AGENDA ITEM
A 3

AGENDA PLACEMENT FORM

(Submission Deadline – Monday, 5:00 PM before Regular Court Meetings)

Date: 11-15-2023

Meeting Date: 11-20-2023

Submitted By: JOSHUA GREEN

Department: Facilities management

Signature of Elected Official/Department Head:

Court Decision:
This section to be completed by County Judge's Office

COMMISSIONERS COURT

NOV 20 2023

Approved

Description:

Consideration of Owner's Contingency Usage for the 911 Center in the amount of $162,117.45

(1) Update Emergency Power requirements to a 150kw Generator in lieu of the 15kw Generator. Including Plumbing, Concrete, and Electrical.

(2) Revise Power outlets for Dispatch in all areas needed for additional power

(3) Revise UPS to accommodate all the needs for the system.

And to give the County Judge Authorization to sign.

(May attach additional sheets if necessary)

Person to Present: Joshua Green

(Presenter must be present for the item unless the item is on the Consent Agenda)

Supporting Documentation: (check one) ☑ PUBLIC ☐ CONFIDENTIAL

(PUBLIC documentation may be made available to the public prior to the Meeting)

Estimated Length of Presentation: 5 minutes

Session Requested: (check one)

☑ Action Item ☐ Consent ☐ Workshop ☐ Executive ☐ Other _____

Check All Departments That Have Been Notified:

☐ County Attorney ☑ IT ☑ Purchasing ☑ Auditor

☐ Personnel ☐ Public Works ☑ Facilities Management

Other Department/Official (list) _____

Please List All External Persons Who Need a Copy of Signed Documents In Your Submission Email

Approved in CC on 9/11/2023

General Contingency Allowance Summary

Project:	Johnson County 911 Call Center Cleburne, TX
Owner:	Johnson County
Contractor:	RJM Contractors Inc.
Architect:	Robert Durham Architecture

1.	General Contingency Award Amount	$388,647.80
2.	Previous Approved GCA	$0.00
3.	Previous Approved GCA Credits to Date	$0.00
4.	Amount of this GCA (this action)	$162,117.45
5.	Remaining Contingency Amount (1-2 thru 4)	$226,530.35

Additional Days Added to Contract for This GCA 180 days

Work Requested by this Action:

1. Update Emergency Power requirements to 150kw generator in lieu of 15kw generator including revised gas service to generator.
2. Revise power outlets – Dispatch – to accommodate Owner requested electrical power
3. UPS – revise UPS as per Owner request.

Upon receipt the Contractor shall reduce the General Contingency Allowance line amount by the amount approved by this GCA and transfer to a separate line identifying this approved GCA for billing purposes. It is understood and agreed that the acceptance of this Contingency Allowance allocation by the contractor constitutes an accord and satisfaction and represents payment in full (both time and money) for all costs arising out of, or incidental to, the above allocation.

Attachments: RJM Contractors Owner Contingency Request #1 dated 11-9-2023

Acknowledged and Accepted By:

General Contractor: RJM Contractors Inc.

Signature:

Date: 11/15/23

Owner: Johnson County

Signature:

Date: 11/20/2023

Architect: Robert Durham Architecture

Signature: Robert Durham

Date: 11-15-2023

November 9, 2023

RJM

Contractors, Inc.

Mr. Robert Durham
Robert Durham Architecture
8545 Crichton Ct.
Cleburne, TX 76033

Re: Owner's Contingency Usage - Price Request #1

Dear Mr. Durham,

It is a pleasure to submit an estimate on the above mentioned project to upgrade the emergency power requirements and generator size per 11/1/23 revised MEP plans. Our bid includes the following:

General Conditions(Supervision/clean-up/trash/etc.)	$	-
Concrete (Slab size Increase for generator)	$	1,823.00
Plumbing (Gas piping and regulater size increase)	$	3,026.00
Electrical (Upsize generator and rework electrical per 11/1/23 revised drawings. UPS systems by owner)	$	156,995.00
Fee 5%	$	273.45
Tax		exempt
Bond	$	-
Total:	**$**	**162,117.45**

Owner's Contingency Allowance Summary:

Owner's Contingency in RJM Contact	$ 388,647.80
Requested Usage by RJM	$ (162,117.45)
Remaining Owner's Contingency	**$ 226,530.35**

180 day increase in time. We hope this is not needed, but to be safe it needs to be documented

If you have any questions, please feel free to call.

Trevor Browne

Please Sign As Approved

Christopher Boedeker, County Judge

7616 Benbrook Pkwy.

Benbrook, TX 76126

Phone 817.377.0971

Fax 817.377.0973

CHANGE ORDER REQUEST

COMMERCIAL CONCRETE

PROJECT NAME: Johnson County 911 Call Center
PROJECT NO: 23002
GENERAL CONTRACTOR: RJM Contractors
ATTENTION: Trevor Brown

C.O.R. NO.: 003
DATE: 11/02/23
REFERENCE:

DESCRIPTION OF CHANGE: Generator Pad

Additive Costs		
Labor	$1,000.00	
Material	$584.50	
Equipment	$0.00	
Subtotal of Additive Cost		$1,584.50
Deductive Costs		
Labor		
Material		
Equipment		
Subtotal of Deductive Cost		$0.00
Total Direct Cost		$1,584.50
Mark-up	**15%**	$237.68
Total Subcontractor Change Request		$1,822.18

Andrew Shore

Andrew Shore - VP

COR # BACKUP DATA

MATERIAL

DESCRIPTION	U/M	QUANITY	@	UNIT	TOTAL	TAX	SUB TOTAL
Concrete	CY	1.5	@	$ 160.00	$ 240.00	$ -	$ 240.00
Short Load Fee	LS	1	@	$ 150.00	$ 150.00	$ -	$ 150.00
Rebar	LB	40	@	$ 0.80	$ 32.00	$ -	$ 32.00
Forms	SF	65	@	$ 2.50	$ 162.50	$ -	$ 162.50
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
					SUBTOTAL	$ -	$ 584.50

LABOR TO PERFORM ADDITIONAL WORK

DESCRIPTION	U/M	QUANITY	@	UNIT	TOTAL	TAX	SUB TOTAL
LABOR TO PERFORM ADDITIONAL WORK	MH	40	@	$ 25.00	$ 1,000.00	$ -	$ 1,000.00
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
					SUBTOTAL	$ -	$ 1,000.00

EQUIPMENT NEEDED

DESCRIPTION	U/M	QUANITY	@	UNIT	TOTAL	TAX	SUB TOTAL
			@		$ -	$ -	$ -
			@	$ -	$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
			@		$ -	$ -	$ -
					SUBTOTAL	$ -	$ -

TOTAL COST
$ 1,584.50

LABOR	$ 1,000.00
MATERIAL	$ 584.50
EQUIPMENT	$ -
TOTAL COST	$ 1,584.50

Clemens Plumbing

14061 Rodeo Daze Dr.
Haslet, TX 76052
(817)800-5479

New Generator Gas Run Change Order

November 09, 2023

RJM Contractors
3629 Lovell Ave.
Fort Worth, Tx 76107

ATTN: Trevor

R.E. Johnson 911-New Generator-gas line

SCOPE: Replace existing ¾ gas run to generator with a 11/4” gas run to accommodate new generator specified

Material and Labor: **$3,026.00**

Exclusions:

1. Paint
2.

SINCERELY,

Mark R Clemens Lic# M-40674
State Board Of Plumbing 512-936-5200

MECHANICAL NOTES

INTENT
THE INTENT OF THIS SPECIFICATION IS TO PROVIDE A STANDARD HVAC INSTALLATION FOR THE FACILITY WHICH IS FREE FROM HAZARD, EFFICIENT, SERVICEABLE, CAPABLE OF MAINTAINING SPECIFIED MAXIMUM RELATIVE HUMIDITY AND TEMPERATURE AS SPECIFIED AND EASY TO MAINTAIN.
THE EQUIPMENT, SYSTEMS, AND CONTROLS SHALL BE DESIGNED AND INSTALLED IN SUCH A MANNER THAT WILL ENCOURAGE THE CONSERVATION OF ENERGY WITHOUT UNNECESSARY HARDSHIP OR INCONVENIENCE TO TENANT.
ALL WORK, MATERIALS AND EQUIPMENT SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE BY TENANT. ANY DEFECTS APPEARING WITHIN THE ONE YEAR GUARANTEED SHALL BE REMOVED AND REPLACED AT NO EXPENSE AND TO THE COMPLETE SATISFACTION OF THE TENANT.

CODES, RULES AND REGULATIONS:
THE INSTALLATION SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL AUTHORITIES HAVING JURISDICTION AND THE RULES AND REGULATIONS OF THE SERVING UTILITY, AND ALSO THE REQUIREMENTS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS. WHERE THE CONTRACT REQUIREMENTS ARE IN EXCESS OF APPLICABLE CODES, RULES AND REGULATIONS, THE CONTRACT PROVISIONS SHALL GOVERN.
ARRANGE AND PAY FOR ALL INSPECTION WORK OF THIS SECTION REQUIRED BY LOCAL BUILDING INSPECTOR. OBTAIN AND PAY FOR ALL PERMITS AND LICENSES, AND GIVE ALL NOTICES, PAY ALL FEES, COMPLY WITH ALL EXISTING LAWS, ORDINANCES, RULES AND REGULATIONS, BEARING ON THE CONDUCT OF THE WORK AS SPECIFIED AND DRAWN.
INSPECTION AUTHORITY CERTIFICATE OF APPROVAL SHALL BE FURNISHED TO THE TENANT BEFORE FINAL ACCEPTANCE WILL BE GIVEN.
IF THE CONTRACTOR OBSERVES THAT THE DRAWINGS OR SPECIFICATIONS ARE AT VARIANCE WITH ANY LAWS, ORDINANCES, RULES AND REGULATIONS, HE SHALL PROMPTLY NOTIFY THE ARCHITECT-ENGINEER IN WRITING.
IF THE CONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO THE ABOVE, AND WITHOUT NOTICE TO THE ARCHITECT-ENGINEER, HE SHALL BEAR ALL EXPENSE REQUIRED TO MAKE THE WORK TO CONFORM IN AN ACCEPTABLE MANNER.

NEMA:
ELECTRICAL COMPONENTS USED IN THIS APPLICATION SHALL BE RATED IN ACCORDANCE WITH NEMA STANDARDS.

SCOPE OF WORK:
FURNISH A COMPLETE SYSTEM OF HEATING, AIR CONDITIONING AND VENTILATION, THE DESIGN OF WHICH SHALL BE BASED UPON THE USE OF A CEILING SUPPLY AND IN-UNIT RETURN AIR SYSTEM.
WORK INCLUDED UNDER THIS SECTION, WITHOUT LIMITING THE GENERALITY THEREOF, CONSISTS OF FURNISHING AND INSTALLING ALL MATERIALS, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR AND REASONABLY INCIDENTAL TO THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN IN GENERAL, AS FOLLOWS:
1. ROOF TOP UNITS, COMPRESSOR UNITS, AND ASSOCIATED REFRIGERANT AND CONDENSATE PIPING.
2. SHEET METAL WORK, INCLUDING DUCTWORK, DIFFUSERS AND REGISTERS.
3. DUCT FURNACES GAS FIRED (OR AS OTHERWISE SPECIFIED).
4. UNIT HEATERS, GAS FIRED (OR AS OTHERWISE SPECIFIED).
5. EXHAUST FANS, INTAKE LOUVERS.
6. INSULATION, PIPE AND DUCT.
7. ENVIRONMENTAL CONTROL PANELS, ALL SYSTEMS SENSORS AND RELATED THERMOSTATS.
8. TESTING AND BALANCING.
9. PROVIDE ALL TEMPORARY HOOK UP REQUIRED TO TEST OUT EQUIPMENT.

PROTECTION:
THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERFECT OPERATION OF THE ENTIRE SYSTEM AND MUST MAKE GOOD AT HIS OWN EXPENSE ANY PART OF THE WORK WHICH MAY BE STOPPED UP, OR BECOME INOPERATIVE DUE TO LEAVING THE WORK UNPROTECTED DURING CONSTRUCTION OF THE SYSTEM OR WHICH MAY BREAK OR FAIL IN ANY MANNER BY REASONS OF POOR WORKMANSHIP OR DEFECTIVE MATERIALS FOR A PERIOD ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK.

GRILLS AND DIFFUSERS:
SUPPLY: CEILING MOUNTED- EQUAL TO 'KRUEGER' 1400A SERIES OR EQUAL.
T GRID MOUNTED- EQUAL TO 'KRUEGER' 1400A SERIES OR EQUAL.
SUPPLY GRILLES TO HAVE MANUAL DAMPERS.
RETURN: EQUAL TO 'KRUEGER' 5000 SERIES (UNLESS OTHERWISE SCHEDULED ON PLANS).

THERMOSTATS:
DIGITAL PROGRAMMABLE THERMOSTATS MOUNTED @ 48" AFF. PER A.D.A. REQUIREMENTS.

DUCTS:
FLEX DUCT APPROVED IF ALLOWED BY THE CITY WITH JURISDICTION. FLEXIBLE DUCTWORK MIN. R-6. ALL DUCT SEAMS TO BE SEALED WITH UL-181A OR 181B TAPES AND MASTICS. MECHANICAL FASTENERS AND SEALANTS MUST BE USED TO CONNECT DUCTS TO AIR DISTRIBUTION EQUIPMENT. ALL DUCT WORK TO BE LINED WITH 1" INSULATION FOR THE FIRST 10' FROM THE PLENUM. BALANCING DEVICES PER IMC 603.8.
ALL DUCT WORK PENETRATING FIRE WALLS MUST HAVE FIRE DAMPERS.

MECHANICAL UNITS:
UNITS 2000 CFM OR GREATER MUST HAVE SMOKE DETECTORS ON THE RETURN AIR SIDE.
UNITS 54 KBTU OR GREATER MUST HAVE ECONOMIZERS.
PROVIDE HAIL GUARDS FOR ALL EXTERIOR UNITS.
PROVIDE CONDENSATE OVERFLOW SWITCH ON ALL AIR HANDLERS. PIPE TO NEAREST DRAIN.
PROVIDE 120V. SERVICE OUTLET WITHIN 25' OF EXTERIOR EQUIPMENT.
PROVIDE EXHAUST AND COMBUSTION AIR THROUGH ROOF PER MANUFACTURER'S INSTRUCTIONS.

ECONOMIZERS:
AIR ECONOMIZERS SHALL BE CAPABLE OF SUPPLYING UP TO 100% OF DESIGN OUTSIDE AIR. ECONOMIZERS MUST BE SUPPLIED WITH HONEYWELL, OR EQUAL, ECONOMIZER CONTROL PAD.
HIGH LIMIT SHUT OFF TO BE SET @ 65 DEGREES FAHRENHEIT.
PROVIDE BAROMETRIC RELIEF DAMPER.
GRAVITY DAMPERS TO BE USED FOR RETURN, EXHAUST/ RELIEF, AND OUTDOOR AIR DAMPERS IN ECONOMIZERS.
AIR ECONOMIZERS TO BE EQUIPPED WITH FAULT DETECTION AND DIAGNOSTICS/FDD SYSTEM(F.D.D.).

FRESH AIR CALCULATIONS

PER IMC:
FIRST FLOOR:

OFFICES - 4204 SF @ 5P/1000 SF= 21P X 5 CFM/P=	105 CFM
AIRFLOW - 4204 SF X 0.06 CFM/SF=	252 CFM
CONFERENCE - 407 SF @ 50P/1000 SF= 20P X15 CFM/P=	100 CFM
AIRFLOW - 407 SF X 0.06 CFM/SF=	24 CFM
BREAK ROOM - 446 SF @ 20P/1000 SF= 9P X 7.5 CFM/P=	68 CFM
AIRFLOW - 446 SF X 0.06 CFM/SF=	27 CFM
ENTRY - 321 SF @ 100P/1000 SF= 3P X 5 CFM/P=	15 CFM
AIRFLOW - 321 SF X 0.06 CFM/SF=	19 CFM
VESTIBILE - 552 SF @ 30P/1000 SF= 17P X 5 CFM/P=	85 CFM
AIRFLOW - 552 SF X 0.06 CFM/SF=	33 CFM
EXERCISE - 208 SF @ 10P/1000 SF= 2P X 20 CFM/P=	40 CFM
AIRFLOW - 208 SF X 0.06 CFM/SF=	12 CFM
EMERGENCY - 288 SF @ 10P/1000 SF= 3P X 15 CFM/P=	45 CFM
LOCKER RM. - 210 SF @ 10P/1000 SF= 3P X 5 CFM/P=	15 CFM
AIRFLOW - 210 SF X 0.06 CFM/SF=	16 CFM
CORRIDOR -660 SF X 0.06 CFM/ SF=	40 CFM
STORAGE -64 SF X 0.12 CFM/ SF=	8 CFM
COMPUTER - 208 SF @ 4P/1000 SF= 1P X 5 CFM/P=	5 CFM
AIRFLOW - 208 SF X 0.06 CFM/SF=	12 CFM
TOTAL REQUIRED:	921 CFM

FRESH AIR SUPPLIED:

AHU-1(5T.)200 CFM	
AHU-2(5T.)200 CFM	
AHU-3(4T.)100 CFM	
AHU-3(1.5T.): 300 CFM	
AHU-4(4T.): 100 CFM	
AHU-5(2.5T.): 30 CFM	
TOTAL SUPPLIED:	930 CFM

SPLIT CONDENSER + FURNACE + COIL UNITS SCHEDULE

Tag	2.5 Ton Split	4 Ton Split	5 Ton Split
Manufacturer	Rheem / RUUD	Rheem / RUUD	Rheem / RUUD
Model No	RA1630AJ1NA	RA1648AC1NA	RA1660AC1NA
Furnace No	R802VA050317MSA	R802VA075421MSA	R802VA075421MSA
Coil No	RCF3617STAM	RCF4821STAM	RCF6021STAM
Cooling ODB (F)	98.6	98.6	98.6
Entering Dry Bulb (F)	80	80	80
Entering Wet Bulb (F)	67	67	67
Leaving Dry Bulb (F)	58.8	58.5	59.4
Leaving Wet Bulb (F)	57.9	58.4	57.5
Nominal Tons	2 1/2	4	5
Total Clg Capacity (Btuh)	28,300	42,900	58,700
Sens. Clg Capacity (Btuh)	22,300	36,200	43,300
SEER	16	16	15.1
AHRI EER	13	13	12.5
IEER	n/a	n/a	n/a
Cooling Stages	1	1	1
Heating Input (Btuh)	50,000	75,000	75,000
Heating Output (Btuh)	41,000	61,000	61,000
Heating Stages	2	2	2
Fan Stages	Variable	Variable	Variable
AFUE	80	80	80
Air Flow (cfm)	1000	1600	2000
ESP (in. WC)	0.5	0.5	0.5
Horse Power	1/2	3/4	3/4
Orientation	Upflow/Horizontal	Upflow/Horizontal	Upflow/Horizontal
Voltage/Hz/Phase	208-230/60/1	208-230/60/3	208-230/60/3
ODU MCA	19	21	24
ODU Max Fuse	30	30	35
Voltage/Hz/Phase	115/60/1	115/60/1	115/60/1
FLA	6.3	8.7	8.7
Economizer	-	-	Yes

SPLIT HEAT PUMP + AIR HANDLER UNITS SCHEDULE

Tag	7.5 Ton Split
Manufacturer	Rheem / RUUD
Model No	RPCL2090CAZ
Air Handler No	RHCLP2090CAS
Cooling ODB (F)	98.6
Entering Dry Bulb (F)	80
Entering Wet Bulb (F)	67
Leaving Dry Bulb (F)	58.4
Leaving Wet Bulb (F)	57.8
Nominal Tons	7 1/2
Total Clg Capacity (Btuh)	87,500
Sens. Clg Capacity (Btuh)	70,100
SEER	n/a
AHRI EER	11
IEER	14.1
Capacity @47 F (Btuh)	86,000
COP @47	3.4
Capacity @17 F (Btuh)	55,000
COP @17	2.25
Aux. Input (kW)	15.6
Voltage/Hz/Phase	208-230/60/3
ODU MCA	39
ODU Max Fuse	60
IDU MCA	67
IDU Max Fuse	70
Factory Options	None
Economizer	Yes

EXHAUST FANS

EXH. FAN NO.	CFM	MANUF. MODEL#	ELEC. DATA	REMARKS
EF-1	70	COOK GEMINI 9SC-120 CEILING MOUNTED EXH. FAN	115/1/60	1.7 SONES, 6" ROUND DISHARGE, 35 WATTS, ROOF OR SIDE WALL EXHAUST. CONTINUOUS RUN.
EF-2,3	225	COOK GEMINI 9SC-180 CEILING MOUNTED EXH. FAN	115/1/60	5.5 SONES, 6" ROUND DISHARGE, 192 WATTS, ROOF OR SIDE WALL EXHAUST. CONTINUOUS RUN.

10/3/2023 TORNADO SHELTER EXHAUST CALCULATION:
USUABLE SF= 220 SF.
220SF-105F (ONE WHEEL CHAIR USER)= 210 SF
210 SF/ 5 SF PER OCCUPANT =42 OCCUPANTS
42 OCC + 1 WHEEL CHAIR USER= 43 OCCUPANTS
REQUIRED VENTILATION = 5 CFM PER OCCUPANT X 43 OCCUPANTS= 215 CFM

TORNADO SHELTER EXHAUST FAN:
FANTECH MODEL RVF-6XL, CAPABLE OF 381 CFM @ 0" W.G.
FANTECH MODEL 8SCK 6" BACKDRAFT DAMPER
FANTECH IP9OS SPEED CONTROLLER
18" X 12" POTTORFF MODEL XCD-545 FEMA RATED WIND DRIVEN LOUVER
PROVIDE MOTORIZED DAMPER (MOUNT BEHIND LOUVER ON INTERIOR SIDE)
18" X 12" TO 6" ROUND SHEET METAL ADAPTER PROVIDED BY OTHERS (CONTRACTOR FABRICATED)

TORNADO SHELTER INTAKE LOUVER:
18" X 12" POTTORFF MODEL XCD-545 FEMA RATED WIND DRIVEN LOUVER
18" X 12" POTTORFF MODEL CD-45 LOW LEAKAGE MOTORIZED CONTROL DAMPER WITH 120 OR 24 VOLT ACTUATOR
(TO BE USED IN COMBINATION WITH THE INTAKE LOUVER. MOUNT DIRECTLY BEHIND THE INTAKE LOUVER)

MECHANICAL ROOM LOUVERS (4):
GREENHECK ESD-635, OR EQAUL.
12"h X 12"w STATIONARY, DRAINABLE, BIRD SCREEN

11/1/2023

WALL HEATER SCHEDULE	
MARK	H-1
WATTS	1500
V/ PHASE	120/ 1 PH
MANUFACTURER	DAYTON
MODEL	5ZK68
THERMAL CUT OUT WITH INDICATOR LIGHT DOUBLE POLE THERMOSTAT	

10/3/2023- TORNADO SHELTER EXHAUST AND INTAKE REVISION

11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM. ADD SPACE HEATER.

LARRY L. BLACKMON, INC
ENGINEERING & BUILDING DESIGN
6716 AZLE AVENUE
FORT WORTH, TEXAS 76135
PHONE: 817-238-9801 FAX: 817-238-9804
REGISTRATION #F-002382

STATE OF TEXAS
LARRY L. BLACKMON
25546
REGISTERED
PROFESSIONAL
ENGINEER
11/1/2023

911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date

MECHANICAL NOTES

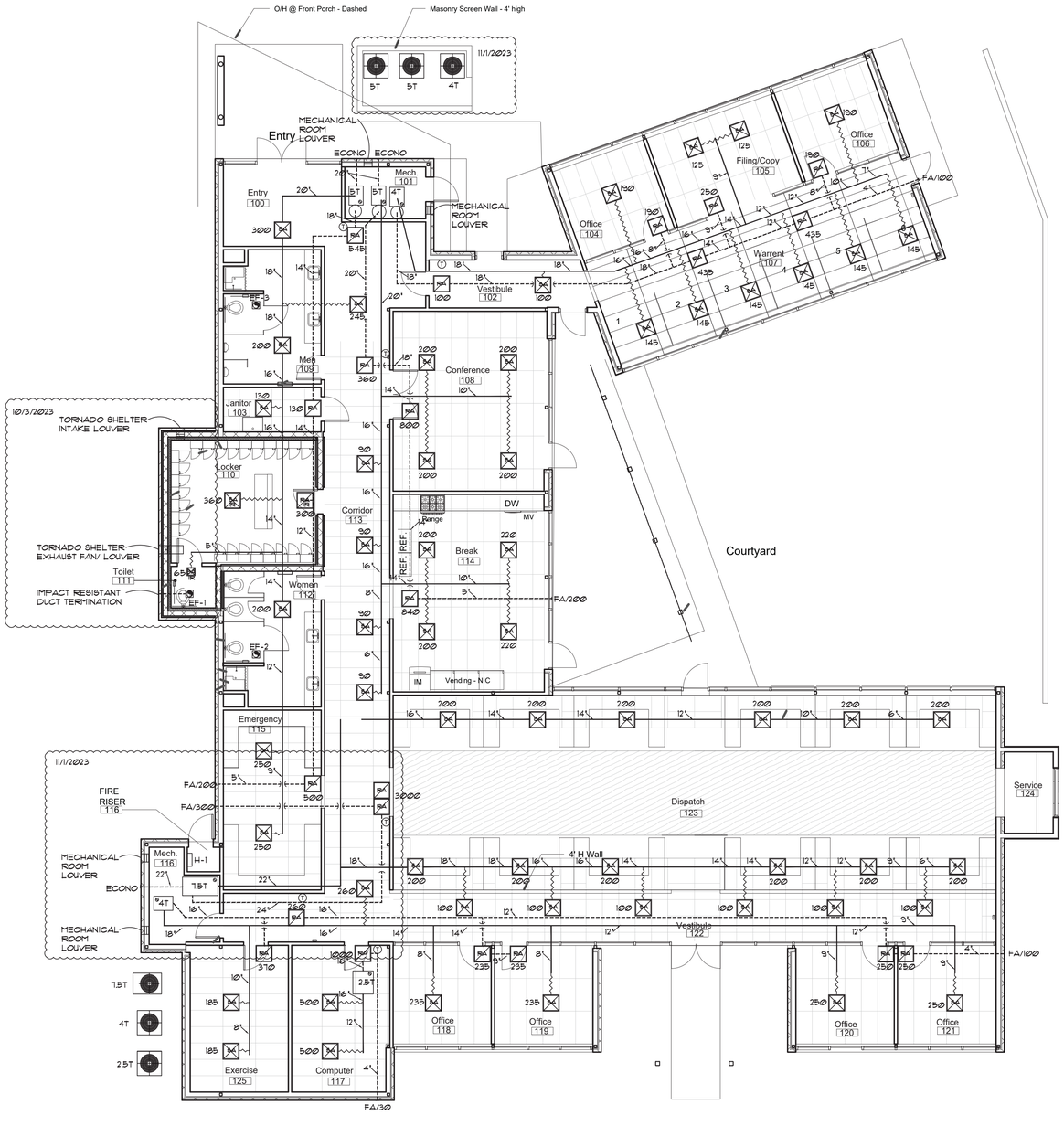
Project #	2021-1102
Date	10/3/2023
Drawn by	Author
Checked by	Checker

M000

Scale 1/8" = 1'-0"

7/9/2023 9:33:44 AM

NOTE TO BIDDERS
THE INTENT OF THE DRAWINGS HEREIN IS TO REPRESENT A COMPLETE WORKING SYSTEM. ALL BIDDERS SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL COMPONENTS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.



