TOSHIBA

ADJUSTABLE SPEED DRIVES

Q9+

LOW VOLTAGE

SYSTEMATIC AND PRECISE PUMP CONTROL

The Toshiba Q9 Plus adjustable speed drive (ASD) incorporates Toshiba's proprietary VLP Technology®* and directly, precisely, and linearly controls pressure, level, and flow. This eliminates certain obstacles users assumed were an unavoidable part of pump control.

- Linearizes Traditional Non-Linear Pump Curve, Providing Stable & Precise Control to HVAC Systems
- Solves Problem of Load-Balancing Over Multiple Fan Plenums or Pump Systems
- Allows User to Configure System in Five Simple Steps, Providing Complete Control in Only Minutes
- Self-Calibrates & Eliminates Common Anomalies
- Maximizes Energy Savings on Variable Torque Loads

* VLP Technology® as used herein refers to Virtual Linear Pump technology

vlp technology®

Start & Stop Points	Determines when to start and stop the fan or pump based on user-set values and system feedback on air or water levels. These points work with a delay timer to help ensure that frequent fluctuations in the system feedback do not unnecessarily start and stop the ASD.
Sleep Timer	Shuts off fan or pump in order to reduce energy consumption and to prolong the lifespan of equipment after it has run at the minimum for a user-specified amount of time.
Damper-Permissive Circuit	Protects ductwork from becoming overpressurized. The drive will not start until a signal from an open damper is received.
Two Selectable Fire-Speeds	Comes as standard features on the Q9 Plus. When a signal from a fire management system is received, the fire-speed circuit forces the ASD to run at a preset speed and forced run.
Customer Interlock	Disables the ASD from running regardless of whether the ASD is in inverter or bypass mode.
Toshiba's Proprietary Windows®-Based ASD Pro Software	Available at no additional cost. This easy-to-use software can be used to program and control the Q9 Plus, to download parameter sets, and to monitor real-time conditions.

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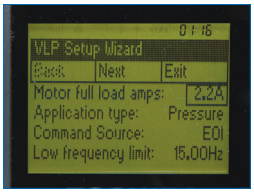
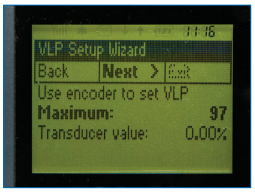
PRACTICAL STARTUP CONFIGURATION

The Q9+'s VLP Technology offers similar functionalities as proportional/integral/derivative gain (PID) with additional protective features for centrifugal pumping systems in numerous applicable industries.

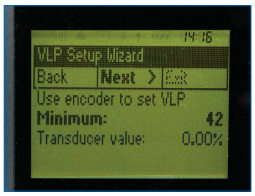


STEP 1:
Input Motor's Electrical Specifications

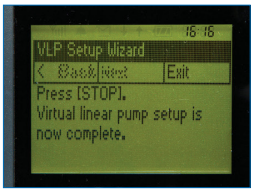
STEP 2:
Input Transducer Specifications



STEP 3:
Input Maximum

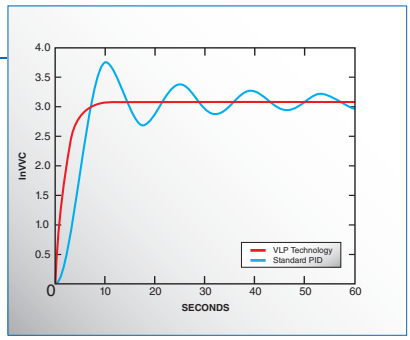


STEP 4:
Input Minimum



STEP 5:
Complete VLP Setup

VLP TECHNOLOGY MAKES PID TUNING A THING OF THE PAST



Toshiba's breakthrough VLP Technology algorithm has taken PID and changed how users control pressure and flow. With this new technology, after simply inputting a few values into the Q9 Plus, optimum control is attained. Toshiba's Setup Wizard effortlessly guides the user through the entire process. The setup process defines the operating boundaries by establishing a minimum point and a maximum point. By defining these points, VLP Technology creates an operating domain within the ASD that is directly and proportionately related to the specific pumping system to which it is connected. Once these points have been established, the Q9 Plus will:

- Monitor Multiple Systems for Friction Losses, Impeller Variations & Other System Variables
- Adjust Systems Accordingly to Help Ensure Only Necessary Fans or Pumps are Operating
- Balance Flow Rates for Each Operating Fan or Pump Under Different Conditions
- Maintain the Same Load for All Operating Fans or Pumps

COMMUNICATION OPTIONS

The Q9 Plus supports many common communication protocols used in the HVAC industry. Options Include:

- BACnet® (Integrated)
- Modbus RTU (Integrated)
- BACnet®/IP®
- Metasys® N2
- APOGEE FLN®
- LonWorks®

INDUSTRIES SERVED

- HVAC

APPLICATIONS

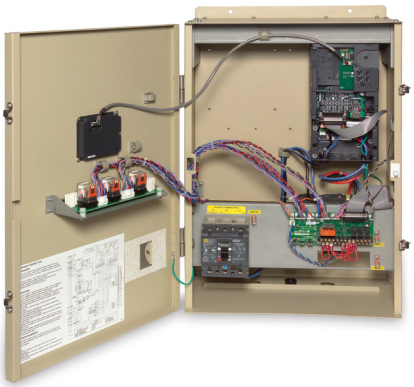
- Air Handling
- Chill Water Circulation
- Cooling
- Fan Walls
- Heat Exchange
- Ventilation
- Water Pumps

INTEGRATED ENCLOSURE & BYPASS OPTIONS

TIC allows users to "build your own drive" by including several popular options as standard choices for custom packages. Configuration options include line reactors for input power-conditioning and harmonic mitigation as well as a choice between two- or three-contactor bypasses to allow for across-the-line motor operation.

"Build Your Own Drive" packages use a standard NEMA 1 enclosure and are available with the following options:

- Input Circuit Breaker
- Two-Contactor Bypass
- Three-Contactor Isolated Bypass
- 3% AC Line Reactor
- 5% AC Line Reactor
- DC Link Reactor



TOSHIBA

MODEL RANGE	1 to 125 HP	1 to 400 HP
Voltage Rating	200 to 240 VAC	380 to 480 VAC
Frame Size	2 to 10	2 to 13
HP Rating	1 to 125 HP	1 to 400 HP
Input Voltage Tolerance	±10%	
Voltage Regulation	Main Circuit Voltage Feedback Control: Automatic, Fixed, & Off	
PWM Carrier Frequency	Adjustable 1 to 16 kHz (Drive-Specific, Consult Factory)	
Control System	Sinusoidal Pulse Width Modulation (PWM) with VLP Technology®	
V/f Pattern	Constant Torque, Voltage Decrease Curve, Automatic Torque Boost, Sensorless Vector Control, 5-Point V/f Custom Curve, PM Drive & PG Feedback Vector Control	
Overload Current Rating	100% Continuous; 110% for One Minute	
Frequency Setting	Rotary Encoder Integrated into EOI, 0 to 10 VDC, ±10 VDC, 0 to 20 mA & Discrete Input	
Frequency Precision	Analog Input 0.2% of Maximum Output Frequency; Discrete/Communications Input 0.01% of Maximum Output Frequency	
Output Frequency Range	0 to 299 Hz	
Speed Regulation	Closed Loop (Up to 0.01%; 1000:1 Speed Range); Open Loop (Up to 0.1%; 60:1 Speed Range)	
Set Point Control	Selectable Between VLP Technology/PID; Proportional Gain, Integral Gain, Feedback Settings, Upper/Lower Deviation Limits, Feedback Source Delay Filter & Feedback Settings Differential Gain	
Load Balancing	Capable of Balancing Load on Pumps Operated by Q9 Plus Drives on Common Header	
Retry	User-Set Number of Retries for Automatic System Restart After Trip	
Restart	Able to Smoothly Catch Freewheeling Motor (Bidirectional)	
Sleep Timer	Shuts Off Fan After Running at Minimum for User-Specified Time	
Enclosure Type	IP20/IP00 (Rating-Dependent), NEMA 1 Kit Available	
Standards/Compliances	UL Listed	
INPUT/OUTPUT		
Discrete Input Terminals	Eight Discrete Input Terminals Programmable to 57 Functions; May Be Increased Using Optional Hardware	
Analog Inputs	Three: One 0 to 20 mA or 0 to 10 VDC Isolated Input, One 0 To 10 VDC Input & One ±10 VDC Input	
Discrete Output Contacts	Three Programmable To 83 Functions; Two Form-A Contacts & One Form-C Contact	
Analog Outputs	Two: One Programmable 4 to 20 mA or 0 to 10 VDC & One 4 to 20 mA Output	
Communication Port	Half/Full Duplex RS485; Integrated Protocols: BACnet®, Modbus®, & Toshiba TSB	
Power Terminals	Input (L1, L2, L3), Output (T1, T2, T3), DCL (PO, PA), DBR (PA, PB) & DC BUS (PA, PC)	
SAFETY FEATURES		
Start & Stop Points	Determine Start/Stop Based On User-Set Values, Transducer Feedback Signal & Programmable Discrete Input Terminal; Work with Delay Timer to Help Ensure ASD Does Not Start/Stop Too Frequently Due to Unstable/Fluctuating Input Signal	
Damper-Permissive Circuit	Protects Drive from Over-Pressuring the System	
Selectable Fire-Speeds	Two Fire-Speeds; Force Drive to Run at Preset Speeds	
ELECTRONIC OPERATOR INTERFACE (EOI)		
LCD (Liquid Crystal Display)	Full-English Backlit Display	
LED (Light Emitting Diode)	Seven-Segment Display	
LED Indicators	Run (Red)/Stop (Green), Hand (Green) & DC Bus Charge Indicator (Red)	
Keys	Hand/Auto, ESC, Run, Mode & Stop/Reset	
Rotary Encoder	Encoder with Integrated Enter Key to View/Change Parameter Settings	
Monitoring	Frequency Command Screen; Allows Two User-Selected Monitored Items to be Displayed; Selectable from: Output Current, DC Voltage, Output Voltage, Run Time, Comp. Frequency, VLP Technology®, Motor Overload, Motor Load, ASD Load, Input Power, Output Power, RR Input, V/I Input, RX Input, RX2 Input, AM/FM Output	
Display Units	Completely Configurable Along with Scaling Factor Multiplier; Display Selectable Between Amps (A) or Percentage of FLA (%); Voltage Display Selectable Between Volts (V) or Percentage of Volts (%)	
Set-Point Units	Selectable Between PSI, GPM, CFM, Inches of Water Column (inH2O), or Feet of Water Column (ftWC)	

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Rev.08ESSENCE0724

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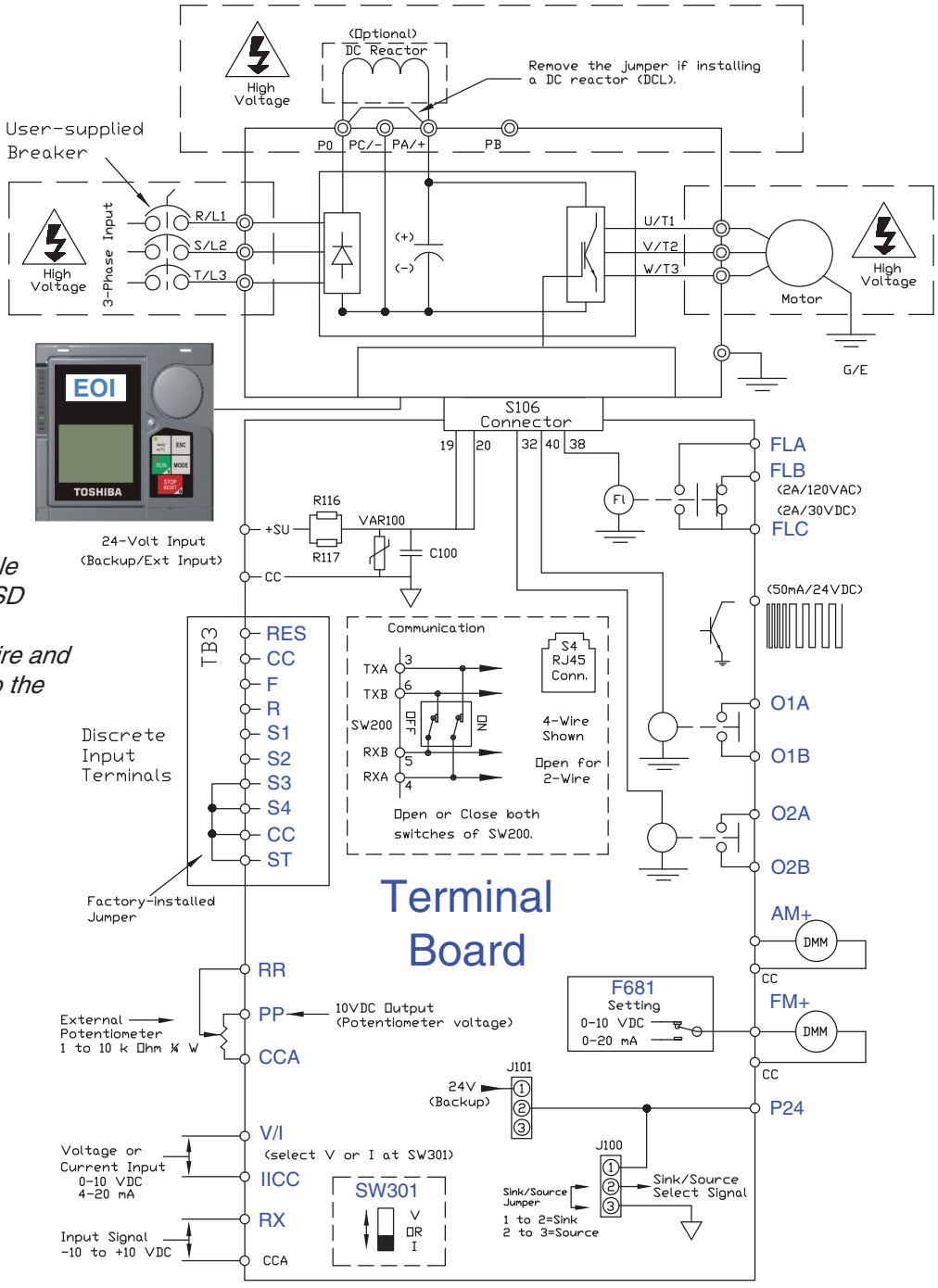
Typical ASD Connection Diagram

Figure 20. The Q9 Plus Typical Connection Diagram.



Note: When connecting multiple wires to any of ASD terminals, do not connect a solid wire and a stranded wire to the same terminal.

Note: The AM, FM, and the +SU analog terminals are referenced to CC. The RR, RX, P24, and the PP analog terminals are referenced to CCA.

The isolated V/I analog terminal references IICC.

Typical Connection Diagram

Three expanded depictions of the **Q9 Plus Bypass ASD/Q9 Plus Bypass Box** systems are shown in figures 8, 9, and 10.

Figure 7. Q9 Plus Bypass ASD/Q9 Plus Bypass Box Typical Connection Diagram.

