
		600	150	0.09				
		800	200	0.14		277	4.1	7.2
		1000	250	0.19				
		1200	300	0.22				
	0621	800	200	0.14	3/4	120	9.6	N/A
		1100	275	0.21				
		1400	350	0.25		277	5.5	10.9
		1700	425	0.29				
	0821	800	200	0.01	3/4	120	9.6	N/A
		1100	275	0.04				
		1400	350	0.06		277	5.5	10.9
		1700	425	0.08				

NOTES:

1. Min. ΔP_s is the static pressure difference across the primary air valve with the damper wide open. All losses (including optional hot water coil) are handled by the unit fan and need not be considered for primary air performance calculations.
2. Performance data obtained from tests conducted in accordance with ARI Standard 880.
3. Calculate wire feeder size and max. over current protective device per NEC and local code requirements. Recommended fuse type shall be UL Class RK5, J, CC or other motor rated fuse.
4. Neutral harmonic current contribution for each 3-phase balanced load of motors at full speed.
5. Includes factory provided 2mH choke for power factor correction on 3/4 hp, 120v and 1 hp, 120v motors.

	TITLE: GENERAL SELECTION DATA MODEL TCL-CC-X MODEL TCS-CC-X			
	DRN BY: JSM	DATE: 06/10/15	SCALE: NTS	DRAWING NO. 06-75042-J
CKD BY: ML	DATE: 06/10/15	REV: 00		

FAN CFM	OUTSIDE AIR			RADIATED SOUND POWER 1.0" INLET ΔPs						DISCHARGE SOUND POWER 1.0" INLET ΔPs					
				FULL OCTAVE BAND, Hz						FULL OCTAVE BAND, Hz					
	%	CFM	Min. ΔPs	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
200	0%	0	-	50	51	49	44	32	25	58	55	54	50	46	38
	15%	30	0.01	51	51	49	44	33	33						
	25%	50	0.01	52	52	50	45	34	34						
300	0%	0	-	50	51	50	45	33	26	58	56	55	53	49	41
	15%	45	0.01	51	51	50	46	36	35						
	25%	75	0.01	51	51	50	46	36	35						
500	0%	0	-	55	54	54	50	38	31	63	60	59	57	54	49
	15%	75	0.01	55	54	54	50	39	37						
	25%	125	0.01	56	55	55	51	41	38						
700	0%	0	-	61	57	58	55	44	37	69	66	64	62	59	56
	15%	105	0.01	61	58	58	56	45	40						
	25%	175	0.02	62	59	59	56	47	42						
800	0%	0	-	64	59	59	57	46	40	72	69	66	65	62	60
	15%	120	0.01	64	60	59	57	48	42						
	25%	200	0.02	66	60	60	58	49	43						
1000	0%	0	-	68	63	62	60	52	45	75	73	69	68	65	64
	15%	150	0.01	68	63	62	60	52	45						
	25%	250	0.04	68	63	62	60	52	45						

1. MIN. ΔPs IS THE STATIC PRESSURE DIFFERENCE ACROSS THE PRIMARY AIR VALVE WITH THE DAMPER WIDE OPEN.
2. SOUND LEVELS ARE EXPRESSED IN DECIBELS, dB re: 1 X 10⁻¹² WATTS.
3. FAN EXTERNAL STATIC PRESSURE IS 0.25 INCHES w.g.
4. PERFORMANCE DATA OBTAINED FROM TESTS CONDUCTED IN ACCORDANCE WITH ARI STANDARD 880.
5. DISCHARGE DATA IS CORRECTED TO INCLUDE DUCT END REFLECTION ENERGY PER AHRI 880.



TITLE: SOUND POWER & O.A. MINIMUM ΔPs
MODEL TCL-CC-X SIZE 0608

DRN BY: GMA	DATE: 1/23/16	SCALE: NTS	DRAWING NO.
CKD BY:	DATE:	REV: 01	06-80045-J

FAN CFM	OUTSIDE AIR			RADIATED SOUND POWER 1.0" INLET ΔPs						DISCHARGE SOUND POWER 1.0" INLET ΔPs					
				FULL OCTAVE BAND, Hz						FULL OCTAVE BAND, Hz					
	%	CFM	Min. ΔPs	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
300	0%	0	-	52	51	51	45	33	25	60	57	56	52	48	41
	15%	45	0.01	53	50	50	45	33	29						
	25%	75	0.01	52	50	50	44	33	28						
500	0%	0	-	57	53	55	52	39	30	64	61	60	56	53	48
	15%	75	0.01	57	53	54	49	38	37						
	25%	125	0.01	56	54	54	48	37	35						
700	0%	0	-	62	57	57	58	45	37	69	66	64	61	58	55
	15%	105	0.01	62	57	57	56	43	36						
	25%	175	0.02	62	58	57	55	42	37						
800	0%	0	-	64	59	59	59	48	40	72	69	66	64	60	58
	15%	120	0.01	64	59	58	57	45	39						
	25%	200	0.02	65	60	58	56	44	39						
1000	0%	0	-	68	63	61	62	51	44	78	74	70	68	65	63
	15%	150	0.01	69	63	61	60	50	44						
	25%	250	0.04	70	64	62	59	48	44						

1. MIN. ΔPs IS THE STATIC PRESSURE DIFFERENCE ACROSS THE PRIMARY AIR VALVE WITH THE DAMPER WIDE OPEN.
2. SOUND LEVELS ARE EXPRESSED IN DECIBELS, dB re: 1 X 10⁻¹² WATTS.
3. FAN EXTERNAL STATIC PRESSURE IS 0.25 INCHES w.g.
4. PERFORMANCE DATA OBTAINED FROM TESTS CONDUCTED IN ACCORDANCE WITH ARI STANDARD 880.
5. DISCHARGE DATA IS CORRECTED TO INCLUDE DUCT END REFLECTION ENERGY PER AHRI 880.



TITLE: SOUND POWER & O.A. MINIMUM ΔPs
MODEL TCL-CC-X SIZE 0609

DRN BY: GMA	DATE: 02/17/15	SCALE: NTS	DRAWING NO.
CKD BY: TJ	DATE: 6/10/15	REV: 01	06-80046-J

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CONTACT FACTORY FOR CERTIFIED DRAWINGS.

Unit Size 0619														
FAN CFM	Outside Air		Radiated Sound Power						Discharge Sound Power					
	%	CFM	Full Octave Band, Hz						Full Octave Band, Hz					
			125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
400	0	0	52	52	50	43	38	31	61	56	56	52	50	44
	25	100	52	52	50	44	39	32	61	56	56	52	50	44
	50	200	53	53	51	46	41	34	61	56	56	53	50	45
600	0	0	56	55	53	47	42	34	66	61	59	57	54	49
	25	150	56	56	54	48	43	36	66	61	60	58	55	51
	50	300	56	57	55	49	44	38	67	62	61	59	56	53
800	0	0	58	58	56	50	45	37	66	61	61	59	56	52
	25	200	59	59	57	51	47	40	67	63	63	62	59	57
	50	400	60	60	58	53	49	43	68	65	65	65	62	60
1000	0	0	60	60	57	55	49	42	68	65	64	65	61	58
	25	250	62	62	60	55	51	44	69	65	65	65	62	59
	50	500	64	64	62	56	52	46	71	66	66	66	63	61
1200	0	0	62	64	60	57	54	46	71	68	67	69	65	62
	25	300	64	65	62	58	54	47	72	68	68	69	66	63
	45	550	66	67	65	59	55	49	73	69	69	69	67	65
1400	0	0	64	65	62	58	56	50	72	70	69	71	67	65
	25	350	66	66	64	59	56	50	73	70	70	71	68	66
	40	550	68	68	66	60	57	51	74	71	71	72	69	68

1. FAN EXTERNAL STATIC PRESSURE IS 0.25 INCHES W.G.
2. OA INLET STATIC PRESSURE IS 1.0 INCHES W.G.
RADIATED SOUND POWER VALUES ARE UP TO 1dB LOWER @ 0.5”
AND UP TO 1 dB HIGHER @ 1.5” W.G. STATIC PRESSURE
3. PERFORMANCE DATA OBTAINED FROM TESTS CONDUCTED IN
ACCORDANCE WITH AHRI STANDARD 880
4. DISCHARGE SOUND POWER ADJUSTED FOR DUCT END REFLECTION
LOSS AS REQUIRED BY AHRI 880
5. SOUND POWER LEVELS, L_w , ARE EXPRESSED IN DECIBELS,
dB re: 1×10^{-12}



TITLE: SOUND POWER LEVELS
MODEL TCS-CC-X WITH 3/4 CCF LINER
UNIT SIZE 0619

DRN BY: NBooz	DATE: 02/18/14	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 2/18/14	REV: 01	70-99000-01-J

Unit Size 0821														
FAN CFM	Outside Air		Radiated Sound Power						Discharge Sound Power					
	%	CFM	Full Octave Band, Hz						Full Octave Band, Hz					
			125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
800	0	0	55	55	54	46	42	34	63	61	59	56	53	48
	25	200	57	56	54	47	44	37	64	61	59	57	54	50
	50	400	59	57	55	49	47	40	65	61	60	58	55	52
1100	0	0	57	58	57	51	48	41	66	65	64	61	59	56
	25	275	60	60	57	52	49	43	68	65	64	62	59	57
	50	550	63	62	59	53	51	45	70	65	64	63	60	58
1400	0	0	61	62	59	56	52	47	71	69	67	66	63	62
	25	350	64	64	61	56	54	49	72	69	68	67	64	63
	50	700	66	65	63	57	55	50	74	70	69	68	66	65
1700	0	0	65	66	62	59	57	52	72	71	68	69	67	66
	25	425	67	67	64	59	57	52	74	72	69	70	68	67
	50	850	69	69	66	60	58	53	77	73	72	72	69	68
2000	0	0	67	69	65	61	60	56	75	75	72	73	71	70
	25	500	70	71	67	63	61	57	78	76	74	75	73	72
	50	1000	73	73	69	65	62	58	80	77	76	77	74	72

1. FAN EXTERNAL STATIC PRESSURE IS 0.25 INCHES W.G.
2. OA INLET STATIC PRESSURE IS 1.0 INCHES W.G.
RADIATED SOUND POWER VALUES ARE UP TO 1dB LOWER @ 0.5”
AND UP TO 1 dB HIGHER @ 1.5” W.G. STATIC PRESSURE
3. PERFORMANCE DATA OBTAINED FROM TESTS CONDUCTED IN
ACCORDANCE WITH AHRI STANDARD 880
4. DISCHARGE SOUND POWER ADJUSTED FOR DUCT END REFLECTION
LOSS AS REQUIRED BY AHRI 880
5. SOUND POWER LEVELS, L_w , ARE EXPRESSED IN DECIBELS,
dB re: 1×10^{-12}



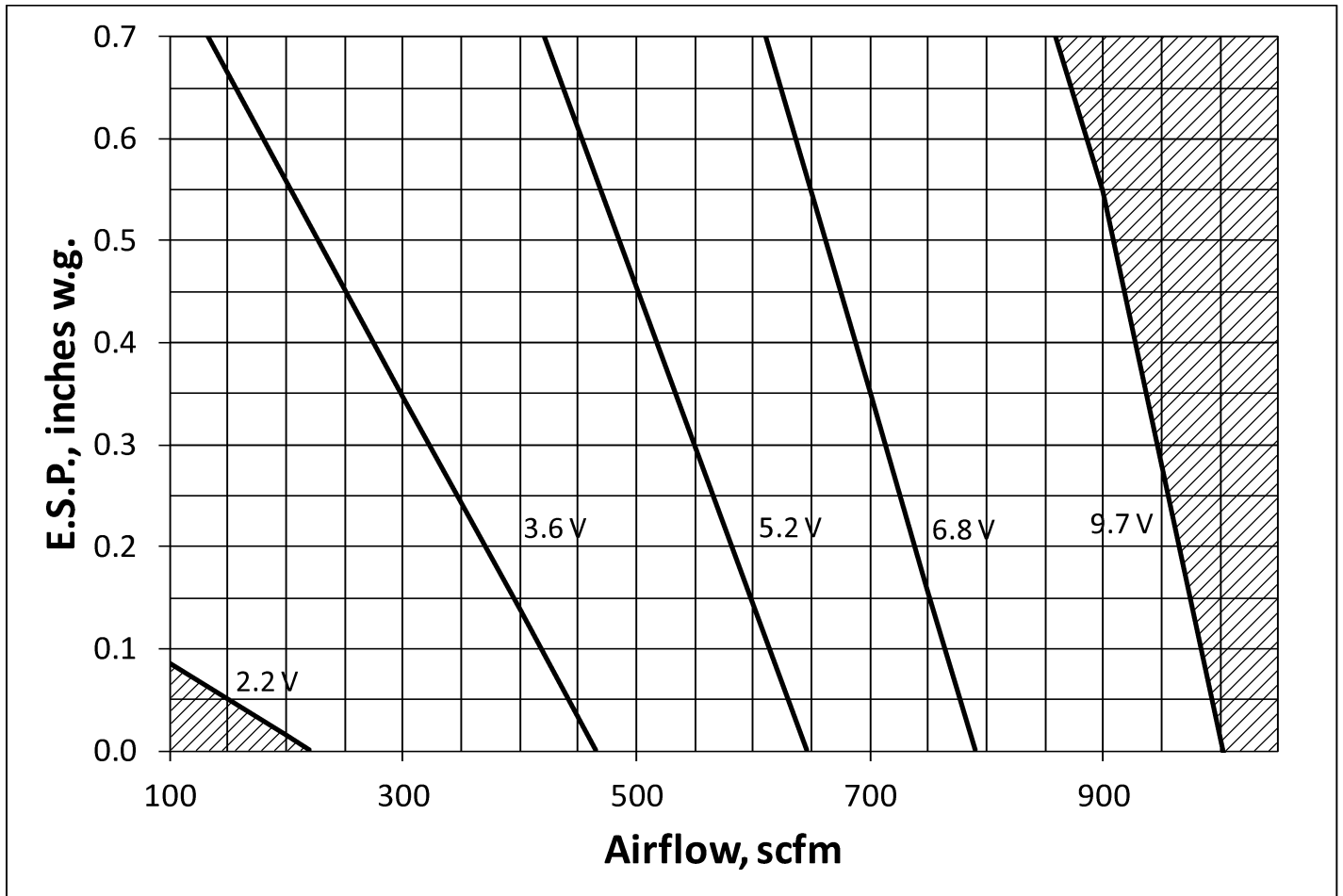
TITLE: SOUND POWER LEVELS
MODEL TCS-CC-X WITH 3/4 CCF LINER
UNIT SIZE 0821

DRN BY: NB00z	DATE: 02/18/14	SCALE: NTS	DRAWING NO.
CKD BY: DF	DATE: 02/18/14	REV: 00	70-99000-02-J

ECM MOTOR DATA

HP	VOLTAGE	AMPS ¹
1/3	277	2.6

- USE FLA (FULL LOAD AMPS) TO CALCULATE WIRE FEEDER SIZE AND MAXIMUM OVER CURRENT PROTECTIVE DEVICE PER NEC AND LOCAL CODE REQUIREMENTS. RECOMMENDED FUSE TYPE SHALL BE RK5, J, CC OR OTHER MOTOR RATED FUSE.



VALID SELECTION IS MADE ANYWHERE IN THE NON-SHADED AREA.

THE PERFORMANCE SHOWN IS RATED TO INCLUDE A 4 ROW 14FPI COOLING COIL, AND 1" THICK CLEAN PLEATED FILTER. ADDITIONAL ROWS AND/OR OPTIONAL HOT WATER COIL REQUIRE ADDITION OF ASSOCIATED PRESSURE DROP TO SPECIFIED E.S.P. TO CONFIRM FAN PERFORMANCE.



TITLE: MODEL TCL-CC-X SIZE 0608
FAN PERFORMANCE CURVE W/ ECM
CONSTANT TORQUE

DRN BY: DVG	DATE: 6/12/12	SCALE: NTS	DRAWING NO.
CKD BY: ML	DATE: 6/12/12	REV: 01	06-80044-J

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ECM MOTOR DATA

HP	VOLTAGE	AMPS ¹
1/3	277	2.6

- USE FLA (FULL LOAD AMPS) TO CALCULATE WIRE FEEDER SIZE AND MAXIMUM OVER CURRENT PROTECTIVE DEVICE PER NEC AND LOCAL CODE REQUIREMENTS. RECOMMENDED FUSE TYPE SHALL BE RK5, J, CC OR OTHER MOTOR RATED FUSE.



VALID SELECTION IS MADE ANYWHERE IN THE NON-SHADED AREA.

PERFORMANCE SHOWN IS RATED TO INCLUDE A 8 ROW, 12 FPI COOLING COIL AND 1" CLEAN PLEATED FILTER. ADDITIONAL PRESSURE DROP ASSOCIATED WITH OPTIONAL HOT WATER COIL AND/OR DIFFERENT COOLING COIL CONSTRUCTION MUST BE ADDED TO SPECIFIED E.S.P. TO CONFIRM PERFORMANCE.