1 Level 1 - MECHANICAL PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

10/3/2023- TORNADO SHELTER EXHAUST AND INTAKE REVISION
11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADD SPACE HEATER

LARRY L. BLACKMON, INC
ENGINEERING & BUILDING DESIGN
6716 AZLE AVENUE
FORT WORTH, TEXAS 76135
PHONE: 817-238-9801 FAX: 817-238-9804
REGISTRATION #-002382

STATE OF TEXAS
LARRY L. BLACKMON
25546
REGISTERED
ENGINEER
11/1/2023

911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date

MECHANICAL SYMBOL LEGEND

- 24"X24" SUPPLY GRILLE
- 12"X12" SUPPLY GRILLE
- 24"X24" RETURN GRILLE
  "IR" TO DENOTE IMPACT RESISTANT STEEL GRILLES
- EXHAUST FAN REF. SCHEDULE
- (T) THERMOSTAT MOUNT @ 48" A.F.F.

NOTE TO BIDDERS

THE INTENT OF THE DRAWINGS HEREIN IS TO REPRESENT A COMPLETE WORKING SYSTEM. ALL BIDDERS SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL COMPONENTS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.

Plan - Level 1 - MECHANICAL PLAN

Project #	2021-1102
Date	10/3/2023
Drawn by	Author
Checked by	Checker

M100

Scale	1/8" = 1'-0"

7/9/2023 9:39:14 AM

ELECTRICAL GENERAL NOTES

1. THE EQUIPMENT ROUGH-INS AS SHOWN ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, HOWEVER, IN SOME INSTANCES, THE OWNER OR SUPPLIER MAY SUBSTITUTE OR THE EQUIPMENT MAY VARY FROM WHAT IS SHOWN. THEREFORE, THE CONTRACTOR SHALL VERIFY ALL CRITICAL DIMENSIONS WITH THE OWNER PRIOR TO CONSTRUCTION. FAILURE OF THE CONTRACTOR TO VERIFY THESE DIMENSIONS SHALL PLACE THE RESPONSIBILITY FOR ANY SUBSEQUENT RELOCATION DIRECTLY UPON THE CONTRACTOR.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE N.E.C. AND STATE AND LOCAL CODES AS THEY APPLY.
3. SWITCHGEAR AND PANELS ARE EXISTING. ALL CIRCUITS ARE TO BE ADDED TO EXISTING PANELS. REVISE AND BALANCE AS NECESSARY.
4. ALL DISCONNECT SWITCHES SHALL BE RATED FOR GENERAL DUTY UNLESS OTHERWISE NOTED.
5. STARTERS AND RELATED WIRING SHALL BE INSTALLED BY ELECTRICAL CONTRACTOR. OVERLOAD UNITS SHALL BE INSTALLED AS PER NAME PLATE DATA ON EQUIPMENT, EXCEPT FOR SUCH ITEMS AS ARE NORMALLY SUPPLIED WITH STARTERS INSTALLED (HVAC UNITS, DISH-WASHERS ETC.) AT THEIR POINT OF MANUFACTURE, ALL STARTERS SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR WILL MOUNT ALL SUCH STARTERS, AS DIRECTED, FURNISHING SUPPORTING STRUCTURES WHERE NECESSARY.
6. ANY FEES ASSOCIATED WITH CONSTRUCTION AND INSPECTION SHALL BE BORNE BY THE CONTRACTOR IN ORDER TO DELIVER TO THE OWNER A FINISHED BUILDING, READY FOR OCCUPANCY AND 100% OPERATION.
7. TWO COPIES OF OPERATION AND MAINTENANCE MANUALS FOR THE EQUIPMENT HEREIN INSTALLED SHALL BE GIVEN TO THE OWNER PRIOR TO ACCEPTANCE OF THE BUILDING FOR OCCUPANCY.
8. ALL PANELBOARDS SHALL BE LABELED WITH RESPECT TO THEIR TITLE, VOLTAGE AND PHASE: I.E. PANEL "A" 120/208/3. LABEL SHALL BE PHENOLIC PLASTIC WITH WHITE LETTERS AND BLACK BACKGROUND. LABELS SHALL BE PERMANENTLY FIXED TO THE EQUIPMENT.
9. PANELBOARDS SHALL CONTAIN A TYPEWRITTEN DIRECTORY OF ALL CIRCUITS WITH A PLASTIC COVER AFFIXED TO THE INSIDE DOOR.
10. CONTRACTOR SHALL SUBMIT 6 COPIES OF SHOP DRAWINGS TO THE ARCHITECT/ENGINEER FOR APPROVAL FOR ALL EQUIPMENT AND DEVICES INSTALLED. THERE WILL BE NO DRAW UNTIL SHOP DRAWINGS HAVE BEEN SUBMITTED AND REVIEWED BY ARCHITECT/ENGINEER.
11. ANY DEVIATION FROM PLANS WITHOUT PRIOR APPROVAL OF THE ARCHITECT SHALL BE CAUSE FOR THE REJECTION OF MATERIALS AND/OR METHODS, AND ANY COST INCURRED TO CORRECT SUCH DEVIATION TO THE SATISFACTION OF THE A/E SHALL BE BORNE BY THE CONTRACTOR.
12. ANY COSTS INCURRED DUE TO LACK OF COOPERATION AMONG THE TRADES SHALL BE BORNE BY THE CONTRACTOR.
13. THE SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT THE CONTRACTOR HAS FAMILIARIZED HIMSELF WITH THE PLANS AND BUILDING SITE. CLAIMS MADE SUBSEQUENT TO THE PROPOSAL FOR MATERIALS AND LABOR, BECAUSE OF DIFFICULTIES ENCOUNTERED, WILL NOT BE RECOGNIZED IF THEY COULD HAVE BEEN FORSEEN HAD PROPER EXAMINATION BEEN MADE.
14. TRADE NAMES ARE GIVEN TO CLARIFY TYPE OF PRODUCT AND QUALITY DESIRED.
15. ALL REMOTE EQUIPMENT ON ROOF OR GROUNDS SHALL HAVE A DISCONNECT SWITCH AT EACH PIECE OF EQUIPMENT. FURNISH FUSED DISCONNECTS AS REQUIRED BY N.E.C.
16. ALL EXTERIOR RECEPTACLES, JUNCTION BOXES AND EQUIPMENT SHALL BE WEATHERPROOF.
17. ALL EXTERIOR CONDUIT FOR WIRING SHOULD BE MINIMIZED BY ROUTING IN CEILING SPACE. NO EXTERIOR CONDUIT WILL BE ACCEPTED, U.O.N.
18. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY, PRIOR TO ANY INDIVIDUAL CIRCUIT'S INSTALLATION, TO VERIFY WITH ALL OTHER TRADES CONCERNED THAT THE CIRCUIT WITH DEVICES AS DRAWN IS ADEQUATE IN SIZE AND MAKE-UP FOR THE EQUIPMENT TO BE INSTALLED. IF ANY CONFLICT IN VOLTAGE, PHASE, OR LOAD IS ENCOUNTERED WHICH WOULD ALTER THE CIRCUIT NOTIFY THE ENGINEER OR OWNER IMMEDIATELY. FAILURE TO DO SO SHALL PLACE THE RESPONSIBILITY FOR ANY SUBSEQUENT CIRCUIT CHANGE DIRECTLY UPON THE CONTRACTOR.
19. ALL ITEMS IN THE NOTES, SCHEDULES AND LEGEND MAY NOT NECESSARILY APPEAR ON THESE DRAWINGS.
20. MINIMUM WIRE SIZE SHALL BE #12 AWG AND MINIMUM CONDUIT SIZE SHALL BE 3/4". ALL WIRING SHALL BE RUN IN CONDUIT.
21. WIRING SHOWN IN THE PANEL SCHEDULE IS THE MINIMUM REQUIRED. RUNS IN EXCESS OF 80'-0" (ONE WAY) SHALL BE SIZED PER THE N.E.C. MAXIMUM 2% VOLTAGE DROP.
22. ANY ELECTRICAL OUTLETS WITHIN 6 FEET OF A SINK SHALL BE GFI PROTECTED. PROVIDE EITHER INDIVIDUAL GFI DEVICES OR GFI CIRCUIT BREAKERS, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS OR SCHEDULES.
26. PROVIDE A 120 VOLT RECEPTACLE WITHIN 25 FEET OF ALL HVAC EQUIPMENT ON THE ROOF. RTU UNITS TO HAVE INTEGRAL 120V. OUTLET.
27. ALL ELECTRICAL TO BE RUN OVERHEAD UNLESS OTHERWISE NOTED.
28. ALL FIXTURES TO BE PROPERLY SECURED TO PREVENT MOVING ONCE IN PLACE.
29. ALL CONDUIT (RIGID AND FLEXIBLE) SHALL BE PROPERLY SECURED AND NOT ALLOWED TO LIE ON FLOOR, ETC.
30. VENDING MACHINES. (A) CORD AND PLUG CONNECTED. CORD AND PLUG CONNECTED VENDING MACHINES MANUFACTURED OR REMANUFACTURED ON OR AFTER JANUARY 1, 2005 SHALL INCLUDE A GROUND FAULT CIRCUIT INTERRUPTER IDENTIFIED FOR PORTABLE USE AS AN INTEGRAL PART OF THE ATTACHMENT PLUG OR BE LOCATED WHITHIN 300 MM.(12 IN.) OF THE ATTACHMENT PLUGS. OLDER VENDING MACHINES MANUFACTURED OR REMANUFACTURED PRIOR TO JANUARY 1, 2005 SHALL BE CONNECTED TO A GFCI PROTECTED OUTLET.
(B) OTHER THAN CORD AND PLUG CONNECTED. VENDING MACHINES NOT UTILIZING A CORD AND PLUG CONNECTION SHALL BE CONNECTED TO A GROUND FAULT CIRCUIT INTERRUPTER PROTECTED CIRCUIT.

APPLIANCE SCHEDULE

REFRIGERATOR/ FREEZER:
G.E. ENERGY STAR 17.5 CU. FT. TOP FREEZER REFRIGERATOR
MODEL #GTE22JTNRWW OR EQUAL

DISHWASHER:
G.E. DISHWASHER WITH FRONT CONTROLS ENERGY STAR
RATED MODEL #GDF610PGJWW OR EQUAL
PROVIDE ELECTRICAL CONNECTION
KIT AND WATER SUPPLY LINE.

GAS RANGE:
G.E. 30" SLIDE IN GAS RANGE
MODEL #JGS760SPSS OR EQUAL
15A, 120V, 60 KBTU

30" WALL MOUNTED PYRAMID CHIMNEY HOOD:
350 CFM (4 SPEED) VENTING
MODEL #JVW5301SJSS OR EQUAL
2.5 AMPS, 120V.
PROVIDE DUCT COVER KIT.

ICE MAKER
VERIFY MODEL AND REQUIREMENTS WITH OWNER.

VERIFY APPLIANCE COLORS WITH ARCHITECT AND OWNER.

10/25/2023

PANEL A (FIRST SECTION) — MB

600 AMPS 120/208 VOLTS 3 PHASE 4 WIRE 10,000 AMP SHORT CIRCUIT RATING

DESCRIPTION	POLES	BKR	V.A. LOAD	CIRCUIT			V.A. LOAD	BKR	POLES	DESCRIPTION
POLE LIGHTS	1	20	384	1	A	2	384	20	1	POLE LIGHTS
EXTERIOR LIGHTS	1	20	1088	3	B	4	1095	20	1	INTERIOR LIGHTING
INTERIOR LIGHTING	1	20	1193	5	C	6	1043	20	1	INTERIOR LIGHTING
CU-5T	3	35	2880	7	A	8	192	20	1	EF-2
CU-5T		35	2880	9	B	10	192	20	1	EF-3
CU-5T		35	2880	11	C	12	180	20	1	CASH DRAWER
CU-4T	3	30	2520	13	A	14	180	20	1	TWH IGNITION
CU-4T		30	2520	15	B	16	1200	20	1	5T AHU
CU-4T		30	2520	17	C	18	1200	20	1	4T AHU
EXTERIOR OUTLETS	1	20	900	19	A	20	720	20	1	INTERIOR GFI'S
OUTLETS	1	20	1440	21	B	22	1440	20	1	OUTLETS
OUTLETS	1	20	1440	23	C	24	1260	20	1	OUTLETS
KITCHEN GFI'S	1	20	540	25	A	26	1500	20	1	MICROWAVE
DISHWASHER	1	20	1200	27	B	28	300	20	1	RANGE HOOD
RANGE	1	20	1800	29	C	30	1200	20	1	REFRIGERATOR
REFRIGERATOR	1	20	1200	31	A	32	1200	20	1	ICE MACHINE
VENDING	1	20	720	33	B	34	720	20	1	VENDING
VENDING	1	20	720	35	C	36	466	20	1	LIGHTS **
**EF-1	1	20	35	37	A	38	540	20	1	OUTLETS **
**EXH FAN/ LOUVER	1	20	1200	39	B	40	1200	20	1	5 TON AHU **
11/1/2023 **RISER RM HEATER	1	20	1500	41	C	42	1200	20	1	FIRE ALARM **

PANEL A (SECOND SECTION) — MB

600 AMPS 120/208 VOLTS 3 PHASE 4 WIRE 10,000 AMP SHORT CIRCUIT RATING

DESCRIPTION	POLES	BKR	V.A. LOAD	CIRCUIT			V.A. LOAD	BKR	POLES	DESCRIPTION
				43	A	44				
				45	B	46	1080	20	1	OUTLETS
OUTLETS	1	20	1080	47	C	48	1080	20	1	OUTLETS
CU-7.5T	3	60	4680	49	A	50	8040	70	3	HEAT-7.5T
CU-7.5T		60	4680	51	B	52	8040	70		HEAT-7.5T
CU-7.5T		60	4680	53	C	54	8040	70		HEAT-7.5T
CU-4T	3	30	2520	55	A	56	1200	20	1	4T AHU
CU-4T		30	2520	57	B	58	90	20	1	LANDSCAPE LIGHTING
CU-4T		30	2520	59	C	60	30	20	1	FLAG POLE LIGHTING
**CU-5T	3	35	2880	61	A	62	720	20	1	ELECTRIC GATE
**CU-5T		35	2880	63	B	64				
**CU-5T		35	2880	65	C	66				
				67	A	68	15,000	125	3	125 AMP UPS **
				69	B	70	15,000	125		125 AMP UPS **
				71	C	72	15,000	125		125 AMP UPS **
				73	A	74				
				75	B	76				
				77	C	78				
				79	A	80				
				81	B	82				
				83	C	84				

MOUNTING		CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	DEMAND FACTOR	DEMAND LOAD A	DEMAND LOAD B	DEMAND LOAD C
LOCATION	LIGHTS	768	2283	2266	1.25	960	2854	2833
	OUTLETS	8927	10,782	13,156	1.00	8927	10,782	13,156
	HVAC	23,520	23,520	23,520	1.00	23,520	23,520	23,520
	UPS	15,000	15,000	15,000	1.00	15,000	15,000	15,000
	PANEL TOTAL					48,407	52,156	54,509
	TOTAL LOAD	155,072 / 360 = 431 A						

11/1/2023

PANEL B — MB

125 AMPS 120/208 VOLTS 3 PHASE 4 WIRE 10,000 AMP SHORT CIRCUIT RATING

DESCRIPTION	POLES	BKR	V.A. LOAD	CIRCUIT			V.A. LOAD	BKR	POLES	DESCRIPTION
STATION 13 OUTLETS	1	20	1440	1	A	2	1440	20	1	STATION 14 OUTLETS
STATION 11 OUTLETS	1	20	1440	3	B	4	1440	20	1	STATION 12 OUTLETS
STATION 9 OUTLETS	1	20	1440	5	C	6	1440	20	1	STATION 10 OUTLETS
STATION 7 OUTLETS	1	20	1440	7	A	8	1440	20	1	STATION 8 OUTLETS
STATION 5 OUTLETS	1	20	1440	9	B	10	1440	20	1	STATION 6 OUTLETS
STATION 3 OUTLETS	1	20	1440	11	C	12	1440	20	1	STATION 4 OUTLETS
STATION 11 OUTLETS	1	20	1440	13	A	14	1440	20	1	STATION 2 OUTLETS
STATION 11 OUTLETS	1	20	1680	15	B	16	1200	20	1	2.5 TON AHU
JOCO DED. 20 AMP QUAD	1	20	1920	17	C	18	1920	20	1	JOCO DED. 20 AMP QUAD
JOCO DED. 20 AMP QUAD	1	20	1920	19	A	20	1920	20	1	MOTO DED. 20 AMP QUAD
MOTO DED. 20 AMP QUAD	1	20	1920	21	B	22	1920	20	1	911 DED. 20 AMP QUAD
911 DED. 20 AMP QUAD	1	20	1920	23	C	24				
CU-2.5T	2	30	2280	25	A	26				
CU-2.5T		30	2280	27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				

MOUNTING		CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	DEMAND FACTOR	DEMAND LOAD A	DEMAND LOAD B	DEMAND LOAD C
LOCATION	OUTLETS	12480	11880	11520	1.00	12480	11880	11520
	HVAC	2280	2280	-0-	1.00	2280	2280	-0-
	PANEL TOTAL					14760	14160	11520
	TOTAL LOAD	40,440 / 360 = 112 A						

GENERATOR AND STANDBY POWER SYSTEM NOTES: (NEC 445,1200,1201,1202)

1. IN THE EVENT OF FAILURE OF THE NORMAL SUPPLY TO THE BUILDING, EMERGENCY POWER MUST BE AVAILABLE WITHIN 10 SECONDS.

2. EACH GENERATOR MUST BE PROVIDED WITH A NAMEPLATE INDICATING THE MANUFACTURERS NAME, RATED FREQUENCY, NUMBER OF PHASES, RATING IN KILOWATTS OR KILOVOLT AMPERES, VOLTS AND AMPERES CORRESPONDING TO THE RATING, RPM, INSULATION CLASS AND RATED AMBIENT TEMPERATURE, AND TIME RATING.

3. TRANSFER EQUIPMENT MUST BE AUTOMATIC, IDENTIFIED FOR EMERGENCY USE, AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.

4. AUTOMATIC TRANSFER SWITCHES MUST BE ELECTRONICALLY OPERATED, MECHANICALLY HELD, AND LISTED FOR EMERGENCY POWER SYSTEM USE.

5. A SIGN MUST BE PLACED AT THE SERVICE ENTRANCE EQUIPMENT INDICATING THE TYPE AND LOCATION OF ON-SITE EMERGENCY POWER SOURCES.

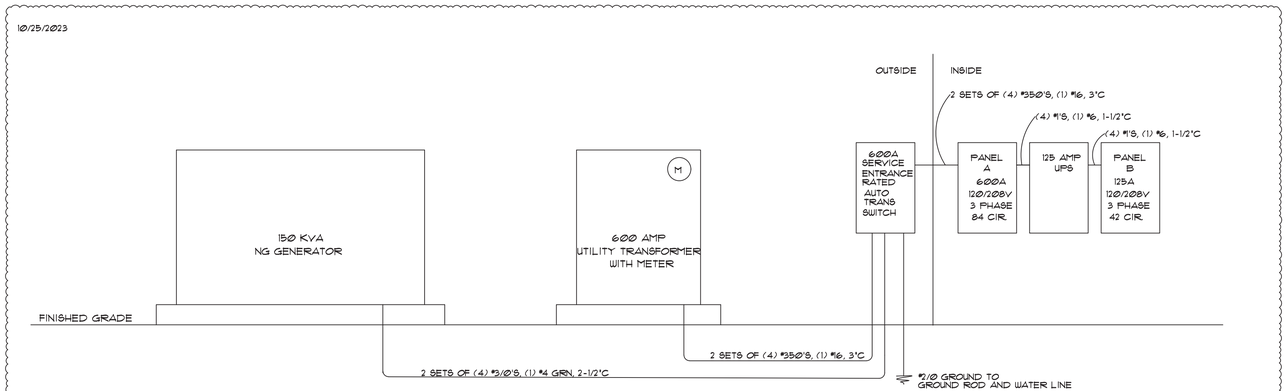
6. A LISTED SURGE PROTECTION DEVICE MUST BE INSTALLED FOR ALL EMERGENCY SYSTEM PANELBOARDS AND SWITCHBOARDS.

7. BOXES, ENCLOSURES, TRANSFER SWITCHES, GENERATORS AND POWER PANELS FOR EMERGENCY CIRCUITS MUST BE PERMANENTLY MARKED AS COMPONENTS OF AN EMERGENCY POWER SYSTEM.

8. EMERGENCY EQUIPMENT MUST BE LOCATED SO AS TO MINIMIZE THE HAZARDS THAT MIGHT CAUSE COMPLETE FAILURE DUE TO FLOODING, FIRES, ICING, AND VANDALISM.

GENERAC (OR EQUAL) 150 KVA NATURAL GAS GENERATOR, VERIFY KBTU FULL LOAD, VERIFY MINIMUM PAD SIZE. CLEARANCES PER MANUFACTURER.

10/25/2023



ELECTRICAL RISER- NOT TO SCALE

10/25/2023- GENERATOR, ELEC. LAYOUT, AND ELECTRICAL PANEL REVISION.
11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADD POWER FOR LIGHTS AND SPACE HEATER.

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REGISTRATION #F-002382

STATE OF TEXAS — LARRY L. BLACKMON — 25546 — REGISTERED — ENGINEER

11/1/2023

911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date

ELECTRICAL NOTES

Project #	2021-1102
Date	Issue Date
Drawn by	Author
Checked by	Checker

E000

Scale	1/8" = 1'-0"

NOTE TO BIDDERS

THE INTENT OF THE DRAWINGS HEREIN IS TO REPRESENT A COMPLETE WORKING SYSTEM. ALL BIDDERS SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL COMPONENTS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.