Note: *When connecting multiple wires to the PA, PB, PC, or PO terminals, DO NOT connect a solid wire and a stranded wire to the same terminal.*

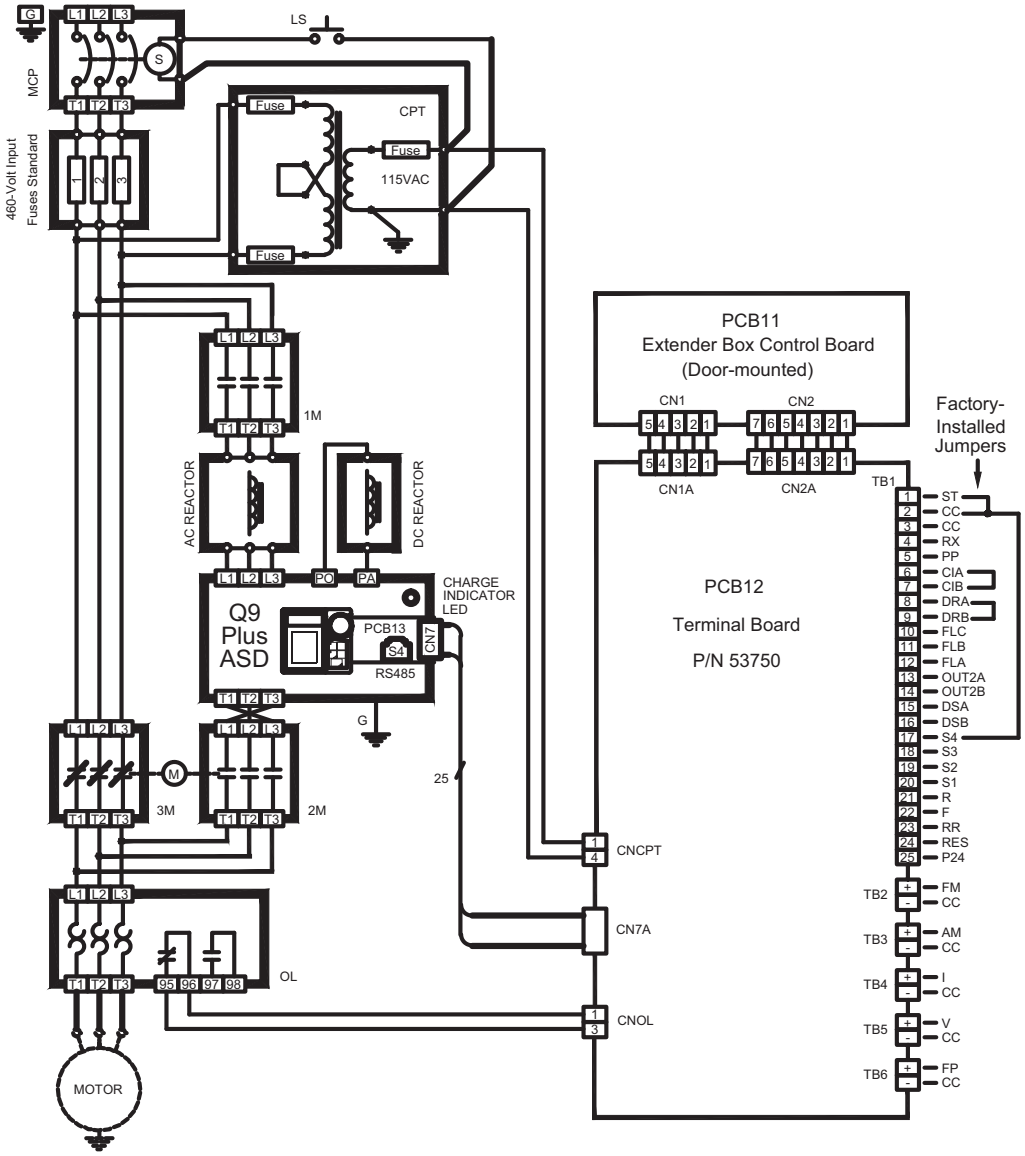
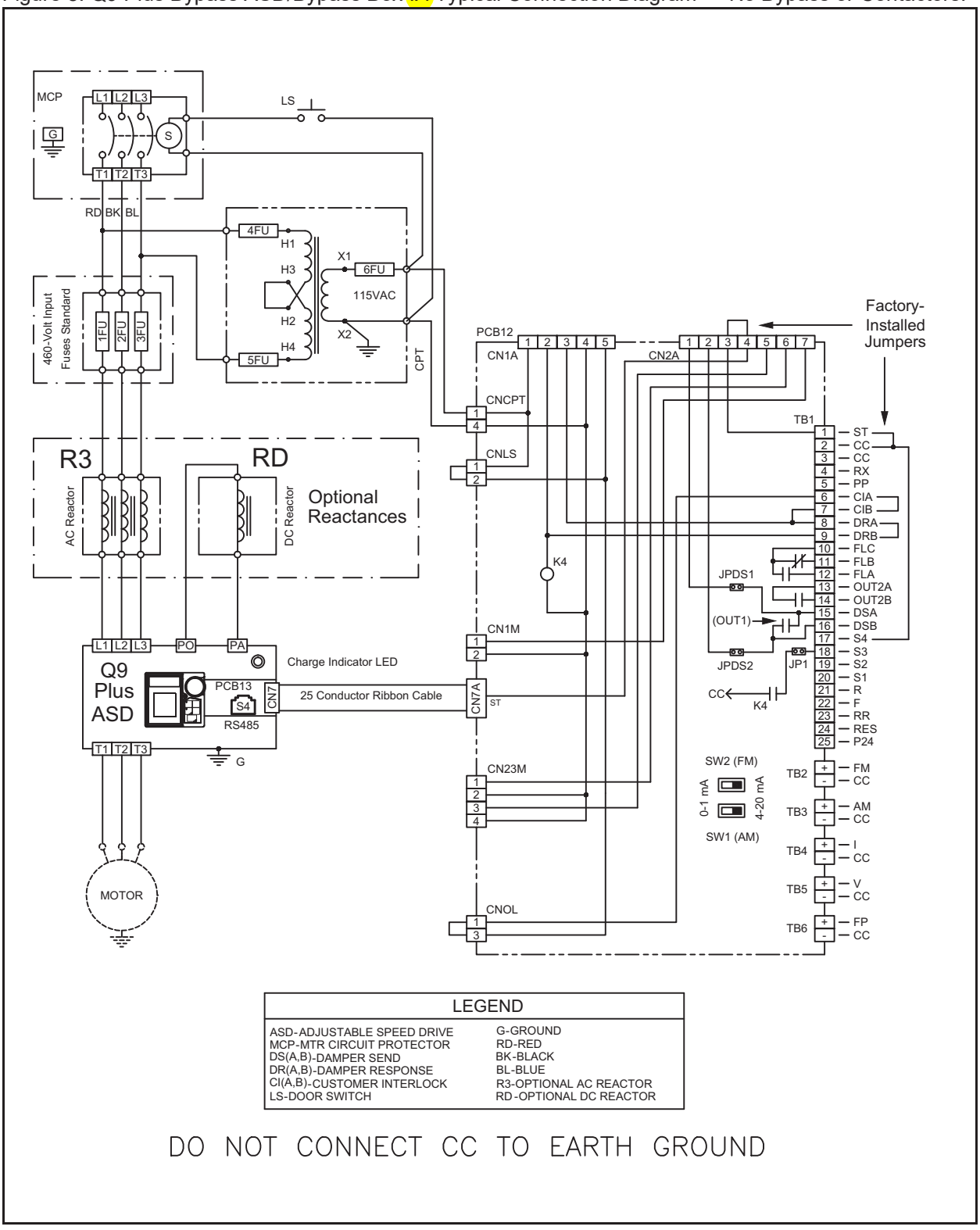


Figure 8. Q9 Plus Bypass ASD/Bypass Box-*IA* Typical Connection Diagram — No Bypass or Contactors.



LEGEND	
ASD-ADJUSTABLE SPEED DRIVE	G-GROUND
MCP-MTR CIRCUIT PROTECTOR	RD-RED
DS(A,B)-DAMPER SEND	BK-BLACK
DR(A,B)-DAMPER RESPONSE	BL-BLUE
CI(A,B)-CUSTOMER INTERLOCK	R3-OPTIONAL AC REACTOR
LS-DOOR SWITCH	RD-OPTIONAL DC REACTOR

DO NOT CONNECT CC TO EARTH GROUND

Figure 9. Q9 Plus Bypass ASD/Bypass Box-*IC* Typical Connection Diagram — Two-Contactor. Bypass.

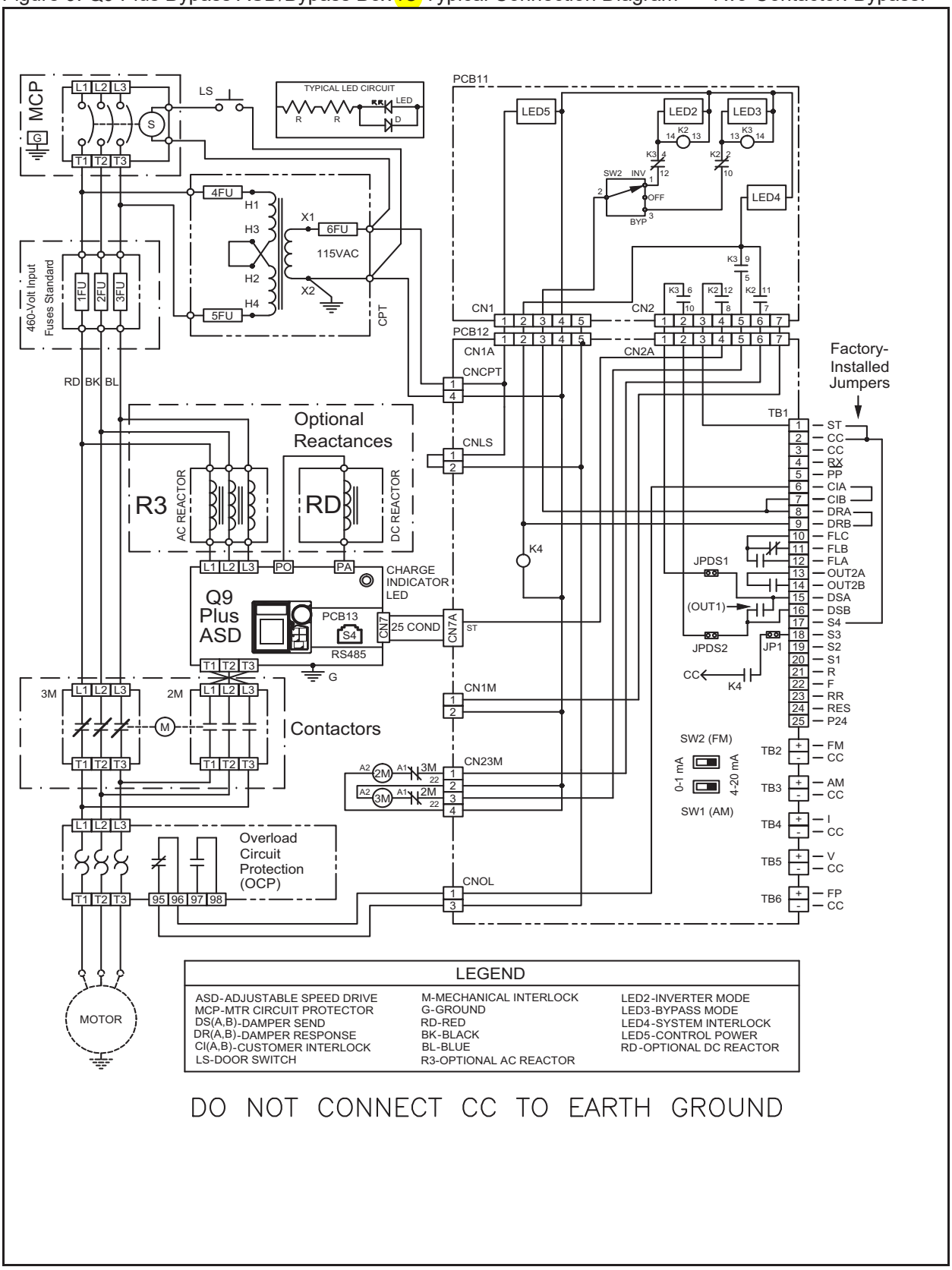
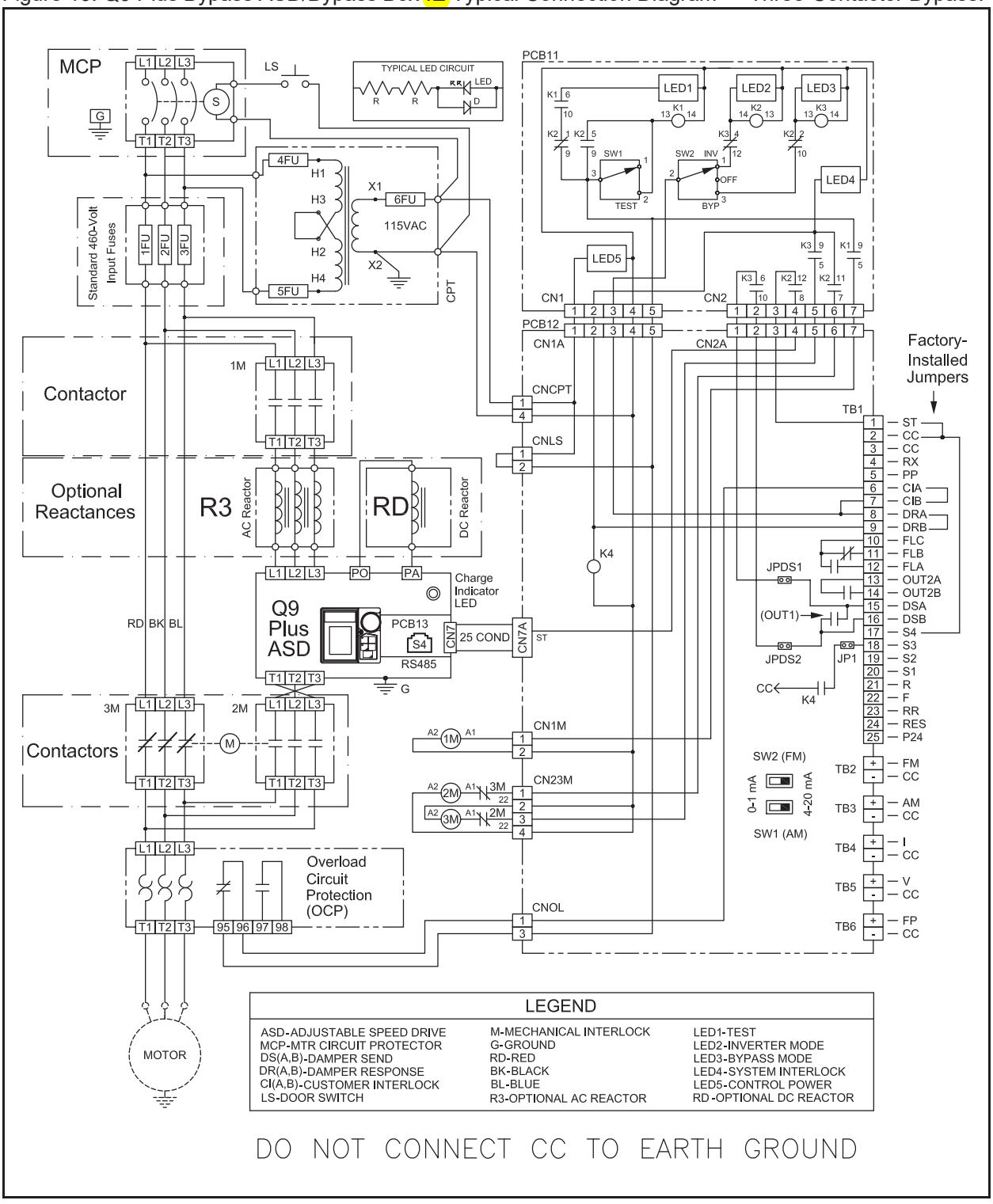


Figure 10. Q9 Plus Bypass ASD/Bypass Box-*IE* Typical Connection Diagram — Three-Contactor Bypass.