TITLE: MODEL TCL-CC-X SIZE 0609
FAN PERFORMANCE CURVE W/ ECM
CONSTANT TORQUE

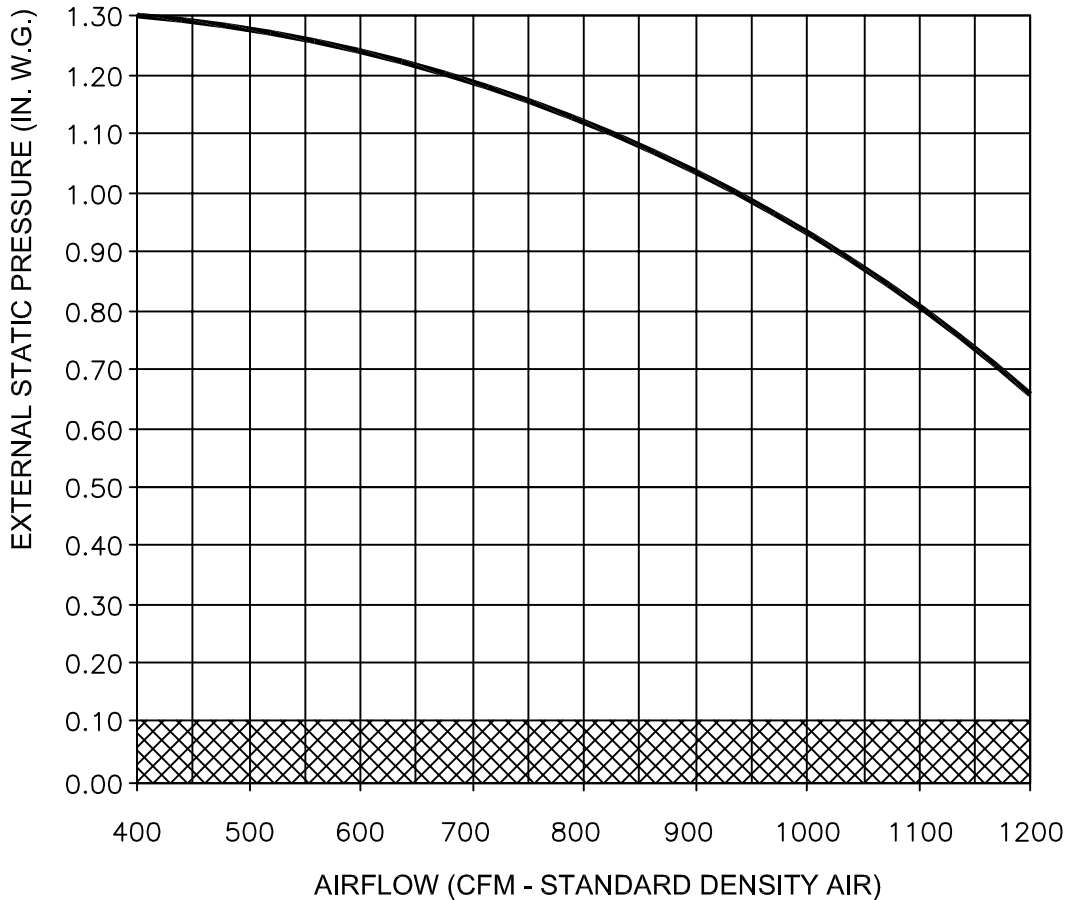
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CKD BY: DF	DATE: 3/2/15	REV: 01	06-80047-J

ECM MOTOR DATA

HP	VOLTAGE	AMPS ¹	3-PHASE ² NEUTRAL AMPS
1/2	120	7.7	13.3
1/2	208	5.0	8.6
1/2	277	4.1	7.1

1. Use FLA (Full Load Amps) to calculate wire feeder size and maximum over current protective device per NEC and local code requirements. Recommended fuse type shall be UL Class RK5, J, CC or other motor rated fuse.

2. Neutral harmonic current contribution for each 3-phase balanced load of motors at full speed.



The performance shown is rated to include a six row 12 FPI cooling coil, a one row 10 FPI heating coil, and a 1" thick clean pleated filter.



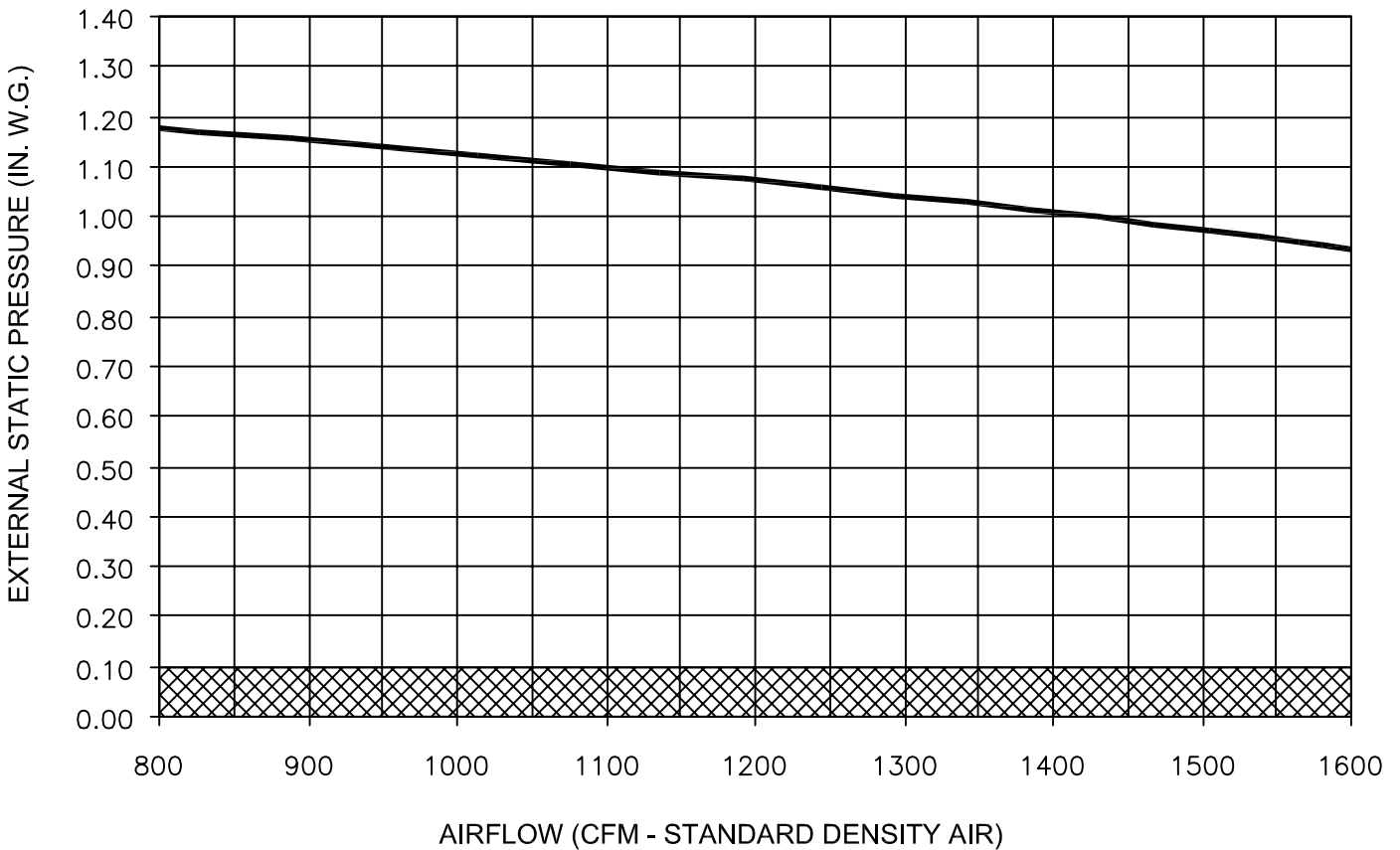
TITLE: MODEL TCS-CC-WC-X 0619
FAN PERFORMANCE CURVE W/ECM
CONSTANT VOLUME MODE

DRN BY: JSM	DATE: 05/16/08	SCALE: NTS	DRAWING NO.:
CKD BY: ML	DATE: 3/20/15	REV: 03	33-75023-J

ECM MOTOR DATA

HP	VOLTAGE	AMPS ¹	3-PHASE ² NEUTRAL AMPS
3/4	120	9.6	16.6
3/4	208	7.3	12.6
3/4	277	5.5	9.5

1. Use FLA (Full Load Amps) to calculate wire feeder size and maximum over current protective device per NEC and local code requirements. Recommended fuse type shall be UL Class RK5, J, CC or other motor rated fuse.
2. Neutral harmonic current contribution for each 3-phase balanced load of motors at full speed.



The performance shown is rated to include a six row 12 FPI cooling coil, a one row 10 FPI heating coil, and a 1" thick clean pleated filter.



TITLE: MODEL TCS-CC-WC-X 0621/0821
FAN PERFORMANCE CURVE W/ECM
CONSTANT VOLUME MODE

DRN BY: JSM	DATE: 05/16/08	SCALE: NTS	DRAWING NO.: 33-75022-J
CKD BY: ML	DATE: 04/16/15	REV: 03	

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CONTACT FACTORY FOR CERTIFIED DRAWINGS.

Model	Drawing Type			Drawing #
TCL-CC-X Size 0608	Construction 4, 6, or 8 Row Cooling Coil	Cooling Only	LH	06-75008
			RH	06-75031
		With 1R HWC	LH	06-75026
			RH	06-75032
		With EH	LH	06-75023
			RH	06-75033
TCL-CC-X Size 0609	Construction 4, 6, or 8 Row Cooling Coil	Cooling Only	LH	06-75027
			RH	06-75029
		With 1R HWC	LH	06-75028
			RH	06-75030
		With EH	LH	06-75034
			RH	06-75035
TCS-CC-X Size 0619	Construction 6 Row Cooling Coil	Cooling Only	LH	06-75015
			RH	06-75014
		With 1R HWC	LH	06-75017
			RH	06-75016
TCS-CC-X Size 0621	Construction 6 Row Cooling Coil	Cooling Only	LH	06-75010
			RH	06-75009
		With 1R HWC	LH	06-75012
			RH	06-75011
TCS-CC-X Size 0821	Construction 6 Row Cooling Coil	Cooling Only	LH	06-75020
			RH	06-75019
		With 1R HWC	LH	06-75022
			RH	06-75021



TITLE: CONSTRUCTION DRAWING MATRIX
MODEL TCL-CC-X
MODEL TCS-CC-X

DRN BY: JSM	DATE: 01/25/17	SCALE: NTS	DRAWING NO.
CKD BY: ML	DATE: 1/25/17	REV: 00	06-80048-J

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SPECIFICATIONS

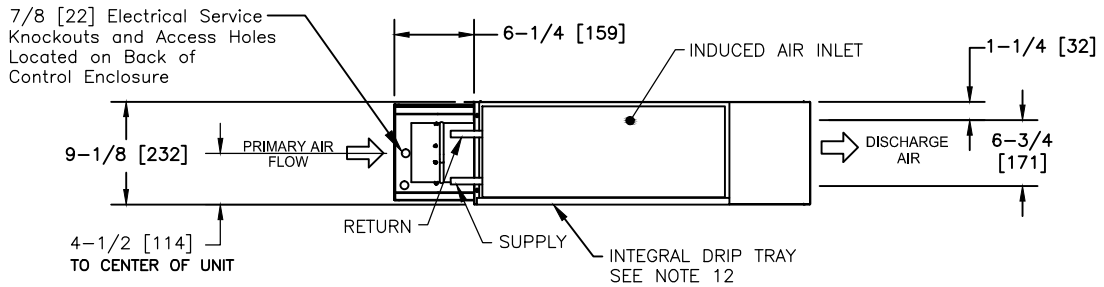
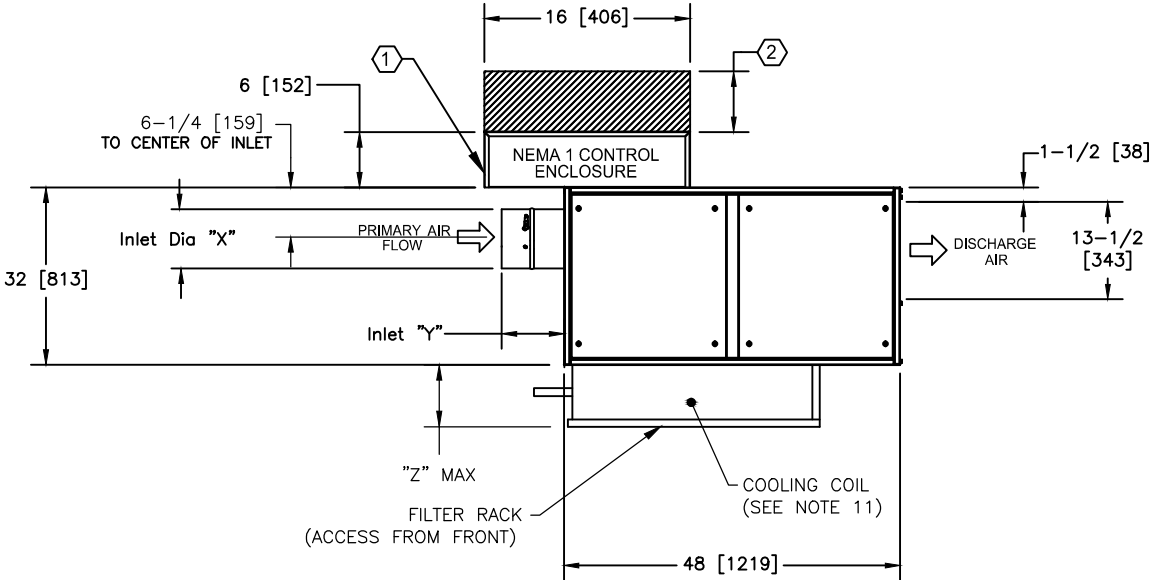
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]

Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.



TITLE: MODEL TCL-CC-X SIZE XX08, LEFT HAND UNIT
COOLING ONLY
ECM FAN MOTOR

DRN BY: GMA	DATE: 1/23/16	SCALE: n/a
CND BY: ML	DATE: 08/7/14	REV: 04

DRAWING NO. 06-75008-J

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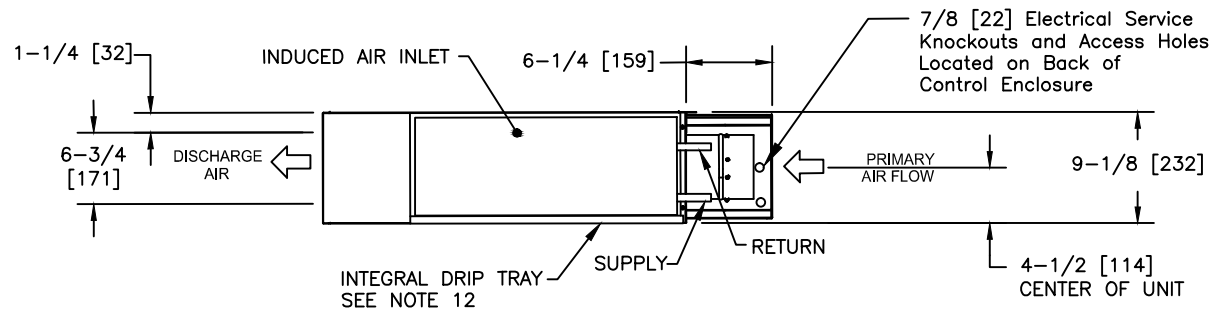
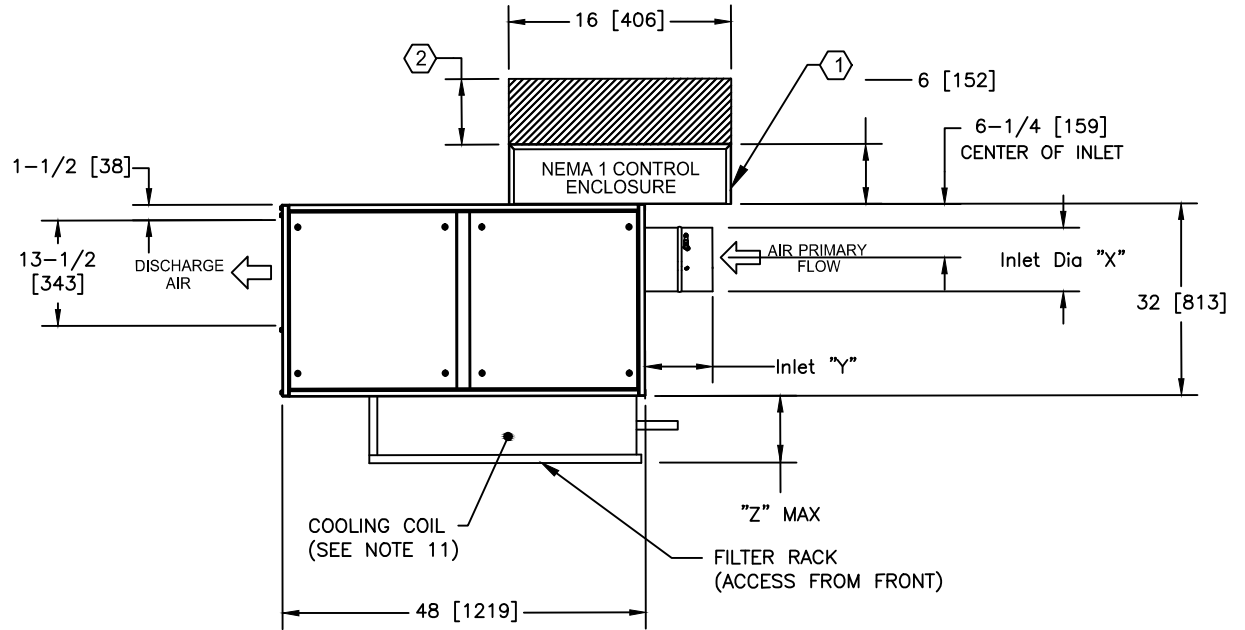
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4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
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SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE: MODEL TCL-CC-X SIZE XX08, RIGHT HAND COOLING ONLY ECM FAN MOTOR

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		CKD BY: ML	DATE: 1/16/15	REV: 01	