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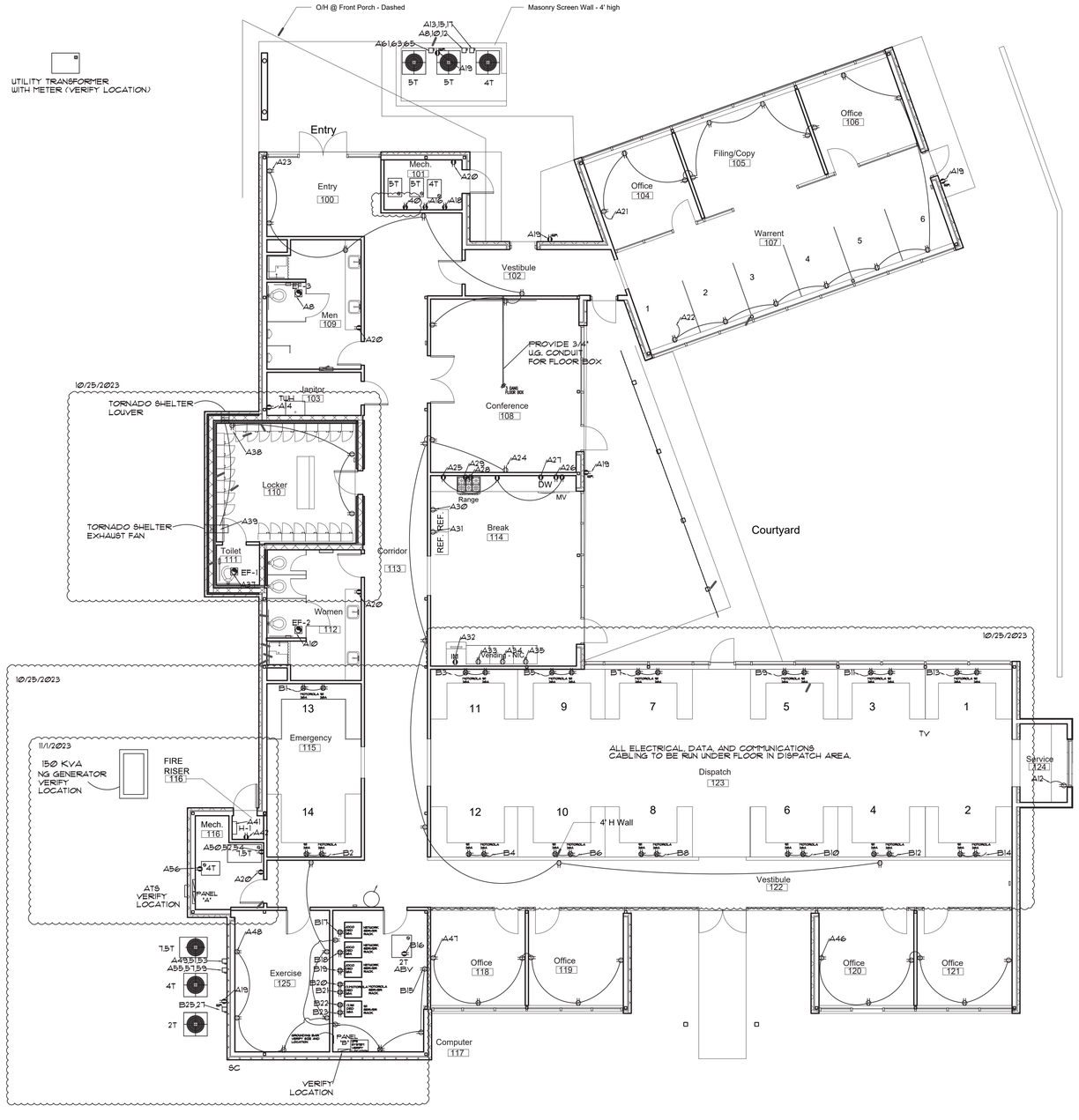

1 Level 1 - ELECTRICAL PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

ELECTRICAL SYMBOL LEGEND	
	120V DUPLEX OUTLET
	GROUND FAULT INTERUPTER 120V DUPLEX OUTLET
	WEATHERPROOF GROUND FAULT INTERUPTER 120V DUPLEX OUTLET
	DISCONNECT
	220V. DED OUTLET
	120V. J BOX
	DATA/ PHONE PORT COORDINATE ALL LOCATIONS WITH OWNER.
	DED. 20 AMP QUAD OUTLET
3 GANG FLOOR BOX	3 GANG FLOOR BOX-VERIFY EXACT REQUIREMENTS WITH OWNER

ADDITIONAL ELECTRICAL NOTES:

1. COORDINATE POWER REQUIREMENTS AND LOCATIONS FOR SECURITY ALARM WITH OWNER. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
2. ELECTRICAL CONTRACTOR TO VERIFY BREAKER SIZE AND HOOK UP REQUIREMENTS WITH HVAC CONTRACTOR AND EQUIPMENT SUPPLIERS.
3. ALL OUTLETS TO BE INSTALLED @ 18" A.F.F., UNLESS NOTED OTHERWISE. COORDINATE HEIGHT OF OUTLETS ABOVE MILLWORK WITH FINAL MILLWORK DESIGN.
4. CONTRACTOR TO COORDINATE ALL DATA AND TELEPHONE OUTLET LOCATIONS AND REQUIREMENTS WITH OWNER. COORDINATE EXACT HEIGHT FOR MONITOR OUTLETS & EQUIPMENT WITH OWNER.
5. GENERATOR PANEL LOADS ARE ESTIMATED ONLY. ACTUAL LOADS MUST BE COORDINATED WITH OWNER. ALL EQUIPMENT REQUIRED TO BE SERVED BY STAND BY POWER TO BE VERIFIED WITH OWNER PRIOR TO THE PURCHASE AND INSTALLATION OF THE GENERATOR, TRANSFER SWITCH, AND GENERATOR PANEL.

NOTE TO BIDDERS
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10/25/2023- GENERATOR, ELEC. LAYOUT, AND ELECTRICAL PANEL REVISION.
11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADD POWER FOR LIGHTS AND SPACE HEATER.

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25546
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PROFESSIONAL ENGINEER

11/1/2023

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No.	Description	Date

Plan - Level 1 - ELECTRICAL PLAN

Project #	2021-1102
Date	Issue Date
Drawn by	Author
Checked by	Checker

E100

Scale	1/8" = 1'-0"

7/9/2023 9:39:44 AM

10/25/2023- GENERATOR, ELEC. LAYOUT, AND ELECTRICAL PANEL REVISION.
11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADD LIGHT FIXTURE.

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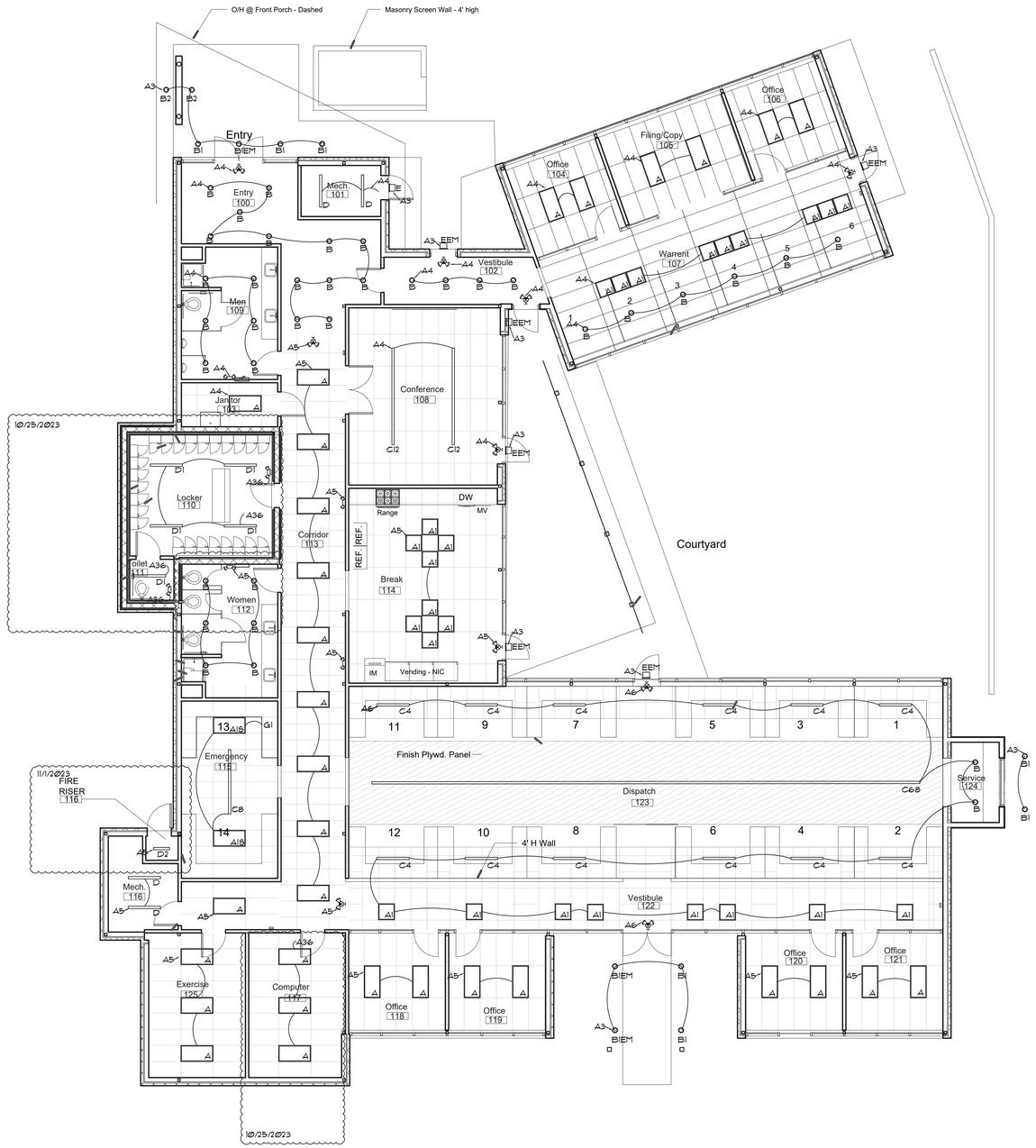
11/1/2023



1 Level 1 - LIGHTING PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

LIGHT FIXTURE SCHEDULE

TYPE/ SYM.	DESCRIPTION	MANUFACTURER
	EXHAUST FAN	REFERENCE MECHANICAL PLAN
	WALL OR CEILING MOUNTED ILLUMINATED DIRECTIONAL EXIT SIGN W/ EMERGENCY LIGHTING AND 90 MINUTE BATTERY BACKUP	SURE-LITE APCHTR
	WALL OR CEILING MOUNT EMERGENCY LIGHTING WITH 90 MINUTE BATTERY BACKUP	SURE-LITE CU1
A, A16	4' LED RECESSED CUBE 2' X 4' 35.2 WATTS PER FIXTURE	METALUX INDEPTH 24CFR2 A- *24ID-40-CFR2-L840 A16- *24ID-40-CFR2-L840-WTA
A1	2' LED RECESSED CUBE 2' X 2' 20.6 WATTS PER FIXTURE	METALUX INDEPTH 22CFR2 *22ID-25-CFR2-L840
B, B1	6" RECESSED LED CAN LIGHT 10 WATTS PER FIXTURE	HALO COMM HC6-10-D010- HOUSING HM6-0525-840-61-MD-C LED LIGHT ENGINE B1EM- PROVIDE 90 MIN. BATTERY BACKUP
B2	6" RECESSED LED CAN LIGHT(WALL WASH) 10 WATTS PER FIXTURE	HALO COMM HC6-10-D010- HOUSING HM6-0525-840-61-RWW-C LED LIGHT ENGINE
C12, C8, C4	LED LINEAR SUSPENDED 6.3 WATTS PER FOOT	CORELITE CONTINUA SQ4 C4- *SQ4-BB-100U-0D-840-1-D-UNV-STD-WAA-AC48-T9-4 C8- *SQ4-BB-100U-0D-840-1-D-UNV-STD-WAA-AC48-T9-8 C12- *SQ4-BB-100U-0D-840-1-D-UNV-STD-WAA-AC48-T9-12 C68- *SQ4-BB-100U-0D-840-1-D-UNV-STD-WAA-AC48-T9-68
D, D1	4' LED SURFACE OR SUSPENDED MOUNT 41 WATTS PER FIXTURE	EATON METALUX 48NLED D- *48NLED-LD5-545L-SLC-UNV-L840-CD-1-U/AYC-CHAIN/SET D1- *48NLED-LD5-545L-SLC-UNV-L840-CD-1
E	LED EXTERIOR WALL MOUNT MOUNT @ 8'-6' ABOVE DOOR. 134 WATTS PER FIXTURE	US ARCHITECTURAL RAZOR WALL MOUNT *RZR-WM3-PLED+111+W-40LED-1050MA-NW-120-FINISH EEM- PROVIDE 90 MIN. BATTERY BACKUP

NOTES:
REFERENCE SHEET E203 FOR LIGHTING CONTROLS PLAN.
1. VERIFY ALL FIXTURE SELECTIONS WITH OWNER.
2. MOUNT ALL SWITCHES @ 48" A.F.F.
3. VERIFY NUMBER AND TYPE OF CONTROL DEVICES (SWITCHES, SENSORS, RELAYS, ETC.) NEEDED TO PROVIDE A COMPLETE WORKING OCCUPANCY/ VACANCY/ LIGHTING LEVEL SYSTEM. LOCATE AND INSTALL CONTROL DEVICES PER MANUFACTURER'S INSTRUCTION.
4. ALL EXTERIOR BUILDING MOUNT AND LANDSCAPE LIGHTING TO BE PROVIDED WITH CONTROLS THAT AUTOMATICALLY SHUTS OFF LIGHTING AS A FUNCTION OF DAWN/DUSK AND A SET OPENING AND CLOSING TIME.
5. PARKING LOT LIGHTING IS TO BE PROVIDED WITH CONTROLS THAT AUTOMATICALLY TURNS OFF THE LIGHTING AS A FUCTION OF AVAILABLE DAYLIGHT.

NOTE TO BIDDERS

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No.	Description	Date

Plan - Level 1 - LIGHTING PLAN

Project #	2021-1102
Date	Issue Date
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E200

Scale 1/8" = 1'-0"

11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADD OCC. SENSOR SWITCH .

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REGISTRATION #F-002382

STATE OF TEXAS
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PROFESSIONAL
ENGINEER

11/1/2023

1 Level 1 - LIGHTING CONTROLS PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

KEY NOTES:

1. Fixture to have integrated Cooper Wavelinx Wireless Sensors
2. Keypads to be wireless Surface Mount 3 Button (On/Off, Raise, Lower) Keypad to individually control fixture over desk.

General Notes

- Provide 8 Circuit of Time Clock control
- Provide exterior photocell & Time Clock for all exterior loads.
- Provide Local override at entry point in each interior space controlled by time clock.

Device Legend	
$ WLV	Cooper WB3L-D-W
$ OS	Cooper onw-d-1001-MV
$ LV OS	Cooper ONW-D-1001-SP
LV COS	Cooper OAC DT Series
SW PP	Cooper SP20-RD4
WAC2 120	Cooper WAC2-120

NOTE TO BIDDERS

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No.	Description	Date

Plan - Level 1 - LIGHTING PLAN

Project #	2021-1102
Date	Issue Date
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E203

Scale	1/8" = 1'-0"

11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADJUST SEWER LINES.

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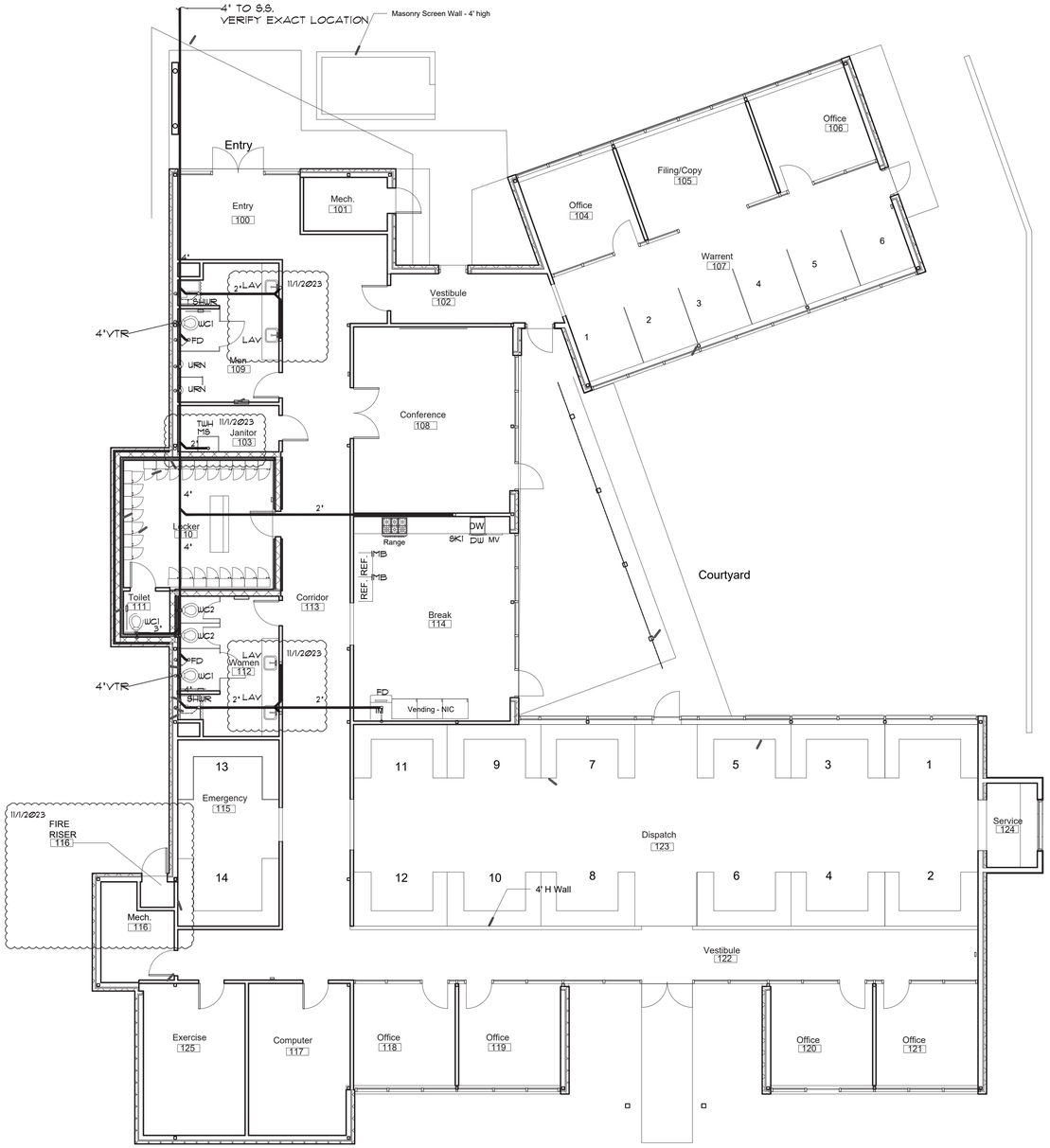
FORT WORTH, TEXAS 76135
PHONE: 817-238-9801 FAX: 817-238-9804
REGISTRATION #F-002382

STATE OF TEXAS
LARRY L. BLACKMON
25546
REGISTERED
PROFESSIONAL ENGINEER

11/1/2023

911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date



1 SEWER PLAN
Level 1 - PLUMBING PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

PLUMBING SYMBOL LEGEND

NEW SEWER LINE

NOTE TO BIDDERS

THE INTENT OF THE DRAWINGS HEREIN IS TO REPRESENT A COMPLETE WORKING SYSTEM. ALL BIDDERS SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL COMPONENTS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.

PLUMBING PLAN

Project #	2021-1102
Date	Issue Date
Drawn by	Author
Checked by	Checker

P100

Scale	1/8" = 1'-0"

7/9/2023 9:23:44 AM

11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM. ADJUST WATER LINES.

LARRY L. BLACKMON, INC
ENGINEERING & BUILDING DESIGN
6716 AZLE AVENUE
FORT WORTH, TEXAS 76135
PHONE: 817-238-9801 FAX: 817-238-9804
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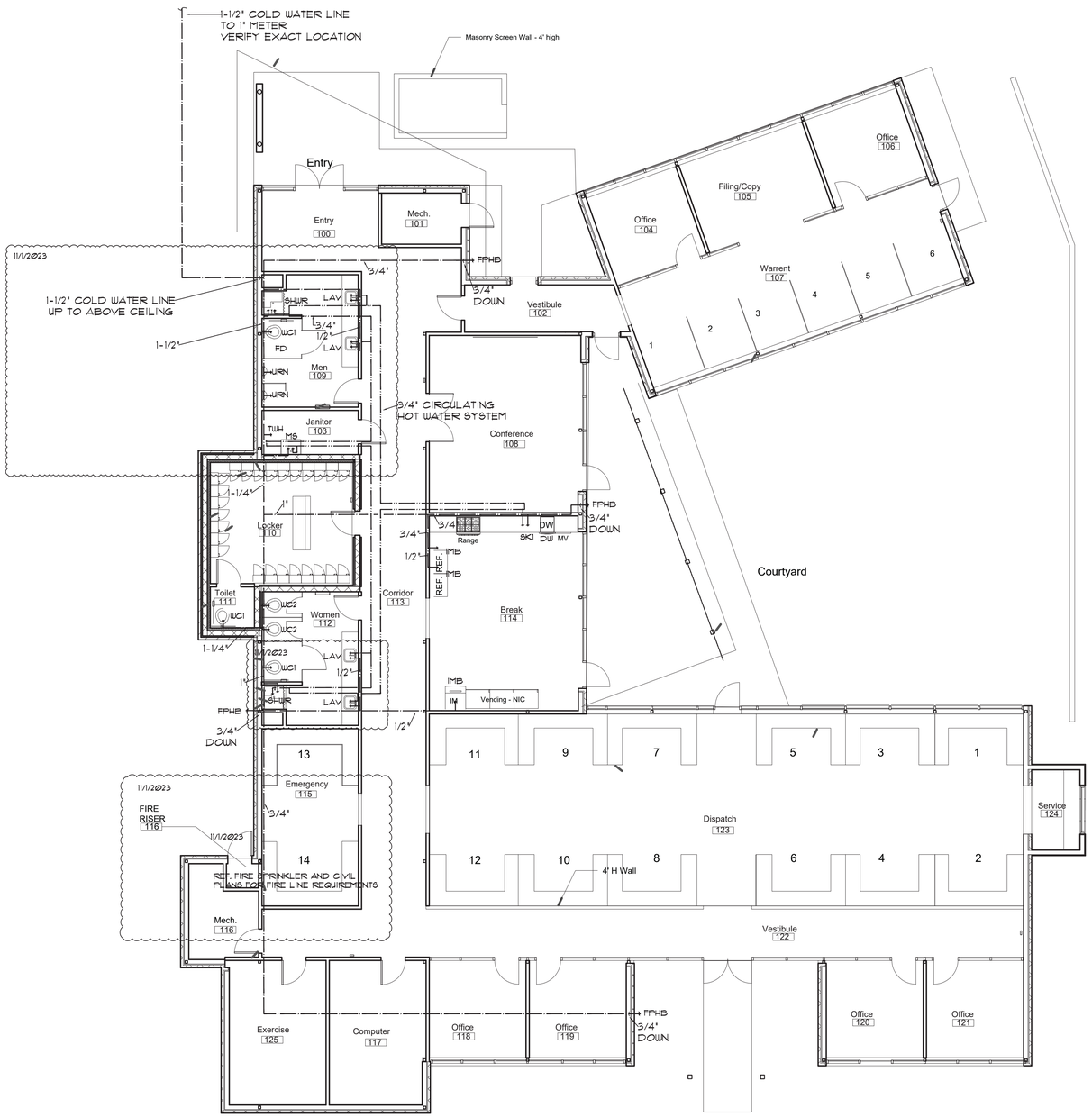

WATER DISTRIBUTION
1 Level 1 - PLUMBING PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date

PLUMBING SYMBOL LEGEND

COLD WATER LINE
HOT WATER LINE

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PLUMBING PLAN

Project #	2021-1102
Date	Issue Date
Drawn by	Author
Checked by	Checker

P200

Scale 1/8" = 1'-0"

10/25/2023- GENERATOR, ELEC. LAYOUT, AND ELECTRICAL PANEL REVISION.
11/1/2023- UPDATE BACKGROUND TO ADD RISER ROOM.
ADJUST GAS LINE.

LARRY L. BLACKMON, INC
ENGINEERING & BUILDING DESIGN
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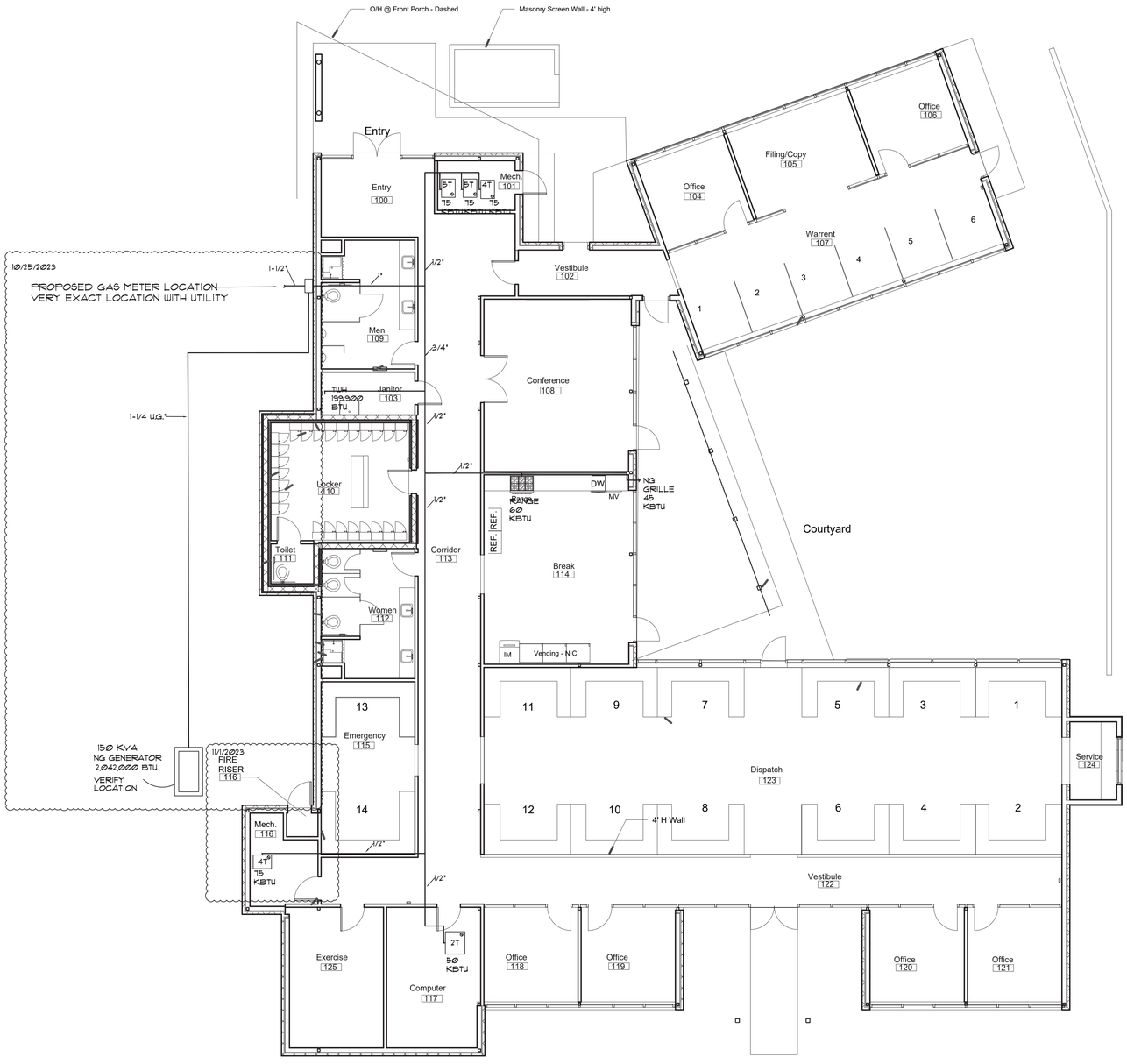
11/1/2023



GAS PLAN
1 Level 1 - PLUMBING PLAN
1/8" = 1'-0"

0' 4' 8' 16' 32'

GAS DEMAND	
TANKLESS WH	199,900 BTU
RANGE	60,000 BTU
5 TON HEAT	2@ 75,000 BTU
4 TON HEAT	2@ 75,000 BTU
2.5 TON HEAT	50,000 BTU
NG GRILL	45,000 BTU
EMERG. GENERATOR	2,042,000 BTU
TOTAL GAS DEMAND	2,636,900 BTU

GAS LINE SIZE SIZED IN 2 psi. REGULATORS REQUIRED.
LONGEST ESTIMATED LENGTH= 150'
GAS PIPING MATERIAL SHALL BE STANDARD WEIGHT WROUGHT IRON OR STEEL (GALVANIZED OR BLACK) OR YELLOW BRASS (CONTAINING NO MORE THAN 15% COPPER.
GAS LINE SIZE TO BE VERIFIED BY LICENSED PROFFESIONAL PLUMBER BASED ON ACTUAL METER LOCATION, LINE LENGTH, AND CONDITIONS IN THE FEILD.