Enclosure Dimensions

Table 21. 230-Volt Q9 Plus ASD Systems.

Frame	ASD HP Rating	Model No. VT130Q9+	Enclosure Figure Number	A Width (in/mm)	B Height (in/mm)	C Depth (in/mm)	Mounting Hole Dimensions (in/mm)						
							D	E	F	G	H	R1	R2
2	1	2015	Figure 38	5.1/130	10.0/254	6.0/152	8.7/220	4.5/114	N/A			0.098/2.5	0.217/5.5
	2	2025											
3	3	2035		6.1/155	11.1/281	6.5/164	9.8/249	5.4/138					
	5	2055											
4	7.5	2080		6.9/175	12.6/320		11.1/283	6.2/158					0.236/6.0
5A	10	2110		8.3/210		7.6/194		7.5/190				0.118/3.0	0.276/7.0
5B	15	2160		9.1/230	16.7/425	7.5/191	15.2/386	8.3/210					
	20	2220											
6	25	2270	Figure 39	9.4/240	16.5/420	8.3/212	15.9/403	8.1/206					0.295/7.5
	30	2330											
7B	40	2400		12.6/320	21.7/550	9.5/242	20.7/525	11.0/280				0.177/4.5	0.394/10

Table 22. 460-Volt Q9 Plus ASD Systems.

Frame	ASD HP Rating	Model Number VT130Q9+	Enclosure Figure Number	A Width (in/mm)	B Height (in/mm)	C Depth (in/mm)	Mounting Hole Dimensions (in/mm)						
							D	E	F	G	H	R1	R2
2	1	4015	Figure 38	5.1/130	10.0/254	6.0/152	8.7/220	4.5/114	N/A			0.098/2.5	0.217/5.5
	2	4025											
	3	4035											
3	5	4055		6.1/155	11.1/281	6.5/164	9.8/249	5.4/138					
	7.5	4080											
4	10	4110		6.9/175	12.6/320		11.1/283	6.2/158					0.236/6.0
5A	15	4160		8.3/210		7.6/194		7.5/190					0.276/7.0
	20	4220											
5B	25	4270	Figure 39	9.1/230	16.7/425	7.5/191	15.2/386	8.3/210				0.118/3.0	
	30	4330											
6	40	4400		9.4/240	16.5/420	8.3/212	15.9/403	8.1/206					0.295/7.5
7A	50	4500	Figure 40		21.7/550	9.5/242	20.8/529						
	60	4600											
8	75	4750		12.6/320	24.8/630	11.4/290	23.8/605	11.0/280				0.177/4.5	0.394/10
	100	410K											
	125	412K											
9	150	*415K	Figure 41	12.2/310	26.8/680	14.6/370	25.6/650	9.8/250				0.224/5.7	0.472/12
10	200	*420K		13.0/350	30.8/782		29.8/758	11.7/298					
11	250	*425K		13.8/334	37.4/950		36.2/920	11.2/285					
12	300	*430K		16.9/430				13.8/350					
	350	*435K											
13	400	*440K		23.0/585				21.3/540					
9	150	415KRD		12.2/310	26.8/680		25.6/650	9.8/250	5.9/150	3.0/75	9.5/240		
10	200	420KRD		13.0/350	30.8/782		29.8/758	11.7/298		2.8/72			
11	250	425KRD		13.8/334	37.4/950		36.2/920	11.2/285		3.0/75			
12	300	430KRD		16.9/430				13.8/350					
	350	435KRD											
13	400	440KRD		23.0/585				21.3/540					

* = Reactance NOT included; but, required (ACL or DCL).

RD suffix = DCL included.

Figure 38. See Table 21 and 22 for Actual Dimensions.

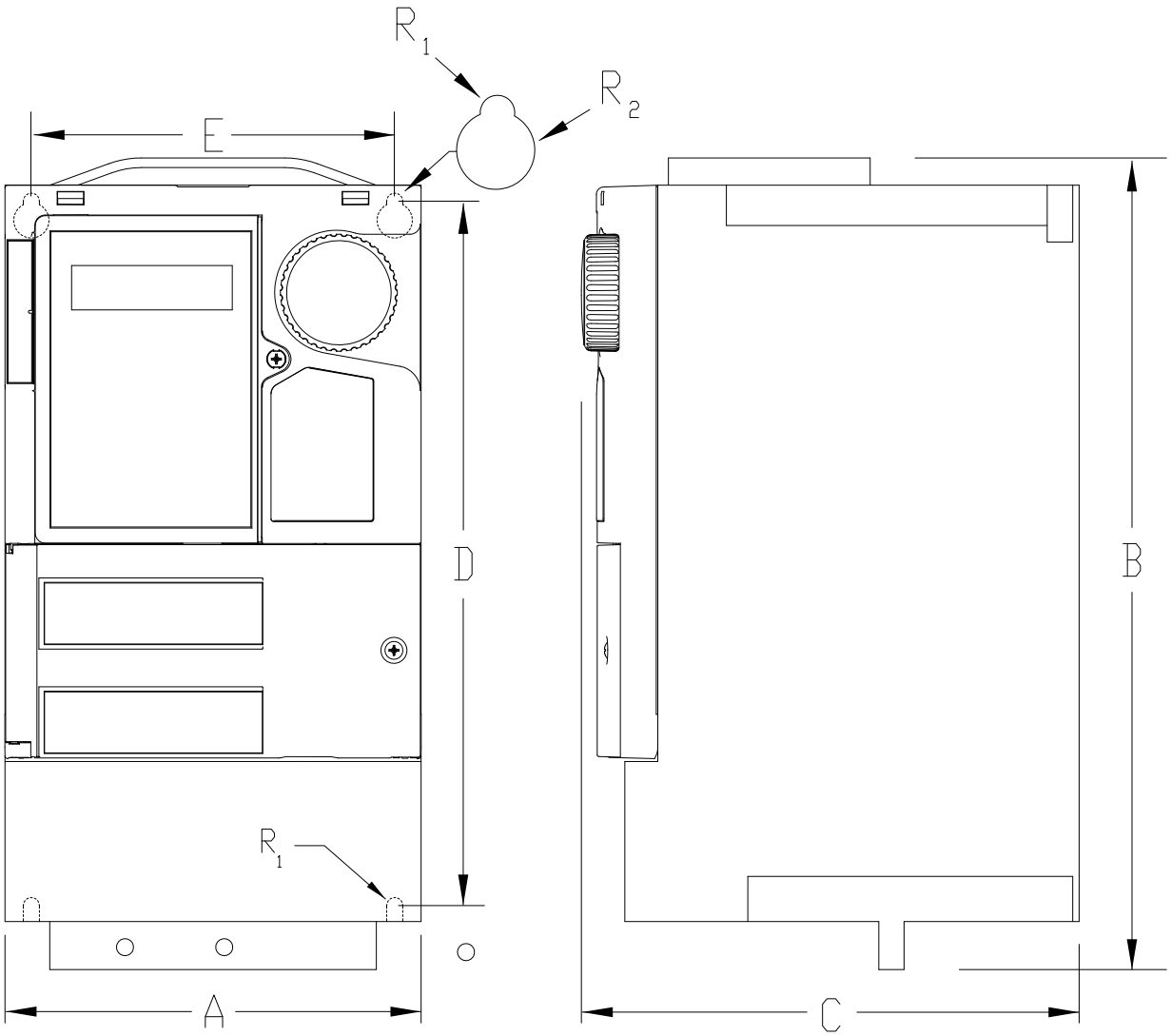


Figure 39. See Table 21 and 22 for Actual Dimensions.

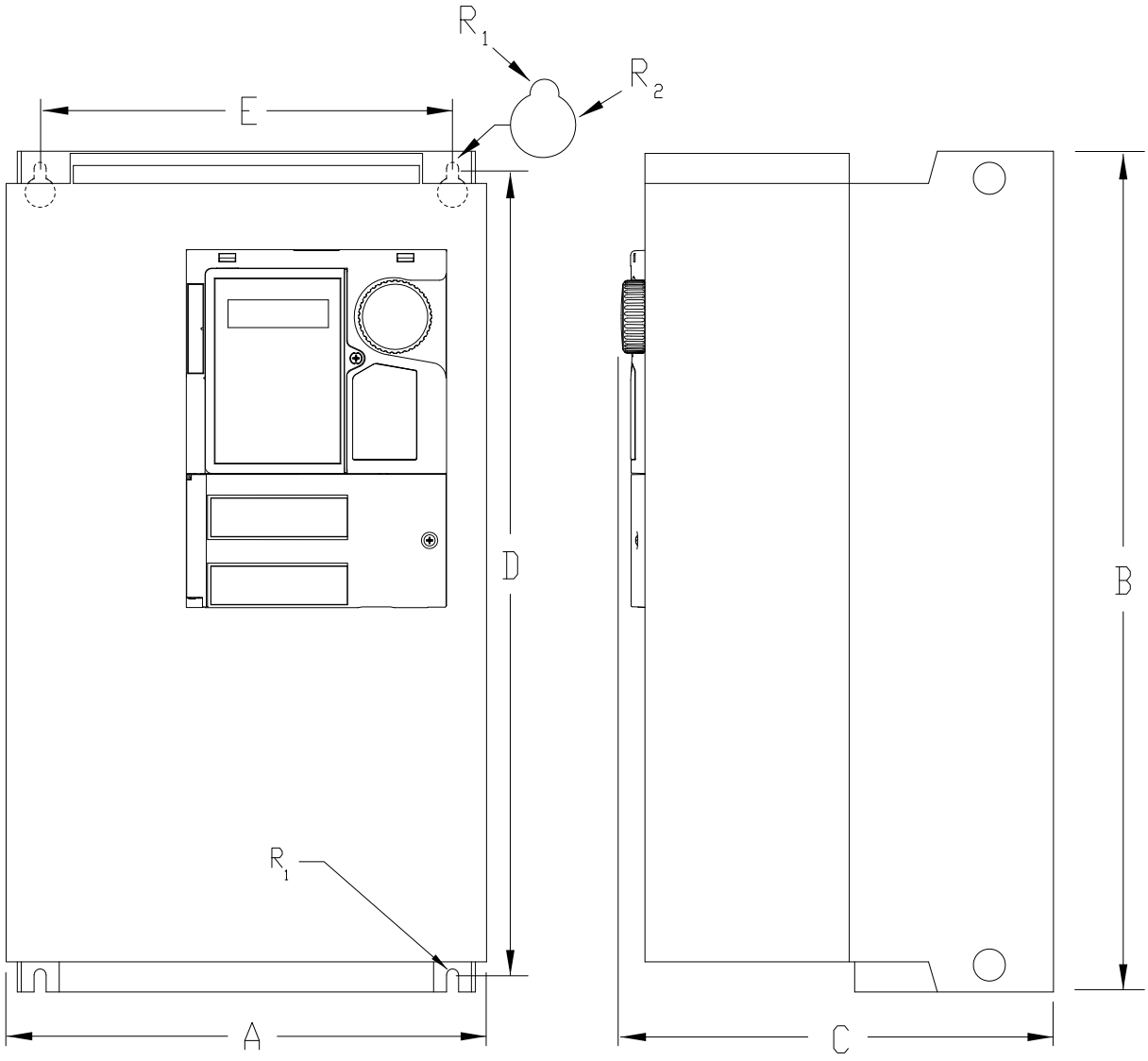


Figure 40. See Table 21 and 22 for Actual Dimensions.