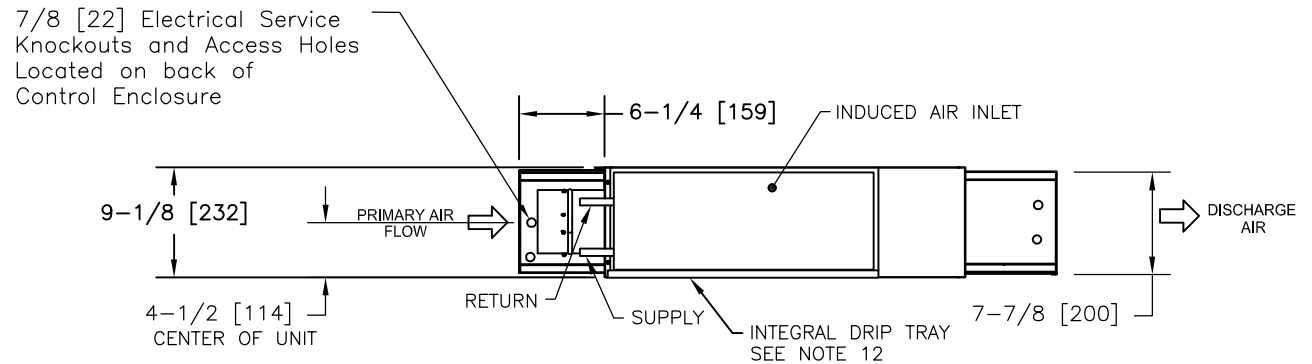
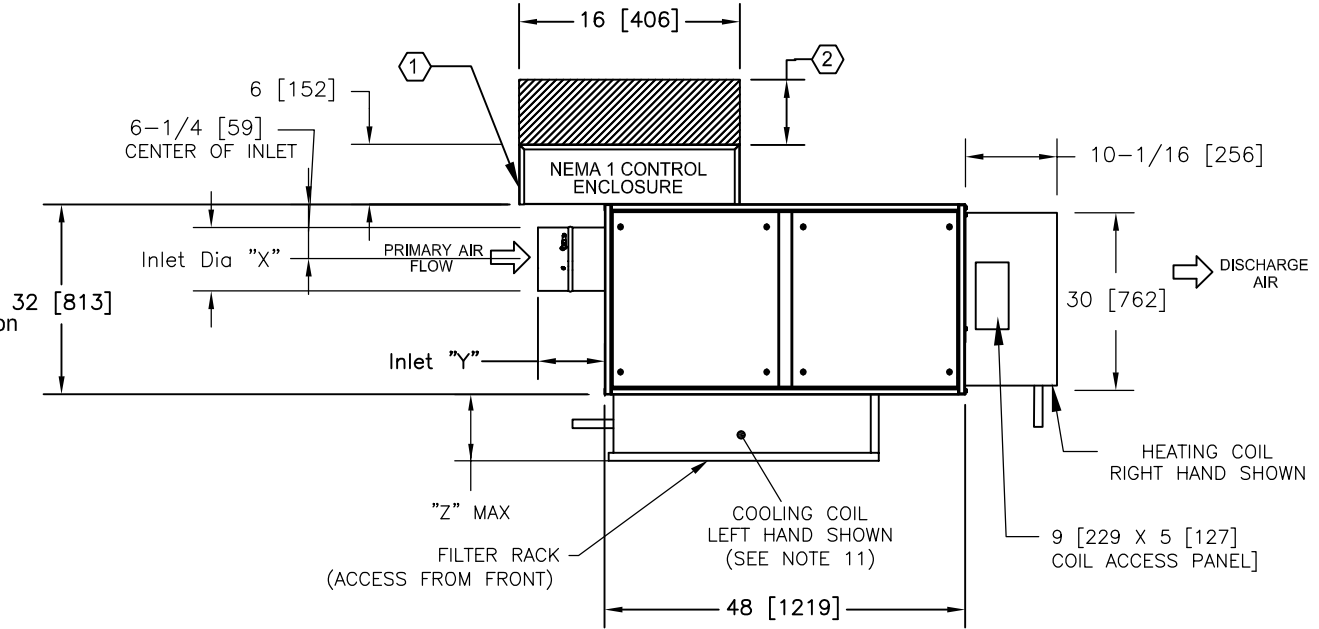
Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE: MODEL TCL-CC-X SIZE 0608, CW + HW LEFT HAND UNIT

DRN BY: JSM	DATE: 01/24/17	SCALE: 1=1	DRAWING NO. 06-75026-J
CKD BY: ML	DATE: 01/24/17	REV: 02	

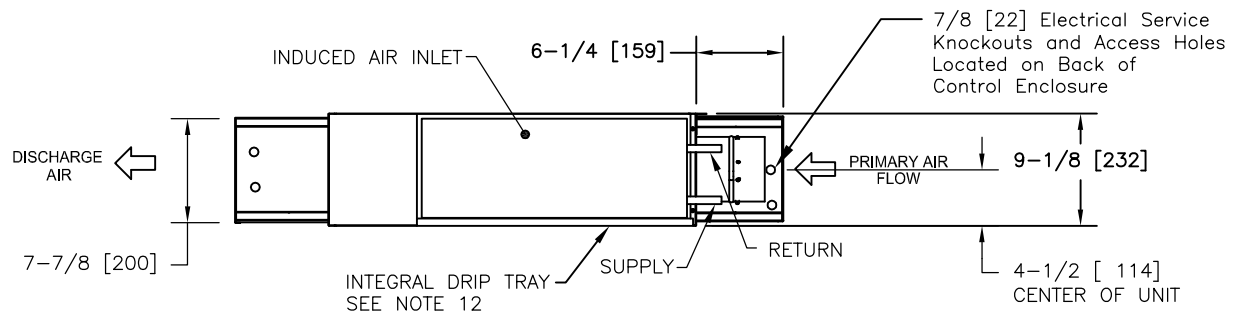
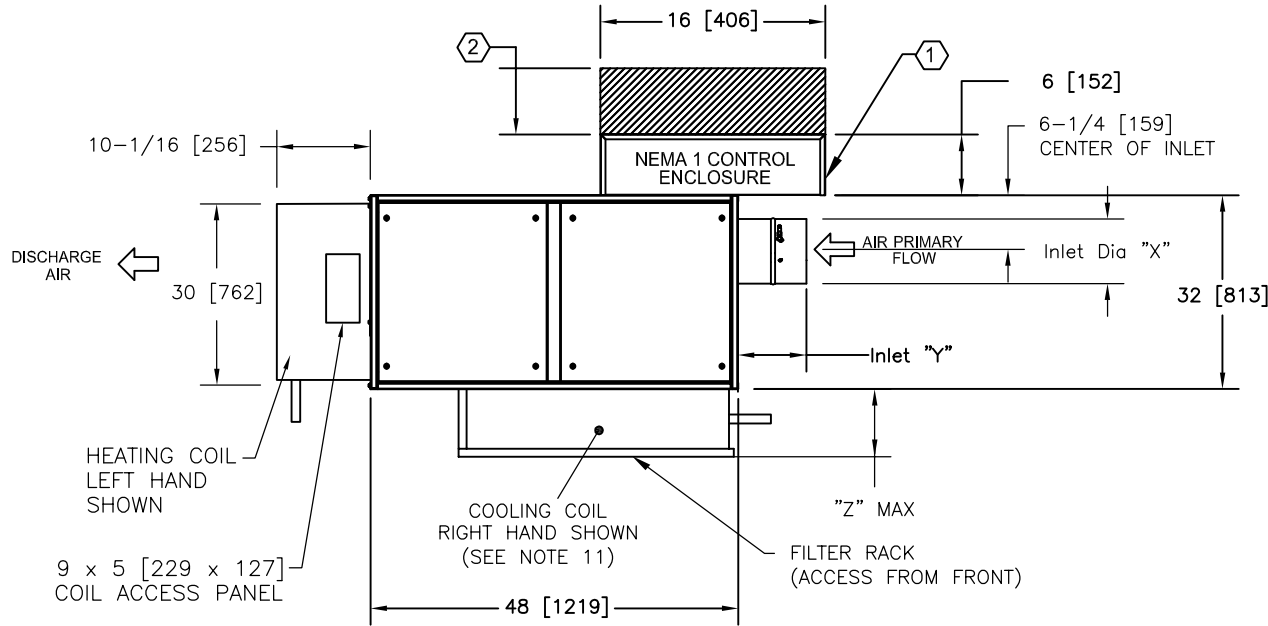
Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE: MODEL TCL-CC-X SIZE 0608, CW + HW
RIGHT HAND UNIT

DRN BY: JSM	DATE: 01/24/17	SCALE: 1=1	DRAWING NO.
CHK BY: ML	DATE: 01/24/17	REV: 02	

06-75032-J

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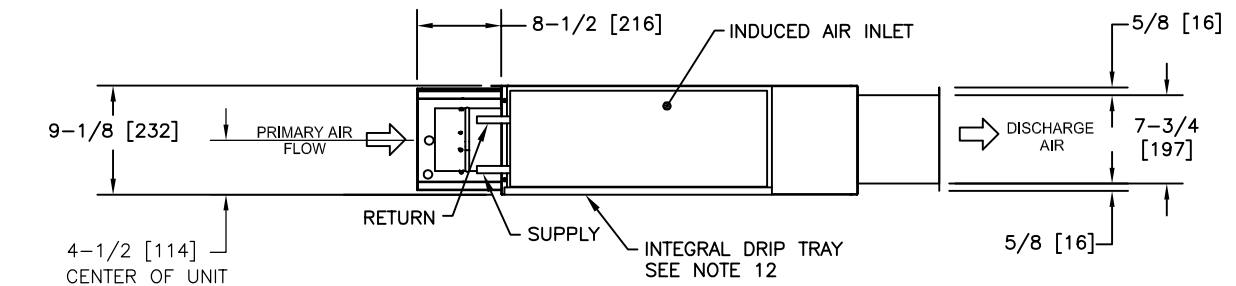
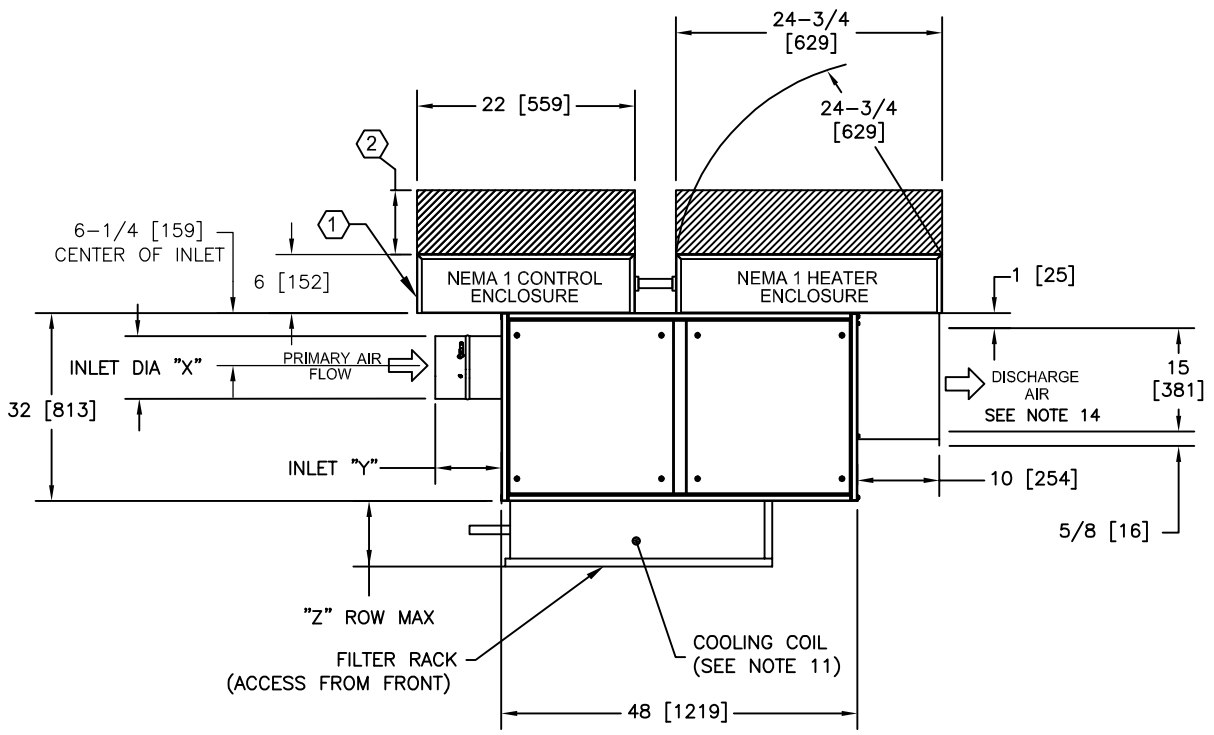
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CONTACT FACTORY FOR CERTIFIED DRAWINGS.

SPECIFICATIONS

Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]

Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve and electric heater casings constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Heater contains primary and secondary high temperature protection.
15. Requires 5/8" flange duct connection at outlet.



General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.



TITLE:
MODEL TCL-CC-EH-X SIZE 0608 WITH ELECTRIC HEAT
LEFT HAND UNIT

DRN BY: JSM	DATE: 01/24/17	SCALE: n/a	DRAWING NO. 06-75023-J
CRD BY: ML	DATE: 01/24/17	REV: 02	

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Standard Construction:

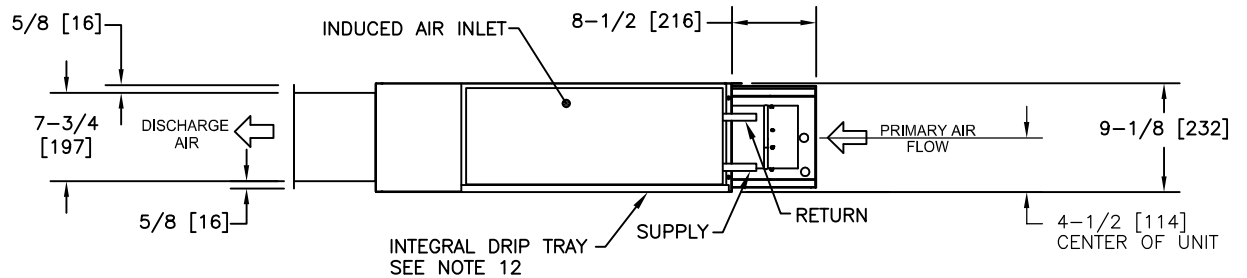
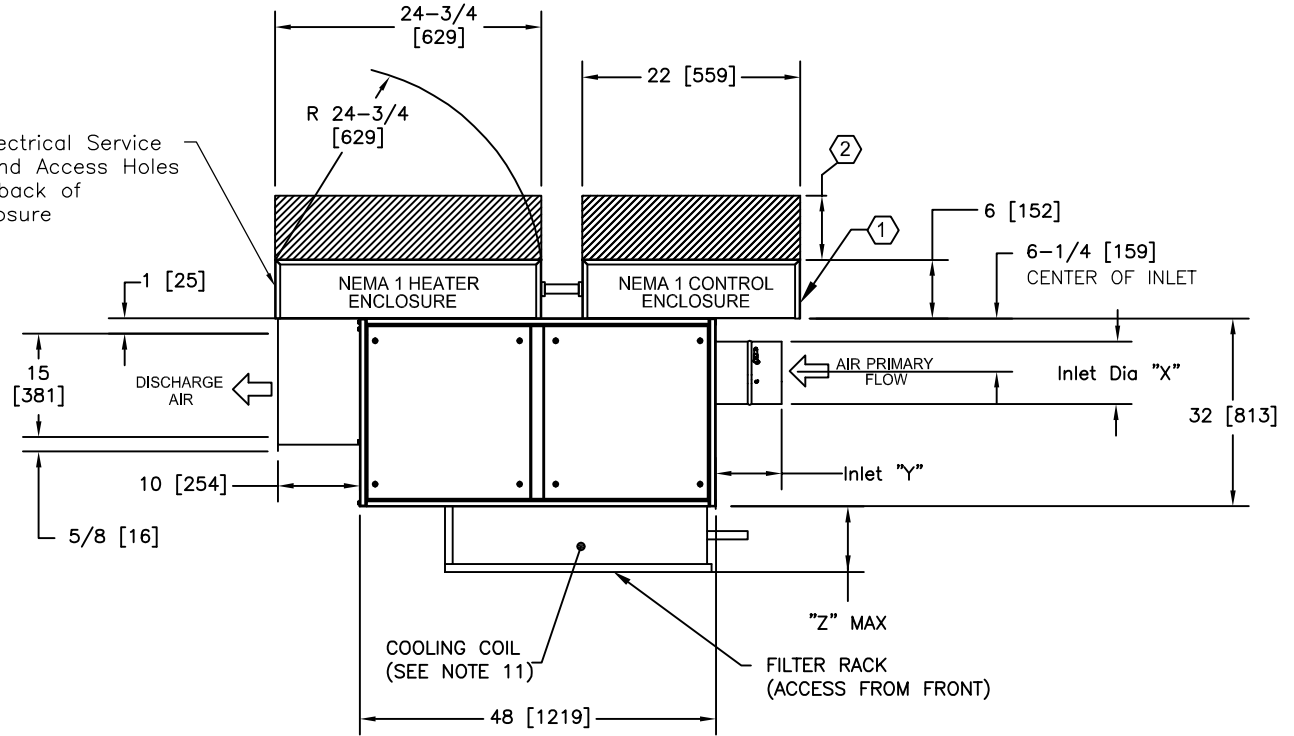
1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve and electric heater casings constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Heater contains primary and secondary high temperature protection.
15. Requires 5/8" flange duct connection at outlet.

7/8 [22] Electrical Service Knockouts and Access Holes Located on back of Control Enclosure

General Notes:

- 1 Control enclosure is standard with electronic controls.
- 2 Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0408	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0608	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE:
MODEL TCL-CC-EH-X SIZE XX08, RIGHT HAND UNIT
WITH ELECTRIC HEAT
ECM FAN MOTOR

DRN BY: JSM	DATE: 01/24/17	SCALE: 1=1	DRAWING NO.
CRD BY: ML	DATE: 01/24/17	REV: 01	06-75033-J

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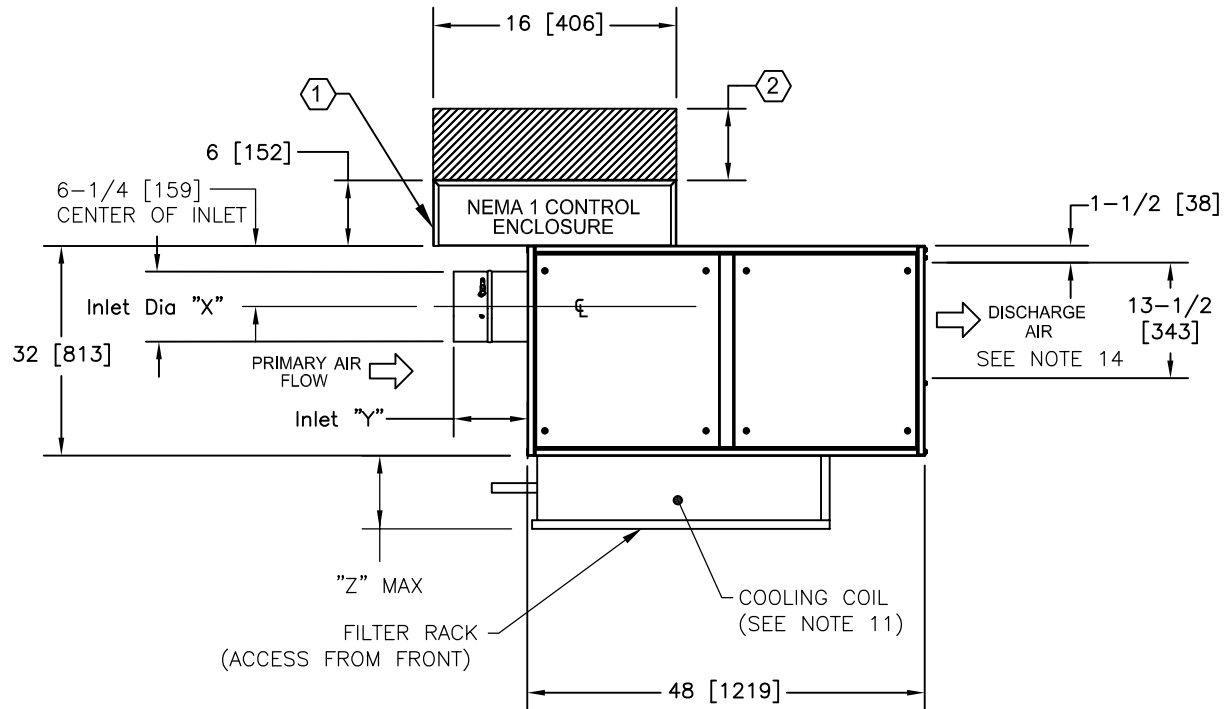
Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 11 [280] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4 / -0.