NOTE TO BIDDERS

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911 Call Center
Johnson County
1102 E. Kilpatrick
Cleburne, TX 76033

No.	Description	Date

PLUMBING PLAN

Project #	2021-1102
Date	Issue Date
Drawn by	Author
Checked by	Checker

P300

Scale	1/8" = 1'-0"

Engineering Submittal Package

Johnson County 911 Center

SHOP DRAWING STAMP

- [x] NO EXCEPTION TAKEN
- [ ] REJECTED - SEE REMARKS
- [ ] MAKE CORRECTIONS NOTED
- [ ] REVISE AND RESUBMIT
- [ ] SUBMIT SPECIFIED ITEMS

CORRECTIONS OR COMMENTS MADE IN THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS THIS CHECK IS ONLY FOR REVIEW AND GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT. DOCUMENTS THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS SELECTING AND FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

LARRY L. BLACKMON, INC.

DATE: 10-30-23 BY Regina Kinney

10/17/2023

Engineering Submittal Package

Johnson County 911 Center

10/17/2023

Table of Contents

Table of Contents

SG150 | 9.0L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating

150 kW, 188 kVA, 60 Hz

Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL508, UL489
- CSA C22.2
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- ISO 3046, 7637, 8528, 9001
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41
- IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac ensures superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise to ensure reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

SG150 | 9.0L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer/Catalyst

Fuel System

- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

Cooling System

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearings
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)

ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuation Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Digital H Control Panel- Dual 4x20 Display

Program Functions

- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable Logic Controller
- RS-232/485 Communications
- All Phase Sensing Digital Voltage Regulator
- 2-Wire Start Capability
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA 110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus® Protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- 16 Channel Remote Trending
- 0.2 msec High Speed Remote Trending
- Alarm Information Automatically Annunciated on the Display

Full System Status Display

- Power Output (kW)
- Power Factor
- kW Hours, Total, and Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency

Alarms and Warnings

- Oil Pressure
- Coolant Temperature
- Coolant Level
- Low Fuel Pressure
- Engine Overspeed
- Battery Voltage
- Alarms and Warnings Time and Date Stamped
- Snap Shots of Key Operation Parameters During Alarms and Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

SG150 | 9.0L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC® | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

DEMAND RESPONSE READY

ENGINE SYSTEM

- ○ Engine Block Heater
- ○ Oil Heater
- ○ Air Filter Restriction Indicator
- ○ Radiator Stone Guard (Open Set Only)
- ○ Baseframe Cover/Rodent Guard
- ○ Level 1 Fan and Belt Guards (Enclosed Units Only)
- ○ Shipped Loose Critical Silencer (Open Set Only)

FUEL SYSTEM

- ○ NPT Flexible Fuel Line

ELECTRICAL SYSTEM

- ○ 10A UL Listed Battery Charger
- ○ Battery Warmer

ALTERNATOR SYSTEM

- ○ Alternator Upsizing
- ○ Anti-Condensation Heater
- ○ Tropical Coating

CIRCUIT BREAKER OPTIONS

- ○ Main Line Circuit Breaker
- ○ 2nd Main Line Circuit Breaker
- ○ Shunt Trip and Auxiliary Contact
- ○ Electronic Trip Breakers

GENERATOR SET

- ○ Demand Response Rating
- ○ Extended Factory Testing (3-Phase Only)
- ○ IBC Seismic Certification
- ○ 8 Position Load Center

ENCLOSURE

- ○ Weather Protected Enclosure
- ○ Level 1 Sound Attenuated
- ○ Level 2 Sound Attenuated
- ○ Level 2 Sound Attenuated with Motorized Dampers
- ○ Steel Enclosure
- ○ Aluminum Enclosure
- ○ AC/DC Enclosure Lighting Kit
- ○ Enclosure Heater
- ○ Pad Vibration Isolation
- ○ Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- ○ Door Open Alarm Switch

CONTROL SYSTEM

- ○ NFPA 110 Compliant Level 1 21-Light Remote Annunciator
- ○ Remote Relay Assembly (8 or 16)
- ○ Oil Temperature Indication and Alarm
- ○ Remote E-Stop (Break Glass-Type, Surface Mount)
- ○ Remote E-Stop (Red Mushroom-Type, Surface Mount)
- ○ Remote E-Stop (Red Mushroom-Type, Flush Mount)
- ○ 10A Engine Run Relay
- ○ Ground Fault Annunciator
- ○ 100 dB Alarm Horn
- ○ 120V GFCI and 240V Outlets
- ○ Damper Alarm Contacts (Motorized Dampers Only)
- ○ Auxiliary Circuit Breaker Contacts to Controller

WARRANTY (Standby Gensets Only)

- ○ 2 Year Extended Limited Warranty
- ○ 5 Year Limited Warranty
- ○ 5 Year Extended Limited Warranty
- ○ 7 Year Extended Limited Warranty
- ○ 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM

- ○ Coolant Heater Ball Valves
- ○ Fluid Containment Pan

ALTERNATOR SYSTEM

- ○ 3rd Breaker System

CONTROL SYSTEM

- ○ Battery Disconnect Switch

GENERATOR SET

- ○ Special Testing
- ○ Battery Box

SG150 | 9.0L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	8
Type	V
Displacement - in^3 (L)	543 (8.9)
Bore - in (mm)	4.49 (114.3)
Stroke - in (mm)	4.25 (108)
Compression Ratio	G18 - 10.5:1 / G26 - 9.1:1 *
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	5
Connecting Rods	Forged Steel
Cylinder Head	Cast Iron
Cylinder Liners	No
Ignition	High Energy
Piston Type	Aluminum Alloy
Crankshaft Type	Forged Steel
Lifter Type	Hydraulic Roller
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Stainless Steel
Hardened Valve Seats	Yes

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driven
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity - qt (L)	G18 - 8.5 (8.0) / G26 - 9.5 (10.0) *

Cooling System

Cooling System Type	Pressurized Closed
Fan Type	Pusher
Fan Speed - RPM	G18 - 2,330 / G26 - 2,386 *
Fan Diameter - in (mm)	22 (559)

Fuel System

Fuel Type	Natural Gas, Propane Vapor/Liquid
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H_2O (kPa)	7 - 11 (1.7 - 2.7)
Operating Fuel Pressure (LPL) - psi (kPa)	30 - 312 (206 - 2,151)

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

* G18 refers to all engines manufactured before August 3rd, 2018. G26 refers to all engines manufactured after August 3rd, 2018.

ALTERNATOR SPECIFICATIONS

Standard Model	K0150124Y26
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50

Standard Excitation	Permanent Magnet
Bearings	Single Sealed Ball
Coupling	Direct Drive
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

SG150 | 9.0L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS

	G18, G26 - Natural Gas *		G18, G26 - Propane/Dual Fuel *	
Single-Phase 120/240 VAC @1.0pf	144 kW	Amps: 600	134 kW	Amps: 558
Three-Phase 120/208 VAC @0.8pf	150 kW	Amps: 521	140 kW	Amps: 486
Three-Phase 120/240 VAC @0.8pf	150 kW	Amps: 452	140 kW	Amps: 422
Three-Phase 277/480 VAC @0.8pf	150 kW	Amps: 226	140 kW	Amps: 211
Three-Phase 346/600 VAC @0.8pf	150 kW	Amps: 181	140 kW	Amps: 169

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	208/240 VAC	30%
K0150124Y26	327	K0150124Y26	250
K0200124Y21	478	K0200124Y21	361

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)		Propane Vapor – scfh (m^3/hr)		Propane Liquid – gph (Lph)	
Percent Load	Standby	Percent Load	Standby	Percent Load	Standby
25%	668 (18.9)	25%	280 (7.9)	25%	6.7 (25.4)
50%	1,127 (31.9)	50%	430 (12.2)	50%	11.4 (43.2)
75%	1,583 (44.8)	75%	573 (16.2)	75%	15.7 (59.4)
100%	2,042 (57.8)	100%	720 (20.4)	100%	20.0 (75.7)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Air Flow (Fan Air Flow Across Radiator)	scfm (m^3/min)	5,598 (158.5)
Coolant Flow	gpm (Lpm)	27.5 (104)
Coolant System Capacity	gal (L)	6.3 (24.0)
Maximum Operating Air Temperature on Radiator	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin 0199270SSD	
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power scfm (m^3/min)	343 (9.7)

ENGINE

		Standby
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	229
Piston Speed	ft/min (m/min)	1,275 (389)
BMEP	psi (kPa)	185 (1,277)

EXHAUST

		Standby
Exhaust Flow (Rated Output)	scfm (m^3/min)	1,206 (34.1)
Backpressure (Post Silencer)	inHg (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,440 (782)

* G18 refers to all engines manufactured before August 3rd, 2018. G26 refers to all engines manufactured after August 3rd, 2018.
** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Demand Response - See Bulletin 10000018250

SG150 | 9.0L | 150 kW

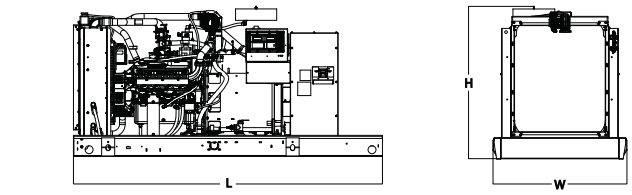
INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC® | INDUSTRIAL POWER

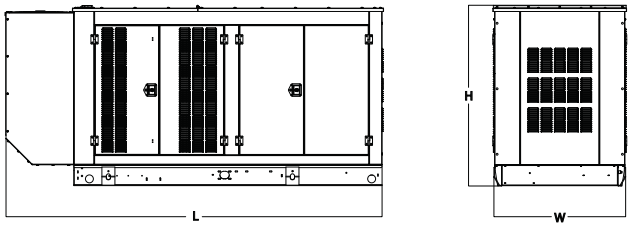
DIMENSIONS AND WEIGHTS*

DEMAND RESPONSE READY



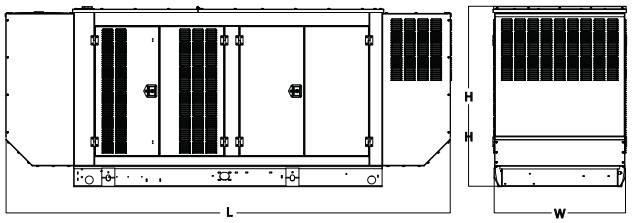
OPEN SET (Includes Exhaust Flex)

L x W x H - in (mm)	116.5 (2,959) x 49.7 (1,262) x 55.6 (1,412)
Weight - lbs (kg)	2,946 (1,336)



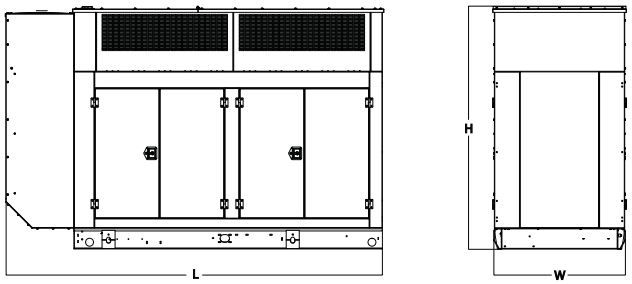
WEATHER PROTECTED ENCLOSURE

L x W x H - in (mm)	143.0 (3,631) x 50.4 (1,280) x 68.2 (1,732)
Weight - lbs (kg)	Steel: 3,843 (1,743) Aluminum: 3,384 (1,535)



LEVEL 1 ACOUSTIC ENCLOSURE

L x W x H - in (mm)	168.5 (4,280) x 50.4 (1,280) x 68.2 (1,732)
Weight - lbs (kg)	Steel: 4,129 (1,873) Aluminum: 3,508 (1,591)



LEVEL 2 ACOUSTIC ENCLOSURE

L x W x H - in (mm)	143.0 (3,632) x 50.4 (1,280) x 91.7 (2,329)
Weight - lbs (kg)	Steel: 4,321 (1,960) Aluminum: 3,592 (1,629)

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please contact a Generac Power Systems Industrial Dealer for detailed installation drawings.

SPEC SHEET

Generac Power Systems, Inc. | P.O.Box 8 | Waukesha, WI 53189
P: (262) 544-4811

Part No. 0K6450
Rev. F 04/25/19

TX Series Transfer Switch

Remote Annunciator

Model G0070080 Remote Annunciator Panel

Description

The Remote Annunciator Panel provides remote monitoring and annunciation for a single TX Transfer switch with 11 LEDs. Works on all legacy TX Transfer Switches with the TXC-100 Control.*

This Remote Annunciator allows for ATS Transfer Test mode, and features a silence for existing alarm. Any new alarm will re-arm and the alarm horn will sound. Fault indication mirrors the TX fault indication and would indicate annunciator failure.

Communications to the TX is RS485.

All models require battery power (+12 or +24 VDC) sourced from the generator battery or other source.

The Remote Annunciator Panel complies with NFPA 99 and NFPA 110.

*When software is at version 1.23 or later.

Environmental Specifications

Operating Temperature	-25° C to 60° C
Humidity	0 to 95% Non-Condensing
Power Supply	+12 or +24 Volts DC
Power Usage	6 Watts Typical
RS485 Comunications	Fully Isolated Twisted Pair Cable with Shield
RS485 Length	4,000 ft (1,219 m)
Fault Relay Contact Rating	30 VDC, 1 Amp
Enclosure Rating	NEMA 1
Alarm Horn	90 dB @ 10 cm

TX Series Transfer Switch

Remote Annunciator

FEATURES

INDICATONS

- Comms OK
- Alarm/Fault
- Not in Auto
- Source 1 Available
- Source 1 Connected
- Source 2 Available
- Source 2 Connected
- Time Delay Active
- Exercise Active
- Loadshed Active
- Test Mode (ATS Transfer Test)

KEYBOARD BUTTONS

- ATS Transfer Test
- Silence Horn
- LED Lamp Test

AUDIBLE HORN CONDITIONS

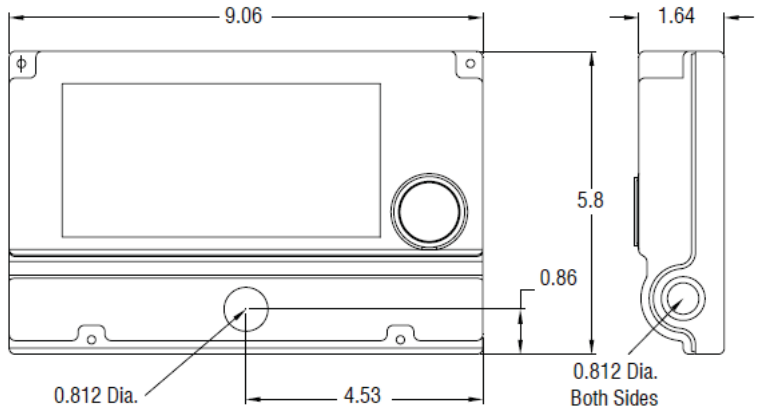
- Comms Failure
- Alarm/Fault
- Not in Auto
- Loadshed Active

3R Cover Kit: G0098860

MOUNTING OPTIONS

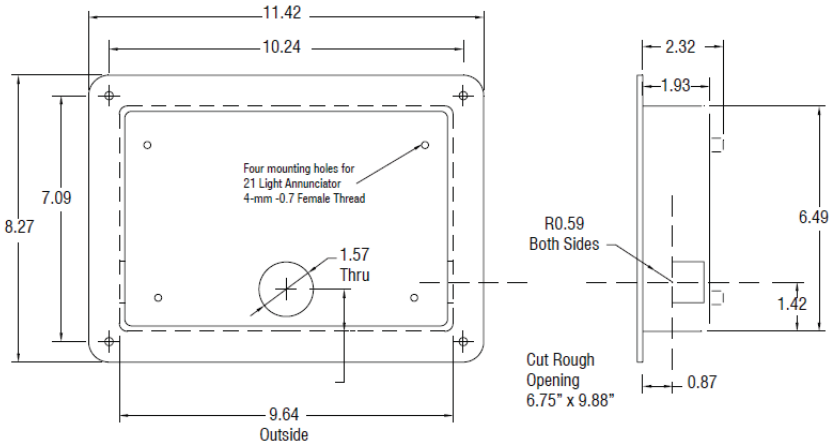
Surface Mount Annunciator

The TX Remote Annunciator can mount to a flat surface with connections through the 0.812 inch diameter knockout on the back surface or through 0.812 inch diameter knockouts on sides as shown.



Flush Mount Annunciator

This Flush Mount Box is recessed into the wall opening and the surface mount annunciator mounts to the (4) 4 mm screw holes on the back surface. After wire connections are made the front annunciator cover is attached.



Part No. A0002366452
Rev. A 04/04/2022

H-100 CONTROL PANEL

The Quiet-Test™ H-100 Control Panel is a digital microprocessor electronic controller that integrates all engine and transfer switch functions into a single control system.

- Digital Controls for All Saftey Shutdowns
- Isochronous Governor Control
- Digital 3 Phase Sensing Voltage Regulator
- Sealed Digital Circuit Board
- Mates with HTS Transfer Switch and Any 2-wire Start ATS
- Alarm and Event Logging
- Built-in Diagnostics
- Internal PLC

Features

- Two 4-line x 20 Displays
- Full System Status
- 3 Phase Sensing Digital Voltage Regulator
- Remote Ports
  - RS-232
  - RS-485
  - CANbus
- Waterproof Connections
- Built -in PLC
- Full Range Standby Operation
- Full System Status
  - 3 Phase AC Volts
  - 3 Phase Amps
  - kW
  - Power Factor
  - Reactive Power
  - Oil Pressure
  - Water Temperature
  - Water Level
  - Oil Temperature (Optional)
  - Fuel Pressure
  - Engine Speed
  - Battery Voltage
  - Alternator Frequency
  - Time
  - Date
  - Transfer Switch Status
  - Run Hours
  - Service Reminders
  - Trending
  - Fault History (Alarm Log)
  - I^2T Function for Full Generator Protection
- Remote Communications
- Programmable Auto Crank
- Shutdowns
  - Overvoltage
  - Overspeed
  - Low Oil Pressure
  - High Coolant Temperature
  - Low Coolant Level
- Emergency Stop
- On/Off/Manual Switch
- Not in Auto Flashing Light
- Audible Alarm for Fault Condition
- Transfer Switch Logic Communicates with HTS Transfer Switch
- Selectable Low Speed Exercise
- Temperature Range: -40° to +70°C

Codes and Standards

- UL 508
- Configurable to NFPA 110, Level 1 or 2

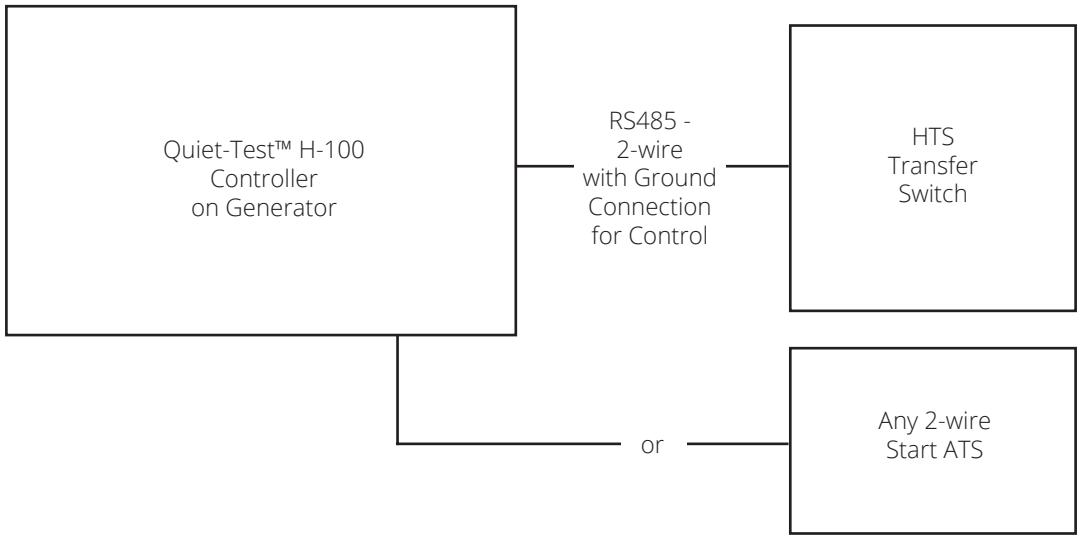
The generator set parameters can be manipulated and monitored without standing in front of the control panel with GenLink® software. The Generac H-100 control panel also wmonitors and controls transfer switch functions when used with the HTS transfer switch.

- Monitors Utility Voltage
- Monitors Generator Voltage
- Timer for Line Interrupt Delay
- Timer for Engine Warmup
- Timer for Minimum Engine Run Time
- Timer for Return to Utility Position
- Timer for Engine Cooldown
- Built-in Exerciser Timer (7 Day)
- Additional 2-wire Start Controls for Any 2-wire Transfer Switch

Part No. 0172110SBY
Rev. F 02/08/23

H-100 CONTROL PANEL

Typical Control Connection



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P: (262) 544-4811

Part No. 0172110SBY
Rev. F 02/08/23

21 LIGHT REMOTE ANNUNCIATOR AND REMOTE RELAY PANEL

Model 0054650 Gray Remote Annunciator Panel without Relays
Model 0054660 Gray Remote Relay Panel without LEDs and Keypad (Relays Only)
Model 0054640 Gray Remote Annunciator Panel with 8 Relays
Model 0056370 Tan Flush Mount Enclosure without Annunciator
Model 0066950 Gray Flush Mount Enclosure without Annunciator

Description:

The Remote Annunciator Panel provides remote monitoring and annunciation of up to 18 generator parameters using LEDs located on the annunciator keypad. It also provides two system level warnings which are System Ready and Communications OK.

The Relay Panel has up to 8 selectable functions on form A relays; multiple relay panels can be connected for all 18 generator parameters.

The specific faults can be selected using either the DIP switches located on the annunciator circuit board or through a computer via the RS232 connection on the circuit board. All relays are energized on power up and open during a fault condition.

Communication is via a RS485 serial data link and power is supplied by the generator battery (+12 VDC or +24 VDC).

The Remote Annunciator Panel complies with NFPA 99 and NFPA 110.

Environmental Specifications

Operating Temperature	-25 ºC to 60 ºC
Humidity	0 to 95% Non-Condensing
Power Supply	Generator Battery, +12 or +24 Volts DC
Power Usage	6 WattsTypical
Communication Line	RS485 Fully Isolated Twisted Pair Cable with Shield
Maximum Cable Length	4,000 ft
Relay Output	One N.O. Contact (Energized when Annunciator is Powered and No Faults are Present)
Relay Contact Rating	30 VDC, 1 A
Enclosure Rating	NEMA 1
Alarm Horn (Remote Annunciator Panels Only)	90 dB @ 10 cm

21 LIGHT REMOTE ANNUNCIATOR AND REMOTE RELAY PANEL

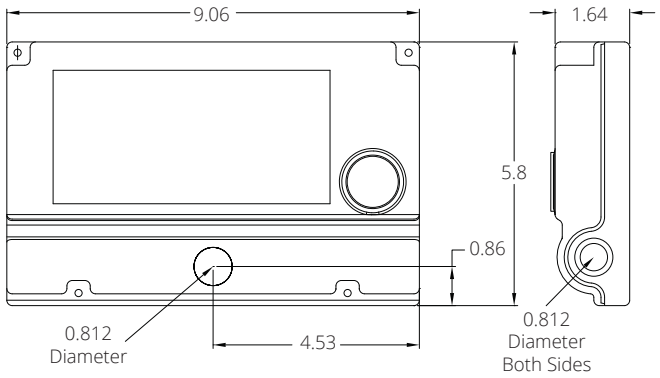
Function	Color	Alarm	Latched
Pre-Low Oil Pressure	Yellow	Yes	Yes
Pre-High Water Temperature	Yellow	Yes	Yes
Pre-Low Water Temperature	Yellow	Yes	Yes
Pre-Low Fuel	Yellow	Yes	Yes
Battery Charge AC Fail	Yellow	Yes	No
Low Battery Voltage	Yellow	Yes	No
High Battery Voltage	Yellow	No	No
Not in Auto	Red	Yes	No
RPM Sensor Loss	Red	Yes	Yes
Overcrank	Red	Yes	Yes
Overspeed	Red	Yes	Yes
Low Oil Pressure	Red	Yes	Yes
High Water Temperature	Red	Yes	Yes
Low Water Level	Red	Yes	Yes
Emergency Stop	Red	Yes	No
Gen Running	Yellow	No	No
Gen Power (ATS)	Yellow	No	No
Line Power (ATS)	Green	No	No
Systems Ready	Green	Yes	No
Communications OK	Green	Yes	No
Spare	Green	No	No

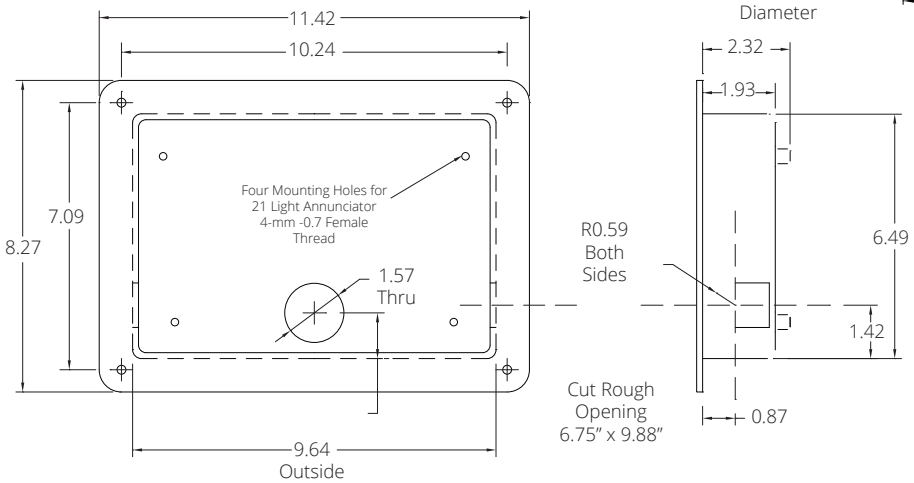
Spare Keypad Switch can be used to implement a remote start function (Model 0054640 only).