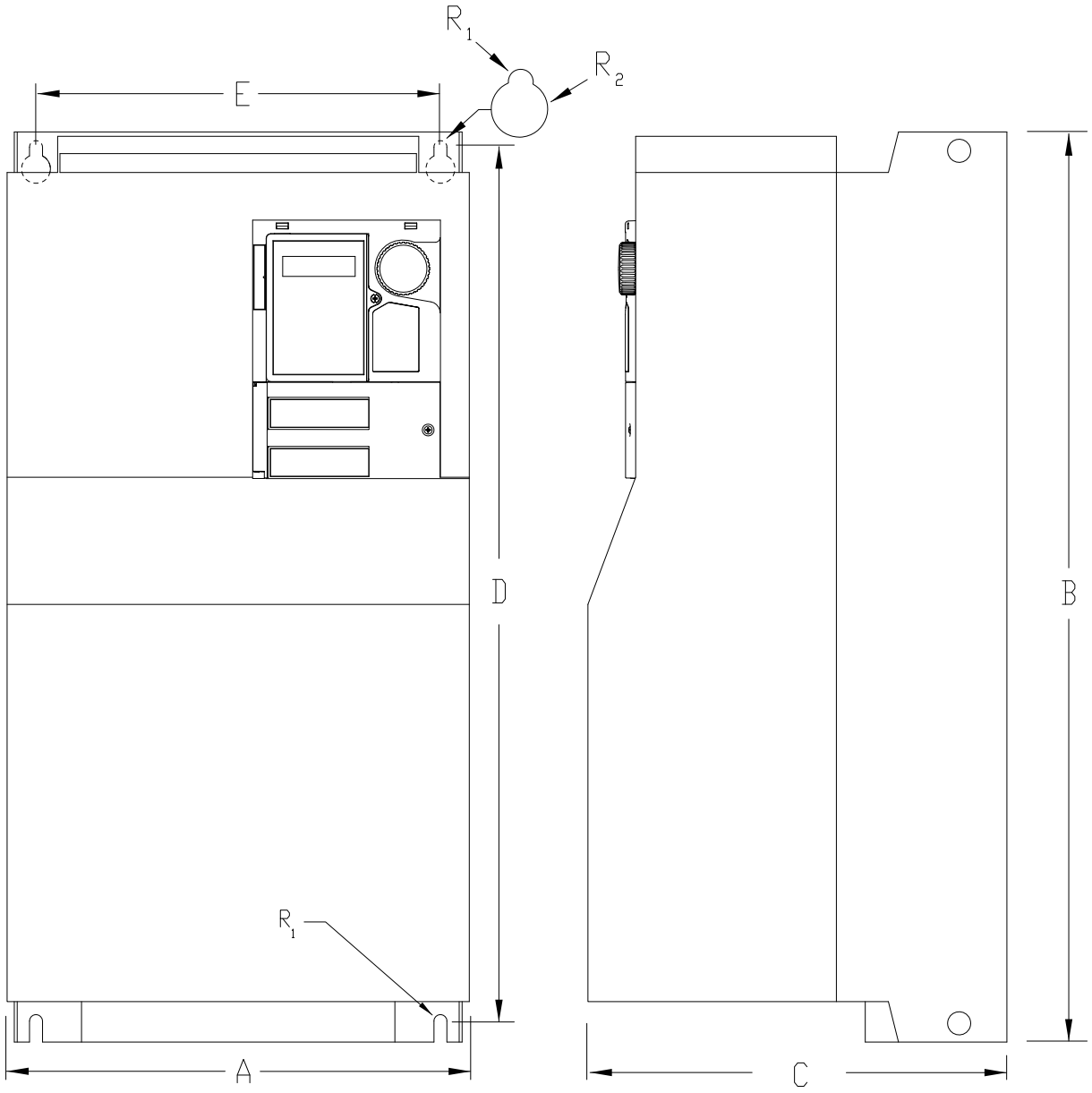
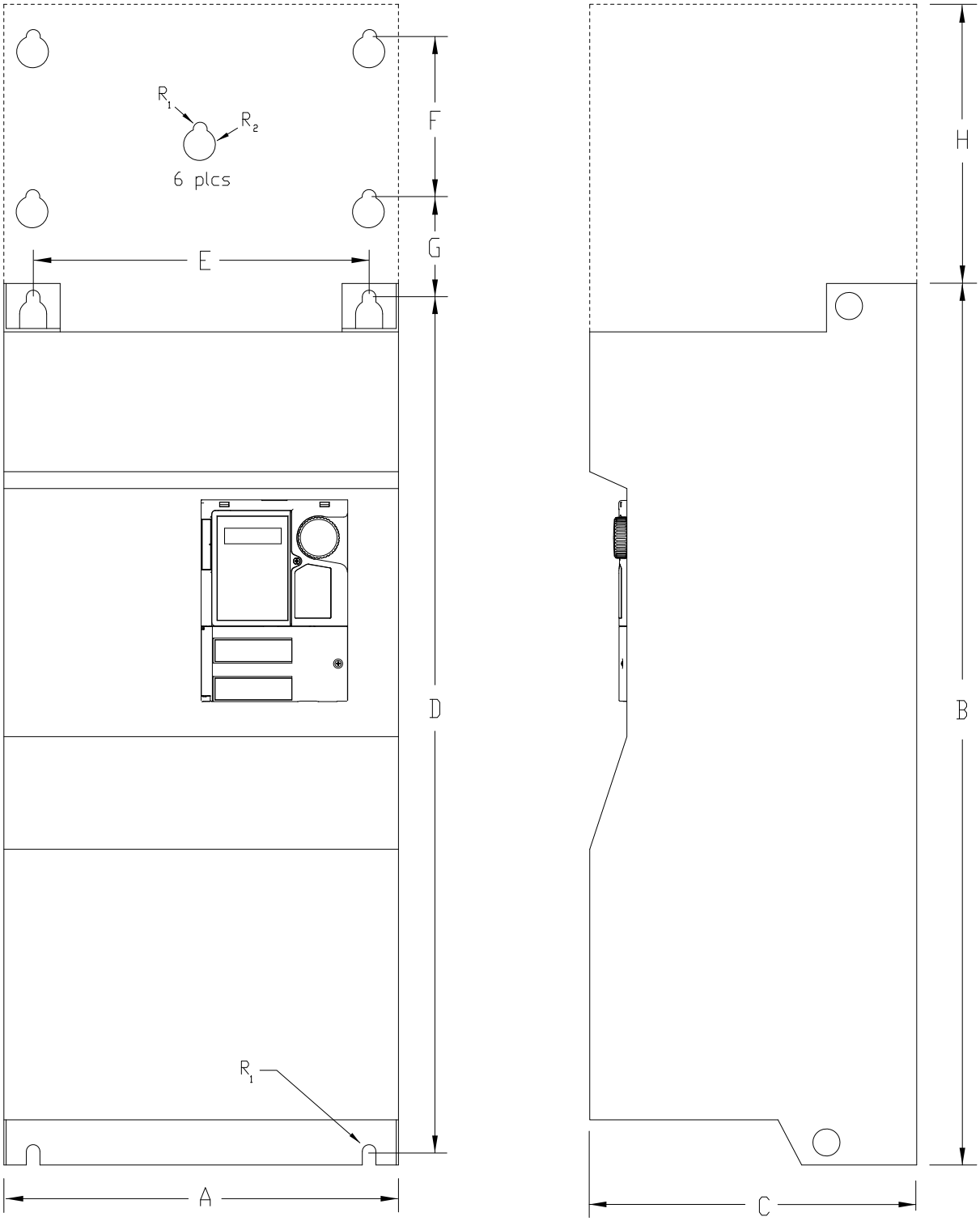
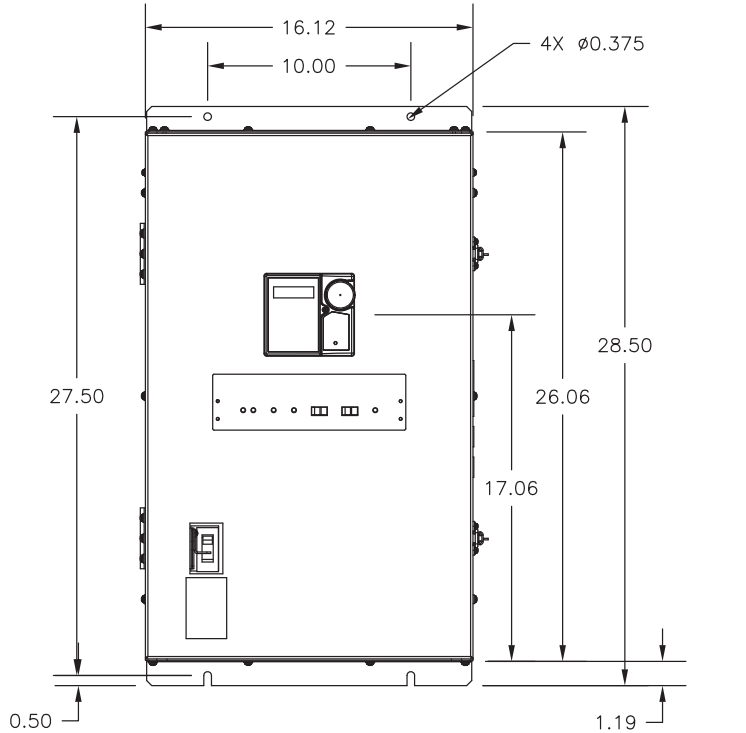
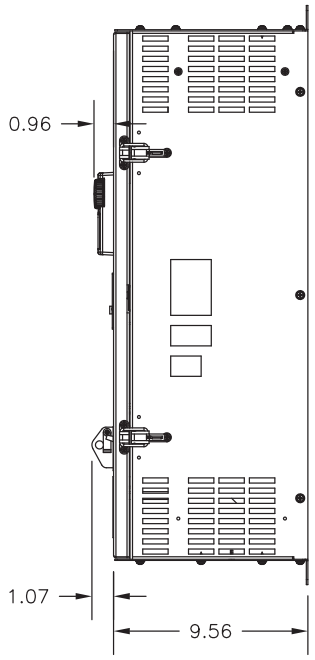
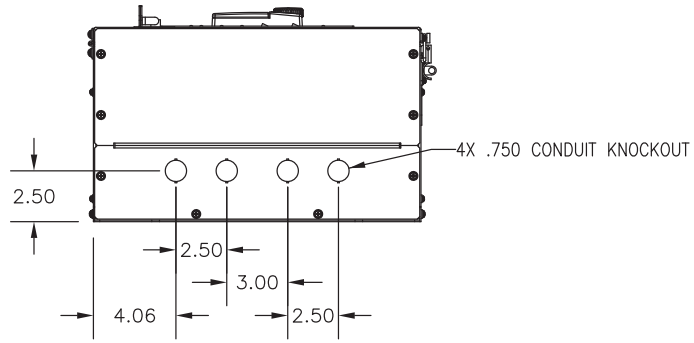


Figure 41. See Table 21 and 22 for Actual Dimensions.









NOTES:
1. ENCLOSURE: TYPE 1
2. COLOR: PRECISION TAN
3. APPROX. WEIGHT: 95 LB.
4. ALL DIMENSIONS IN INCHES AND ARE FOR REFERENCE ONLY

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/16/15	FIRST ISSUE	DT	HP	BTa

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MADE IN HOUSTON, TEXAS U.S.A.

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TITLE:
ENCLOSURE OUTLINE SIZE 1
1 TO 7.5HP–230V / 1 TO 15HP–460V

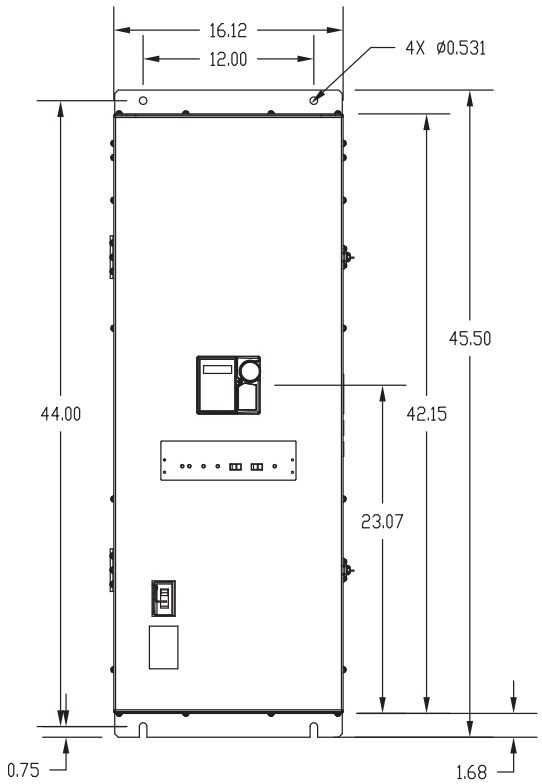
CUSTOMER:

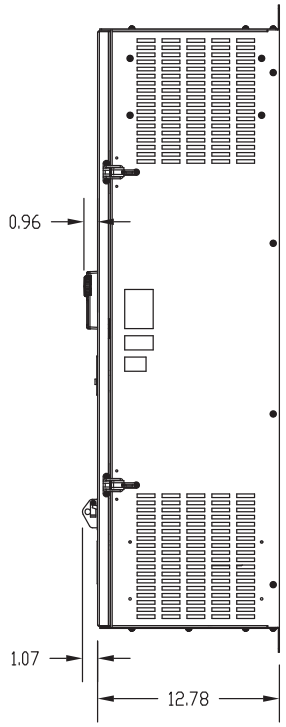
PROJECT NUMBER:

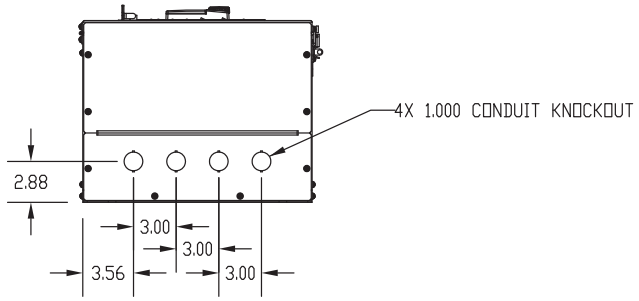
REVISION: 0

SCALE: 3=16

DRAWING NUMBER: I808RY26







NOTES:
1. ENCLOSURE: TYPE 1
2. COLOR: PRECISION TAN
3. APPROX. WEIGHT: 180 LB.
4. ALL DIMENSIONS IN INCHES AND ARE FOR REFERENCE ONLY

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/16/15	FIRST ISSUE	DT	HP	BTα

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TITLE:
ENCLOSURE OUTLINE SIZE 2
10 TO 25HP 230V / 20 TO 40HP 460V

CUSTOMER:

PROJECT NUMBER:

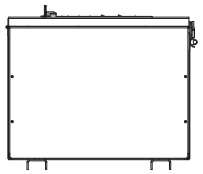
REVISION: 0

SCALE: 7=64

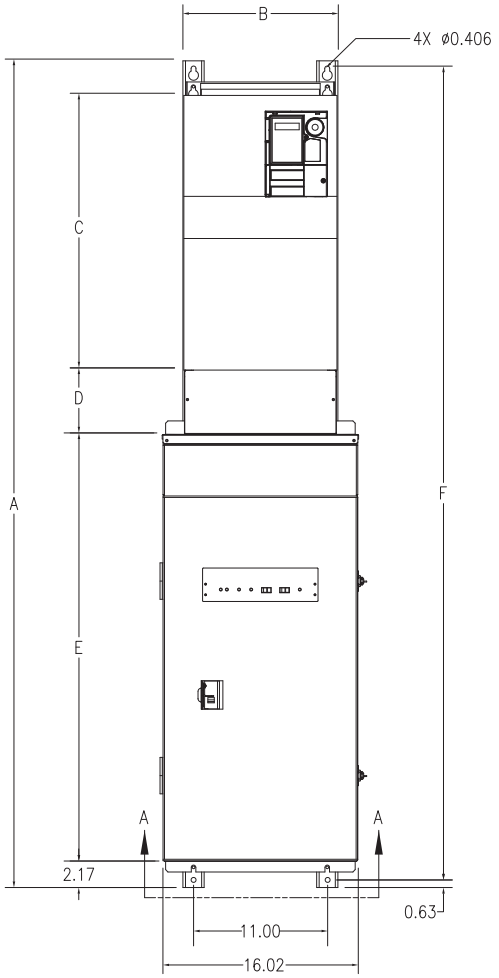
DRAWING NUMBER: I808RY27

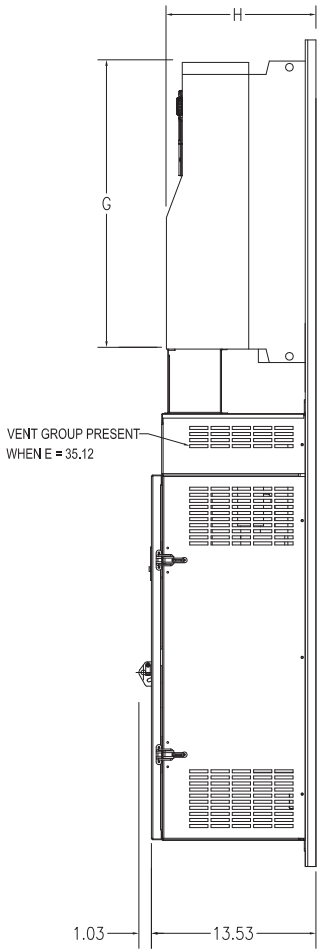
UNIT	A	B	C	D	E	F	G	H
Q9+2330E*	54.38	12.50	15.31	4.55	30.12	53.13	15.90	8.91
Q9+2330E*R*	59.75	12.50	15.31	4.55	35.12	58.50	15.90	8.91
Q9+2400E*	59.75	12.50	19.45	5.30	30.12	58.50	20.43	10.05
Q9+2400E*R*	64.88	12.75	19.45	5.30	35.12	63.63	20.43	10.05
Q9+4500E*	59.75	12.50	19.45	5.30	30.12	58.50	20.24	10.05
Q9+4500E*R*	59.75	12.50	19.45	5.30	30.12	58.50	20.24	10.05
Q9+4600E*	59.75	12.50	19.45	5.30	30.12	58.50	20.24	10.05
Q9+4600E*R*	59.75	12.50	19.45	5.30	30.12	58.50	20.24	10.05
Q9+4750E*	63.00	12.75	22.60	5.30	30.12	61.75	23.58	12.29
Q9+4750E*R*	68.00	12.75	22.60	5.30	35.12	66.75	23.58	12.29
Q9+410KE*	63.00	12.75	22.60	5.30	30.12	61.75	23.58	12.29
Q9+410KE*R*	68.00	12.75	22.60	5.30	35.12	66.75	23.58	12.29
Q9+412KE*	68.00	12.75	22.60	5.30	35.12	66.75	23.58	12.29

SUFFIXES: EA, EAR3, EAR5, EARD, EC, ECR3, ECR5, ECRD, EE, EER3, EER5, EERD



SECTION A–A





TOLERANCE:
.XX TO ±.03
.XXX TO ±.015
.XXXX TO ±.005

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/16/15	FIRST ISSUE	DT	HP	BTa

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TITLE:
ENCLOSURE OUTLINE
Q9+ SIZE3, 3B

CUSTOMER:

PROJECT NUMBER:

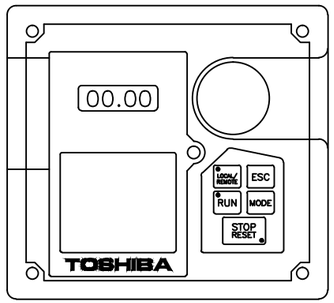
REVISION: 0

SCALE: NTS

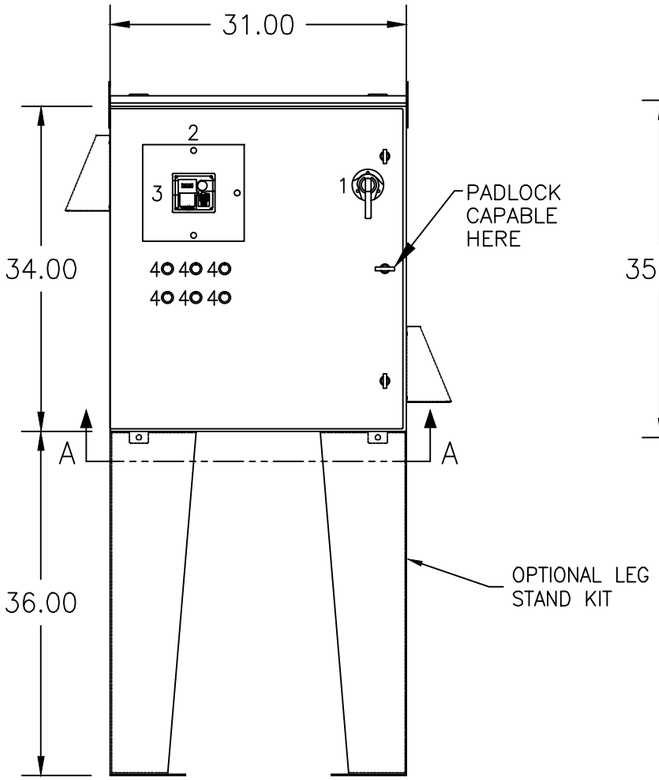
DRAWING NUMBER: I808RY29

DEVICE LEGEND:

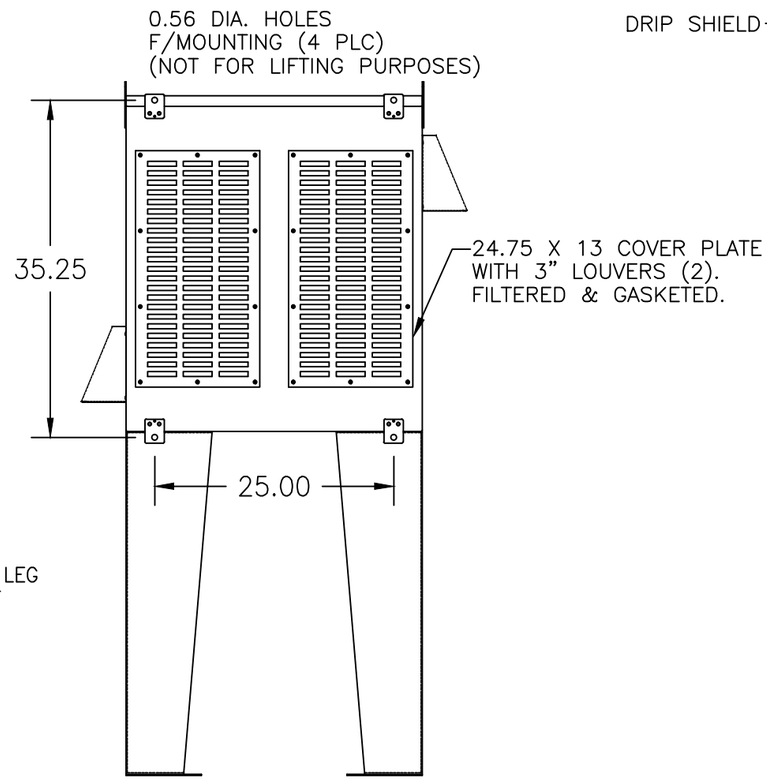
1. CIRCUIT DISCONNECT HANDLE
2. DEAD–FRONT DOOR
3. Q9+ EOI
4. HOLE PLUG



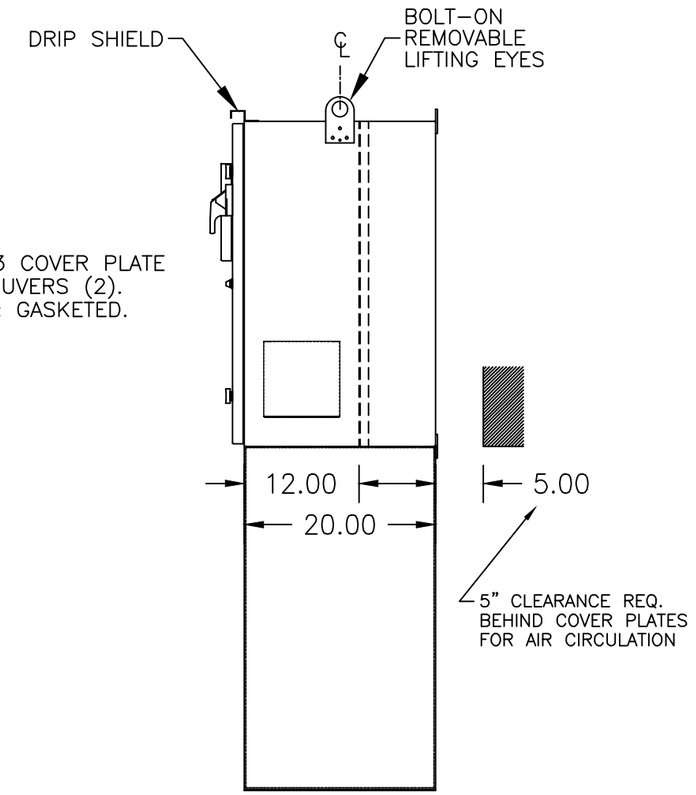
Q9+ KEYPAD DETAIL



FRONT VIEW



REAR VIEW

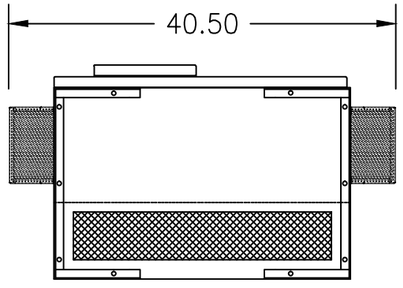


RIGHT SIDE VIEW

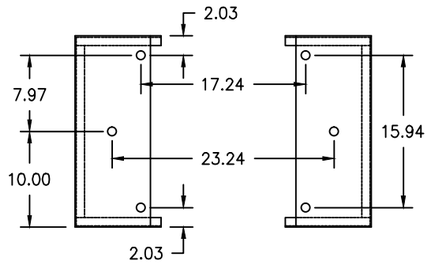
NOTES:

1. PAINT TO BE WHITE

FAN CONFIGURATIONS (HP)			
VOLTAGE	4" CF	6" CF	10" CF
230V	1~60	--	--
460V	1~125	150~350	400



SECTION A–A



LEG STAND KIT MOUNTING

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/22/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
230V: 1~20HP / 460V: 1~30HP

CUSTOMER:

PROJECT NUMBER:

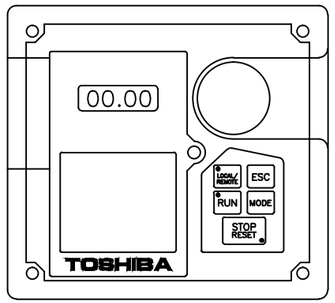
REVISION: 0

SCALE: 1.0=16.0

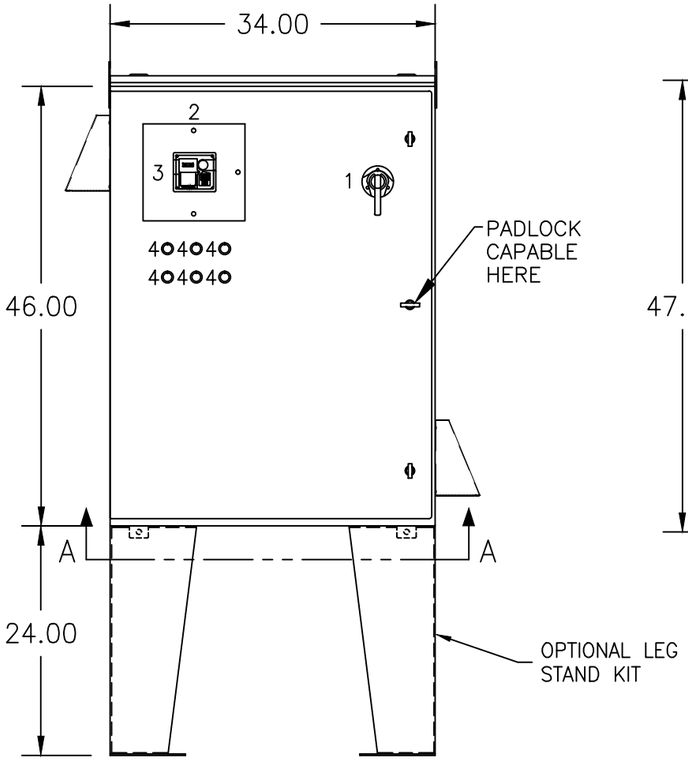
DRAWING NUMBER: I808RM19

DEVICE LEGEND:

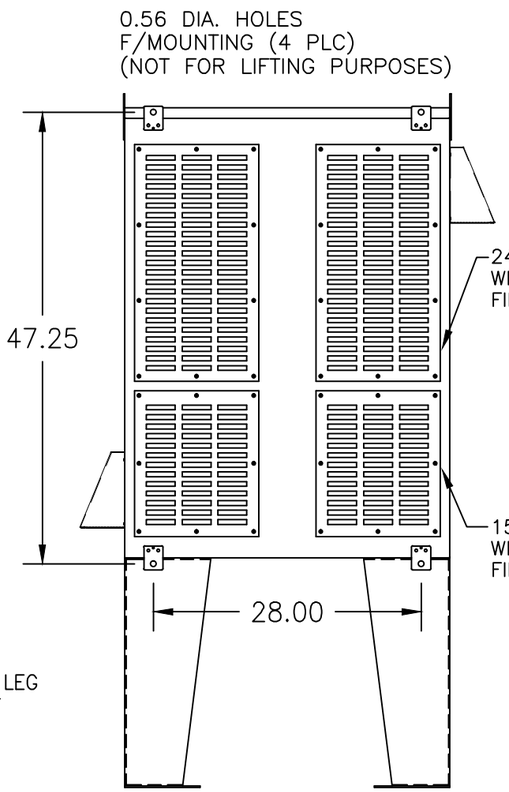
1. CIRCUIT DISCONNECT HANDLE
2. DEAD–FRONT DOOR
3. Q9+ EOI
4. HOLE PLUG



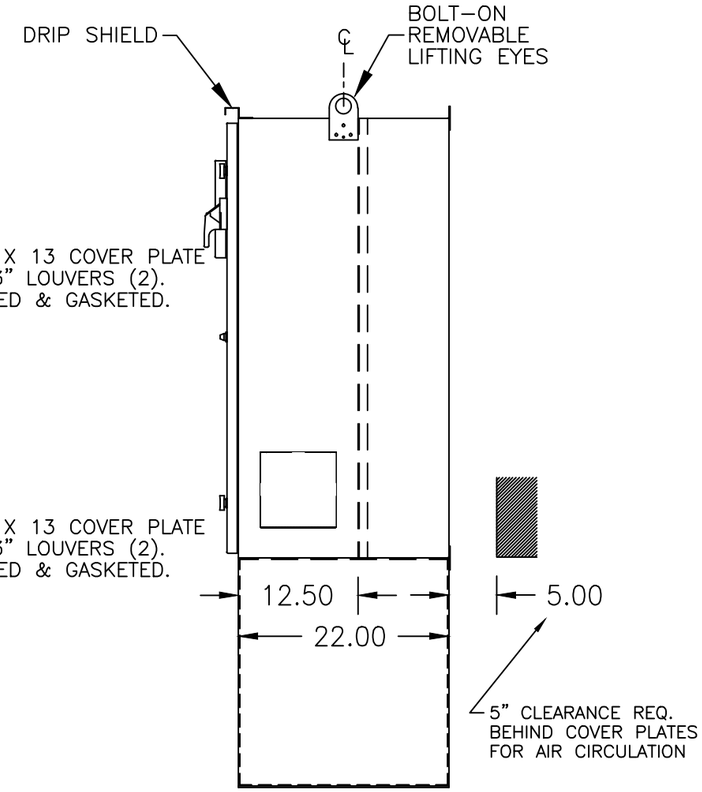
Q9+ KEYPAD DETAIL



FRONT VIEW



REAR VIEW

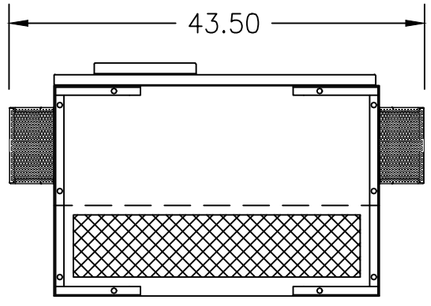


RIGHT SIDE VIEW

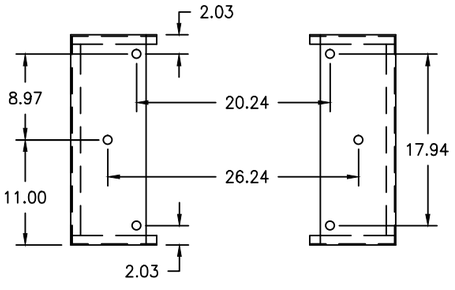
NOTES:

1. PAINT TO BE WHITE

FAN CONFIGURATIONS (HP)			
VOLTAGE	4" CF	6" CF	10" CF
230V	1~60	--	--
460V	1~125	150~350	400



SECTION A–A



LEG STAND KIT MOUNTING

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/22/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
230V: 25~60HP / 460V: 40~125HP

CUSTOMER:

PROJECT NUMBER:

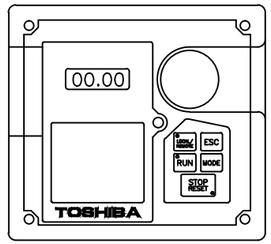
REVISION: 0

SCALE: 1.0=16.0

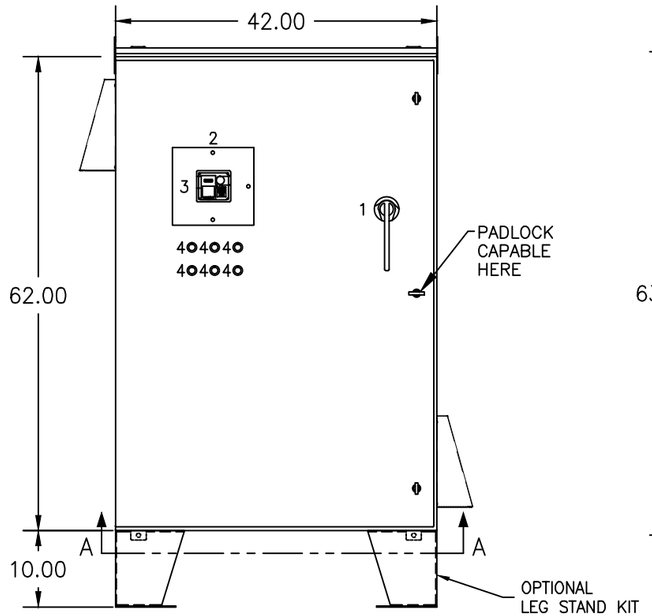
DRAWING NUMBER: I808RM20

DEVICE LEGEND:

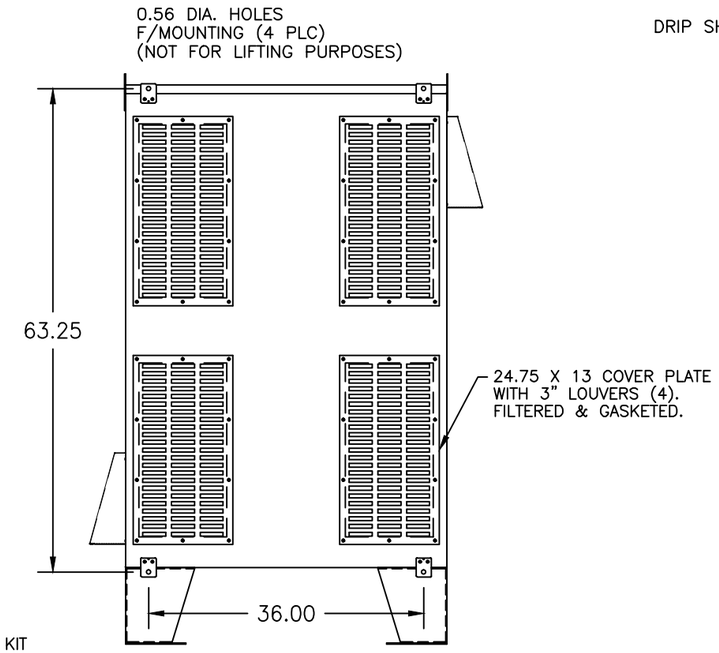
1. CIRCUIT DISCONNECT HANDLE
2. DEAD–FRONT DOOR
3. Q9+ EOI
4. HOLE PLUG



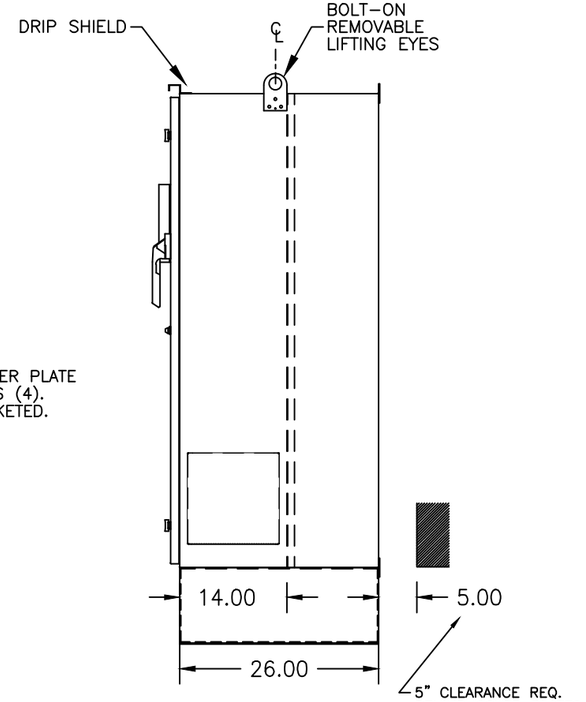
Q9+ KEYPAD DETAIL



FRONT VIEW



REAR VIEW

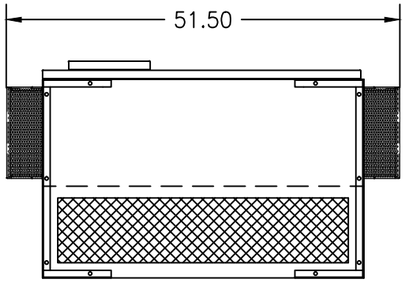


RIGHT SIDE VIEW

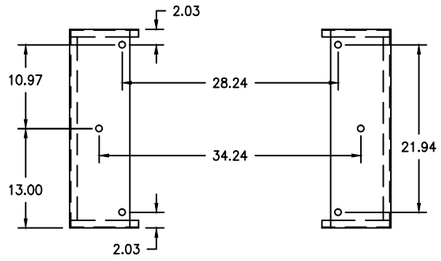
NOTES:

1. PAINT TO BE WHITE

FAN CONFIGURATIONS (HP)			
VOLTAGE	4" CF	6" CF	10" CF
230V	1~60	--	--
460V	1~125	150~350	400



SECTION A–A



LEG STAND KIT MOUNTING

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/22/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
460V: 150~350HP

CUSTOMER:

PROJECT NUMBER:

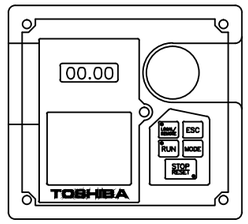
REVISION: 0

SCALE: 1.0=20.0

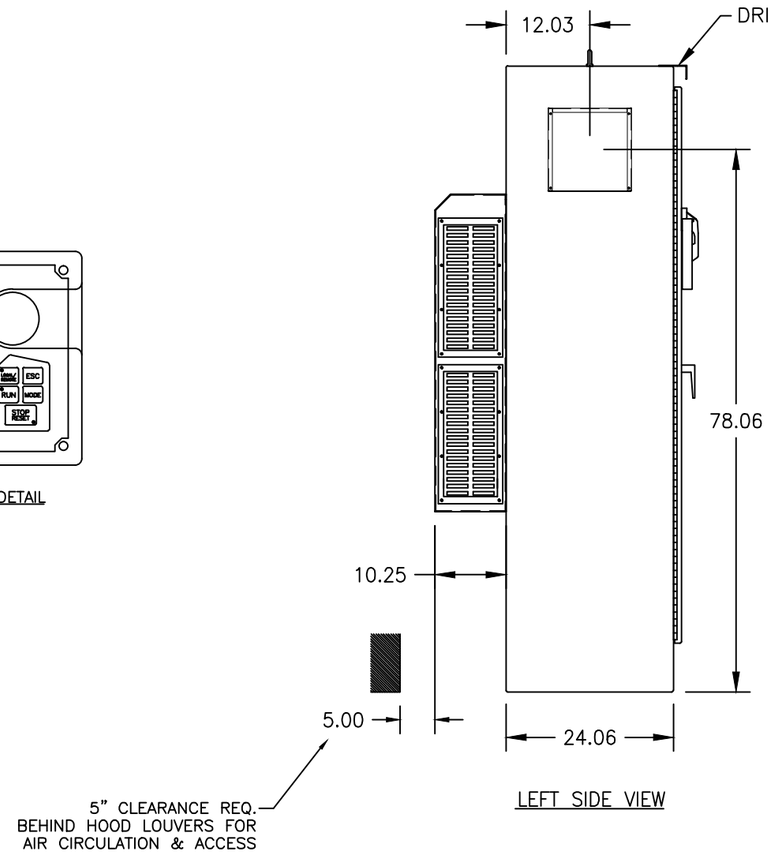
DRAWING NUMBER: I808RM21

DEVICE LEGEND:

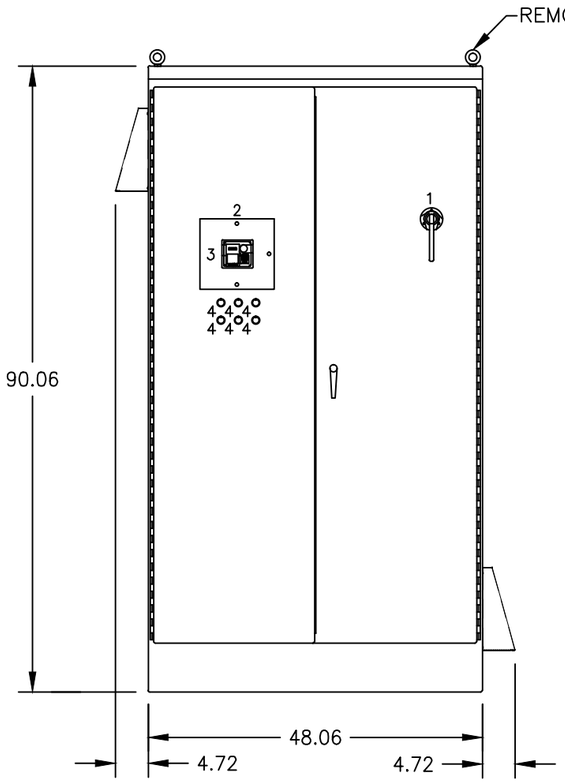
1. CIRCUIT DISCONNECT HANDLE
2. DEAD–FRONT DOOR
3. Q9+ EOI
4. HOLE PLUG



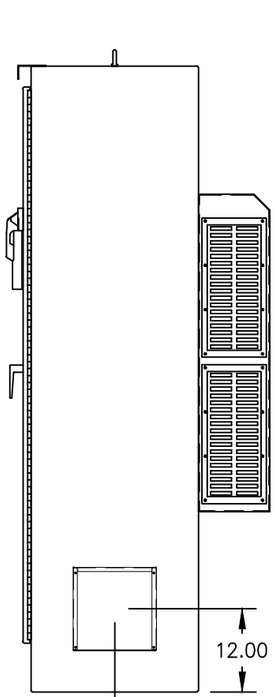
Q9+ KEYPAD DETAIL



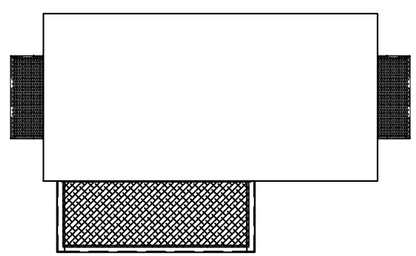
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



BOTTOM VIEW

NOTES:

1. PAINT TO BE WHITE

FAN CONFIGURATIONS (HP)			
VOLTAGE	4" CF	6" CF	10" CF
230V	1~60	--	--
460V	1~125	150~350	400

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/22/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
460V: 400HP

CUSTOMER:

PROJECT NUMBER:

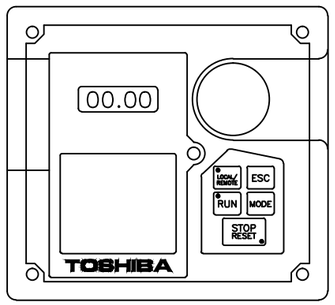
REVISION: 0

SCALE: 1.0=22.0

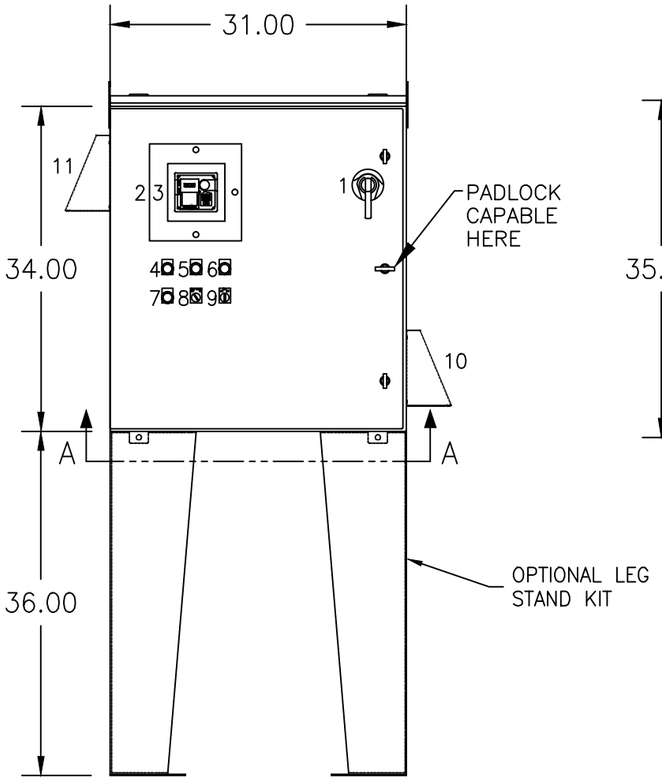
DRAWING NUMBER: I808RM22

DEVICE LEGEND

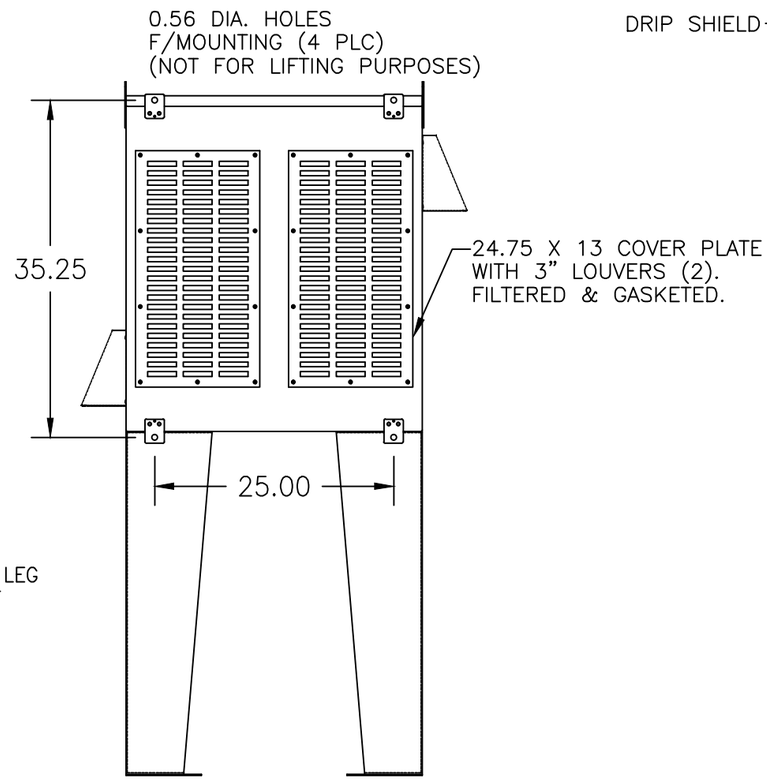
1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET



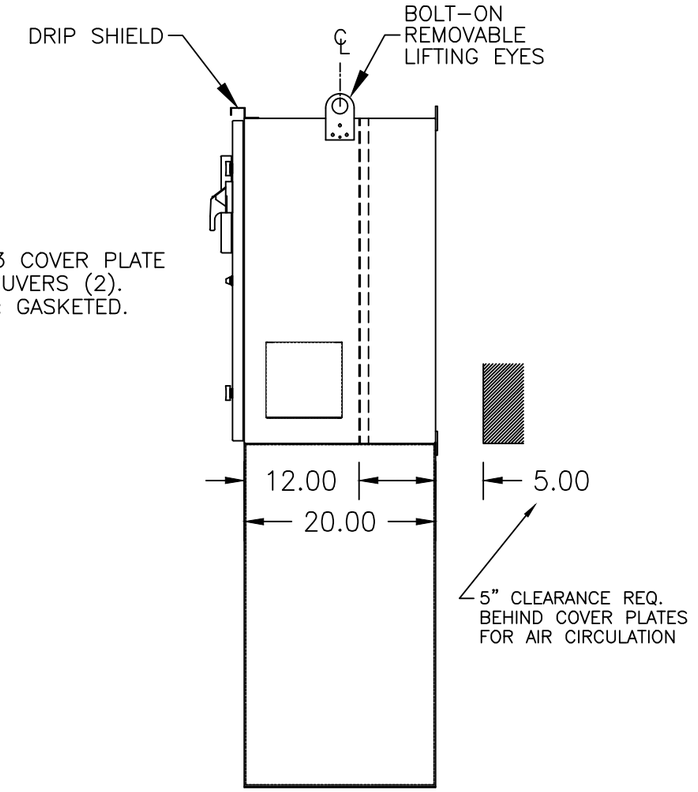
Q9+ KEYPAD DETAIL



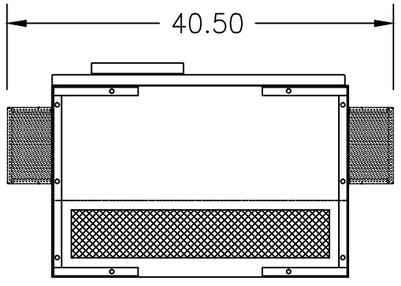
FRONT VIEW



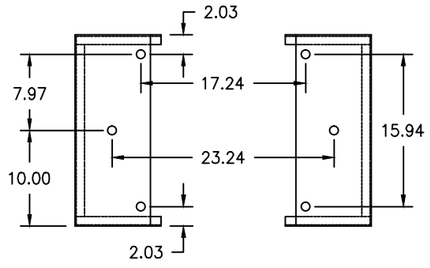
REAR VIEW



RIGHT SIDE VIEW



SECTION A–A



LEG STAND KIT MOUNTING

FAN CONFIGURATIONS (HP)				
VOLTAGE	4" CF	6" CF	4"+6" CF	4"+10" CF
230V	1~30	40~60	--	--
460V	1~60	75~250	300~350	400

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
230V: 1~5HP / 460V: 1~7.5HP

CUSTOMER:

PROJECT NUMBER:

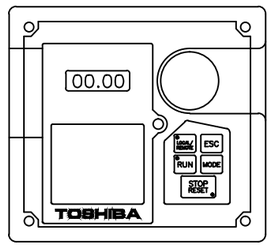
REVISION: 0

SCALE: 1.0=16.0

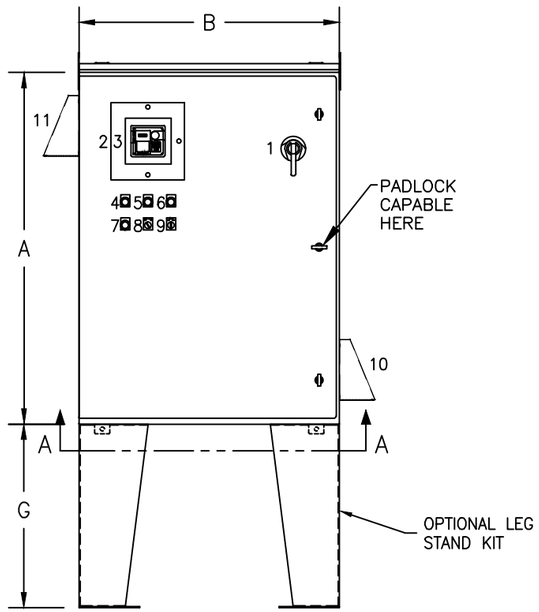
DRAWING NUMBER: I808RN19

DEVICE LEGEND

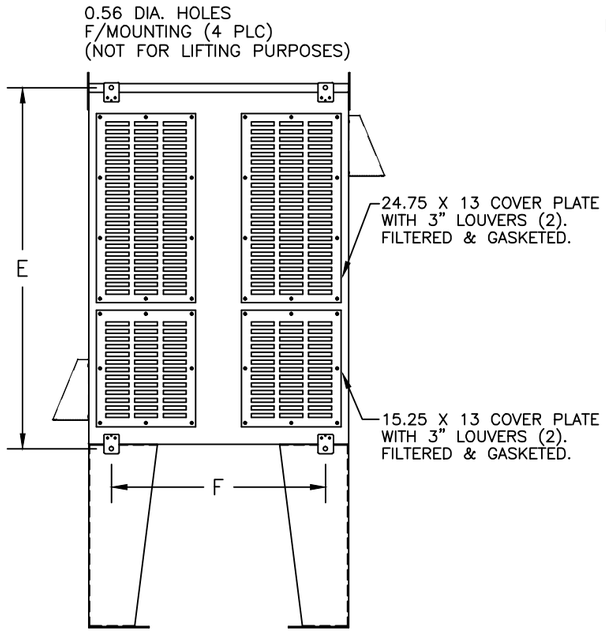
1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET



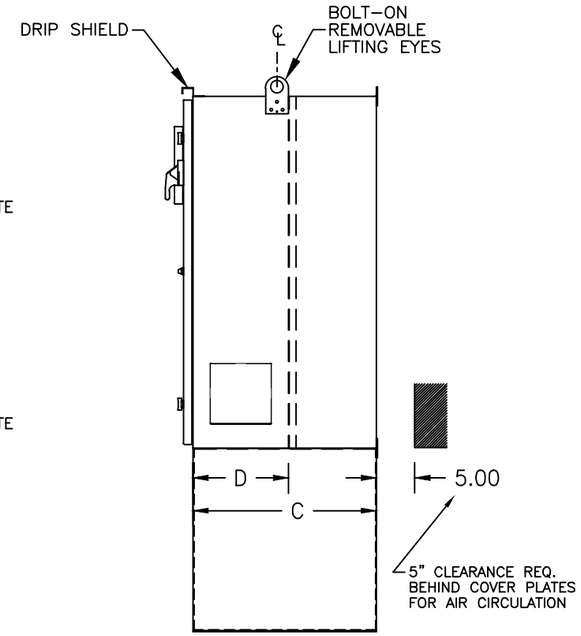
Q9+ KEYPAD DETAIL



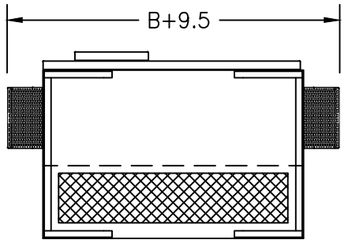
FRONT VIEW



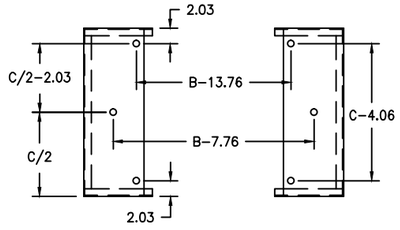
REAR VIEW



RIGHT SIDE VIEW



SECTION A–A



LEG STAND KIT MOUNTING

DESCRIPTION OF ENCLOSURE	AS1 HP RATING 230V	460V	ENCLOSURE SIZE A	B	C	D	MOUNTING DIMS E	F	LEGS G
46x34x24	7.5–20	10–30	46.00	34.00	24.00	12.50	47.25	28.00	24.00
52x38x26	25–30	40–60	52.00	38.00	26.00	16.00	53.25	32.00	18.00

FAN CONFIGURATIONS (HP)				
VOLTAGE	4" CF	6" CF	4"+6" CF	4"+10" CF
230V	1~30	40~60	--	--
460V	1~60	75~250	300~350	400

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
230V: 7.5~30HP / 460V: 10~60HP

CUSTOMER:

PROJECT NUMBER:

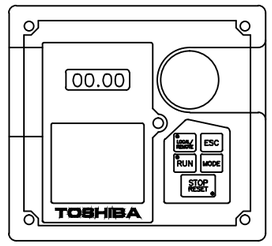
REVISION: 0

SCALE: 1.0=20.0

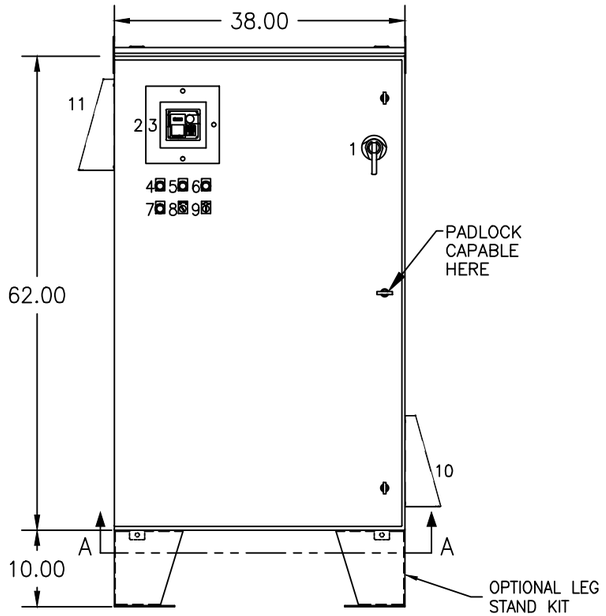
DRAWING NUMBER: I808RN20

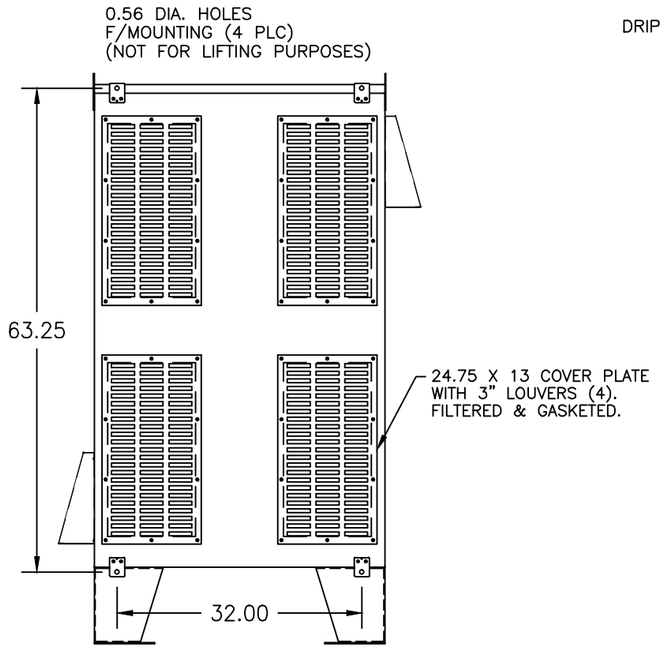
DEVICE LEGEND

1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET

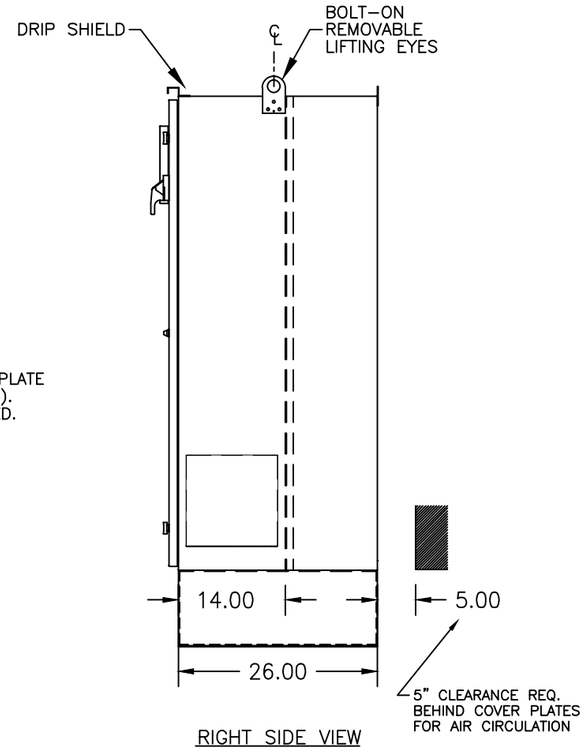


Q9+ KEYPAD DETAIL

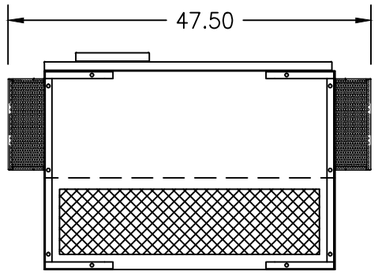




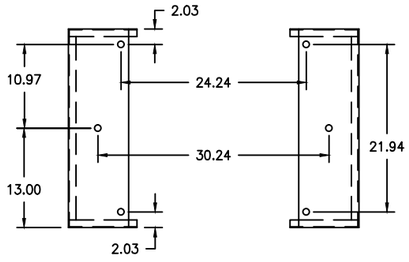
REAR VIEW



RIGHT SIDE VIEW



SECTION A–A



LEG STAND KIT MOUNTING

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
230V: 40~60HP / 460V: 75~125HP

CUSTOMER:

PROJECT NUMBER:

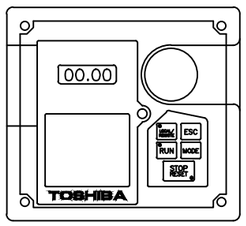
REVISION: 0

SCALE: 1.0=20.0

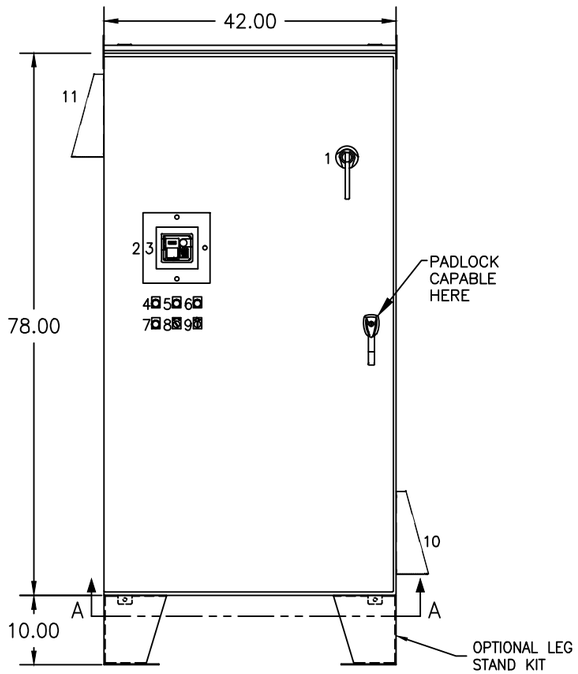
DRAWING NUMBER: I808RN21

DEVICE LEGEND

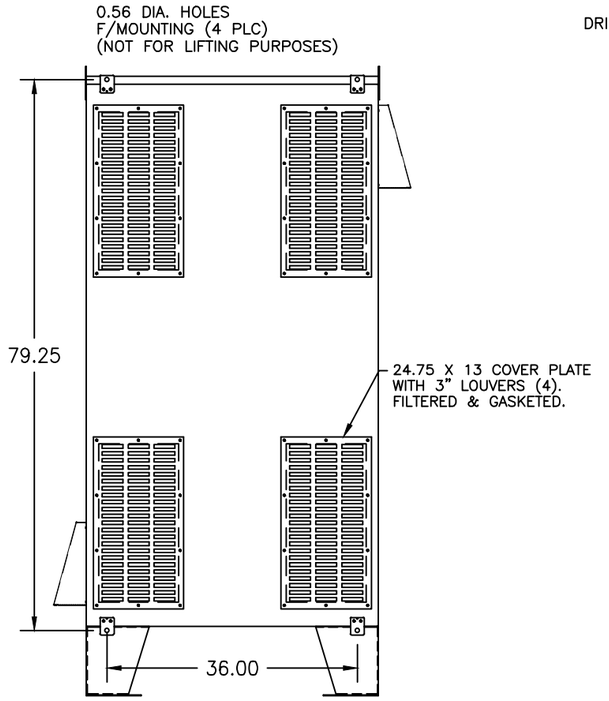
1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET



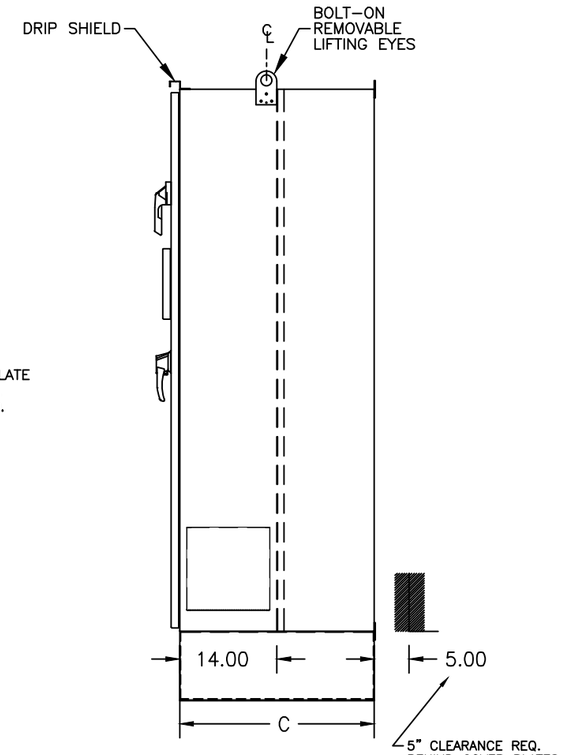
Q9+ KEYPAD DETAIL



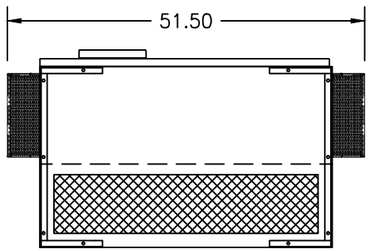
FRONT VIEW



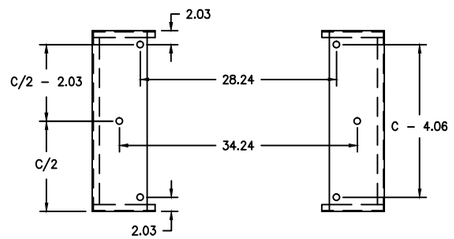
REAR VIEW



RIGHT SIDE VIEW



SECTION A–A



LEG STAND KIT MOUNTING

DESCRIPTION OF ENCLOSURE	AS1 HP RATING 230V	460V	ENCLOSURE SIZE A	B	C	D
78x42x26	--	150–200	--	--	26.00	--
78x42x28	--	250	--	--	28.00	--

FAN CONFIGURATIONS (HP)				
VOLTAGE	4" CF	6" CF	4"+6" CF	4"+10" CF
230V	1~30	40~60	--	--
460V	1~60	75~250	300~350	400

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
460V: 150~250HP

CUSTOMER:

PROJECT NUMBER:

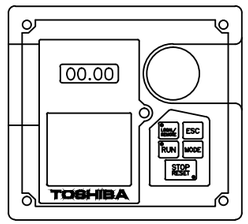
REVISION: 0

SCALE: 1.0=22.0

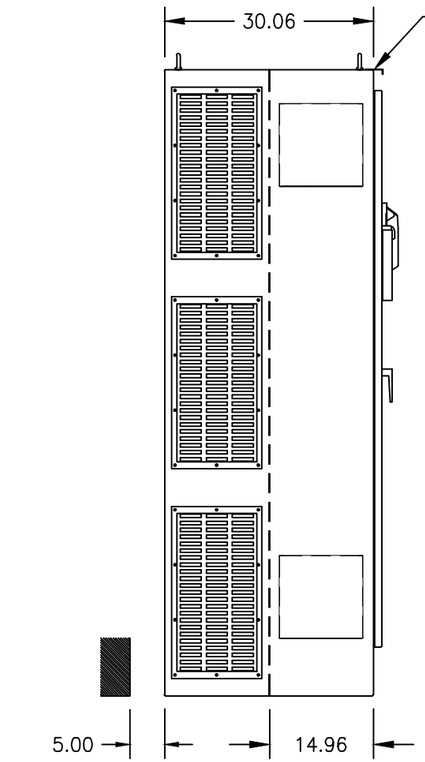
DRAWING NUMBER: I808RN22

DEVICE LEGEND

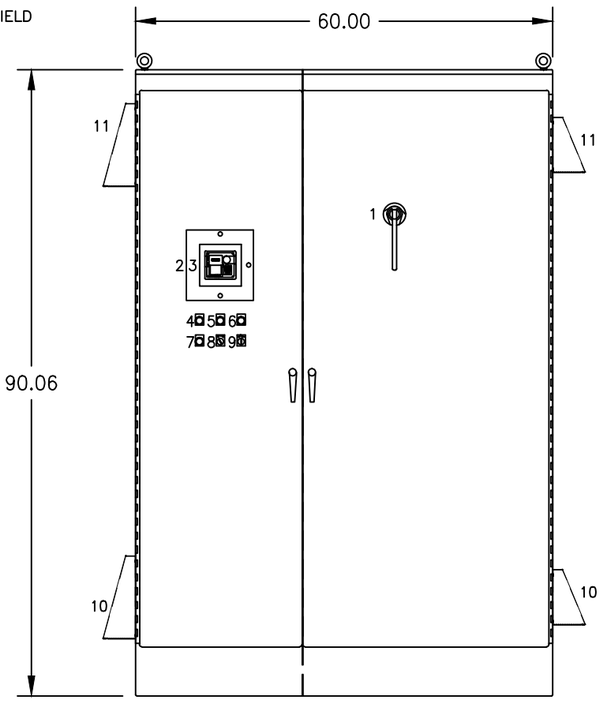
1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET



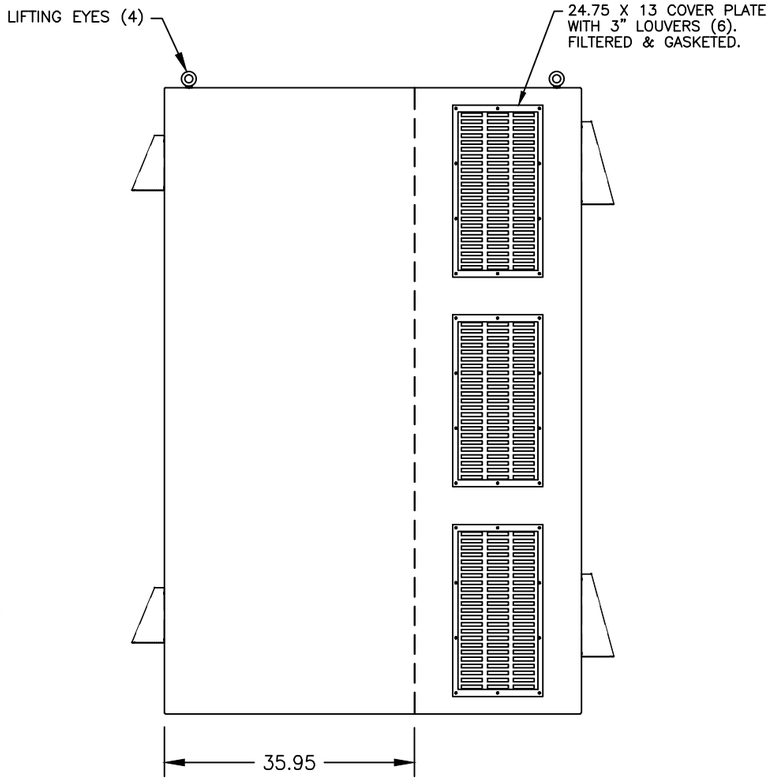
Q9+ KEYPAD DETAIL



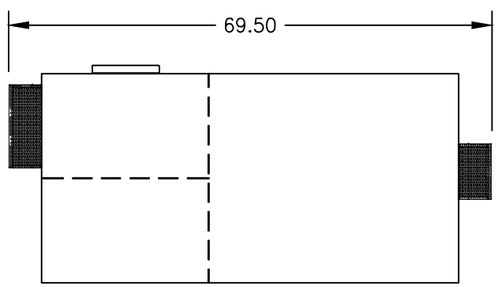
LEFT SIDE VIEW



FRONT VIEW



REAR VIEW



BOTTOM VIEW

FAN CONFIGURATIONS (HP)				
VOLTAGE	4" CF	6" CF	4"+6" CF	4"+10" CF
230V	1~30	40~60	--	--
460V	1~60	75~250	300~350	400

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
460V: 300~350HP

CUSTOMER:

PROJECT NUMBER:

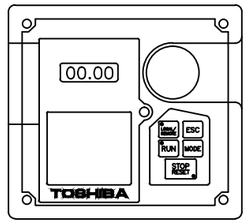
REVISION: 0

SCALE: 1.0=22.0

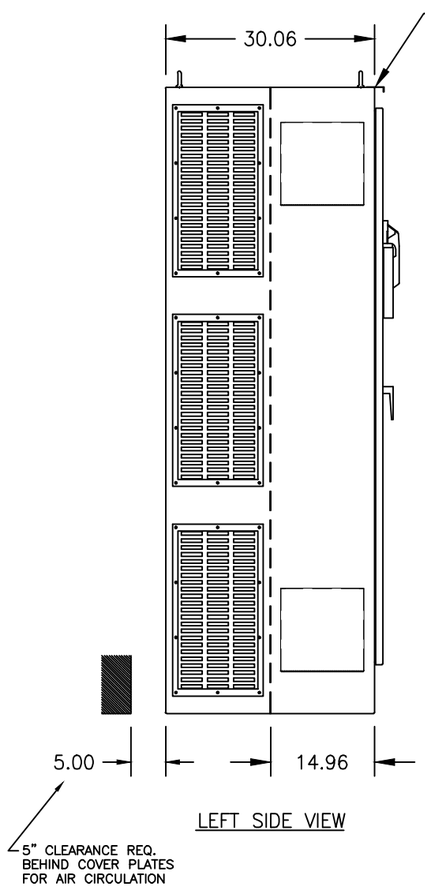
DRAWING NUMBER: I808RN23

DEVICE LEGEND

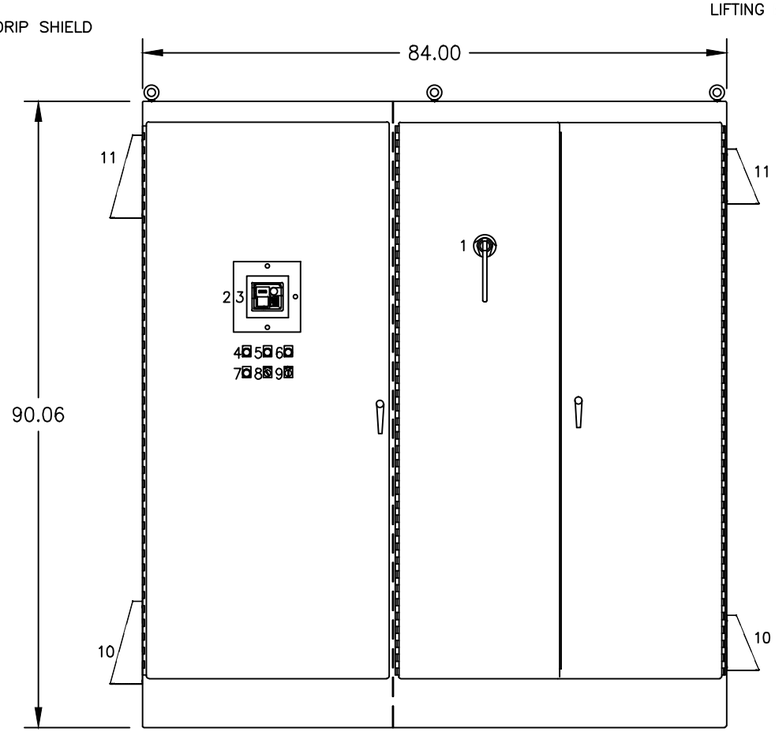
1. CIRCUIT DISCONNECT
2. HINGED VIEWING WINDOW
3. Q9+ KEYPAD
4. PILOT LIGHT "POWER ON" (WHITE)
5. PILOT LIGHT "VFD MODE" (BLUE)
6. PILOT LIGHT "BYPASS MODE" (BLUE)
7. PILOT LIGHT "RUN" (RED)
8. TEST SWITCH "OFF/ON"
9. SELECTOR SWITCH "INV/OFF/BYP"
10. FILTERED INLET FAN
11. FILTERED OUTLET



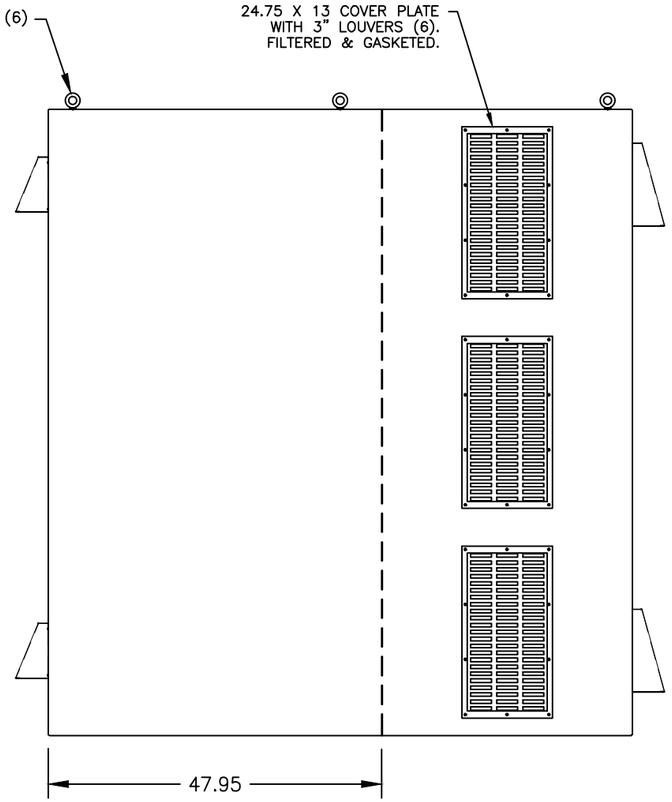
Q9+ KEYPAD DETAIL



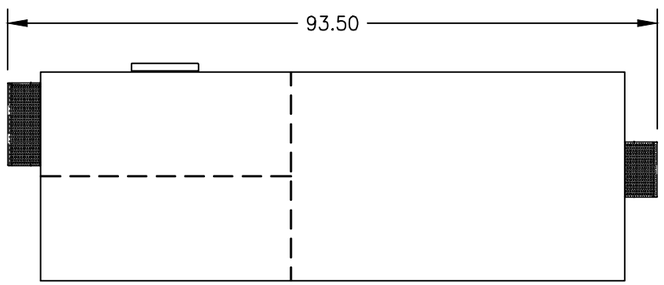
LEFT SIDE VIEW



FRONT VIEW



REAR VIEW



BOTTOM VIEW

FAN CONFIGURATIONS (HP)				
VOLTAGE	4" CF	6" CF	4"+6" CF	4"+10" CF
230V	1~30	40~60	--	--
460V	1~60	75~250	300~350	400

ENCLOSURE PAINT COLOR: WHITE

REV	DATE	DESCRIPTION	BY	CHK	APPR
4					
3					
2					
1					
0	01/30/15	FIRST ISSUE	EYANG	SE	RKR

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TITLE:
ENCLOSURE OUTLINE – TYPE 3R
460V: 400HP

CUSTOMER:

PROJECT NUMBER:

REVISION: 0

SCALE: 1.0=22.0

DRAWING NUMBER: I808RN24