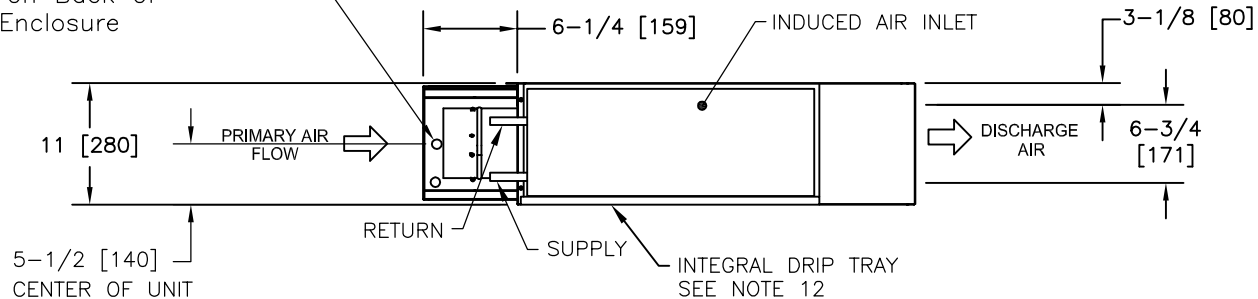
General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



7/8 [22] Electrical Service Knockouts and Access Holes Located on Back of Control Enclosure



TITLE:
MODEL TCL-CC-X XX09, COOLING ONLY, LEFT HAND

DRN BY: JSM	DATE: 01/24/17	SCALE: N/A	DRAWING NO. 06-75027-J
CKD BY: ML	DATE: 01/24/17	REV: 01	

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Standard Construction:

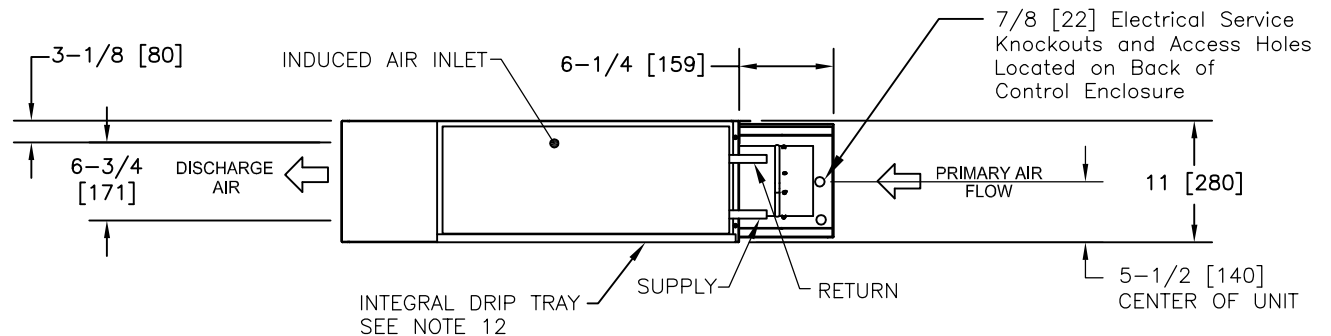
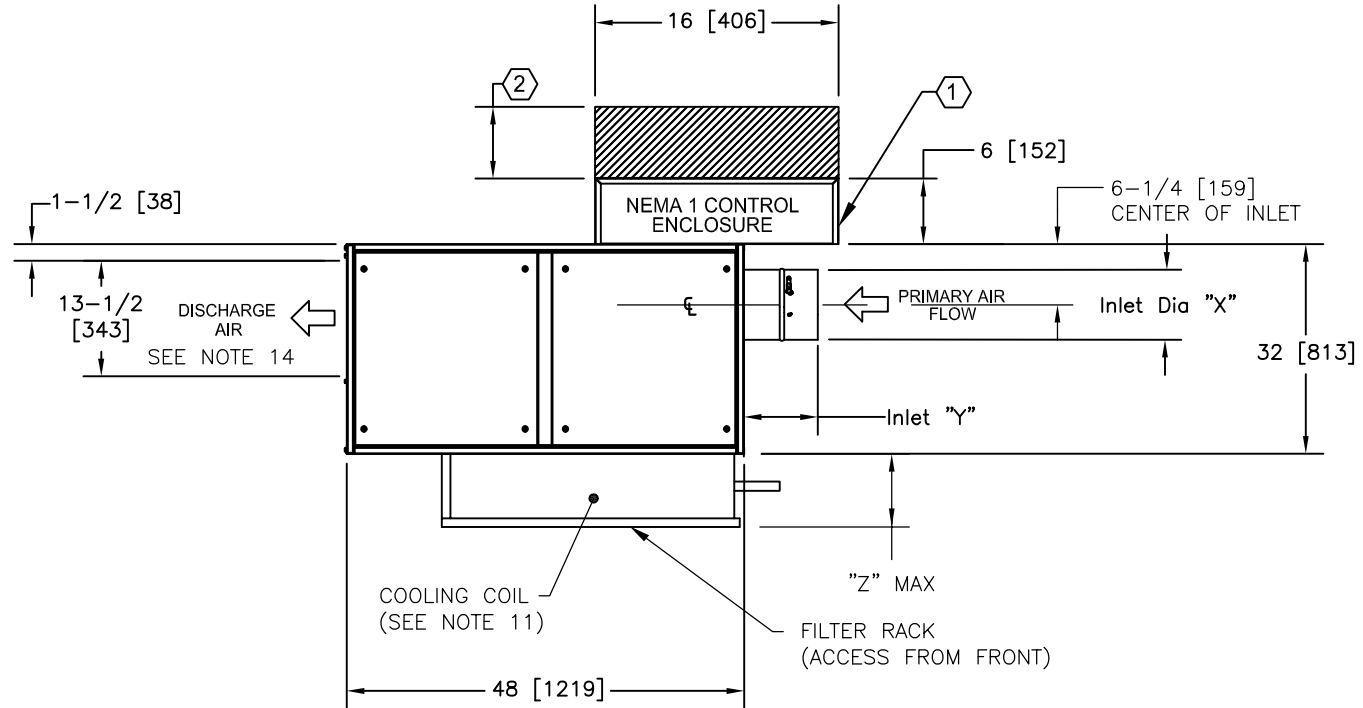
1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 11 [280] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4 / -0.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS

Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE:
MODEL TCL-CC-X XX09, COOLING ONLY, RIGHT HAND

DRN BY: JSM	DATE: 01/24/17	SCALE: N/A	DRAWING NO. 06-75029-J
CKD BY: ML	DATE: 01/24/17	REV: 01	

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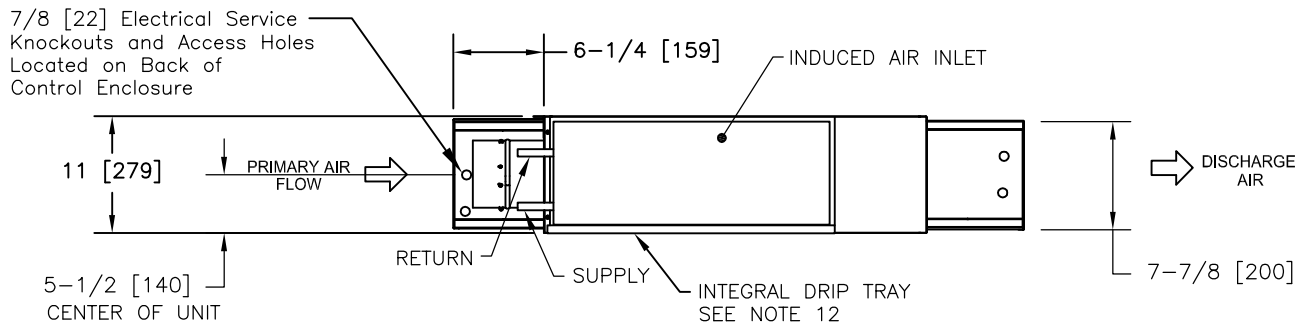
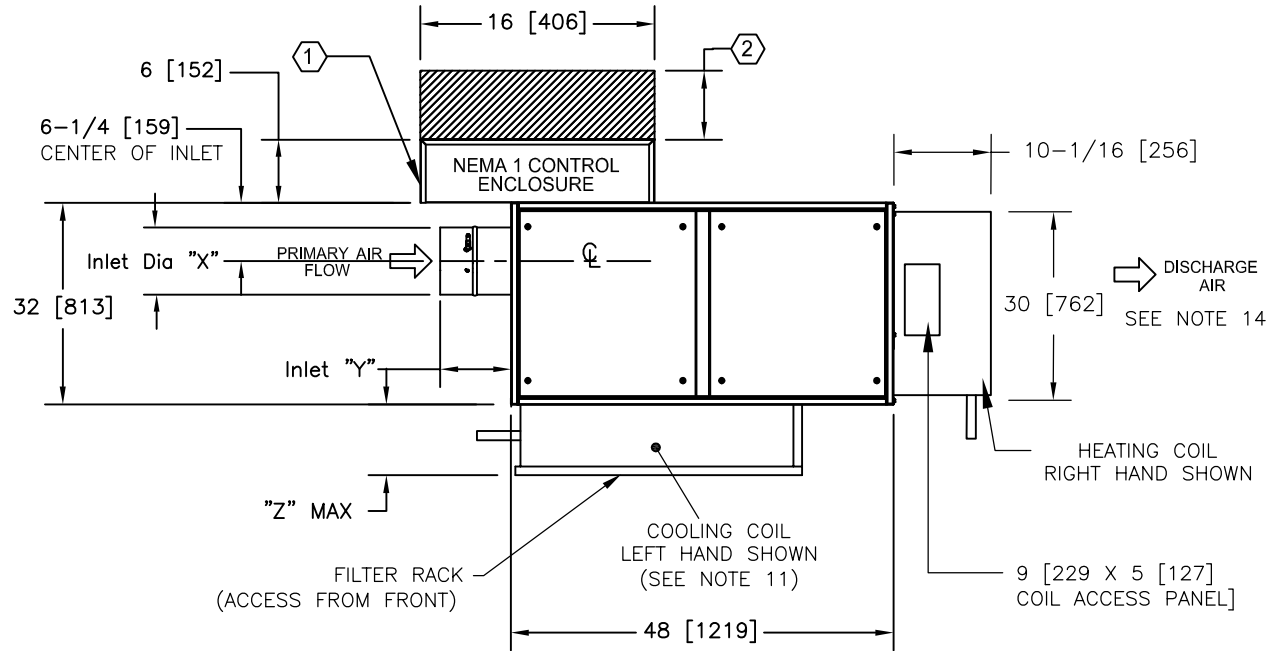
Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4" / - 0".

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE: MODEL TCL-CC-X SIZE XX09, CW + HW LEFT HAND UNIT

DRN BY: JSM	DATE: 01/24/17	SCALE: 1=1	DRAWING NO. 06-75028-J
CKD BY: ML	DATE: 01/24/17	REV: 01	

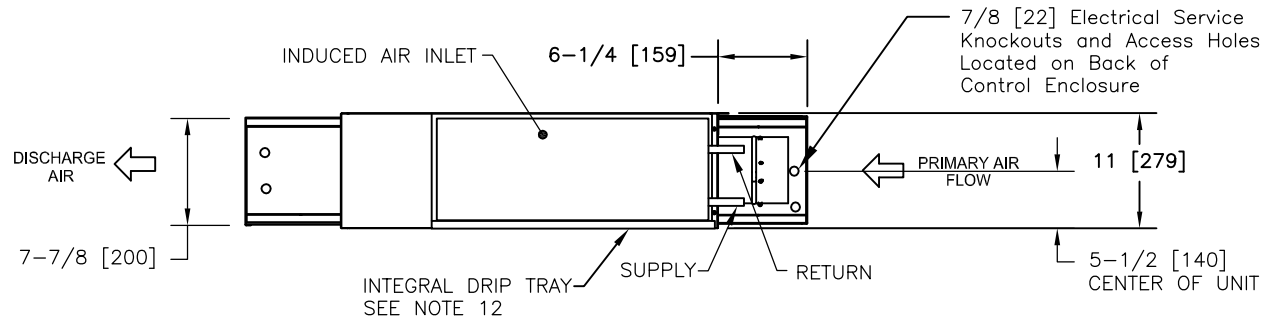
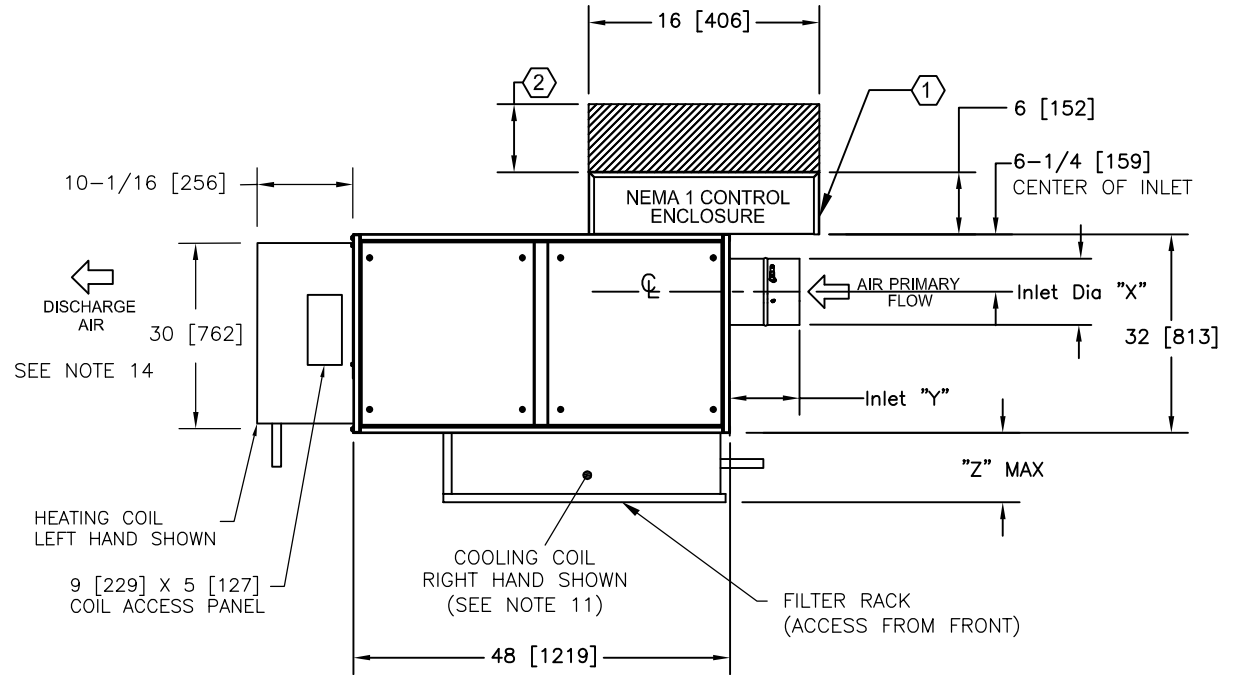
Standard Construction:

1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 9 [229] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4" / - 0".

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE: MODEL TCL-CC-X SIZE XX09, CW + HW RIGHT HAND UNIT

DRN BY: JSM	DATE: 01/24/17	SCALE: n/a	DRAWING NO.
CKD BY: ML	DATE: 01/24/17	REV: 01	

06-75030-J

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Standard Construction:

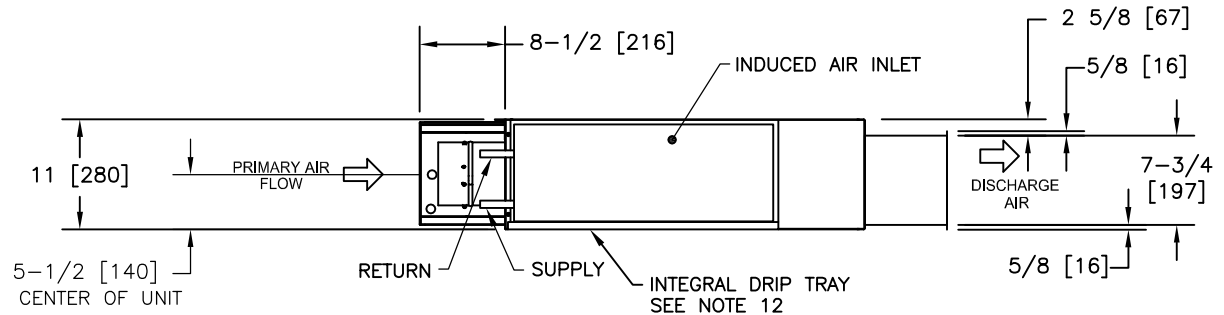
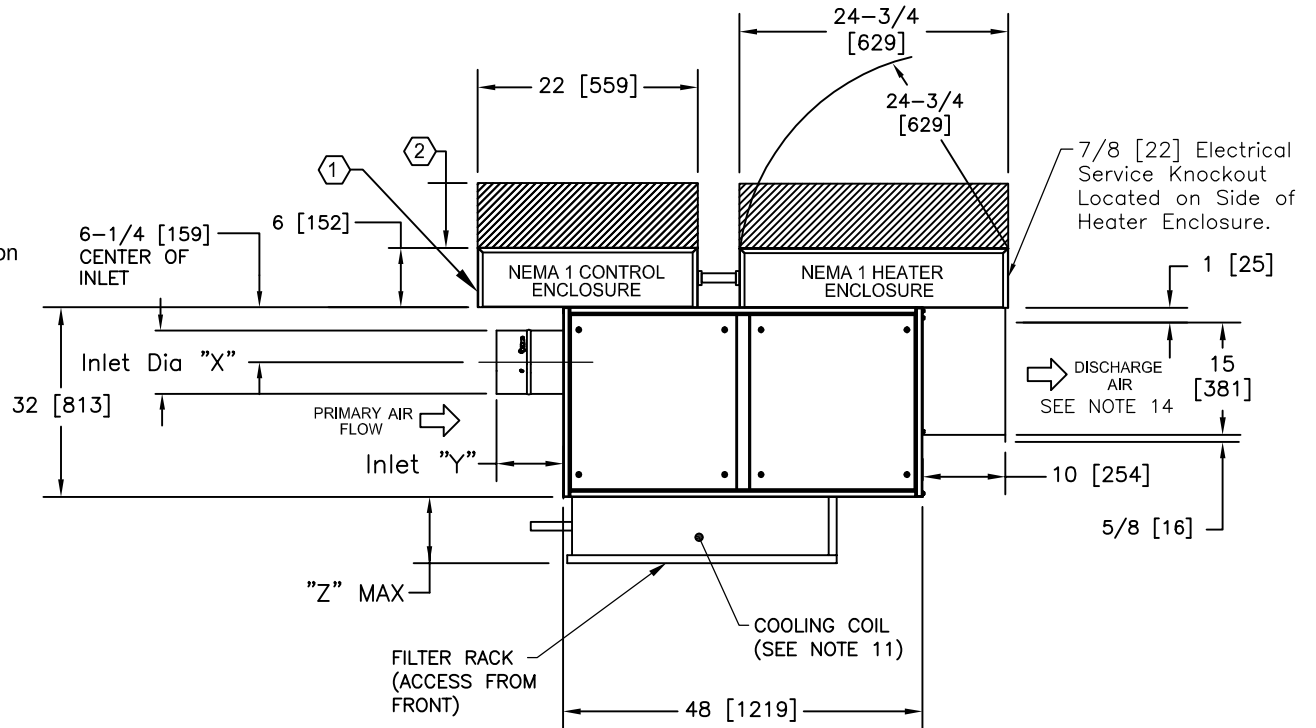
1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 11 [280] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4 / -0.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS

Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]



TITLE:
MODEL TCL-CC-EH-X XX09, WITH EH, LEFT HAND

DRN BY: JSM	DATE: 01/24/17	SCALE: N/A	DRAWING NO. 06-75034-J
CKD BY: RM	DATE: 01/24/17	REV: 01	

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Standard Construction:

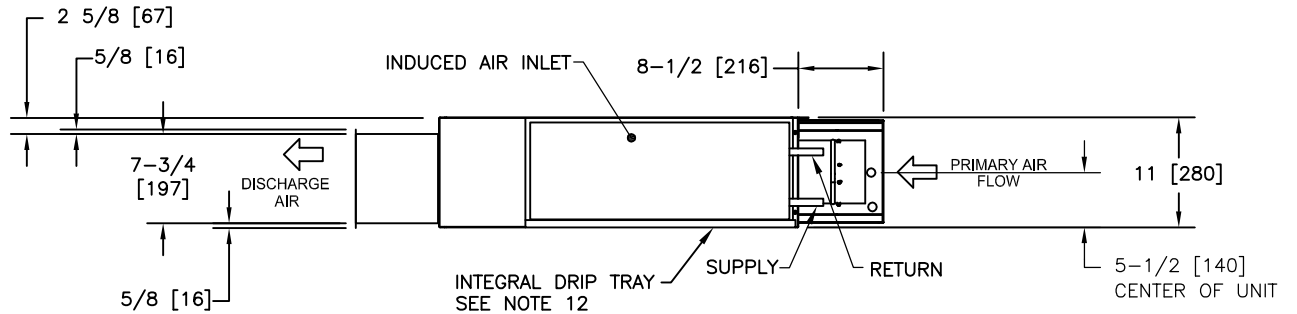
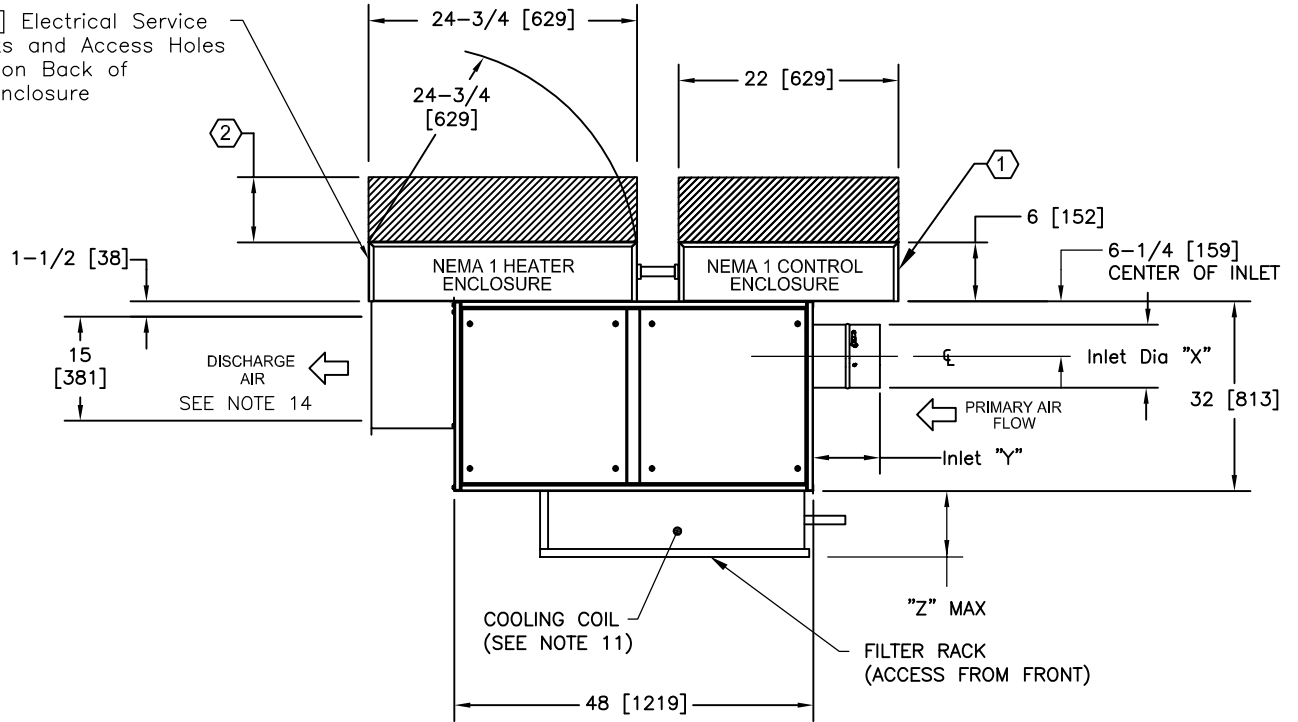
1. Patented FlowStar™ multi-axis center averaging airflow sensor with external balancing taps.
2. Unit and primary inlet valve constructed from minimum 22 gauge galvanized steel meeting 125 hour salt spray requirements per ASTM B117.
3. Casing insulation complies with UL181 and NFPA 90A and is installed with no raw edges in the airstream.
4. Single point power connection provided.
5. ECM fan motor with remote or manual speed adjustment.
6. Motor isolated from the fan housing.
7. Unit assembly is ETL listed in accordance with UL/ANSI 1995 / CSA c22.2.
8. Full top and bottom access provided to main unit casing.
9. Side access to control enclosure.
10. Filter size is 11 [280] X 36 [914] X 1 [25].
11. Cooling coil has copper tubing with aluminum fins. Manual air vent & bleed valve not shown.
12. Integral Drip tray is non-insulated, 1/2" deep, with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
13. A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet & outlet collars should be externally insulated by others (in the field) if required.
14. Down stream duct work must match outlet dimensions +1/4 / -0.

General Notes:

- ① Control enclosure is standard with electronic controls.
- ② Check all national and local codes for required clearance.

SPECIFICATIONS					
Unit Size	Inlet Dia X	Inlet Y	4 Row Z	6 Row Z	8 Row Z
0409	3-7/8 [98]	10-1/2 [267]	5 [127]	7-3/8 [187]	10 [254]
0609	5-7/8 [149]	6-3/4 [171]	5 [127]	7-3/8 [187]	10 [254]

7/8 [22] Electrical Service Knockouts and Access Holes Located on Back of Heater Enclosure

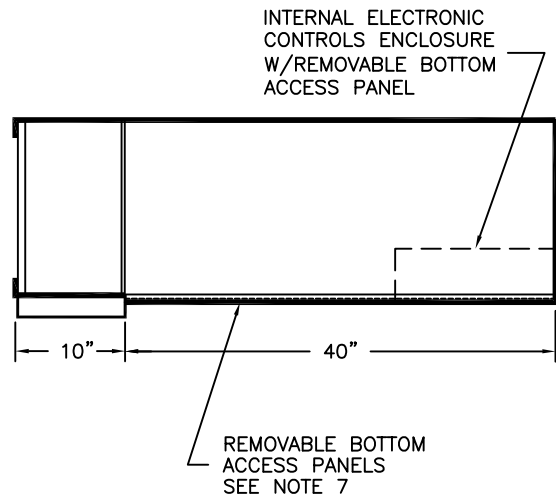
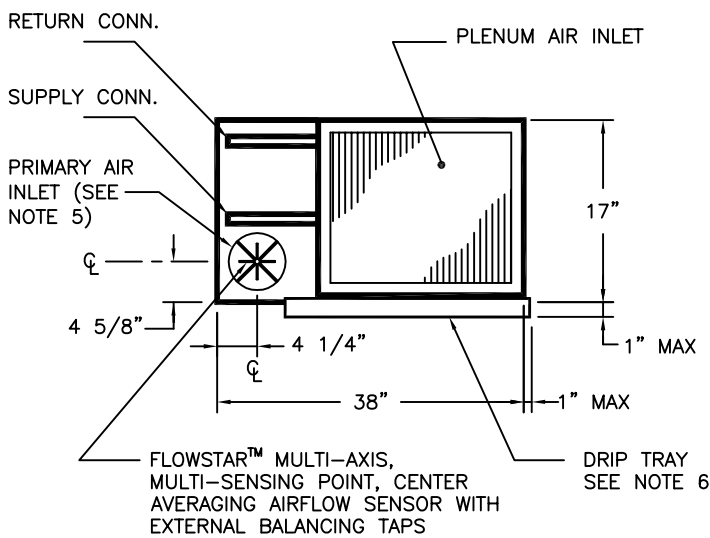
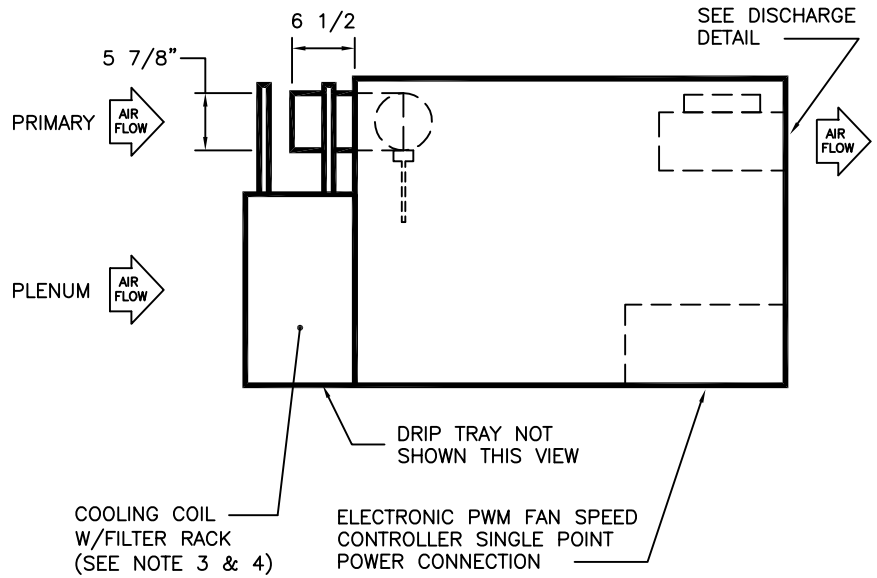
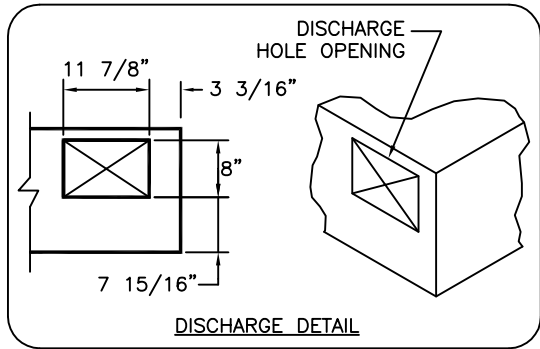


TITLE:
MODEL TCL-CC-EH-X XX09, WITH EH, RIGHT HAND

DRN BY: JSM	DATE: 01/24/17	SCALE: N/A	DRAWING NO.
CKD BY: ML	DATE: 01/24/17	REV: 01	06-75035-J

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CONSTRUCTION NOTES:

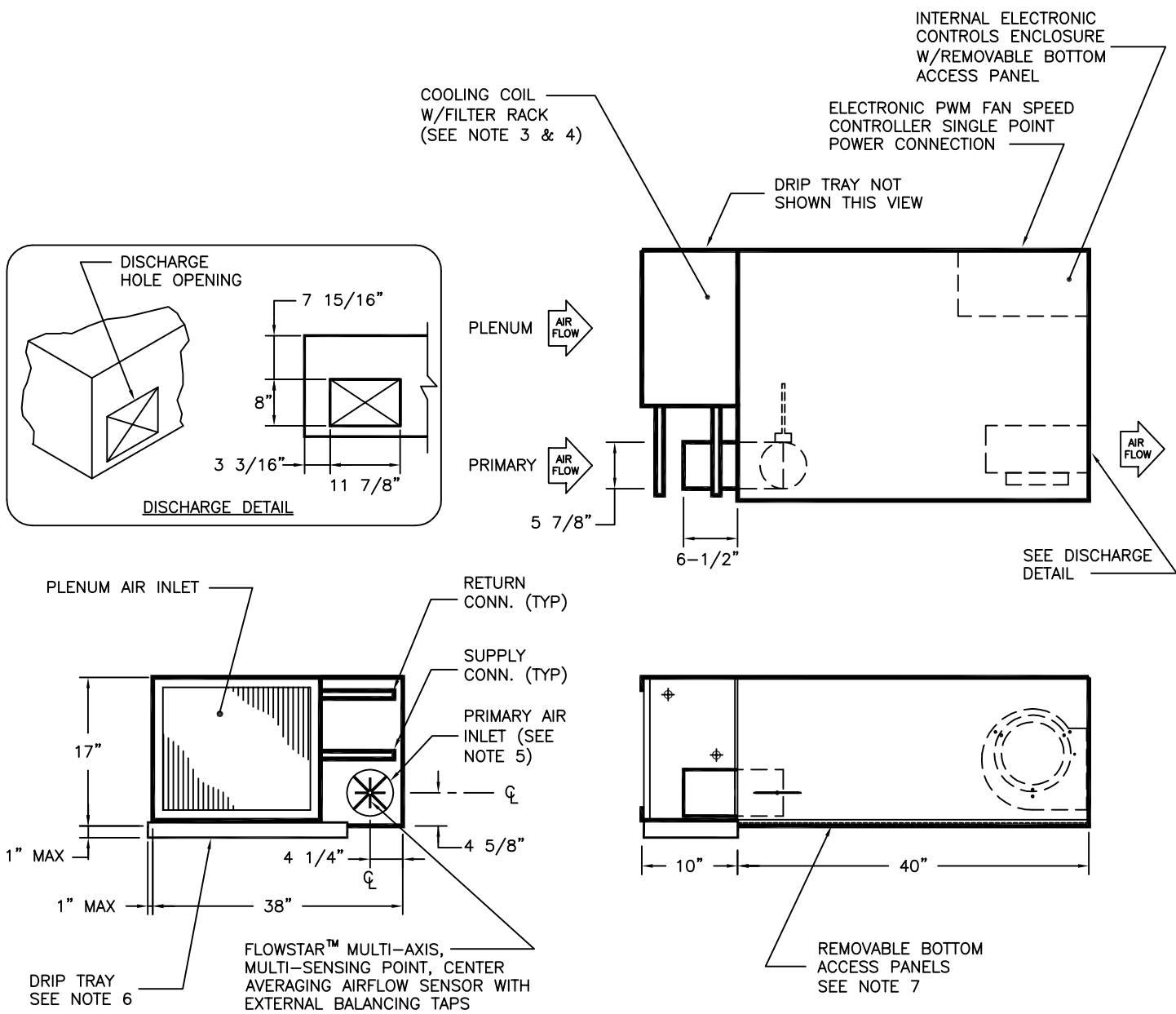
1. MATERIAL: Galvanized steel. Casing—22 gauge; Bottom access — 22 gauge; Air Valve Casing — 22 gauge.
2. INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
3. FILTER: Pleated disposable media (17" x 28" x 1"). Filter access is from the front.
4. COOLING COIL: Copper tubing with aluminum fins, Inlet/Outlet 1/2" NPSM, ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
5. INSTALLATION: A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet and outlet collars should be externally insulated by others (in the field) if required.
6. DRIP TRAY: Non insulated 1" deep with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE: MODEL TCS-CC-XL SIZE 0619 LEFT HAND UNIT			
DRN BY: DJM	DATE: 05/14/02	SCALE: NTS	DRAWING NO.
CKD BY: HANK	DATE: 6/16/05	REV: 00	06-80015-J

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CONSTRUCTION NOTES:

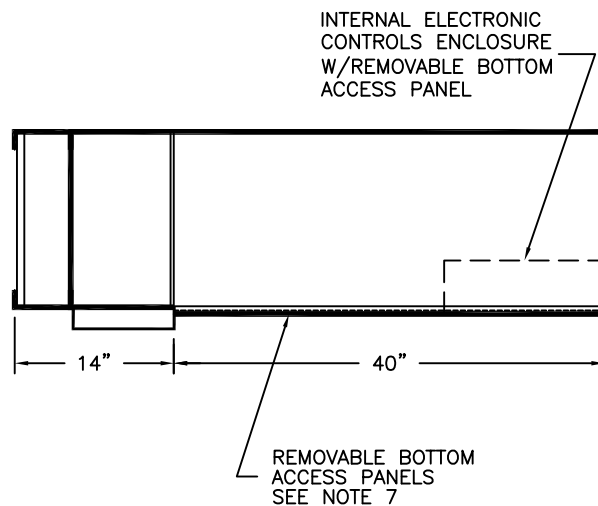
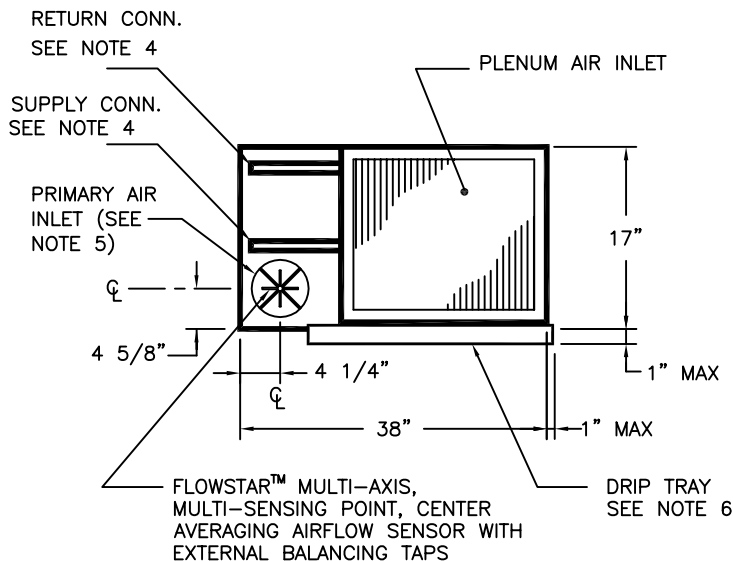
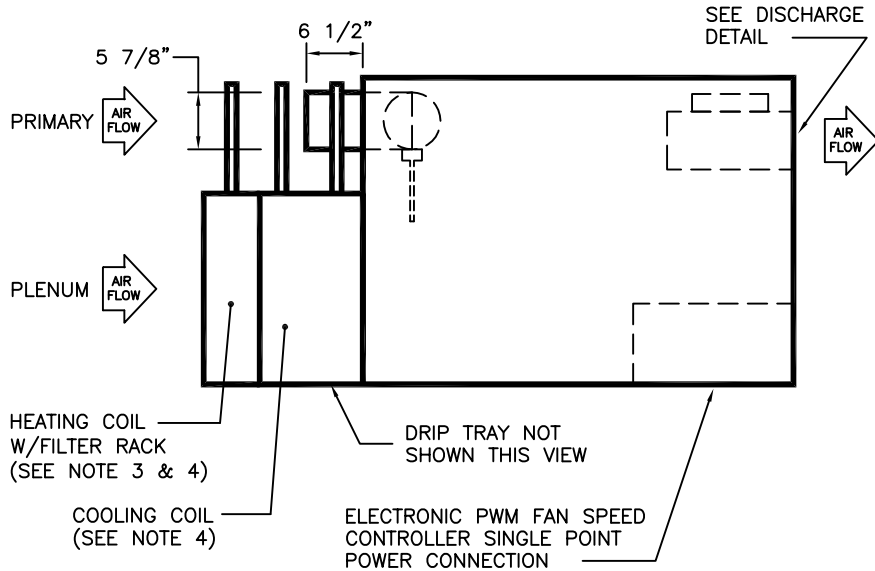
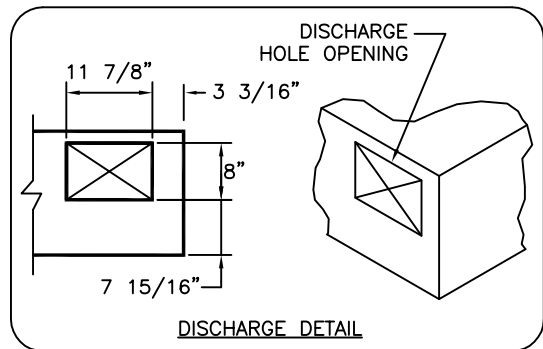
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6. DRIP TRAY: Non insulated 1" deep with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE: MODEL TCL-CC-XR SIZE 0619 RIGHT HAND UNIT			
DRN BY: DJM	DATE: 05/14/02	SCALE: NTS	DRAWING NO.
CKD BY: HANK	DATE: 11/10/04	REV: 01	06-80014-J

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CONSTRUCTION NOTES:

- MATERIAL: Galvanized steel. Casing-22 gauge; Bottom access - 22 gauge; Air Valve Casing - 22 gauge.
- INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
- FILTER: Pleated disposable media (17" x 28" x 1"). Filter access is from the front.
- COOLING COIL: Copper tubing with aluminum fins, Inlet/Outlet 1/2" NPSM, ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
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- ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.

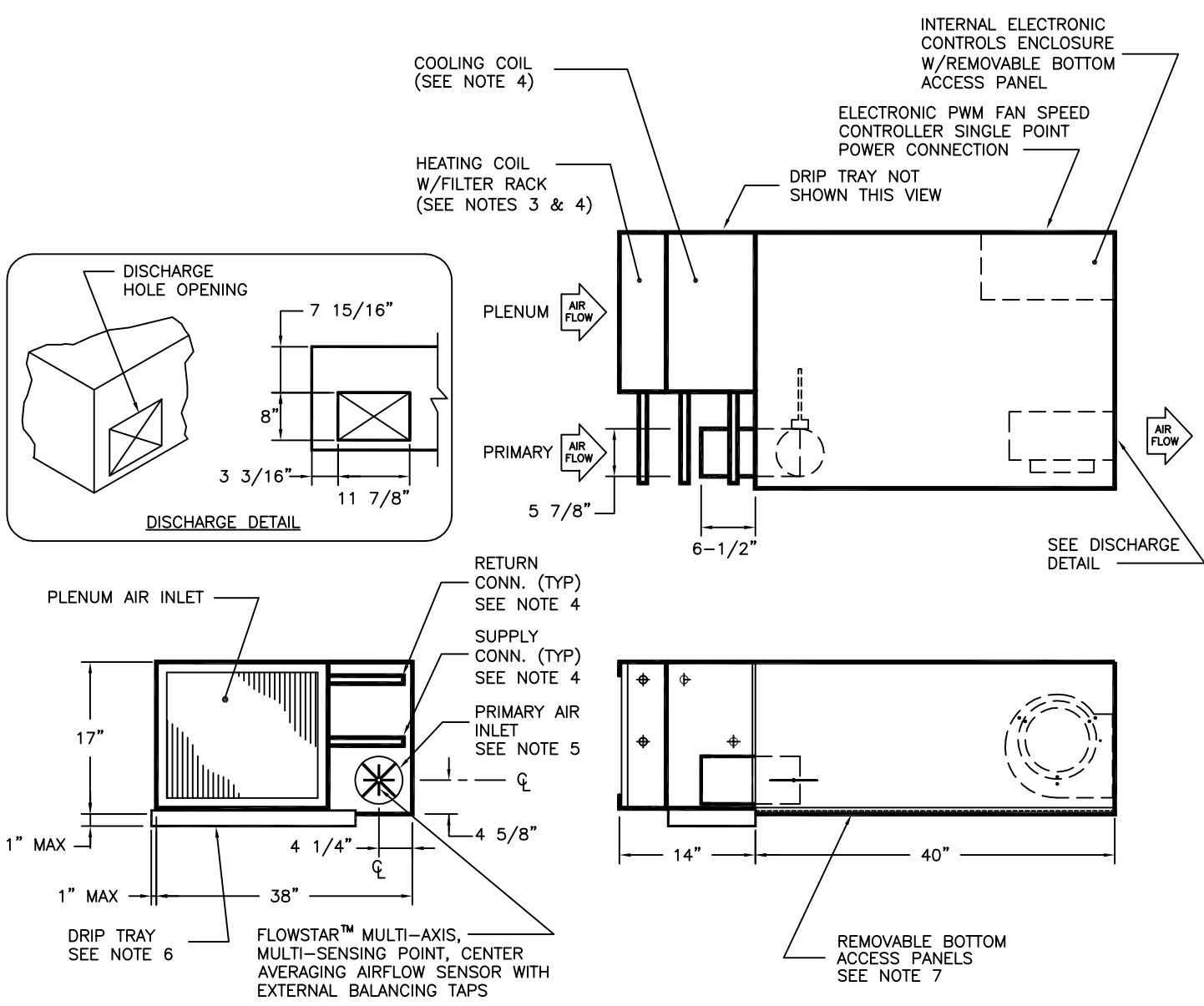


TITLE: MODEL TCS-CC-WC-XL SIZE 0619 LEFT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 05/14/02	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 3/20/15	REV: 01	06-75017-J

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CONSTRUCTION NOTES:

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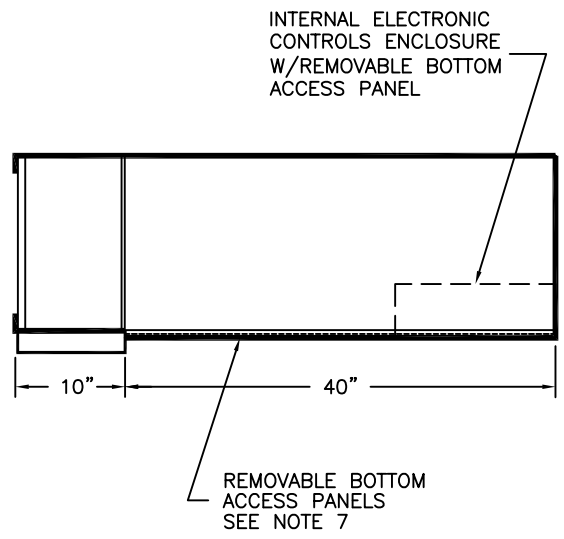
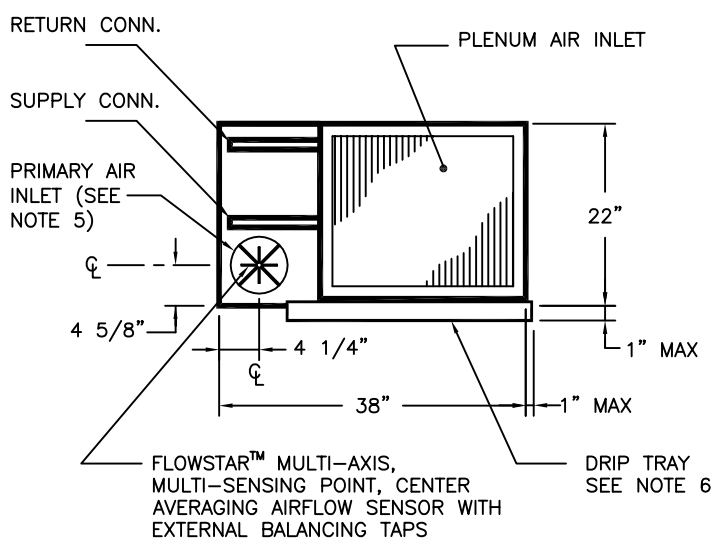
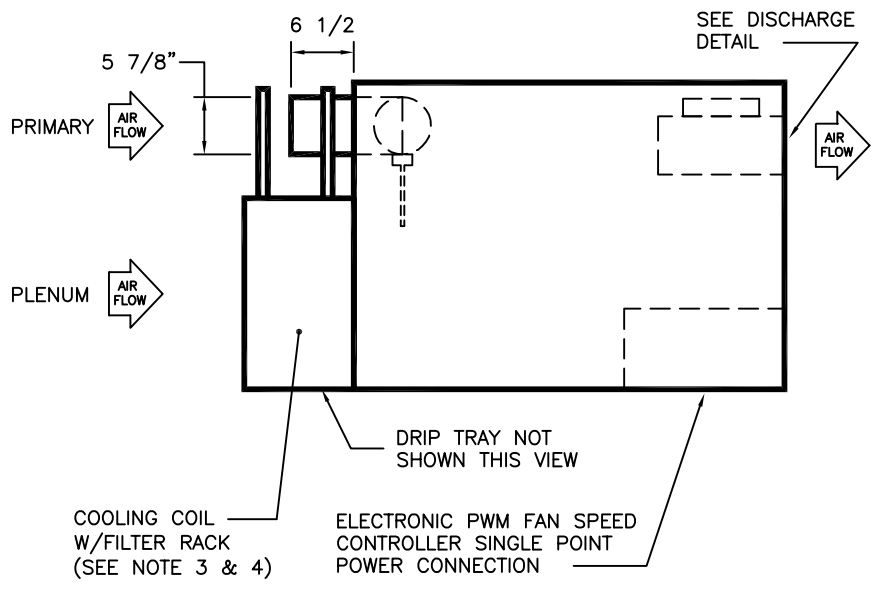
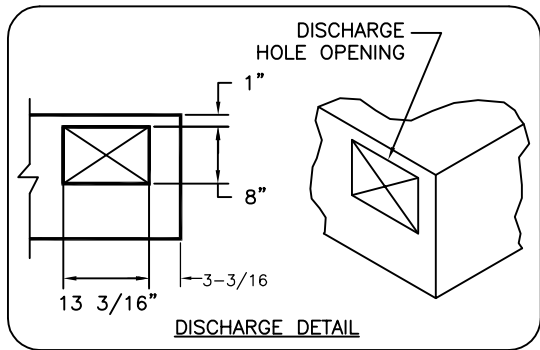


TITLE: MODEL TCS-CC-WC-XR SIZE 0619
RIGHT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 05/14/02	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 3/20/15	REV: 01	06-75016-J

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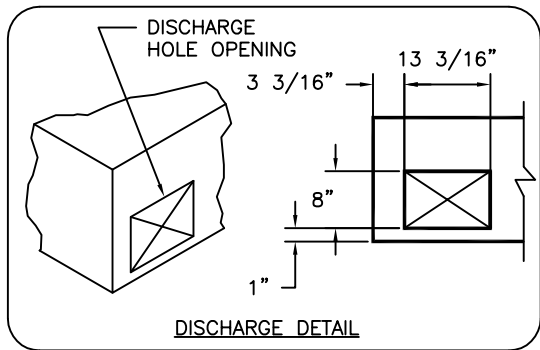


TITLE: MODEL TCS-CC-XL SIZE 0621 LEFT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 10/29/04	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 3/20/15	REV: 02	06-75010-J

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DO NOT SCALE DRAWING. DIMENSIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE. CONTACT FACTORY FOR CERTIFIED DRAWINGS.

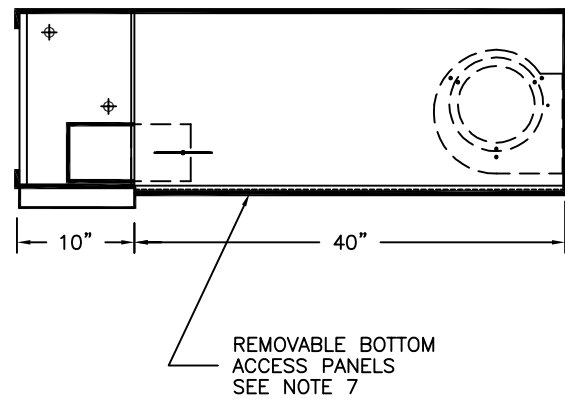
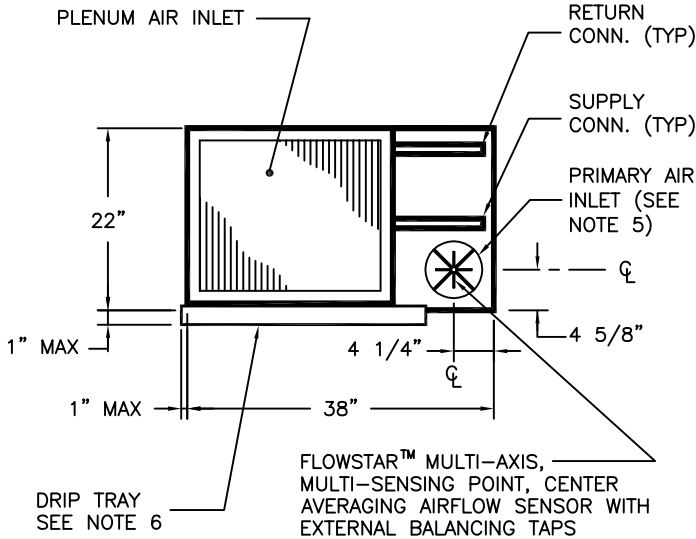
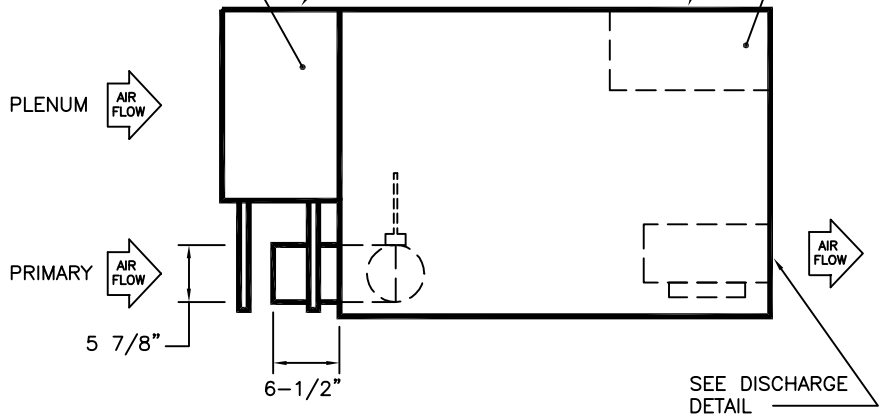


COOLING COIL
W/FILTER RACK
(SEE NOTE 3 & 4)

INTERNAL ELECTRONIC
CONTROLS ENCLOSURE
W/REMOVABLE BOTTOM
ACCESS PANEL

ELECTRONIC PWM FAN SPEED
CONTROLLER SINGLE POINT
POWER CONNECTION

DRIP TRAY NOT
SHOWN THIS VIEW



CONSTRUCTION NOTES:

1. MATERIAL: Galvanized steel. Casing—22 gauge; Bottom access — 22 gauge; Air Valve Casing — 22 gauge.
2. INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
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6. DRIP TRAY: Non insulated 1" deep with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE:

MODEL TCS-CC-XR SIZE 0621
RIGHT HAND UNIT, ECM MOTOR

DRN BY:

DJM

DATE:

10/29/04

SCALE:

NTS

DRAWING NO.