Annunciators

Surface Mount

The 21 Light Annunciator can mount to a flat surface with connections through the 0.812 inch diameter knockout on the back surface or through 0.812 inch diameter knockouts on sides as shown.





Flush Mount

This Flush Mount Box is recessed into the wall opening and the surface mount annunciator mounts to the (4) 4 mm screw holes on the back surface. After wire connections are made the front annunciator cover is attached.

All dimensions are in inches.

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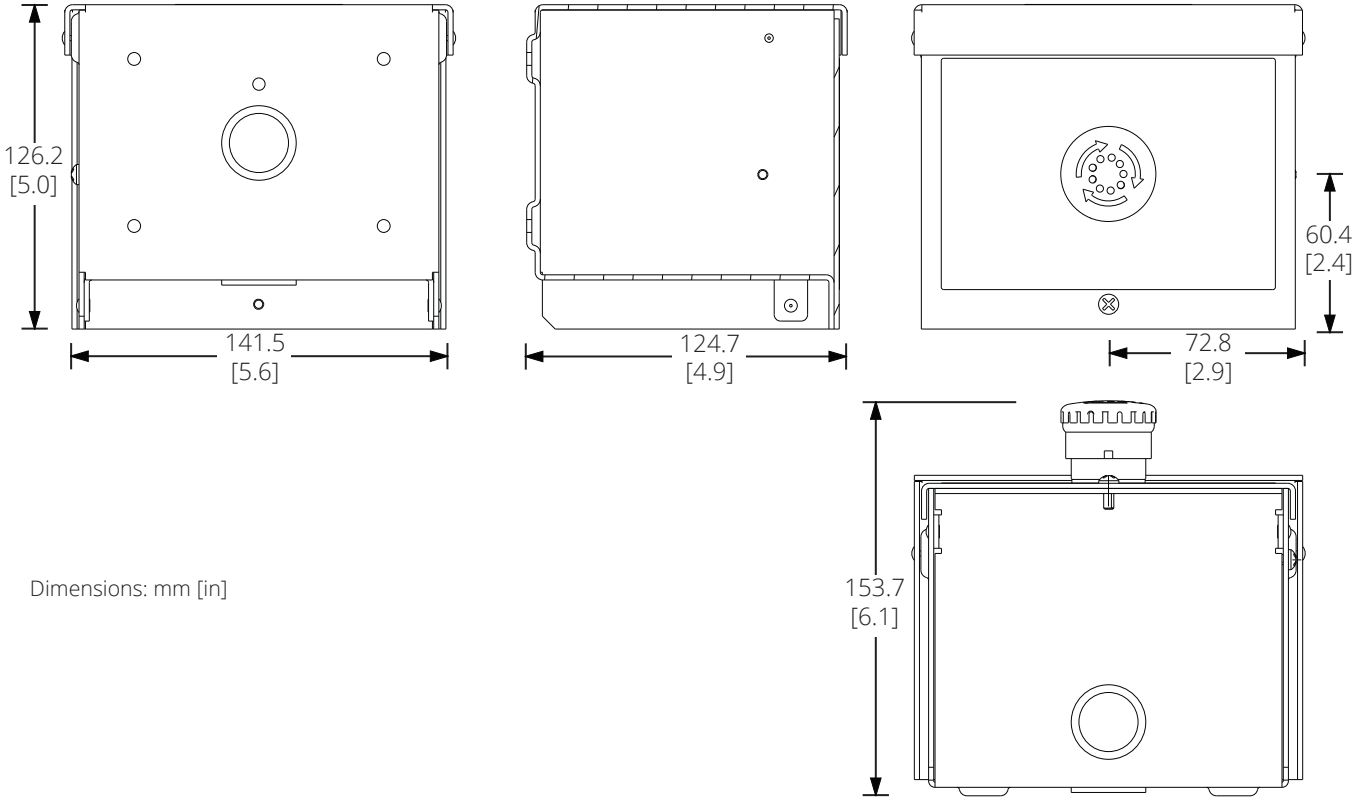
Part No. 0604160SSD
Rev. F 09/27/22

REMOTE EMERGENCY STOP SWITCH
Surface Mount, H-Panel & PM-DCP



Dimensions: mm [in]

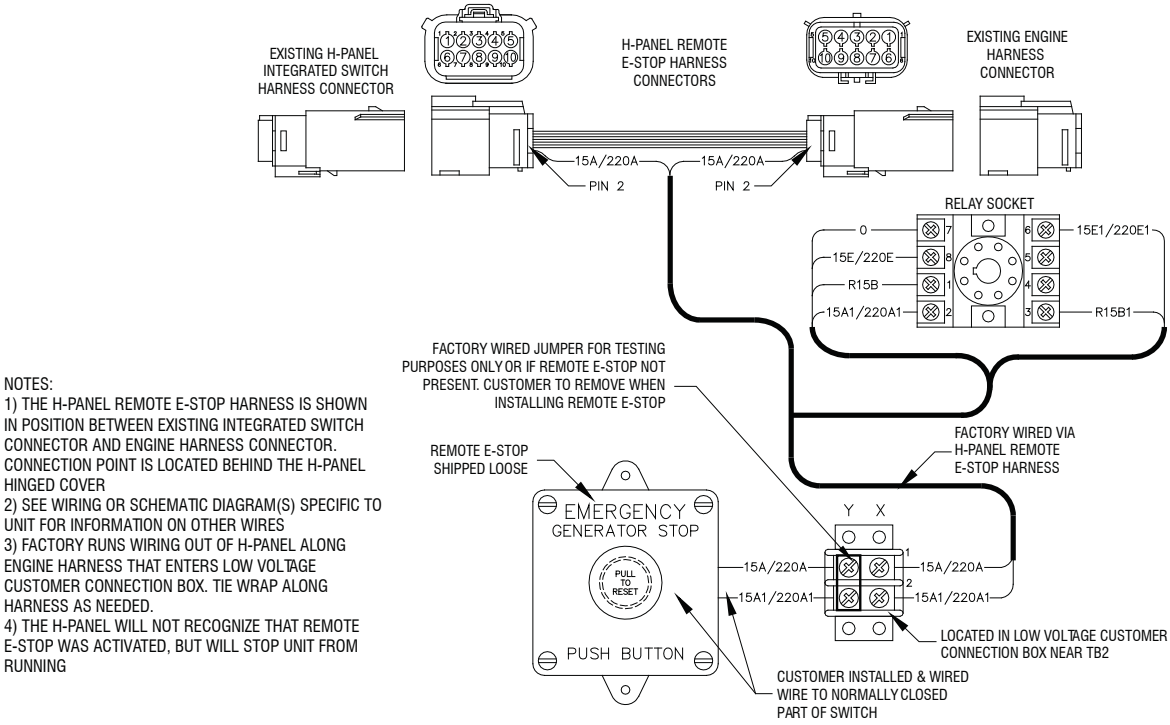
Specifications

Generac Part Number: A0001223907
Surface Mount, NEMA 3R
Aluminum Enclosure
Contact Rating: 10A at 120V

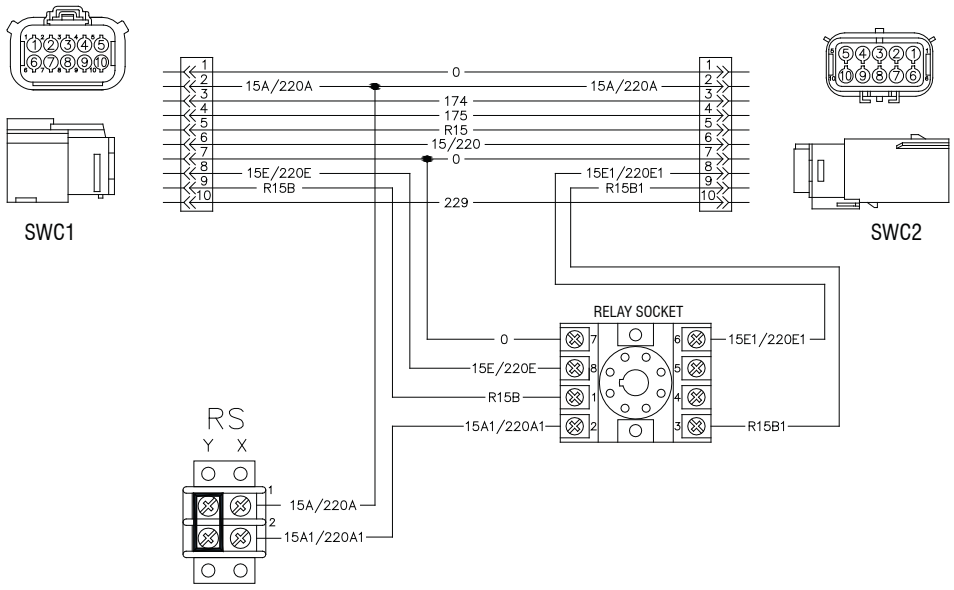
Part No. A0001726817
Rev. C 08/03/23

REMOTE EMERGENCY STOP SWITCH
Surface Mount, H-Panel & PM-DCP

Wiring - H-Panel



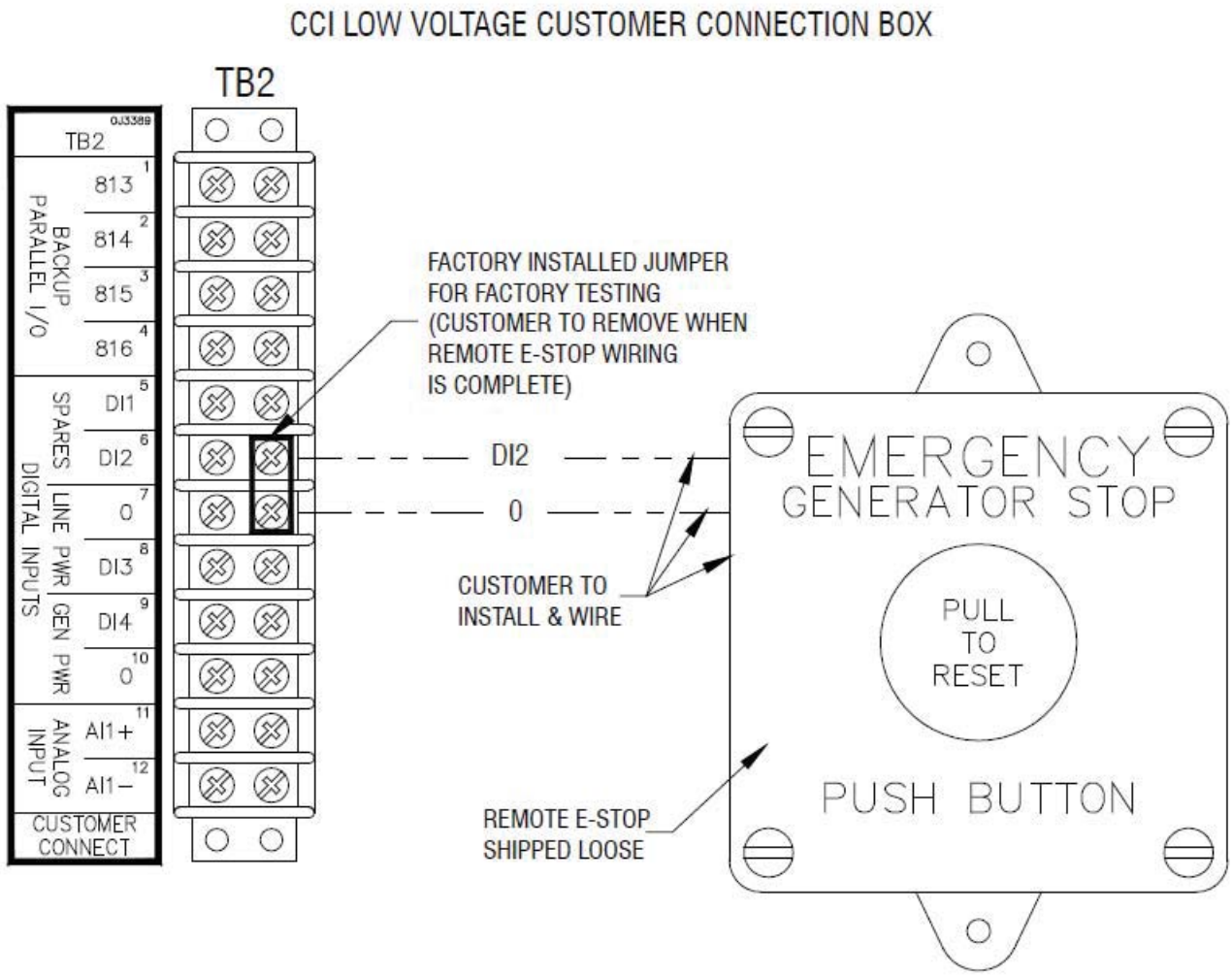
NOTES:
1) THE H-PANEL REMOTE E-STOP HARNESS IS SHOWN IN POSITION BETWEEN EXISTING INTEGRATED SWITCH CONNECTOR AND ENGINE HARNESS CONNECTOR. CONNECTION POINT IS LOCATED BEHIND THE H-PANEL HINGED COVER
2) SEE WIRING OR SCHEMATIC DIAGRAM(S) SPECIFIC TO UNIT FOR INFORMATION ON OTHER WIRES
3) FACTORY RUNS WIRING OUT OF H-PANEL ALONG ENGINE HARNESS THAT ENTERS LOW VOLTAGE CUSTOMER CONNECTION BOX. TIE WRAP ALONG HARNESS AS NEEDED.
4) THE H-PANEL WILL NOT RECOGNIZE THAT REMOTE E-STOP WAS ACTIVATED, BUT WILL STOP UNIT FROM RUNNING



Part No. A0001726817
Rev. C 08/03/23

REMOTE EMERGENCY STOP SWITCH
Surface Mount, H-Panel & PM-DCP

Wiring - PM-DCP



Note:
1. Factory to provide jumper on TB2 as shown below to perform normal factory testing which will remain installed on unit when shipped to customer.
2. Default input is "D12" (digital input #28) but can be changed, if needed, to another psotion. See programming instructions for changing configuration.
3. Factory to test functionality of remote e-stop programming by temporarily removing one side of installed jumper to see if unit will shut down. Reattached when testing is complete.
4. Customer to remove jumper when remote e-stop wiring is completed. Recommended at least 300V 18AWG wire.
5. Remote e-stop shipped loose with unit.

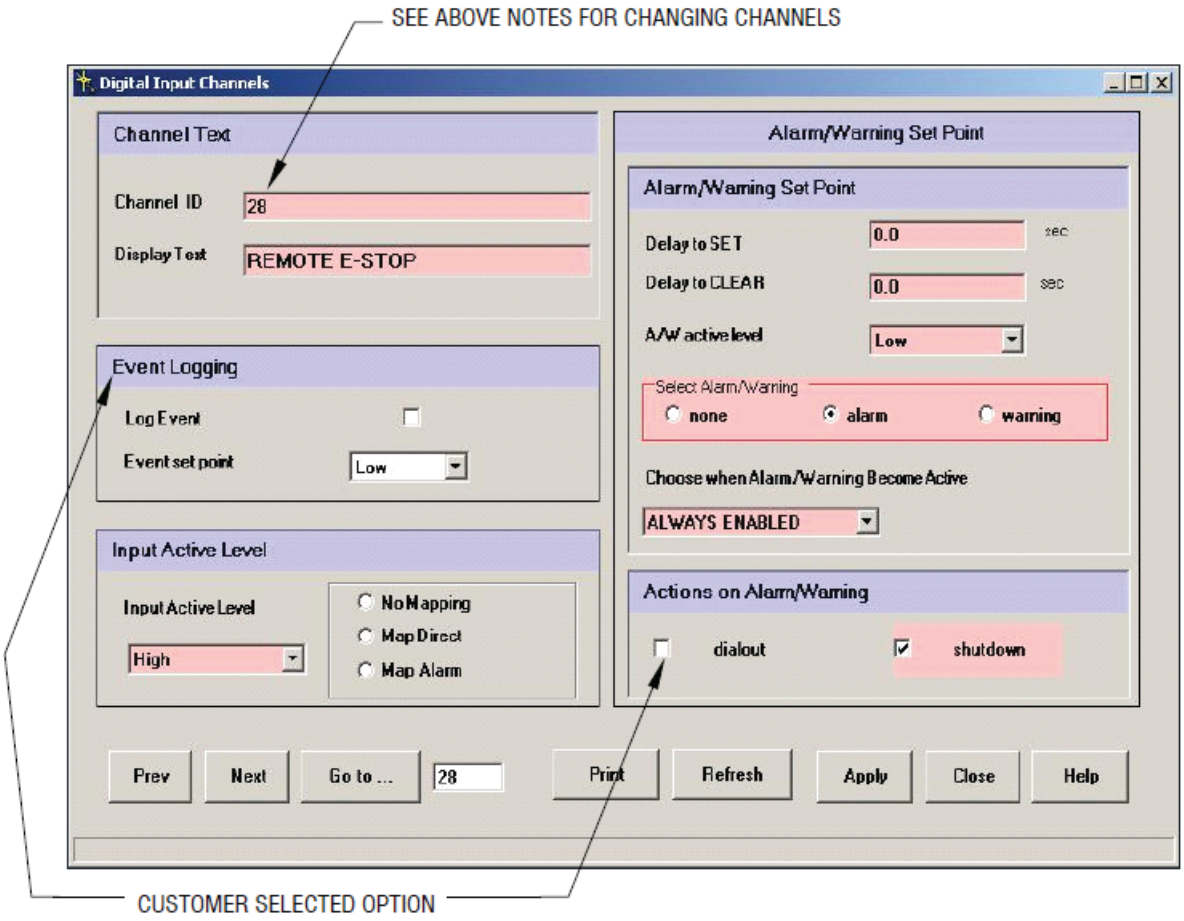
Part No. A0001726817
Rev. C 08/03/23

REMOTE EMERGENCY STOP SWITCH
Surface Mount, H-Panel & PM-DCP

Programming - PM-DCP

P□ -DCP Programming Notes:

1. "G□N□□N□-DCP" program is re□uired to change digital input channel to match what is shown below.
2. Default digital input channel is #28 (D12) but can be wired to optional channels. □ input is related, wiring and digital input channel configuration must match digital input used. Optional digital inputs are #27 (D12), #29 (D13), and #30 (D14). #29 and #30 are reserved for 21 □ight applications. Do not use if 21 □ight Annunciator is present.



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P: (262) 544-4811

Part No. A0001726817
Rev. C 08/03/23

GENprotect ™
Seamless Protection for Industrial Power Generators

GENprotect Operation

The design choice of an onsite power system using a Generac Industrial Power Generator assures your emergency power source is protected from unexpected power distribution faults. Typically, a generator will include some type of over-current device, such as a circuit breaker, or be protected by inherent design with the controller protecting the alternator through a protection algorithm. Generac's GENprotect generator protection system monitors the system current output and protects the alternator with extended security against fault scenarios that could occur within the site's downstream distribution system.

It is a common misconception that the alternator's main circuit breaker protects the alternator from a short circuit event. The main output breaker protects the cabling and provides a convenient disconnect. The characteristic trip curve for the industry standard thermal magnetic breaker (MCCB, molded case thermal magnetic or solid state) does not coordinate with the thermal damage limitation for an on-site generator. If circuit breakers are used for generator protection, a solid-state circuit breaker with full adjustments (Long Time, Short Time and Instantaneous, LSI) is required to coordinate the breaker protection curve within the generator thermal damage curve. Historically, this limitation was often accepted in system design since failures of the main generator feeder are extremely rare. Most short circuit events happen at a branch circuit, equipment level, where the fault is easily cleared by the smaller down stream breakers.

Given the mission critical nature of today's back-up power applications, it is more desirable to protect the system against even relatively rare failure modes. As generator controllers have become more powerful it is feasible for manufactures to supply coordinated short circuit protection integral to the generator control system, negating the need for a main-line circuit breaker.

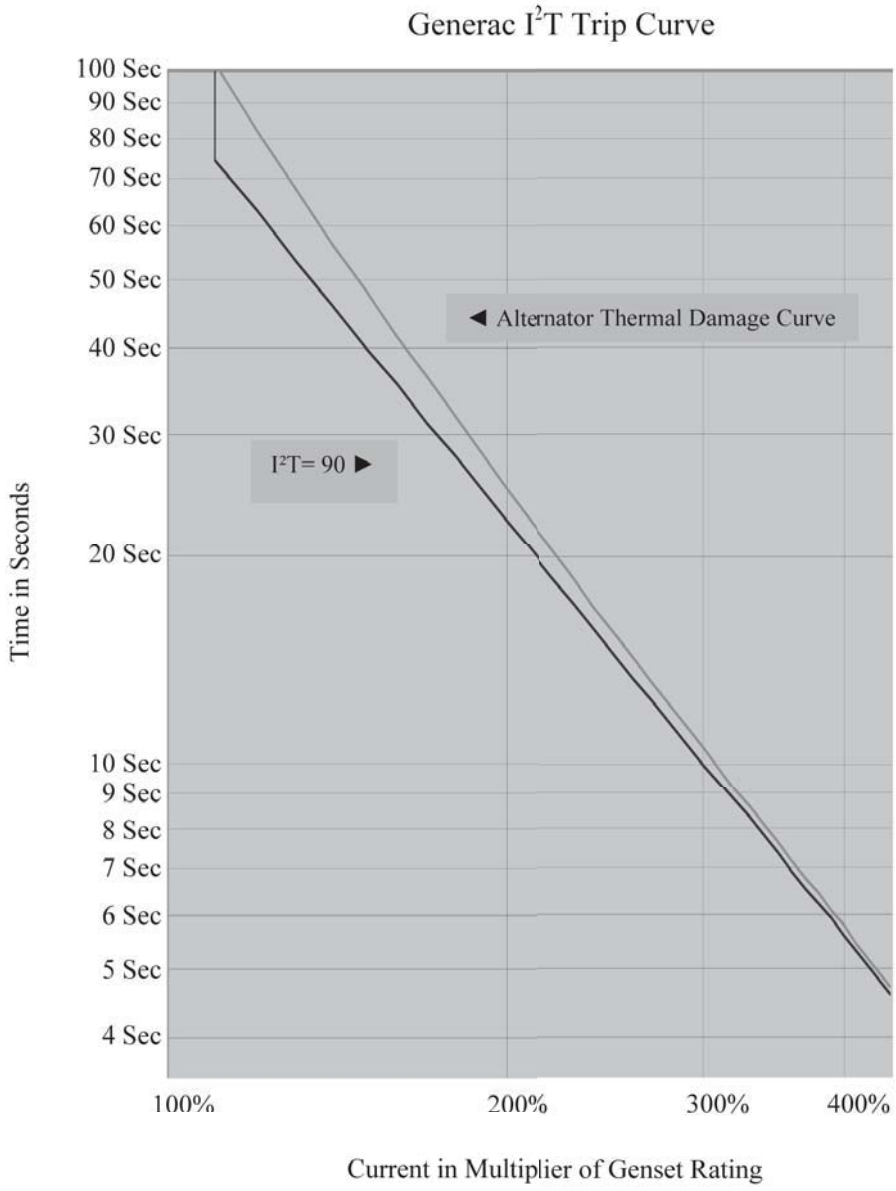
Generac's GENprotect alternator protection algorithm monitors the generator output. If this monitoring senses short circuit current in excess of rated amps, GENprotect steps in to provide a controlled and safe approach to breaker coordination and alternator protection. GENprotect first limits the alternator short circuit current level to 300%. By limiting the available fault current, GENprotect extends the time the alternator can maintain fault current resulting in consistent breaker coordination. Without this functionality a line to neutral fault may be at 800% of rated current and need to be cleared within 1.4 seconds. The second function GENprotect performs is I2T thermal protection for the alternator. Since a short circuit event can heat the alternator so rapidly, it is not possible to protect the alternator by monitoring temperature. Instead GENprotect calculates the heat energy of the fault current. When this energy reaches the limits of NEMA MG1, GENprotect trips the generator off-line. This configuration ensures the alternator is protected and the power system is ensured 10 seconds of 300% fault current for breaker coordination.

DESCRIPTION

- GENprotect is an alternator protection algorithm approved by UL.
- Protects alternator from damage due to shorts and electrical faults.
- Provides breaker coordination and alternator protection.
- Allows for use of multiple circuit breaker choices, including "no" breaker.

Doc. No 0187980SBY
Rev. D 06/13/19

GENprotect ™
Seamless Protection for Industrial Power Generators



The above Figure shows the Generac GENprotect thermal protection curve for use in protection and coordination studies. The alternator Thermal Damage Curve is shown just to the right of the GENprotect protection curve. If the alternator load is greater than the thermal damage protection curve for the alternator, the generator set will trip off-line. For example, an overload current of 110% for 75 seconds causes an overload alarm and will trip the generator off-line, shutting down the engine. GENprotect will provide generator protection over a full range of time and current, from instantaneous faults to overloads lasting several minutes. An advantage of GENprotect over a MCCB is that GENprotect allows for downstream breakers to clear faults without tripping the generator off-line, providing selective coordination with the first level of downstream breakers.

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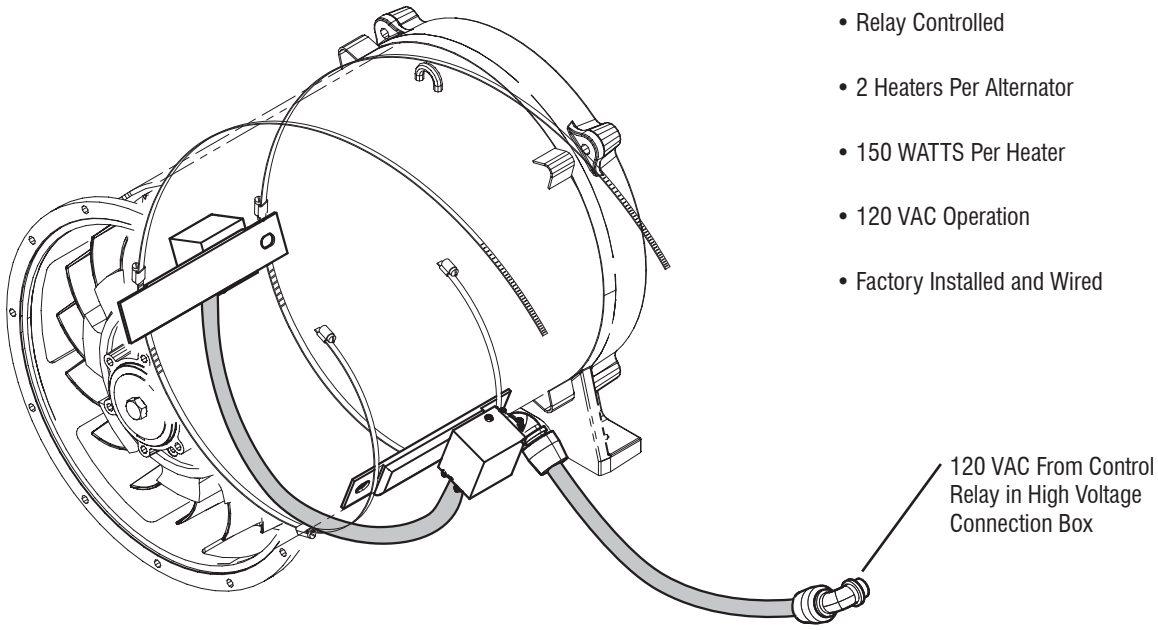
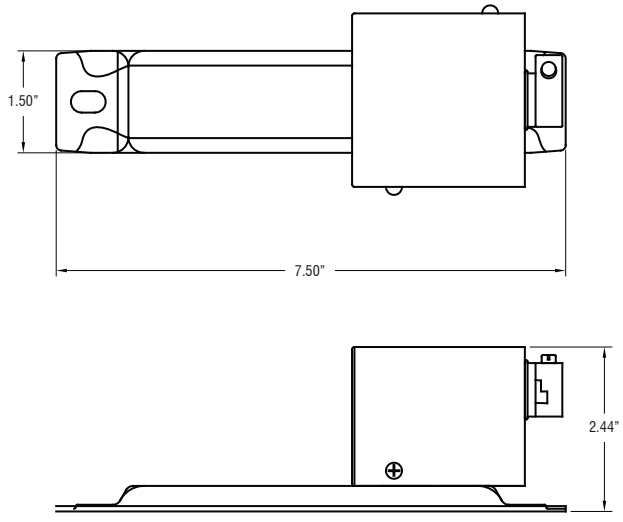
Doc. No 0187980SBY
Rev. D 06/13/19

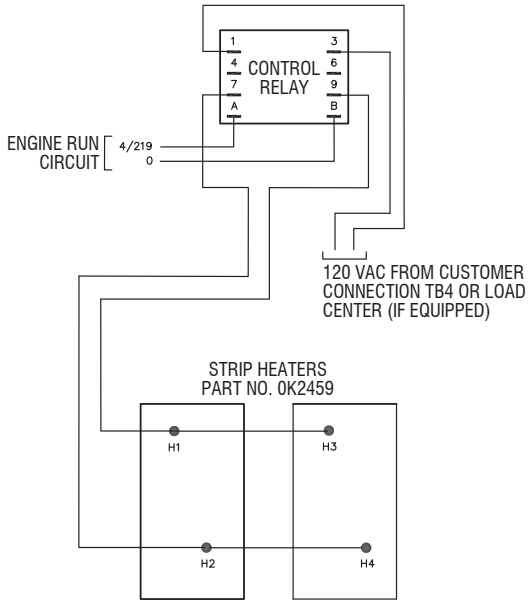
ALTERNATOR STRIP HEATER 120 VAC



Typical Heater Location on Alternator

- Relay Controlled
- 2 Heaters Per Alternator
- 150 WATTS Per Heater
- 120 VAC Operation
- Factory Installed and Wired





WIRING DIAGRAM

Part No. 0603480SSD
Rev. E 06/14/19

ALTERNATOR DATA SHEET
K0150124Y26

General Characteristics

Voltages (V)	208/240 and 480	Number of Leads	12
Frequency (Hz)	60	Winding Type	Reconnectable
Phases	3	Air Flow (cfm)	1,000
Speed (rpm)	1,800	Total Harmonic Distortion (%)	<5
Excitation System	PMG	Largest Single Harmonic Value (%)	<3.5
Insulation Class	H	Telephone Interference Factor (TIF)	<50
Winding Pitch	2/3	Reference Part Number	10000024485

Ratings at 0.8 pf based on 40˚C Ambient

Voltage (V)	80˚C Rise		105˚C Rise		120˚C Rise		150˚C Rise	
	kW	kVA	kW	kVA	kW	kVA	kW	kVA
208/240	115	144	138	172	150	187	160	200
480	115	144	138	172	150	187	160	200

Base Data at 480V, 187 kVA, 1800 RPM, 60 Hz, 3 Phase

Description	Value
Stator Resistance, Line to Neutral, High Wye Connection (Ω)	0.0250
Rotor Resistance (Ω)	2.200
Exciter Stator Resistance - PMG (Ω)	5.5
Exciter Rotor Resistance - PMG(Ω)	0.5155
Excitation Winding Resistance - PMG (Ω)	1.3334
Xd, Direct Axis Synchronous Reactance (p.u.)	3.03
X2, Negative Sequence Reactance (p.u.)	0.27
X0, Zero Sequence Reactance (p.u.)	0.03
X'd, Direct Axis Transient Reactance (p.u.)	0.21
X"d, Direct Axis Subtransient Reactance (p.u.)	0.16
Xq, Quadrature Axis Synchronous Reactance (p.u.)	1.33
T'd, Direct Axis Transient Short Circuit Time Constant (s)	0.054

Description	Value
T"d, Direct Axis Subtransient Short Circuit Time Constant (s)	0.008
T'do, Direct Axis Transient Open Circuit Time Constant (s)	1.235
Ta, Short Circuit Time Constant of Armature Winding (s)	0.018
Phase Sequence CCW-NDE	T1, T2, T3
Voltage Balance, L-L or L-N (%)	2.5
Deviation Factor (%)	7
High Wye Connection, Sustained 3-Phase Short Circuit Current (%) - PMG only	300
X/R	7
Short Circuit Ratio	0.40
Heat Rejection (BTU/hr) - 100% Rated Load, 480V, 0.8pf, 120ºC Temp. Rise	64,660

Reference: Mil-STD-705B
All Ratings are Nominal

ALTERNATOR DATA SHEET
K0150124Y26

sKVA

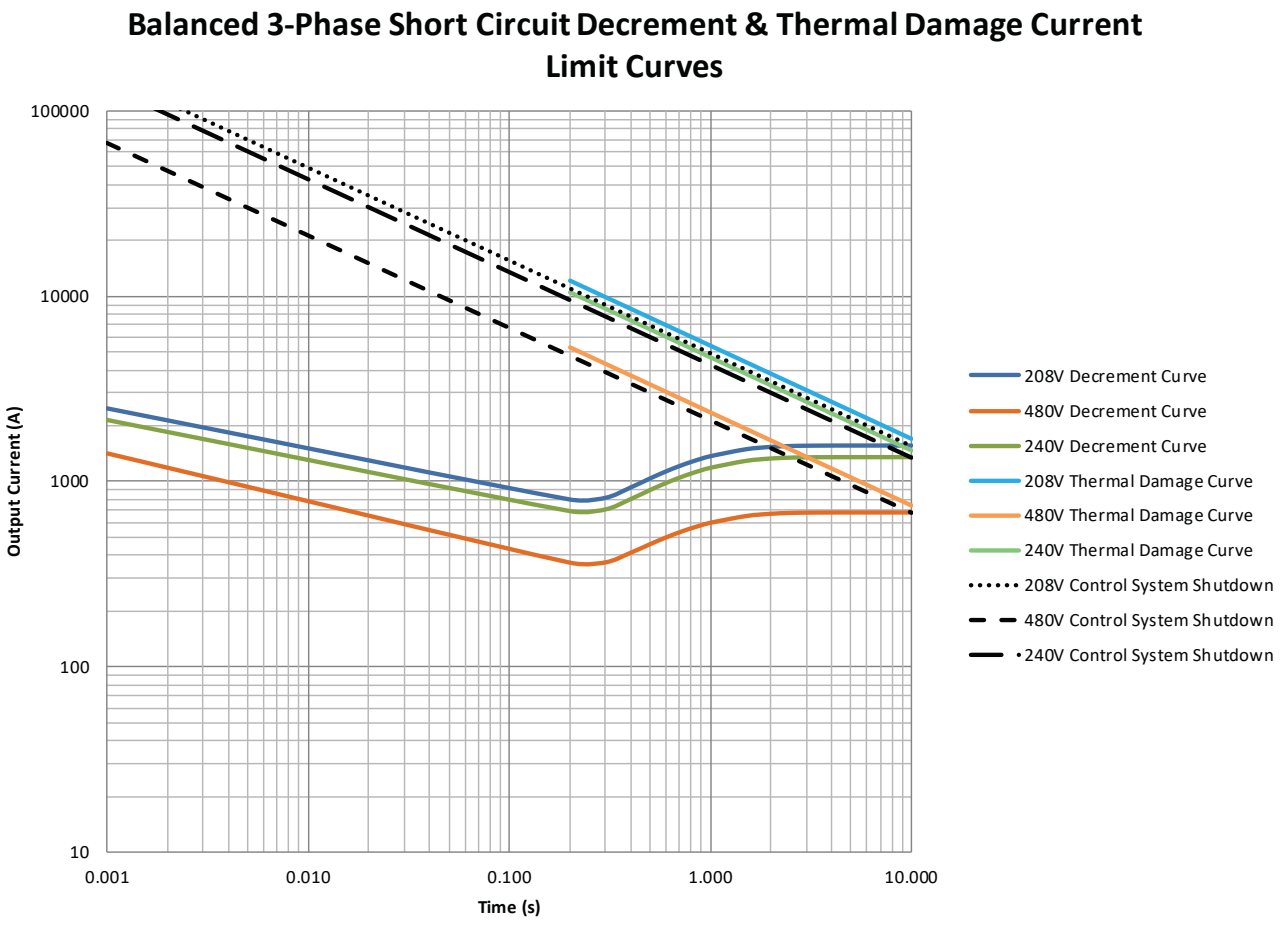
	10%	15%	20%	25%	30%	35%
480 V @ 0.3PF	77	120	169	223	292	361
480 V @ 0.6PF	94	139	192	251	327	403
208/240 V @ 0.3PF	59	89	127	167	223	270
208/240 V @ 0.6PF	67	103	144	189	250	298

Efficiencies

	480 @ 0.8 PF	480 @ 1.0 PF	208/240 @ 0.8PF	208/240 @ 1.0 PF
20% Rated Power*	79.9	81.1	80.8	81.8
40% Rated Power*	86.6	88.4	86.7	88.5
60% Rated Power*	88.4	90.9	87.8	89.9
80% Rated Power*	88.8	91.7	87.7	90.2
100% Rated Power*	88.8	92.1	87.4	90.4

*Rated Power value is rating kW at 120°C Winding Temp Rise and 0.8pf

LOG LOG Decrement Curve



INDUSTRIAL GENSET - BATTERY INDEX

• Warranty by Exide Corp. • Exide e-mail: tbgna@exide.com • 800-782-7848 National Hot line

INDUSTRIAL SPARK-IGNITED GENSETS - AVAILABLE BATTERIES

			GENERAC PART #					
Engine	System Voltage	Battery Quantity	058208 (Group 24F)	077483 (Group 26)	058665 (Group 27F)	061119 (Group 31)	061104 (Group 8D)	BT0015A02 (Group 8D)
G2.4	12	1		X				
G4.5	12	1			X	X		
G9.0	12	1			X	X		
G14.2	24	2					X	
G21.9	24	2					X	
G25.8	24	2					X	
G33.9	24	4					X	
G49.0	24	4					X	X

INDUSTRIAL DIESEL GENSETS - AVAILABLE BATTERIES

			GENERAC PART #			
Engine	System Voltage	Battery Quantity	058665 (Group 27F)	061119 (Group 31)	061104/BT0015A00 (Group 8D)	BT0015A02 (Group 8D)
D2.2 Perkins	12	1	X	X		
D3.3 Perkins	12	1		X		
D4.5 FPT	12	1		X		
D6.7 FPT 100, 130kW	12	1 or 2†		X		
D6.7 FPT 150, 175kW	12	2†		X		
D8.7 FPT	24	2		X		
D10.3 FPT	24	2		X	X	
D12.9 FPT	24	2		X	X	
D12.5 Perkins	24	2			X	
D15.2 Perkins	24	2			X	
D16.0 Volvo	24	2		X	X	
D18.1 Perkins	24	2			X	
D30.6 Perkins	24	2			X	X
D33.9 MHI	24	2			X	X
D37.1 MHI	24	4			X	X
D49.0 MHI	24	4			X	X
D65.4 MHI	24	4			X	X

			DIMENSIONS (in) NOMINAL		
Part Number	Group Number*	Nominal CCA @ 0° F	L	W	H
058208	24F	525	6.75	10.63	9.00
077483	26	525	6.75	8.25	7.75
058665	27F	700	6.75	12.50	9.00
061119	31	925	6.75	13.00	9.40
061104/ BT0015A00	8D	1,200	11.00	20.80	10.00
BT0015A02	8D	1,400	11.00	20.80	10.00

All batteries are 12V, 6 cell construction, lead calcium type.
For 24V systems, batteries are wired in series.

X Battery available with electrolyte and installed in genset.
† Single or dual-paralleled battery options are available on 100 and 130kW. Single-battery option not available on 150 and 175kW.
* BCI Group Size reference.

Part No. 0161970SBY
Rev. N 4/5/2022

GENERATOR ENCLOSURES

DESCRIPTION

GENERAC POWER SYSTEMS' generator enclosures provide year-round weather protection for your power equipment. Engineered with functionality and value in mind, the enclosure design benefits are unique in that the enclosures utilize dimensionally matched components for either a weather protective configuration or a sound attenuated/acoustic configuration. With common components used between design, modification and on-site upgrades can be accomplished with ease.

The enclosure design offers several benefits over the "standard enclosures" of other manufacturers. Generac's enclosures have been created with the goal of maximizing the customer's product performance satisfaction while maintaining the functionality of reducing exterior noise levels and discouraging product tampering.

Although others may require a "premium" for a self-enclosed exhaust system, rugged steel panel construction or protective polyethylene washers under all exterior panel fasteners, Generac includes these and several other features on every enclosure configuration. Be sure to compare. Generac Enclosures offer additional design enhancement extras that other "standard enclosures" do not.

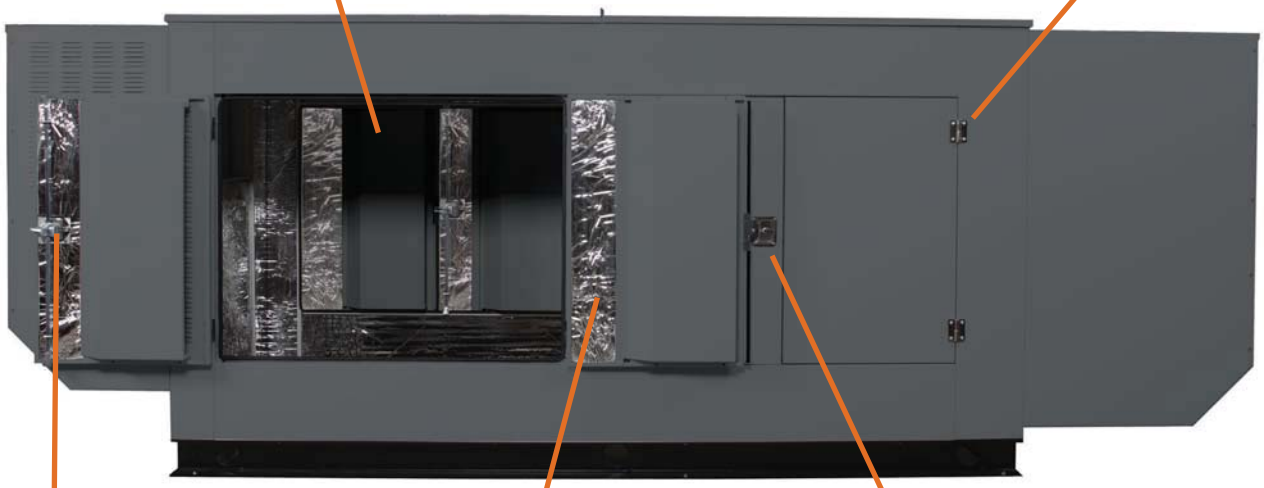
Doc No. 0163180SBY
Rev. E 06/10/19

GENERATOR ENCLOSURES

Post-Free Twin Doors
Provide Large, Unobstructed Service Access

Gasket-Free, Interconnected Roof Panel Joint
Drip-Free, Maintenance-Free

Heavy Gauge, Stainless Steel, Partial Pin Hinges with Nylon Spacers
Durable, Corrosion-Free, Removable Doors



Two-Point Door Latch System
Ensures Proper Seal Preventing Water Ingress and Sound Egress

Dense, Closed-Cell Foam Insulation with Reflective Silver Mylar Layer
Improved Sound Attenuation Without Damaging Effects From Radiant Heat Exposure

Lockable Turn and Tuck Stainless Steel Latch Handle
Corrosion-Free, Non-Protruding and Secure

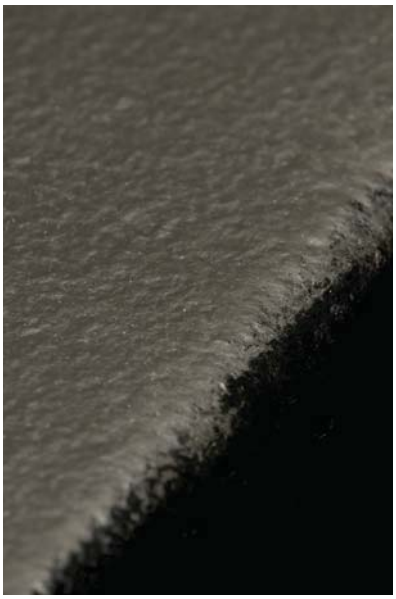
Doc No. 0163180SBY
Rev. E 06/10/19

GENERATOR ENCLOSURES

FEATURES:	BENEFITS:
Dimensional matching of acoustic and non-acoustic enclosure designs	Reduces variation in fuel tank pricing, inventory; removes need to change out fuel tank or retrofit
Standardized enclosure components *	Ease of retrofit or upgrade to acoustic system; reduced parts inventory, costs
Enclosure mounted directly to unit baseframe	Simplified delivery and installation with enclosure and unit in single component design
Electrostatically painted panels	Maximum protection from weather elements
12 or 14 gauge steel based on kW rating	Maximum sound attenuation, protection and product life
Aluminum Enclosure optional	Prevents corrosion in coastal regions
Stainless steel door latch and hinge hardware	Provides extended component life; maximum protection against rusting
Stainless steel door latch strike plate	Maximum protection against enclosure paint damage from door latch pin
Door hinges utilize slip-pin design	Provides quick door removal for full-unit access
Polyethylene gasketing under door hinges	Additional protection for enclosure paint finish
Keyed door latches	Protection for equipment and personnel
Large removable access doors	Ease of maintenance
Relocation of access doors	Provides improved access to MLCB on all units
Redesigned door gasketing	Improved sealing quality from sound and weather elements
Weather resistant aluminum roof design with drip ledge	Provides optimum moisture/rain runoff from unit
Cabled and gasketed radiator access cover	Provides improved radiator access and additional protection from weather elements
Acoustic roof panels manufactured with mechanical retention pins	Increased acoustic foam retention within unit
Polyethylene washers under all panel fasteners	Additional paint finish protection from stainless steel fastener
Internally fastened enclosure panels (where possible)	Provides streamlined unit appearance
Additional roof panel stiffener	Added overall compartment rigidity and acoustic foam panel retention
Self-enclosed exhaust system	Provides safe unit operation; no enclosure hot spots; streamlined unit appearance
Discharge air duct has been designed with minimal fasteners	Ease of removal and access to exhaust system
Stainless steel exhaust band clamps	Provides extended component life; ensures proper exhaust seal
Drain holes within air ducts	Enables maximum water run-off
Rodent-proof, tamper proof enclosure design	Safety and security for personnel and equipment
Redesigned baseframe lifting lugs	Ease of unit relocation; prevents compartment damage from lifting straps
Up to 200 MPH wind kit options (Contact Factory for Availability)	Meets locally enforced wind requirements

* Consult Generac Power Systems, Inc. for installation drawings for specific configurations and dimensions.

RhinoCoat™



Generac's RhinoCoat™ finish system provides superior durability as a standard for all Generac Industrial enclosures, tanks and frames.*

Testing Standards

Generac's RhinoCoat™ finished surfaces are subjected to numerous tests. These include:

- ASTM D - 1186 - 87.....2.5+ MIL Paint Thickness
- ASTM D - 3363 - 92a.....Adequate Material Hardness
- ASTM D 522 - B.....Resistant to Cracking
- ASTM D 3359 - B.....Exceptional Adhesion
- ASTM B117 D 1654.....Resistant to Salt Water Corrosion
- ASTM D1735 D 1654.....Resistant to Humidity
- ASTM 2794 93 (2004).....Exceptional Impact Resistance
- SAEJ1690 - UV Specifications.....UV Protection

In addition to the testing standards above, Generac adds the following test requirements more specific to generator applications:

- Resistant to Typical Oils
- Resistant to Typical Fuels
- Resistant to Typical Antifreeze
- Resistant to Distilled Water

Primary Codes and Standards

*RhinoCoat™ powder coat paint is durable and corrosion resistant however it is not a rust preventative. Generac pretreats all powder coated parts to assist with resistance to corrosion.