CKD BY:

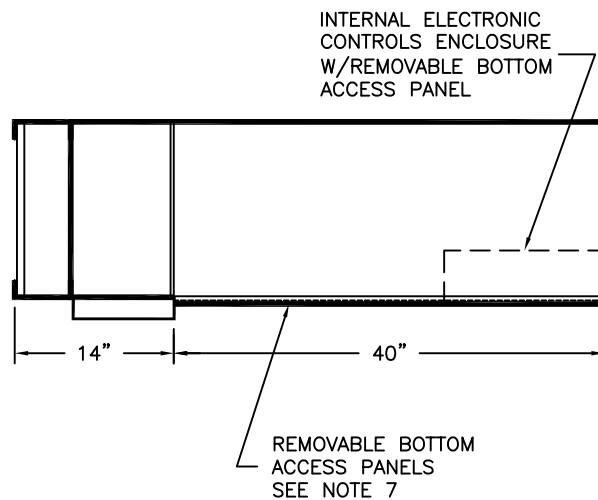
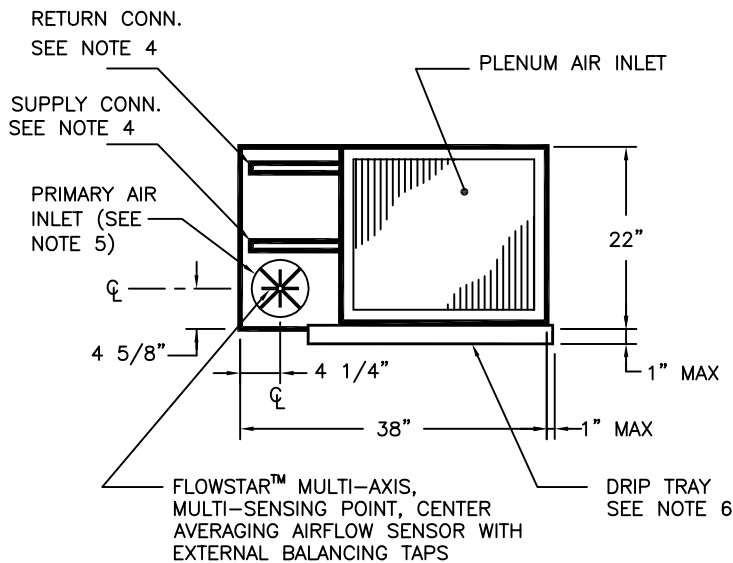
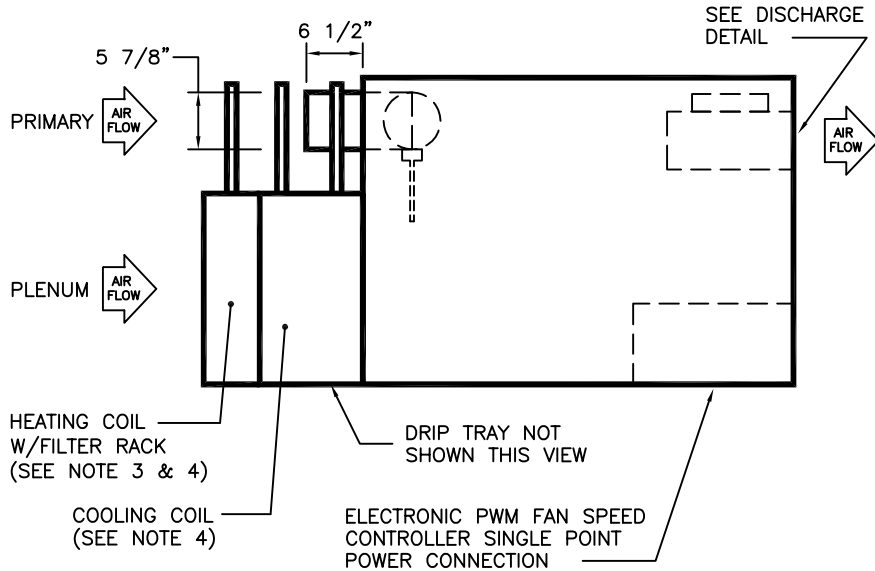
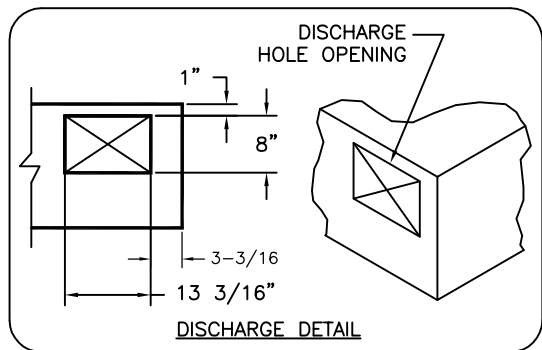
DATE:

03/20/15

REV:

01

06-75009-J



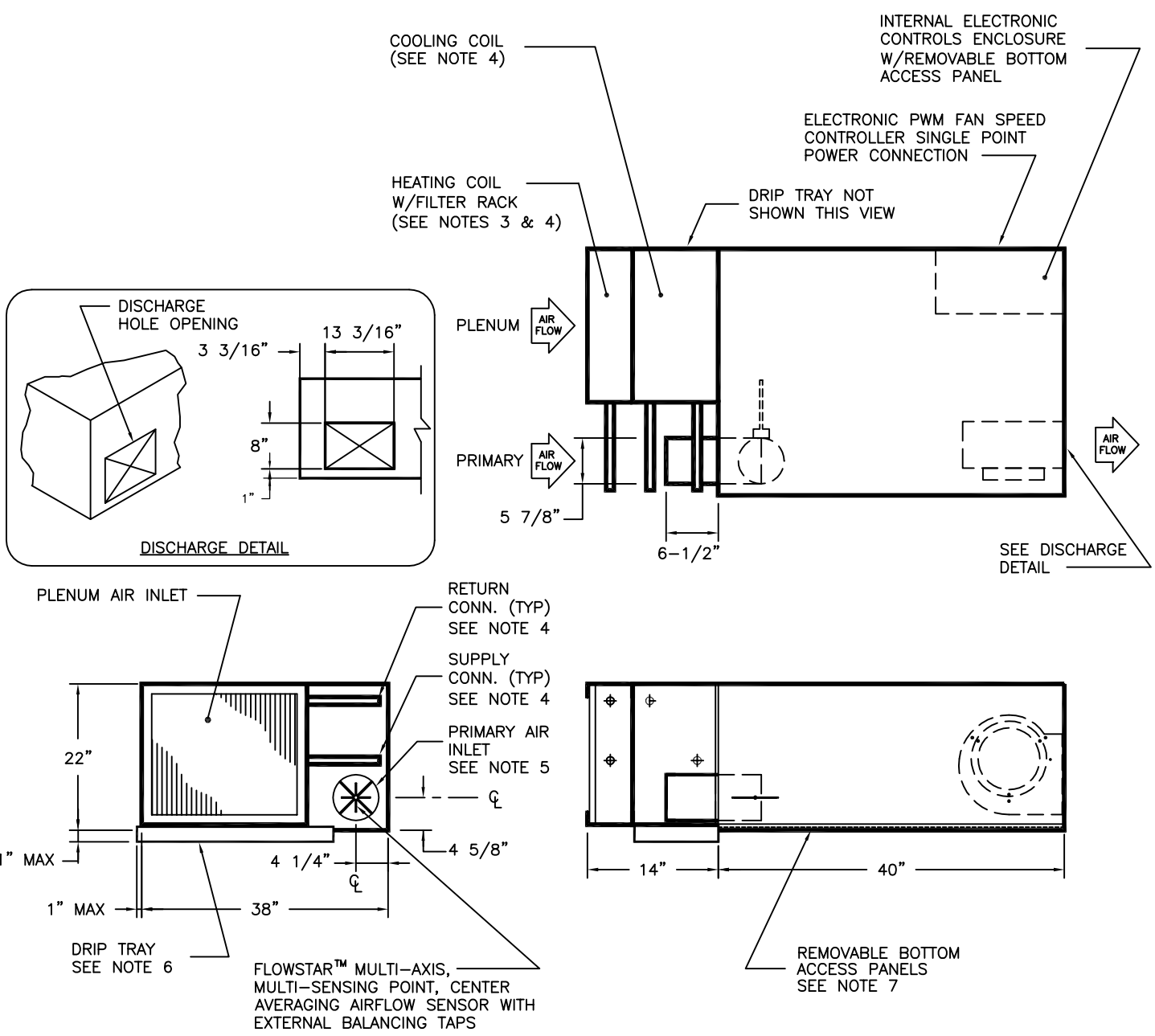
CONSTRUCTION NOTES:

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7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE: MODEL TCS-CC-WC-XL SIZE 0621 LEFT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 10/29/04	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 06/16/05	REV: 01	06-75012-J



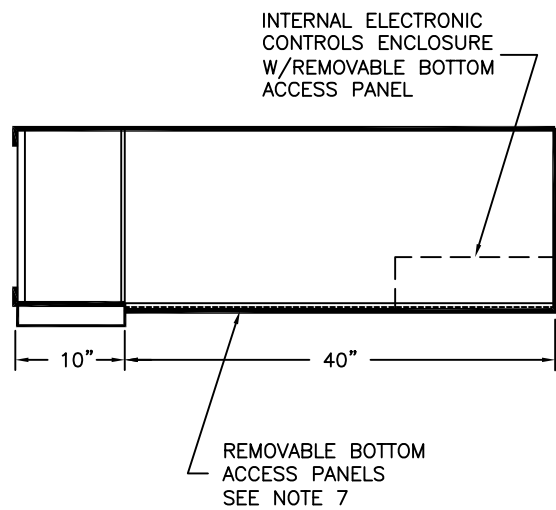
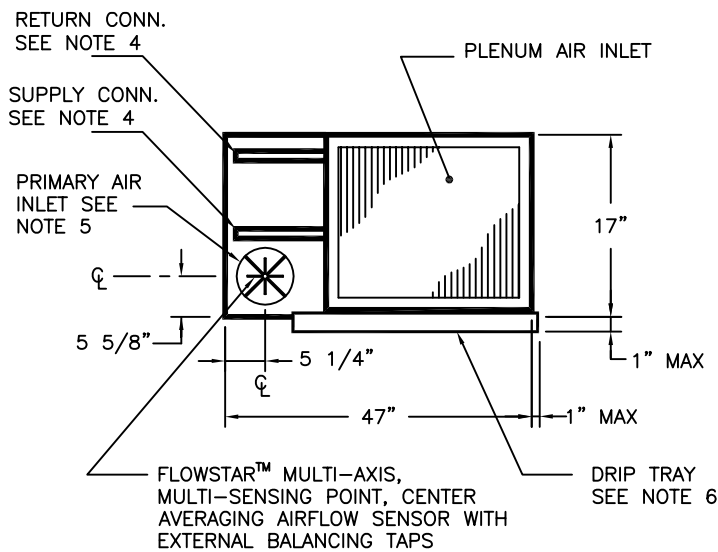
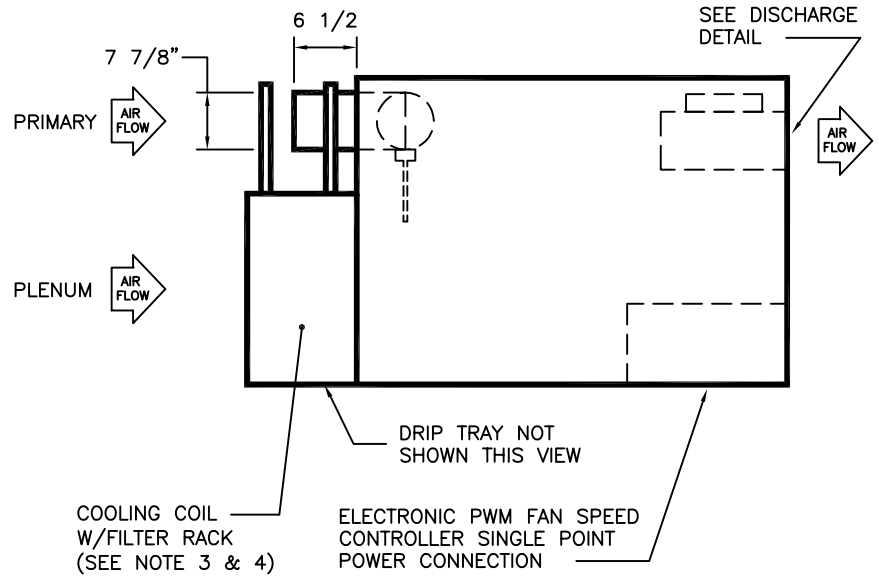
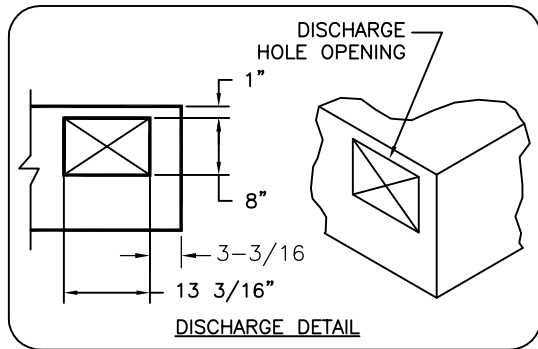
CONSTRUCTION NOTES:

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7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.

		TITLE:	
		MODEL TCS-CC-WC-XR SIZE 0621 RIGHT HAND UNIT, ECM MOTOR	
DRN BY:	DATE:	SCALE:	DRAWING NO.
DJM	10/29/04	NTS	
CKD BY:	DATE:	REV:	
	6/16/05	01	06-75011-J

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CONSTRUCTION NOTES:

1. MATERIAL: Galvanized steel. Casing-22 gauge; Bottom access - 22 gauge; Air Valve Casing - 22 gauge.
2. INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
3. FILTER: Pleated disposable media (17" x 35" x 1"). Filter access is from the front.
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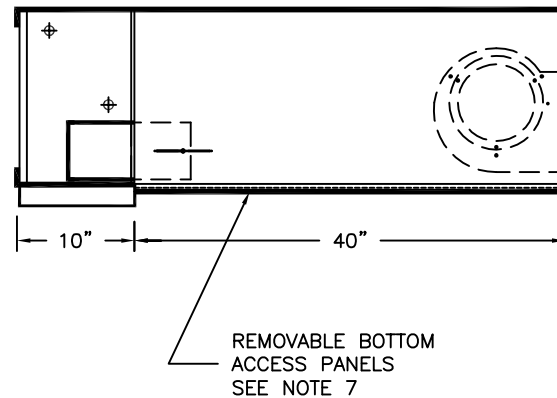
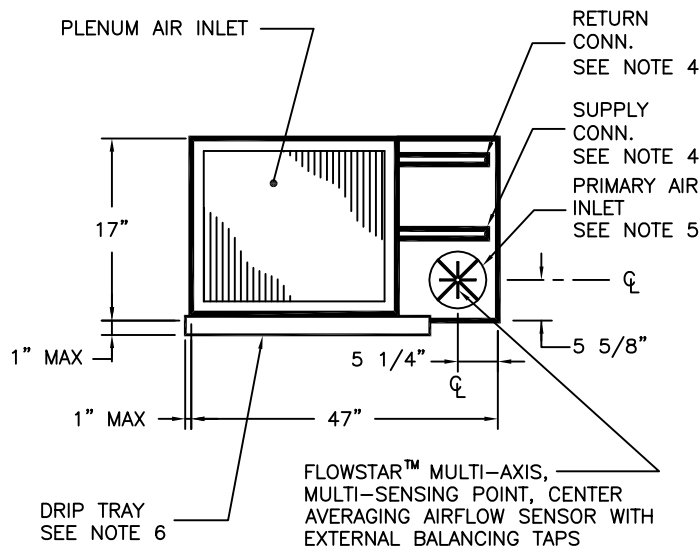
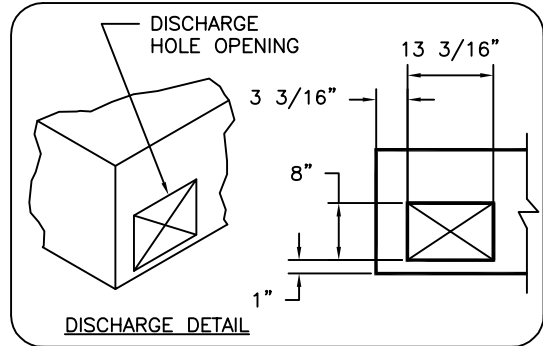
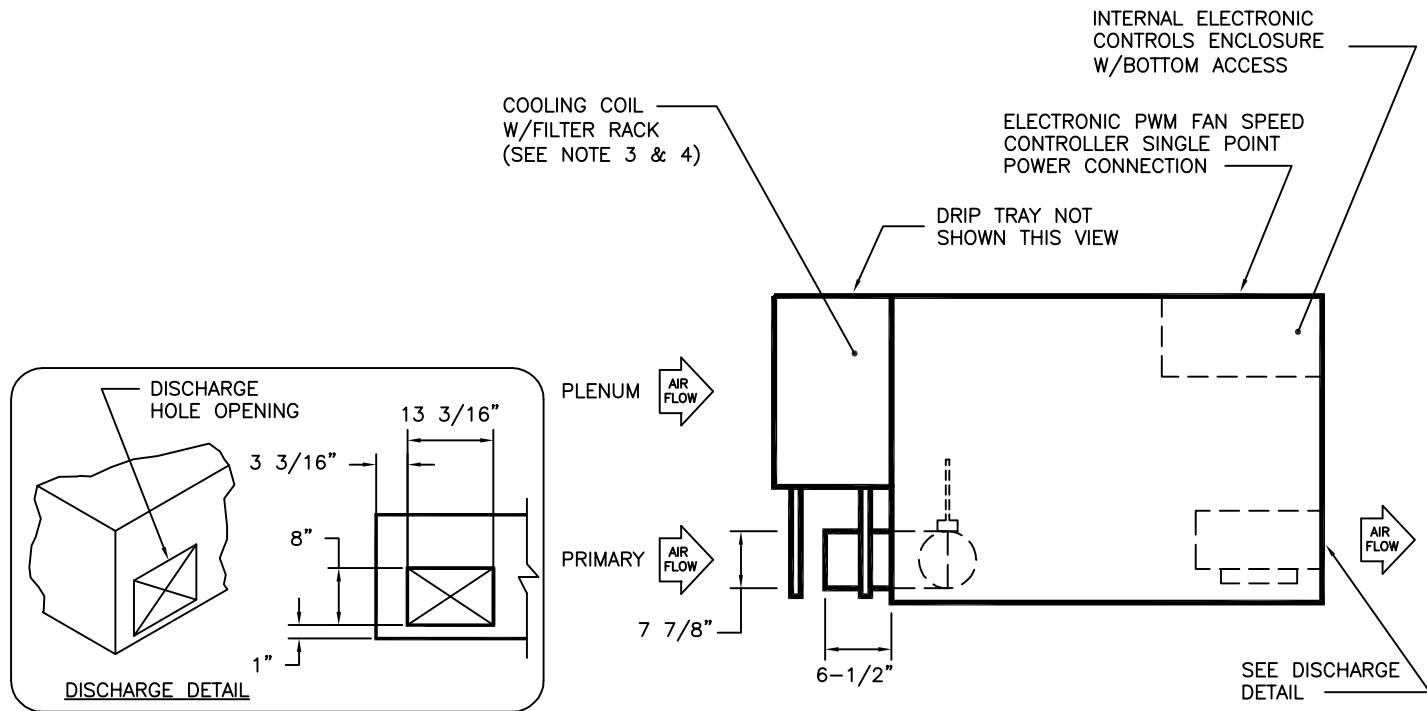