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53187
P: (262) 544-4811

Part No. 0180230SBY
Rev. F 11/16/19

EATON CIRCUIT BREAKER DATA
Standard (80% Rated) Thermal-Magnetic

AMPS	VOLTS	ACCESSORIES	EATON PART NUMBER	SERIES	FRAME	GENERAC PART NUMBER
15	600	No Accessories	FG3015	C	F-Frame	0H9294TA00
		Shunt Trip and Aux. Contacts	FG3015A12S03			0H9294TAB0
20		No Accessories	FG3020			0H9295TA00
		Shunt Trip and Aux. Contacts	FG3020A12S03			0H9295TAB0
25		No Accessories	FG3025			0J0248TA00
		Shunt Trip and Aux. Contacts	FG3025A12S03			0J0248TAB0
30		No Accessories	FG3030			0H9296TA00
		Shunt Trip and Aux. Contacts	FG3030A12S03			0H9296TAB0
35		No Accessories	FG3035			0H9297TA00
		Shunt Trip and Aux. Contacts	FG3035A12S03			0H9297TAB0
40		No Accessories	FG3040			0H9298TA00
		Shunt Trip and Aux. Contacts	FG3040A12S03			0H9298TAB0
45		No Accessories	FG3045			0H9299TA00
		Shunt Trip and Aux. Contacts	FG3045A12S03			0H9299TAB0
50		No Accessories	FG3050			0H9300TA00
		Shunt Trip and Aux. Contacts	FG3050A12S03			0H9300TAB0
60		No Accessories	FG3060			0H9301TA00
		Shunt Trip and Aux. Contacts	FG3060A12S03			0H9301TAB0
70		No Accessories	FG3070			0H9302TA00
		Shunt Trip and Aux. Contacts	FG3070A12S03			0H9302TAB0
80		No Accessories	FG3080			0J0841TA00
		Shunt Trip and Aux. Contacts	FG3080A12S03			0J0841TAB0
90		No Accessories	FG3090			0J0837TA00
		Shunt Trip and Aux. Contacts	FG3090A12S03			0J0837TAB0
100		No Accessories	FG30100			0H9314TA00
		Shunt Trip and Aux. Contacts	FG3100A12S03			0H9314TAB0
125		No Accessories	FG30125			0J0231TA00
		Shunt Trip and Aux. Contacts	FG3125A12S03			0J0231TAB0
150		No Accessories	FG30150			0H9315TA00
		Shunt Trip and Aux. Contacts	FG3150A12S03			0H9315TAB0
175		No Accessories	FG30175			0H9316TA00
		Shunt Trip and Aux. Contacts	FG3175A12S03			0H9316TAB0
200		No Accessories	FG30200			0J0232TA00
		Shunt Trip and Aux. Contacts	FG3200A12S03			0J0232TAB0
225		No Accessories	FG3225			0H9317TA00
		Shunt Trip and Aux. Contacts	FG3225A12S03			0H9317TAB0
250		No Accessories	JG3250		J-Frame	0H9318TA00
		Shunt Trip and Aux. Contacts	JG3250A12S43			0H9318TAB0
300		No Accessories	KG3300		K-Frame	0H9319TA00
		Shunt Trip and Aux. Contacts	KG3300A12S43			0H9319TAB0

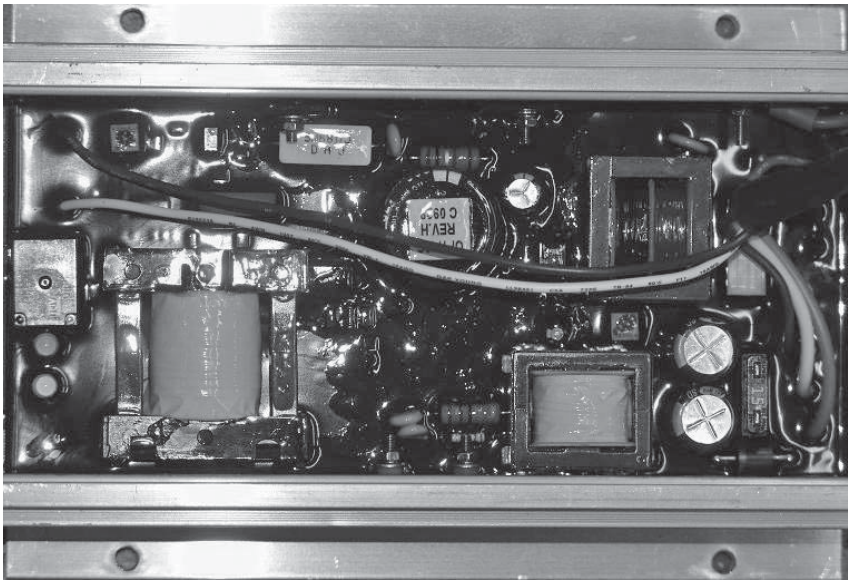
EATON CIRCUIT BREAKER DATA
Standard (80% Rated) Thermal-Magnetic

AMPS	VOLTS	ACCESSORIES	EATON PART NUMBER	SERIES	FRAME	GENERAC PART NUMBER
350	600	No Accessories	KG3350	C	K-Frame	0H9320TA00
		Shunt Trip and Aux. Contacts	KG3350A12S43			0H9320TAB0
400		No Accessories	KG3400			0H9321TA00
		Shunt Trip and Aux. Contacts	KG3400A12S43			0H9321TAB0
450		No Accessories	LG3450		L-Frame	0H9322TA00
		Shunt Trip and Aux. Contacts	LG3450A12S03			0H9322TAB0
500		No Accessories	LG3500			0H9323TA00
		Shunt Trip and Aux. Contacts	LG3500A12S03			0H9323TAB0
600		No Accessories	LG3600			0H9324TA00
		Shunt Trip and Aux. Contacts	LG3600A12S03			0H9324TAB0
700		No Accessories	MDL3700		M-Frame	0H9325TA00
		Shunt Trip and Aux. Contacts	MDL3700A06S02			0H9325TAB0
800		No Accessories	MDL3800			0H9326TA00
		Shunt Trip and Aux. Contacts	MDL3800A06S02			0H9326TAB0
900*		No Accessories	NG3900		N-Frame	0H9327TA00
		Shunt Trip and Aux. Contacts	NG3900A12S03			0H9327TAB0
1,000*		No Accessories	NG31000			0H9328TA00
		Shunt Trip and Aux. Contacts	NG31000A12S03			0H9328TAB0
1,200*		No Accessories	NG31200			0H9329TA00
		Shunt Trip and Aux. Contacts	NG31200A12S03			0H9329TAB0
1,400*		No Accessories	RGH316033MY22	G	RG-Frame	0H9360EAN0
		Shunt Trip and Aux. Contacts	RGH316033MA12S21Y22			0H9360EANB
1,600*		No Accessories	RGH316033MY22			0H9361EAN0
		Shunt Trip and Aux. Contacts	RGH316033MA12S21Y22			0H9361EANB
2,000*		No Accessories	RGH320033M			0H9367EAN0
		Shunt Trip and Aux. Contacts	RGH320033MA12S21			0H9367EANB
2,500*		No Accessories	RGH325033M			0H9368EAN0
		Shunt Trip and Aux. Contacts	RGH325033MA12S21			0H9368EANB

*LS-type electronic trip breaker equipped with RMS 310+ trip unit.

Part No. 0189370SSD
Rev. F 4/3/20

BATTERY CHARGER
2.5 amp and 10 amp



Battery charger shown from inside of control panel enclosure. Connections are made via an attached harness.

The Generac 2.5 amp 12 volt and 10 amp 12/24 volt battery chargers are designed to work with Generac Industrial Controls to provide the ultimate in automatic battery voltage maintenance.

The 2.5 amp charger is self-regulating and produces instantaneous output current adjustments to keep the battery charged to an optimum level. Battery voltage is read on the control panel digital display.

The 10 amp charger has automatic float and equalize control. It precisely monitors the battery's voltage and automatically activates the correct charging mode. The charge rate is limited and controlled to efficiently and safely maintain ideal battery levels under varying conditions.

The equalize system uses a control circuit to limit charging current to 10 amps. When battery voltage drops below a preset level, charging current increases to 5 amps and then to the 10 amp charge rate if needed. When the battery reaches maximum charge, the charger switches to float mode to supply just enough current to maintain the battery at or above 13/26 volts. Battery voltage and charging current are read at the control panel digital display.

Specifications	2.5A	10A
Nominal Input	120 VAC	120 VAC
Operating AC Line Voltage Range	108 to 132 VAC	108 to 132 VAC
Input AC Line Frequency	50/60 Hz	50/60 Hz
Battery Fuse	N/A	15 A
Nominal Charge Rate	2.5 A	10 A
Equalize Voltage	N/A	13.8/27.6 V
Float Voltage	13.4 V	13.0/26.0 V
Current @ Equalize to Float Transition	N/A	5 A
Battery Under-voltage shutdown	N/A	11/22 V
LED Indicators	No	Yes
AC Line Voltage	N/A	Green LED
Battery Connected and Charging	N/A	Yellow LED
Battery Current Drain	30 mA	30 mA
AC Line Connection	Connector Plug	Connector Plug
Battery Connection	Connector Plug	Connector Plug
Control Connection		AC Power Fail Form Relay Form C 2 A Rating
CUL Recognized	Yes	Yes
NFPA 110 Compliant	No	Yes
AGM Compatible	No	Yes
UL1236	No	Yes
CSA 22.2 No. 107	No	Yes

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53187
P: (262) 544-4811
Part No.0191900SBY
Rev. F 01/30/23

EATON CIRCUIT BREAKER DATA LUG INFORMATION

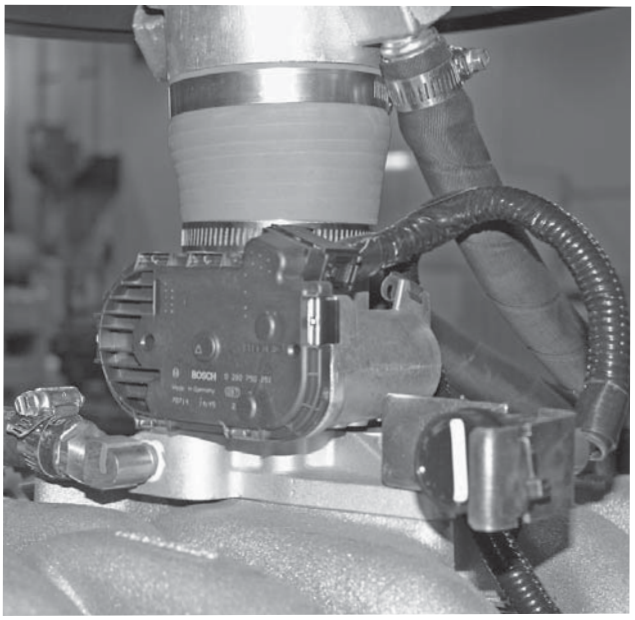
Eaton Series C Circuit Breaker Lugs

			Standard Lug	
Amps	Series	Frame	Eaton Part #	Wire (QTY) Size
15-70	C	G	-	(1) #10-1/0
15-100	C	F	3T100FB	(1) #14-1/0
125-200	C	F	3TA225FD	(1) #4-4/0
225	C	F	3TA225FDK	(1) #6-300MCM
250	C	J	TA250KB	(1) #4-350MCM
300	C	K	TA350K	(1) 250-500MCM
350-400	C	K	3TA400K	(2) 3/0-250MCM
450-500	C	L	TA602LD	(2) 3/0-350MCM
600	C	L	3TA603LDK	(2) 400-500MCM
700-800	C	M	TA800MA2	(3) 3/0-400MCM
900-1,000	C	N	T1200NB3	(4) 3/0-400MCM
1,200	C	N	TA1201NB1	(3) 500-750MCM

Eaton Series G Circuit Breaker Lugs

			Standard Lug	
Amps	Series	Frame	Eaton Part #	Wire (Qty) Size
50-250	G	JG	TA250FJ	(1) #8-350MCM
300-600	G	LG	3TA632LK	(2) #2-500MCM
900-1,200	G	NG	TA1201NB1	(3) 500-750MCM
1,400-1,600	G	RG	T1600RD	(4) 1-600MCM
2,000	G	RG	Lugs Not Included	
2,500	G	RG	Lugs Not Included	

ELECTRONIC GOVERNOR
Spark-Ignited Engines



Generac's electronic isochronous governor systems are standard on all Spark-Ignited gensets utilizing Generac's Digital Control Platforms.

- Isochronous Speed Regulation
- ±0.25% Steady State Regulation
- Factory Installed and Adjusted
- Fully Adjustable
- Quiet-Test™ Low-Speed Exercise Capability
- Fast Response
- High Reliability
- Environmentally Sealed

ACTUATOR

Die cast enclosure housing the throttle plate and the gear-driven rotary actuator with the interior components sealed against dust, dirt and moisture. The gear drive is directly connected to the throttle plate for fast and precise control. Safety spring-return to a closed position upon loss of power.

Design	Bosch
Type	Electronically Actuated Throttle Valve
Operating Voltage	12/24VDC
Response Time	<100 ms
Operating Temperature Range	-40˚F to 284˚F
Output	Rotary (internal - no linkage)

CONTROLLER

The governor driver module is located in the generator control panel. A sealed unit with waterproof connections and a feedback circuit from the actuator for throttle plate position. Generac software controls speed governing, and is fully adjustable.

The Generac electronic governor system applies to all spark-ignited gensets with Generac's Digital Control Platforms.

COOLANT HEATER OPTION
1,500 WATT, 120 VAC

SPECIFICATIONS:

Voltage: 120 VAC

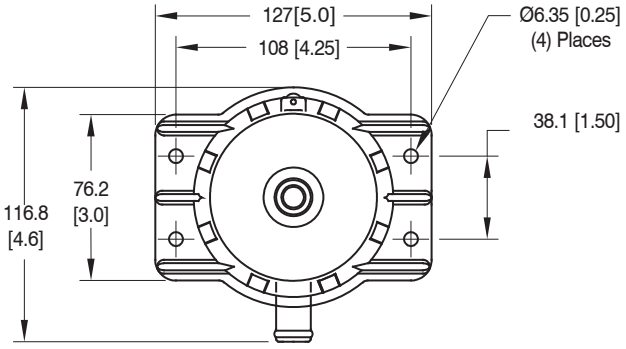
Heat Power: 1,500 WATT

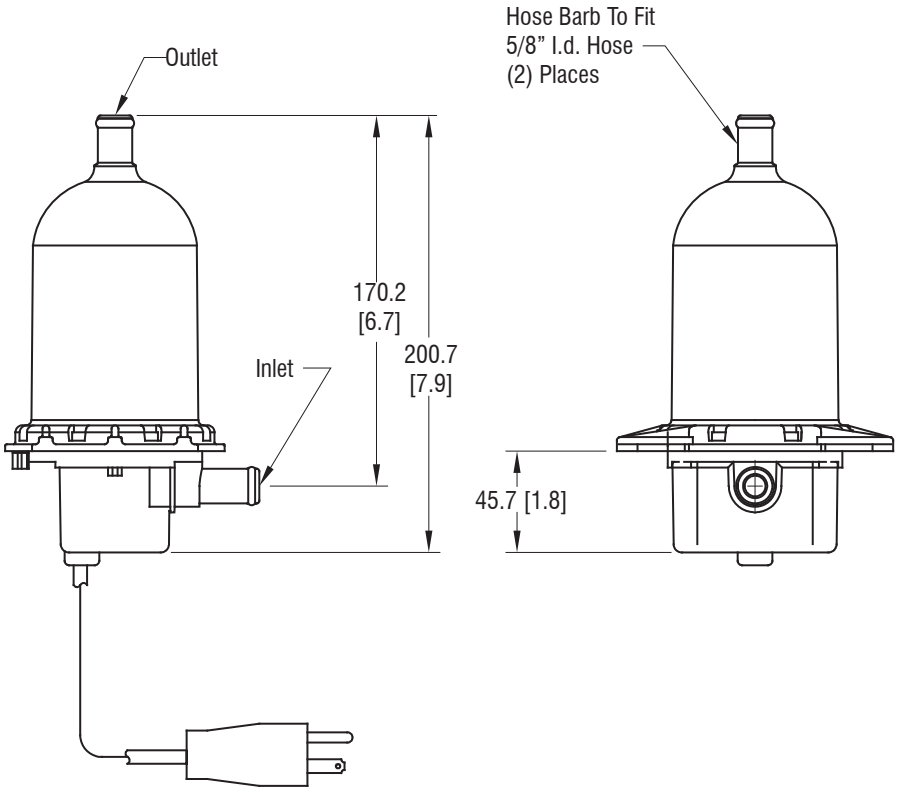
Fixed Thermostat: 100°-120°F

Heating Element: Incoloy 800

Maximum Pressure: 90 PSI (620 kPa)

Plug NEMA Standard: 5-15P





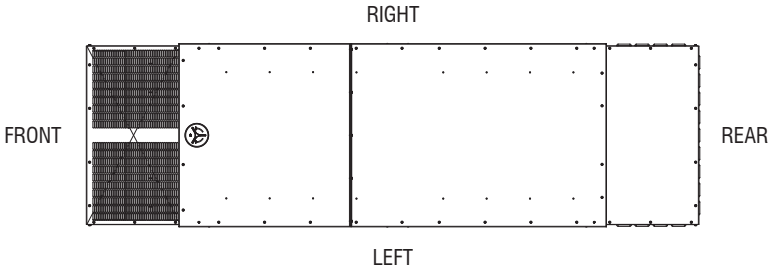
DIMENSIONS: mm [INCHES]

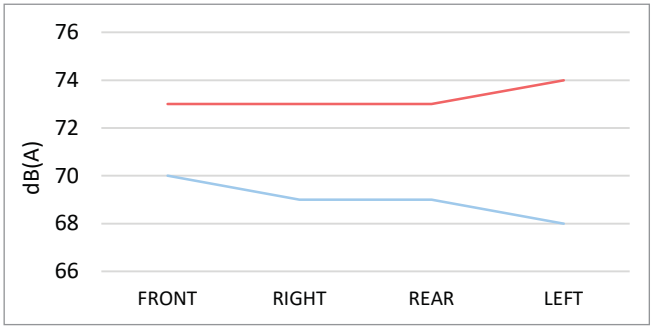
Part No. 084918G_SBM
Rev. R 08/07/19

LEVEL 1 SOUND ATTENUATED ENCLOSURE
G9.0L Generac, SG/MG150

60Hz NO-LOAD, dB(A)									DISTANCE: 7 METERS	
MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY (Hz)									
	31.5	63	125	250	500	1,000	2,000	4,000	8,000	dB(A)
FRONT	37	53	57	62	66	66	59	52	45	**70**
RIGHT	38	55	59	63	63	64	57	52	45	**69**
REAR	39	58	64	59	61	64	52	47	42	**69**
LEFT	39	55	61	63	63	61	56	51	45	**68**
AVERAGE	**38**	**55**	**60**	**62**	**63**	**64**	**56**	**50**	**44**	**69**

60Hz FULL-LOAD, dB(A)									DISTANCE: 7 METERS	
MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY (Hz)									
	31.5	63	125	250	500	1,000	2,000	4,000	8,000	dB(A)
FRONT	35	61	63	67	66	70	60	55	48	**73**
RIGHT	36	59	65	71	66	62	60	54	50	**73**
REAR	37	66	71	66	62	64	54	48	44	**73**
LEFT	36	63	69	69	67	63	61	53	49	**74**
AVERAGE	**36**	**62**	**67**	**68**	**65**	**65**	**59**	**53**	**48**	**73**





- All positions at 23 feet (7 meters) from side faces of generator set.
- Test conducted on a 100 foot diameter asphalt surface.
- Sound pressure levels are subject to instrumentation, installation and testing conditions.
- Sound levels are ±2 dB(A).

TX611 Series Transfer Switch

600 Amps

Contactor Type · Open and Delayed Transition

- Automatic Transfer Switch
- 600A up to 600V VAC, 60 Hz, 100% current rated
- Single or Three Phase
- 2, 3, or 4 Poles
- UL Type 1, 3R, or 12 Enclosure
- Open and Inphase or Open with Delayed Transition
- ETL Listed to UL 1008
- High Withstand and Closing Ratings
- 3-Cycle Rated for Easy Upstream Breaker Coordination

Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

cETLus Listed to UL 1008

NFPA 70, 99, 110

NEC 700, 701, 702, 708

Description

Generac's patented* contactor is featured in the TX contactor type transfer switch, which is a double-throw robust switch construction with inherent interlocks for safe positive transfer between power sources. Featuring a transition time of less than 30 milliseconds, this high speed transfer is ideal for all applications, including motor load applications. The contacts are silver composite for long life, resisting pitting or burning. The switches are rated for full load transfers in mission critical, emergency, legally required, and optional power systems.

The microprocessor based controller provides the customers with the flexibility to program a comprehensive group of set points to match the application needs. The controller has two programmable inputs and one programmable output as standard and is available with an optional expansion board for up to four programmable inputs and outputs. The LCD displays real time and historical information with time-stamped events. The integrated plant exerciser can be configured in off, daily, day of week, biweekly, and monthly intervals with user selectable run time. Standard features of the controller include three phase sensing on both sources, phase unbalance, phase reversal, load shed, emergency inhibit, and communications.

*Patent Number: US 11,227,728 B2

TX611 Series Transfer Switch

600 Amps

Contactor Type · Open and Delayed Transition

STANDARD FEATURES

GENERAL

- Small Footprint, Results in Easy Mounting and Installation for Reduced Time and Costs
- Wall Mount
- Cable Entry is Top or Bottom
- Double-throw, stored energy transfer mechanism
- Can be electrically isolated while energized
- Graphical LCD-Based Display for Programming, System Diagnostics, and Help Menu Display Mimic
- Diagram with Source Available and Connected LED Indicator
- Method of Transfer: Open with Inphase Transition
- Mechanically Interlocked to Prevent Connection of Both Sources
- Modbus® RTU Communications
- TXC 100 Controller
- Operating Temperature: -4° to 158°F (-20° to 70°C)
- Removable Top and Bottom Plates for Ease of Entry
- Voltage Agnostic*
- High Withstand and Closing Ratings
- Heater Kit Standard on all 3R Enclosures
- Auxiliary Output Includes: Two Wire Start, Signal Before Transfer, Fault, and a Programmable Relay Output
- Auxiliary Input Includes: Permissive Inputs (24VDC)
- General Alarm Indication
- 2 Year Standard Warranty

VOLTAGE AND FREQUENCY SENSING

- Three Phase Under and Over Voltage Sensing on Normal and Emergency Sources
- Under and Over Frequency Sensing on Normal and Emergency
- Selectable Settings: Single or Three Phase Voltage
- Sensing on Normal and Emergency 60 Hz
- Phase Sequence Sensing for Phase Sensitive Loads

START CIRCUIT

- 2-wire Start
- 3-wire Start from C Contact for Circuit Monitoring

DIGITAL OUTPUTS

- Switch Position Indication (2 Form C)
- Signal Before Transfer (Elevator)
- General Alarm

DIGITAL INPUTS

- Emergency Inhibit (Permissive & Load Shed)
- Go to Emergency (Demand Response)
- Manual Generator Retransfer

CONTROLS

- Front Programmable Control Reduces PPE Needs and Arc Flash Hazard
- Built in Battery Backup – Increases Switch Reliability and Reduces Switch Transition Time to Alternate Source
- Battery Backup Able to Power the Controller for up to 60 Minutes in the Event of No Source Availability
- Generator Battery Backup for Controller
- Accessible USB Port for Easy Data Downloads, Firmware Updates without Requiring PPE, Reducing the Risk of Arc Flash
- All Amp Nodes Offered with Delayed Transition
- Heater Programmable through Control for Desired Temperature and Humidity Settings
- Front Accessible Customer Connections
- Time-Stamped Event History Log
- Programmable Exerciser – Daily, Weekly, Biweekly, Monthly

* 480 V 3-Wire Systems and all 600 V systems must be specified at time of ordering for Transformer Kit to be included

AVAILABLE OPTIONS

- Time Delay in Neutral Transition (TDN) or Inphase with a Default to Time Delay in Neutral Transfer
- Remote Annunciator
- Chicago Code Kit
- 3R Padlockable Cover for Controller (Standard on 3R Enclosure)
- CTs for Integrated Metering
- Heater Option for Temperature and Humidity Control (Standard on 3R Enclosure)
- Expandable Input/Output Board Module Includes: 4 Relay Outputs and 4 Optically Isolated Inputs
- 2 Year Extended Limited Warranty
- 5 Year Basic Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

Engineered Options

- Transient Voltage Surge Suppressor (TVSS)
- Manual Generator Retransfer Switch
- Go to Emergency Switch
- NEMA 4 and 4X

Conversion Kits

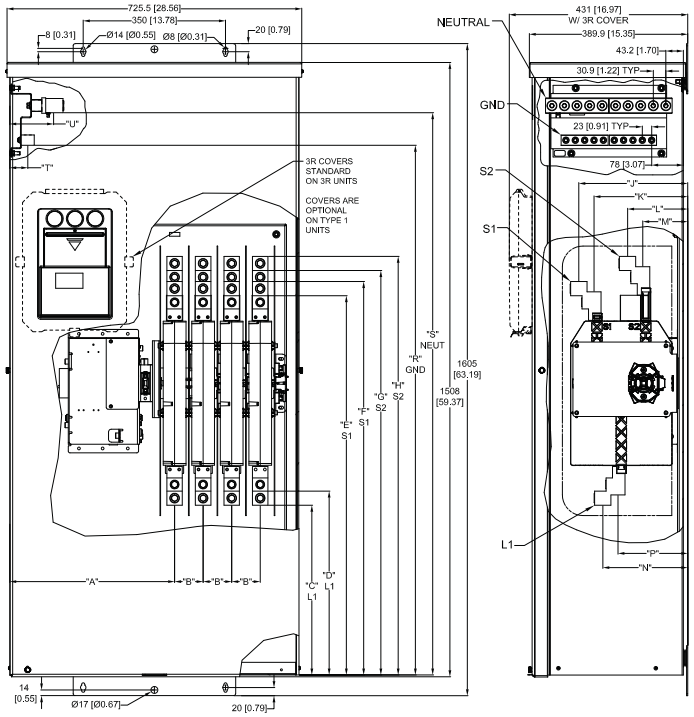
- 480 V Transformer Kit for 3-Wire Systems
- 600 V Transformer Kit
- UL Type 1 to Type 3R Kit

TX611 Series Transfer Switch

600 Amps

Contactor Type · Open and Delayed Transition

UNIT DIMENSIONS*



Non-Service Entrance Rated, Contactor Type, Open and Delayed Transition, 600 A, Type 1 and Type 3R

Description	in (mm)														Cu/Al					lbs (kg)
	A (Dim)	B (Dim)	C (Dim)	D (Dim)	E (Dim)	F (Dim)	G (Dim)	H (Dim)	J (Dim)	K (Dim)	L (Dim)	M (Dim)	N (Dim)	P (Dim)	Normal 75 °C Wire	Standby Source 75 °C Wire	Load 75 °C Wire	Neutral Connection	Ground Connection	Weight
600A 2 & 3 Pole	18.12 (460.3)	2.75 (69.9)	15.34 (389.7)	16.34 (415.1)	39.53 (1004)	40.53 (1029.4)	42.19 (1071.7)	43.19 (1097.1)	9.54 (242.3)	8.21 (208.5)	4.81 (122.3)	3.48 (88.5)	7.18 (182.3)	5.85 (148.5)	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(10) 600 Kcmil - 4	(10) 350 Kcmil - 6	245 (111)
600A 4 Pole	16.23 (412.3)	2.75 (69.9)	15.34 (389.7)	16.34 (415.1)	39.53 (1004)	40.53 (1029.4)	42.19 (1071.7)	43.19 (1097.1)	9.54 (242.3)	8.21 (208.5)	4.81 (122.3)	3.48 (88.5)	7.18 (182.3)	5.85 (148.5)	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(10) 600 Kcmil - 4	(10) 350 Kcmil - 6	256 (116)

UL 1008 Withstand and Closing Ratings

Ampere Rating	3-Cycle Rating (kA)	Fuse Rating (Class L)	Fuse Size (Class L)	Voltage
600	50	200 kA	2000 A	600V

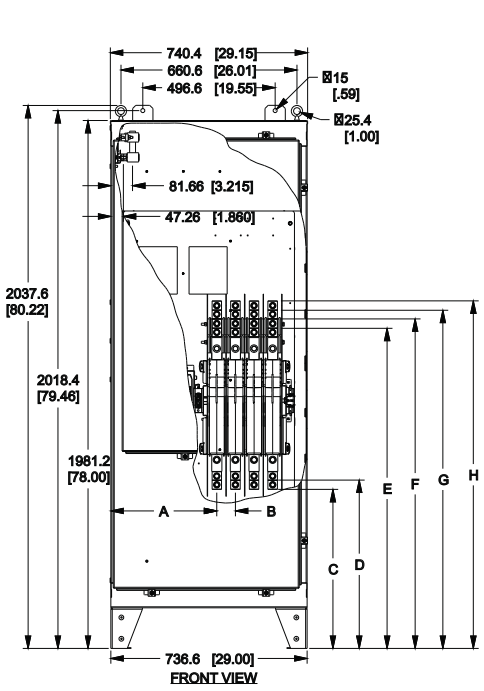
* All measurements are approximate and for estimation purposes only. Specification characteristics may change without notice. Please contact a Generac Power Systems Industrial Dealer for detailed installation drawings.