TITLE: MODEL TCS-CC-XL SIZE 0821 LEFT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 05/28/02	SCALE: NTS	DRAWING NO.
CKD BY:	DATE: 03/20/15	REV: 01	06-75020-J

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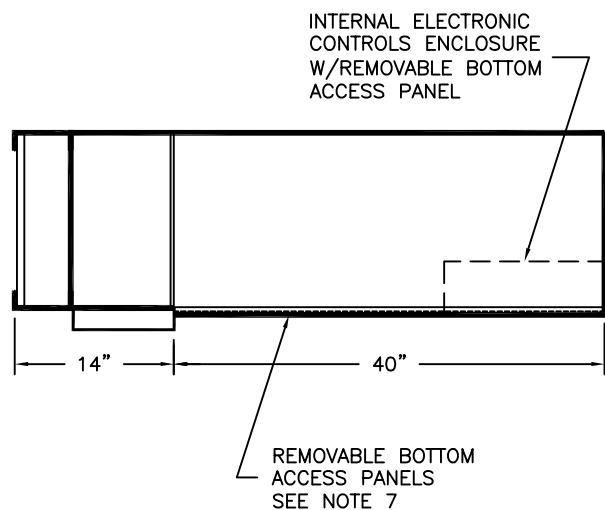
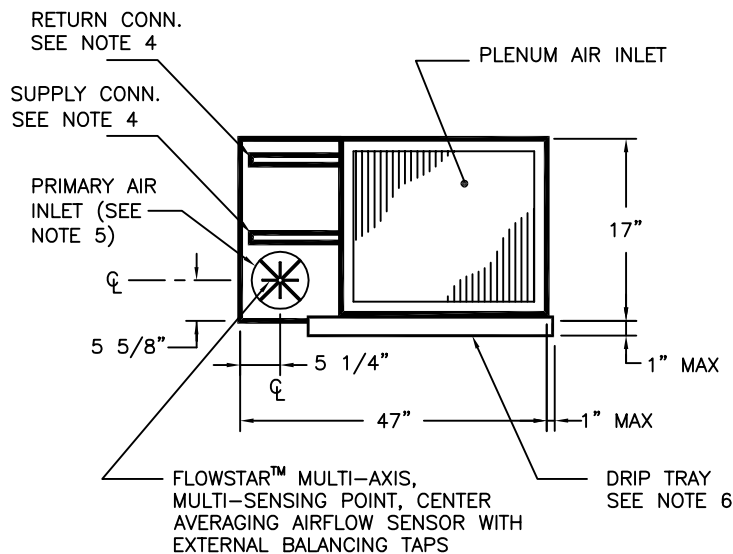
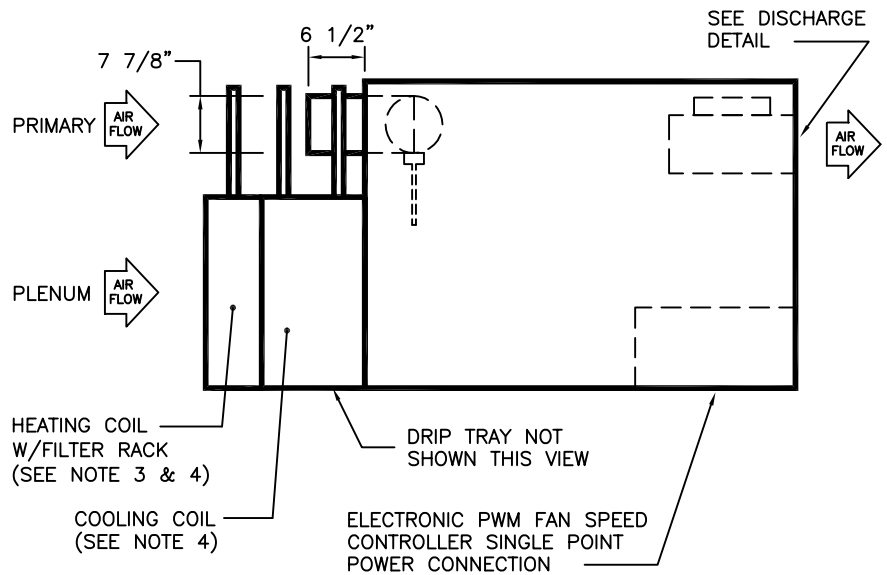
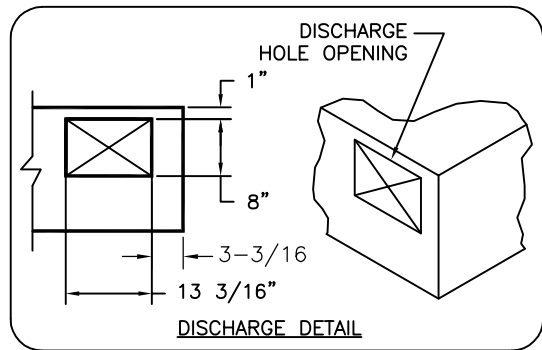


TITLE: MODEL TCS-CC-XR SIZE 0821
RIGHT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 05/28/02	SCALE: NTS	DRAWING NO.
CKD BY: HANK	DATE: 3/20/15	REV: 02	06-75019-J

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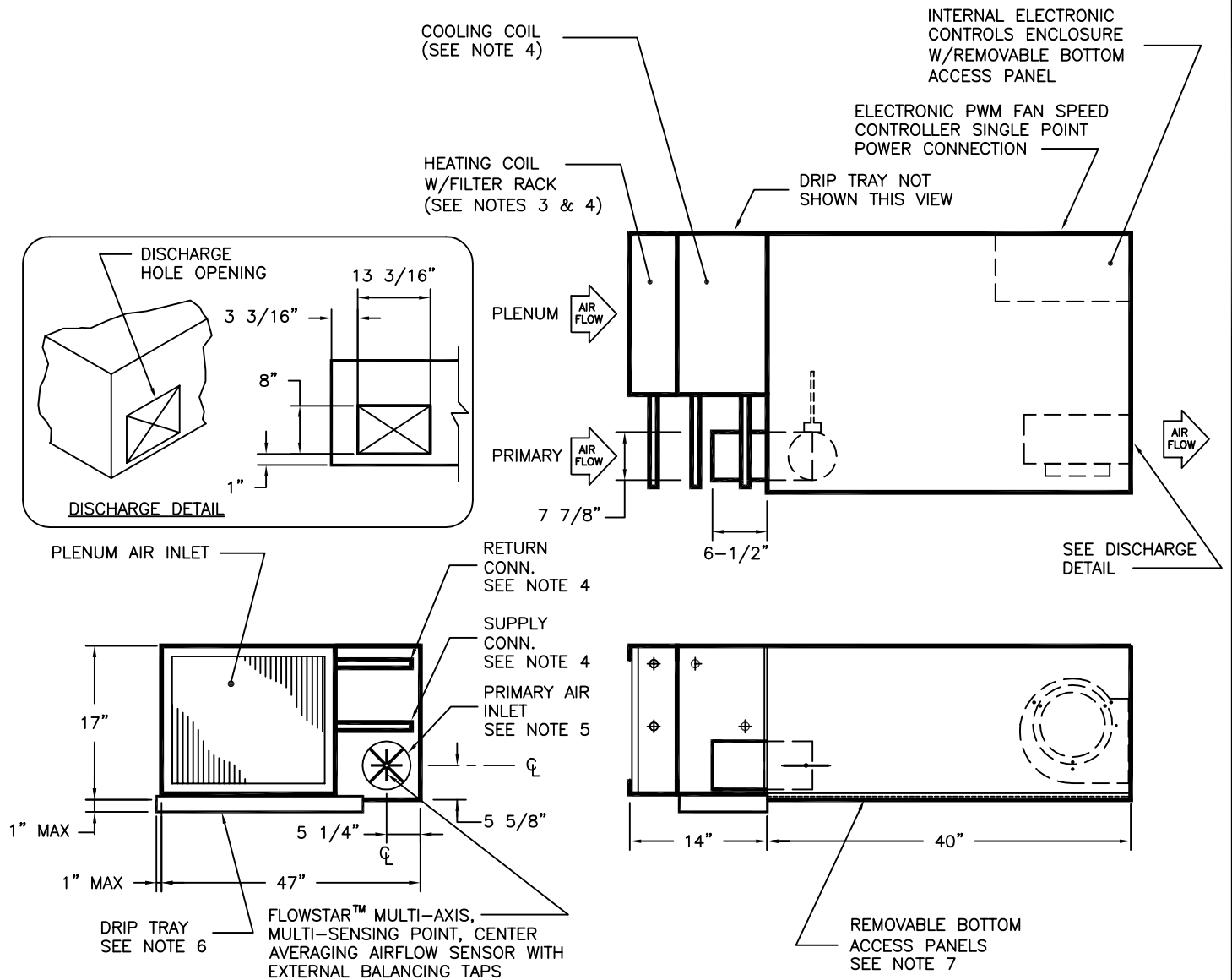
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2. INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
3. FILTER: Pleated disposable media (17" x 35" x 1"). Filter access is from the front.
4. COOLING COIL: Copper tubing with aluminum fins, Inlet/Outlet 3/4" NPSM ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
HEATING COIL: Copper tubing with aluminum fins, Inlet/Outlet 1/2" NPSM, ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
5. INSTALLATION: A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet and outlet collars should be externally insulated by others (in the field) if required.
6. DRIP TRAY: Non insulated 1" deep with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE: MODEL TCS-CC-WC-XR SIZE 0821 LEFT HAND UNIT, ECM MOTOR

DRN BY: DJM	DATE: 05/28/02	SCALE: NTS	DRAWING NO.
CKD BY: HANK	DATE: 3/20/15	REV: 02	06-75022-J



CONSTRUCTION NOTES:

1. MATERIAL: Galvanized steel. Casing—22 gauge; Bottom access — 22 gauge; Air Valve Casing — 22 gauge.
2. INSULATION: 3/4" thick, 4.0 P.C.F. skin, dual density, fiberglass.
3. FILTER: 1" Pleated disposable media (17" x 35" x 1"). Filter access is from the front.
4. COOLING COIL: Copper tubing with aluminum fins, Inlet/Outlet 3/4" NPSM ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
HEATING COIL: Copper tubing with aluminum fins, Inlet/Outlet 1/2" NPSM, ANSI B2.2, straight thread water connections (bottom inlet/top outlet); manual air vent & bleed valve (not shown).
5. INSTALLATION: A) If internal insulation is utilized in the downstream ductwork, the insulation must be secured in such a manner that no raw insulation edges are exposed to the airstream.
B) Inlet and outlet collars should be externally insulated by others (in the field) if required.
6. DRIP TRAY: Non insulated 1" deep with no drain connection per customer request. Customer is responsible for condensate management, should it occur.
7. ACCESS PANELS: All bottom access panels are removable and use quarter turn fasteners, including electrical access.



TITLE: MODEL TCS-CC-WC-XR SIZE 0821
RIGHT HAND UNIT, ECM MOTOR

DRN BY: NBooz	DATE: 05/28/02	SCALE: NTS	DRAWING NO.
CKD BY: HANK	DATE: 3/20/15	REV: 02	06-75021-J

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DOAS Series Flow Fan Powered Terminal Guide Specifications

GENERAL

Furnish and install Johnson Controls Model TCL-CC-X (Low Height), TCS-CC-X (Standard Height), Series Flow Constant Volume Fan Powered Terminals of the sizes and capacities scheduled. Units shall be ETL listed. Terminals with electric heat shall be listed as an assembly.

The entire unit shall be designed and built as a single unit. Field-assembled components or built-up terminals employing components from multiple manufacturers are not acceptable.

CONSTRUCTION

Terminals shall be constructed of not less than 20-gauge galvanized steel, able to withstand a 125 hour salt spray test per ASTM B-117. Casing shall have bottom access to gain access to the cooling coil, primary air valve, and fan assembly. The opening shall be sufficiently large to allow complete removal of the fan if necessary. All appurtenances including control assemblies, control enclosures, sensible chilled water coils, hot water heating coils, and electric heating coils shall not extend beyond the top or bottom of the unit casing.

(Optional: Provide quarter-turn bottom access panel fasteners.)

FIBERGLASS INSULATION (Standard for TCS-CC-X)

Casing shall be internally lined with 3/4" thick fiberglass insulation rated for a maximum air velocity of 5000 f.p.m. Maximum thermal conductivity shall be .24 (BTU • in) / (hr • ft² • °F). Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A.

CLOSED CELL INSULATION (Standard for TCL-CC-X; Option for TCS-CC-X)

Casing shall be internally lined with [1/2" thick Model TCL-CC-X] [3/4" thick Model TCS-CC-X] Elastomeric Closed Cell Foam Insulation and shall conform to UL 181 for erosion, NFPA 90A for fire, smoke and melting, and comply with a 25/50 Flame Spread and Smoke Developed Index per ASTM E-84 or UL 723. Additionally, insulation shall comply with Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21. Polyethylene insulation is not acceptable.

PRIMARY AIR VALVE

Rectangular shaped primary air valves shall consist of minimum 18-gauge galvanized steel. Cylindrically shaped primary air valves shall consist of minimum 22-gauge galvanized steel and include embossment rings for rigidity. The damper blade shall be connected to a solid shaft by means of an integral molded sleeve which does not require screw or bolt fasteners. The shaft shall be manufactured of a low thermal conducting composite material, and include a molded damper position indicator visible from the exterior of the unit. The damper shall pivot in self-lubricating bearings. The valve assembly shall include internal mechanical stops for both full open and closed positions. The damper blade seal shall be secured without use of adhesives. The air valve leakage shall not exceed 1% of maximum inlet rated airflow at 3" W.G. inlet pressure for cylindrical valves. Rectangular valve leakage shall not exceed 2% of maximum inlet rated airflow at 3" W.G. inlet pressure.

PRIMARY AIRFLOW SENSOR

For inlet diameters 6" or greater, the differential pressure airflow sensor shall traverse the duct along two perpendicular diameters. Cylindrically shaped inlets shall utilize the equal cross sectional area or log-linear traverse method. Single axis sensor shall not be acceptable for duct diameters 6" or larger. A minimum of 12 total pressure sensing points shall be utilized. The total pressure inputs shall be averaged using a pressure chamber located at the center of the sensor. A sensor that delivers the differential pressure signal from one end of the sensor is not acceptable. The sensor shall output an amplified differential pressure signal that is at least 2.3 times the equivalent velocity pressure signal obtained from a conventional pitot tube. The sensor shall develop a differential pressure of 0.015" w.g. at an air velocity of < 325 FPM. Documentation shall be submitted which substantiates this requirement. Balancing taps and airflow calibration charts shall be provided for field airflow measurements.

DOAS Series Flow Fan Powered Terminal Guide

Specifications

FAN ASSEMBLY

The unit fan shall utilize a forward curved, dynamically balanced, galvanized wheel with a direct drive motor. The fan motor shall be un-pluggable from the electrical leads at the motor case for simplified removal. The motor shall be mounted to the fan housing using rubber grommets to minimize vibration transfer.

Fan motor shall be ECM™. Motor shall be brushless DC controlled by an integral controller / inverter that operates the wound stator and senses rotor position to electronically commutate the stator. Motor shall be permanent magnet type with near-zero rotor losses designed for synchronous rotation. The motor shall utilize permanently lubricated ball bearings. Motor shall maintain minimum 70% efficiency over the entire operating range. Motor speed control shall be accomplished through a PWM (pulse width modulation) controller specifically designed for compatibility with the ECM™. The speed controller shall have terminals for field verification of fan capacity utilizing a digital volt meter. A calibration graph shall be supplied indicating Fan CFM verses DC Volts.

CHILLED WATER SENSIBLE COOLING COIL & DRIP TRAY

Terminal shall include an integral chilled water sensible cooling coil. The coil shall be manufactured by the terminal unit manufacturer and shall have a minimum 22-gauge galvanized sheet metal casing. Coil shall be constructed of aluminum fins with full fin collars mechanically fixed to copper tubes to assure accurate fin spacing and maximum heat transfer. A galvanized steel drip tray shall be provided, factory installed underneath the sensible cooling coil. Each coil shall be hydrostatically tested at 450 PSIG, and rated for a maximum 300 PSIG working pressure at 200°F.

HOT WATER COIL

Terminal shall include an integral hot water coil where indicated on the plans. The coil shall be manufactured by the terminal unit manufacturer and shall have a minimum 22-gauge galvanized sheet metal casing. Coil shall be constructed of aluminum fins with full fin collars mechanically fixed to copper tubes to assure accurate fin spacing and maximum heat transfer. Each coil shall be hydrostatically tested at 450 PSIG, and rated for a maximum 300 PSIG working pressure at 200°F. Coils shall incorporate a built in, flush mounted access plate, allowing bottom access to coil.

ELECTRIC HEAT (TCL Only)

Terminal shall include an integral electric heater where indicated on the plans. Heater shall be manufactured by the terminal unit manufacturer. The heater cabinet shall be constructed of not less than 20-gauge galvanized steel. Heater shall have a hinged access panel for entry to the controls.

Heater shall be furnished with all controls necessary for safe operation and full compliance with UL 1995 and National Electric Code requirements. Heater shall have a single point electrical connection (optional: door interlocking fused disconnect switch). It shall include magnetic contactors (optional: staged solid state relays), (optional: airflow switch), primary disc-type automatic reset high temperature limit, secondary high limit(s), Ni-Chrome elements and fusing per UL and NEC. Heater shall have complete wiring diagram with label indicating power requirement and kW output. Heater shall be interlocked with fan terminal so as to preclude operation of the heater when the fan is not running.

ELECTRICAL

Terminals shall have a single point power connection. (Optional: toggle disconnect and motor fusing for units without electric heat).

FILTERS

Terminals shall include a filter rack and 1" thick disposable fiberglass filter (optional: MERV 8 filter).

CONTROLS COORDINATION

Furnish a NEMA 1 control enclosure with 24-volt transformer and factory mount and wire DDC controller and primary air damper actuator provided by automatic temperature control contractor. [Model TCS-CC-X, primary air actuator must be separate component and NOT integral to the controller.]