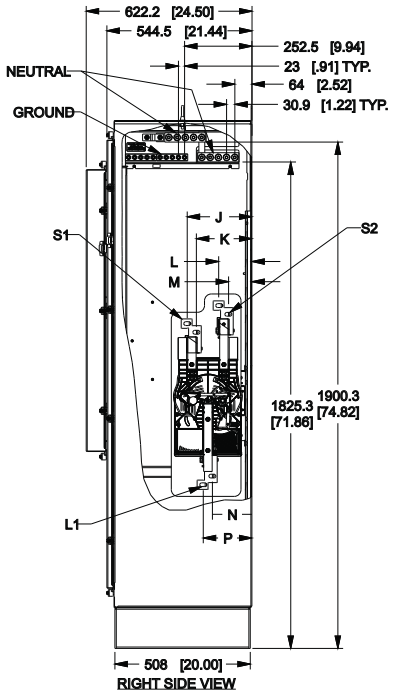
TX611 Series Transfer Switch

600 Amps

Contactor Type · Open and Delayed Transition

UNIT DIMENSIONS*





Non-Service Entrance Rated, Contactor Type, Open and Delayed Transition, 600 A, Type 12

Description	in (mm)														Cu/Al					lbs (kg)†
	A (Dim)	B (Dim)	C (Dim)	D (Dim)	E (Dim)	F (Dim)	G (Dim)	H (Dim)	J (Dim)	K (Dim)	L (Dim)	M (Dim)	N (Dim)	P (Dim)	Normal 75 °C Wire	Standby Source 75 °C Wire	Load 75 °C Wire	Neutral Connection	Ground Connection	Weight
600A 2 & 3 Pole	15.66 (397.8)	2.75 (69.9)	23.5 (597.0)	24.9 (632.0)	47.31 (1201.6)	48.68 (1236.5)	49.97 (1269.2)	51.34 (1304.1)	9.55 (242.5)	8.20 (208.2)	4.82 (122.5)	3.47 (88.2)	5.83 (148.2)	7.18 (182.5)	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(8) 600 Kcmil - 4	(10) 350 Kcmil - 6	375 (170)
600A 4 Pole	15.66 (397.8)	2.75 (69.9)	23.5 (597.0)	24.9 (632.0)	47.31 (1201.6)	48.68 (1236.5)	49.97 (1269.2)	51.34 (1304.1)	9.55 (242.5)	8.20 (208.2)	4.82 (122.5)	3.47 (88.2)	5.83 (148.2)	7.18 (182.5)	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(2) 750 Kcmil - 2	(8) 600 Kcmil - 4	(10) 350 Kcmil - 6	385 (175)

UL 1008 Withstand and Closing Ratings

Ampere Rating	Specific Breaker (kA)**	Fuse Rating (Class L)	Fuse Size (Class L)	Voltage
600	85	200 kA	2000 A	600V

* All measurements are approximate and for estimation purposes only. Specification characteristics may change without notice. Please contact a Generac Power Systems Industrial Dealer for detailed installation drawings.
** See Specific Breaker List available on GENconnect.
† Weight listing is an estimation.

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P: (262) 544-4811

Part No. A0002155896
Rev. D 04/07/2023

GAS SUPPLY CHECK LIST

- **Gas Service Meter and Serving Utility**
  - Available on site and reliable
  - Rated for the combined loading of the facility and the generator (total BTU)
  - Maintains generator minimum pressure requirements while under maximum loading
- **Step Down Pressure Regulators**
  - Selected for the pressure and flow needs of the generator
  - Direct acting type with good dynamic response (no significant time lags in regulation)
  - Selected for minimum no-load to full load pressure droop (< 1-2" w.c desired)
  - Located near the generator (allows the long piping runs to be at higher pressure)
  - Located at least 10' away from generator connection (avoids regulator oscillations)
  - Dedicated to a single generator (increases system reliability)
- **Piping**
  - Sized large enough to minimize pressure drops to acceptable levels under full gas flow
  - Minimize the number of elbows to avoid unwanted pressure drops
  - Ensure entire gas supply system maintains acceptable generator pressure under full gas flow conditions
  - Should be connected to generator with a flexible connection
  - Should include a drip leg (sediment trap)
- **LP**
  - LP tank's boil off rate (BTU capacity) needs to support rated BTU at minimum ambient
  - LP liquid withdrawal systems should be considered: cold ambients, small tanks, large generators
  - LP liquid systems require pressure rated piping and vaporization outside a building
- **Generac Design Resources**
  - "Installation Guidelines for Stationary Industrial Generators" manual 046622 (detailed information)
  - "Power Design Pro" software -- mechanical design tab (gas piping pressure drop calculator)
- **National Codes and Standards**
  - NFPA 37 "Installation and use of Stationary Combustion Engines"
  - NFPA 54 "National Fuel Gas Code"
  - NFPA 58 "LP Gas Code"

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Part No. 10000002132
Rev. C 11/15/19

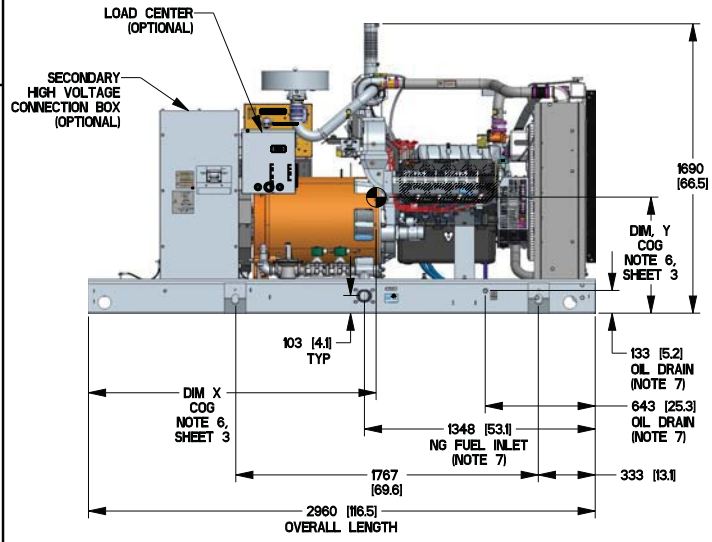
SH	REV	WINDCHILL VERSION
1/3	C	C.2

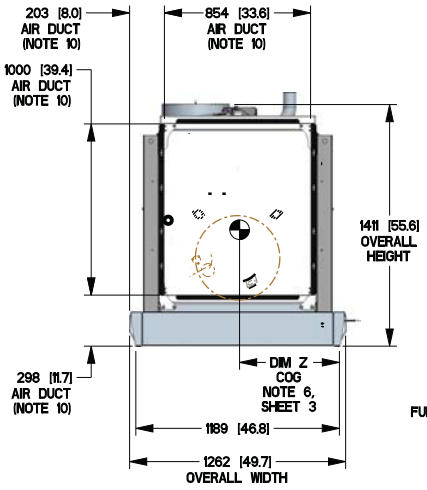
Notes:
1. CONTROL PANEL, (OPTIONAL BATTERY CHARGER INSIDE).
2. 120V, 20A GFCI & 250V, 15A OUTLET (OPTIONAL).
3. CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN THE LOW VOLTAGE CONNECTION BOX (USE LOW VOLTAGE STUB-UP AREA).
4. BATTERY (12 VOLT NEGATIVE GROUND SYSTEM).
5. MAIN LINE CIRCUIT BREAKER (MLCB), AC LOAD LEADS. (DIMENSIONS MAY VARY DUE TO UNIT CONFIGURATION)
6. CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
7. ENGINE SERVICE CONNECTIONS:
   INLET NATURAL/LPV GAS = 2" NPT FEMALE COUPLING
   INLET DIESEL = N/A
   RETURN DIESEL = N/A
   OIL DRAIN = 1/2" NPT
   RADIATOR DRAIN = N/A
   FLEX PIPE OUTLET = 3"
   EXHAUST OUTLET = 4"
   INLET LPL = 1/4" NPT FEMALE COUPLING

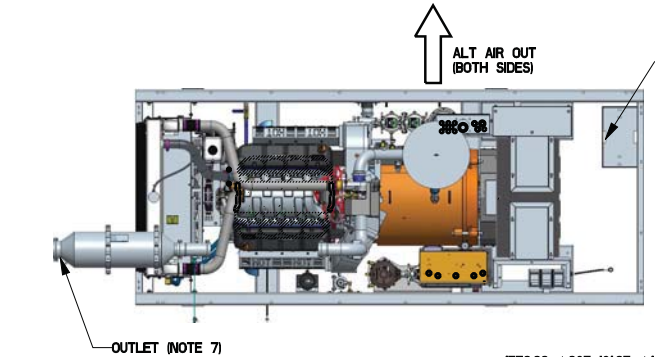
***** SEE GENERATOR SIZING GUIDE FOR FUEL PIPE SIZING TO SUIT APPLICATION *****

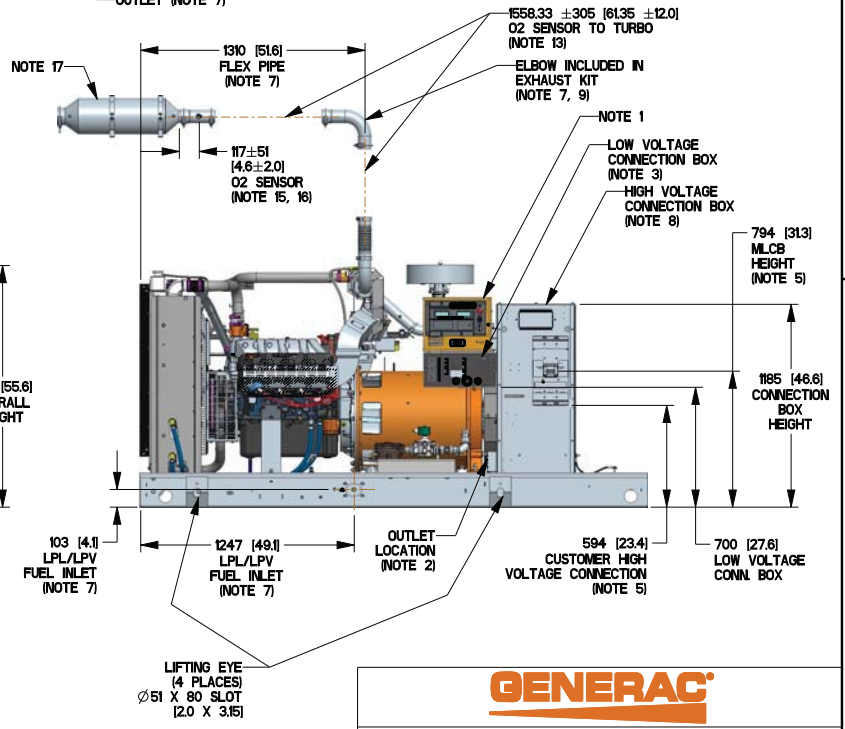
8. AUXILARY AC CONNECTION FOR UNIT OPTIONS ARE LOCATED IN HIGH VOLTAGE CONNECTION BOX, UNLESS AN OPTIONAL LOAD CENTER IS INSTALLED.
9. EXHAUST PIPES MAY BE ROTATED TO ALLOW MUFFLER TO POINT OUT TO THE RIGHT OR LEFT SIDE OF GENERATOR. (MAY NOT APPLY TO ALL UNITS)
10. GENERATOR SET MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND DISCHARGE AIR FROM THE RADIATOR IS NOT RECIRCULATED.
11. BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
12. EXHAUST SYSTEM MAXIMUM BACK PRESSUE = 10" H2O, POST SILENCER.
13. INSTALL EXHAUST BLANKETS ALONG THIS LINE.
14. CONNECT THE OPEN SET EXHAUST PER NFPA 37.
15. BLANKETS SHOULD NOT COVER OXYGEN SENSOR.
16. OXYGEN SENSOR (IF EQUIPPED) MUST BE MOUNTED BETWEEN ENGINE OUTLET AND CATALYST INLET AS SHOWN. IF ELBOW IS REQUIRED ONLY SINGLE ELBOW MAY BE USED.
17. CATALYST MUST BE MOUNTED IN DESCRIBED POSITION. FAILING TO FOLLOW THESE INSTRUCTIONS WHEN INSTALLING A CERTIFIED ENGINE IN A PIECE OF STATIONARY EQUIPMENT VIOLATES FEDERAL LAW 40CFR 1068.105(b), SUBJECT TO FINES OR PENALTIES AS DESCRIBED IN THE CLEAN AIR ACT.
18. BOLTS OR STUDS USED TO MOUNT UNIT TO PAD SHALL BE 5/8 - 11 GRADE 5.

ADDITIONAL NOTES: FOR WEIGHT AND CENTER OF GRAVITY DATA SEE NOTE 6, AND SHEET 3.









DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

DIMENSIONS ARE IN MILLIMETERS [INCHES]

INSTALLATION DRAWING

ELECTRONICALLY APPROVED INSIDE WINDCHILL

GENERAC

TITLE
OPEN SET
G9.0L, 60HZ: SG150
50HZ: SG120, SG104 (1 PH)
SG130/150, SG104/120-UPSIZE ALT

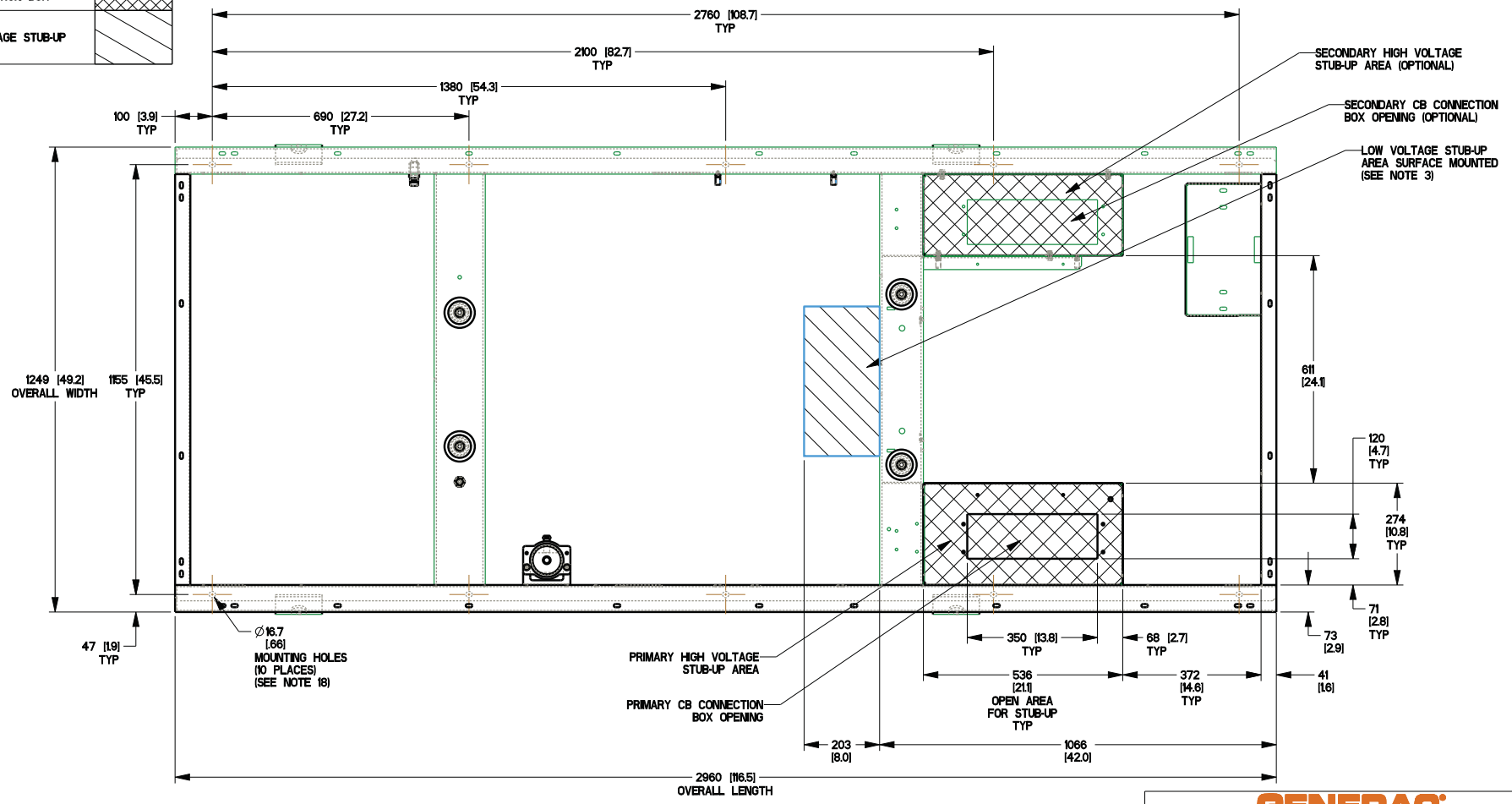
ISSUE DATE:

SIZE	CAGE NO	DWG NO	REV
B	N/A	10000018604	C

SCALE 0.035 | WT-KG | SHEET 1 of 3

SH	REV	WINDCHILL VERSION
2/3	C	C.2

RECOMMENDED ELECTRICAL STUB-UP	
HIGH VOLTAGE STUB-UP AC LOAD LEAD CONDUIT FOR CONNECTION BOX	
LOW VOLTAGE STUB-UP	



DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
STUB-UP VIEW
G9.0L, 60HZ: SG150
50HZ: SG120, SG104 (1 PH)
SG 130/150, SG 104/120-UPSIZE ALT

ISSUE DATE:

SIZE	CAGE NO	DWG NO	REV
B	N/A	10000018604	C

SCALE 0.090	WT-KG	SHEET 2 of 3

OPEN SET

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG150, SG120	220V/240V 1Ø	1288 KG [2840 LBS]	1728 [68.0]	552 [21.7]	581 [22.9]
SG/MG150, SG/MG120	208V, 240V, 400V, 480V & 600V 3Ø	1337 KG [2948 LBS]	1710 [67.3]	551 [21.7]	

NOTE:
CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.

STD ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG150, SG120	220V/240V 1Ø	1695 KG [3737 LBS]	1804 [71.0]	659 [25.9]	612 [24.1]
SG/MG150, SG/MG120	208V, 240V, 400V, 480V & 600V 3Ø	1744 KG [3845 LBS]	1788 [70.4]	655 [25.8]	

STD ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
1487 KG [3278 LBS]	1784 [70.2]	610 [24.0]	612 [24.1]
1536 KG [3386 LBS]	1767 [69.6]	607 [23.9]	

L1A ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG150, SG120	220V/240V 1Ø	1825 KG [4023 LBS]	1700 [66.9]	685 [27.0]	612 [24.1]
SG/MG150, SG/MG120	208V, 240V, 400V, 480V & 600V 3Ø	1874 KG [4131 LBS]	1689 [66.5]	680 [26.8]	

L1A ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
1411 KG [3111 LBS]	1732 [68.2]	625 [24.6]	612 [24.1]
1432 [3157 LBS]	1717 [67.6]	622 [24.5]	

L2A ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG150, SG120	220V/240V 1Ø	1912 KG [4215 LBS]	1805 [71.1]	814 [32.0]	614 [24.2]
SG/MG150, SG/MG120	208V, 240V, 400V, 480V & 600V 3Ø	1961 KG [4323 LBS]	1791 [70.5]	806 [31.7]	

L2A ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
1581 KG [3486 LBS]	1786 [70.3]	694 [27.3]	612 [24.1]
1630 KG [3594 LBS]	1770 [69.7]	689 [27.1]	

DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

DIMENSIONS ARE IN MILLIMETERS [INCHES]

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

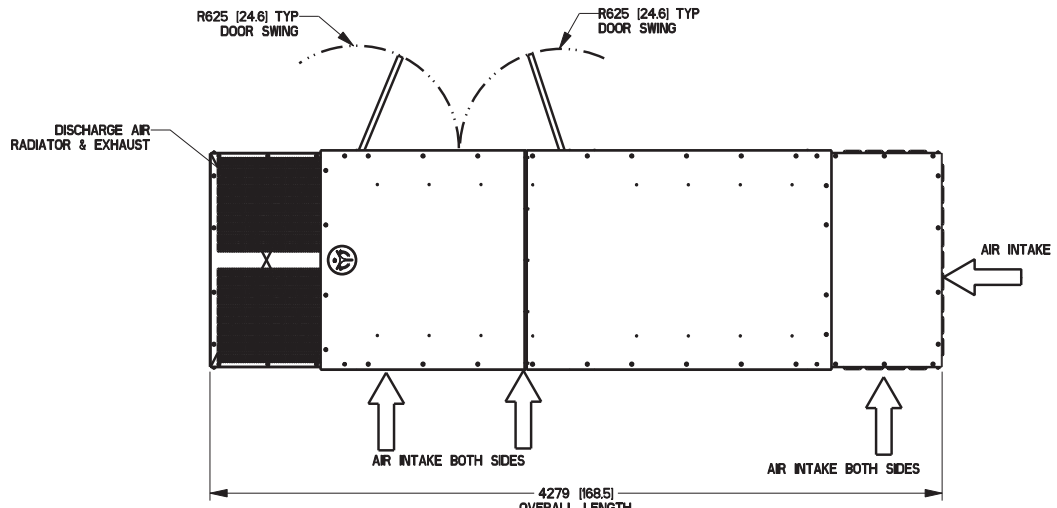
TITLE
WEIGHT & CENTER OF GRAVITY
G9.0L, 60HZ: SG150
50HZ: SG120, SG104 (1 PH)
SG 130/150, SG 104/120-UPSIZE ALT

ISSUE DATE:

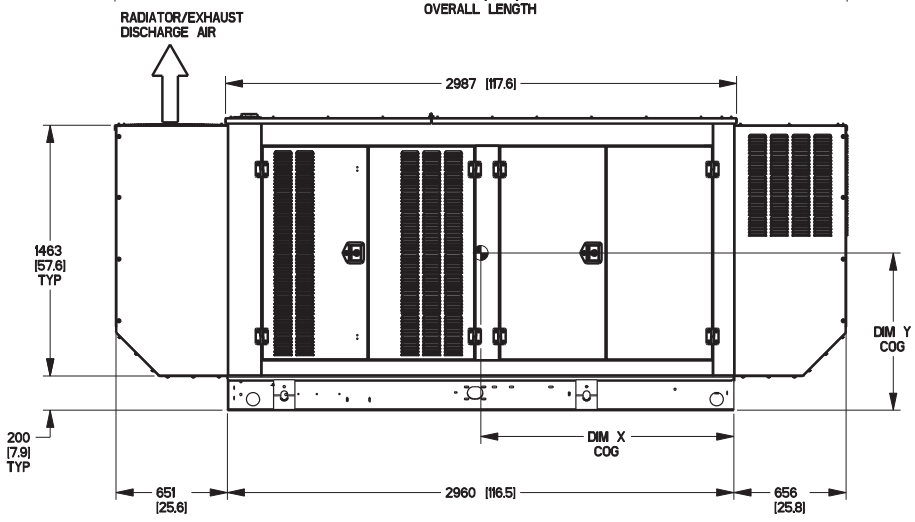
SIZE	CAGE NO	DWG NO	REV
B	N/A	10000018604	C

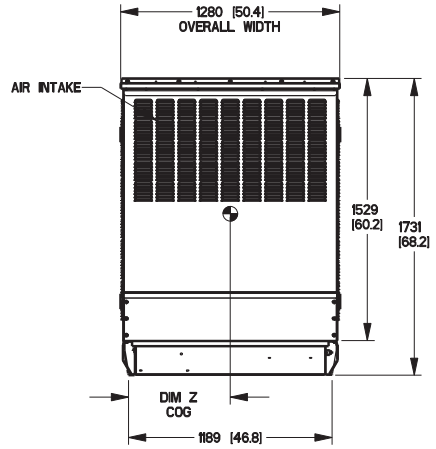
SCALE 0.015 | WT-KG | SHEET 3 of 3

SH	REV	WINDCHILL VERSION
1/1	A	A.1



FOR ALL STUB-UP, WEIGHT, AND COG DETAILS, SEE CORRESPONDING OPEN SET DRAWING PER UNIT CONFIGURATION.





DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

DIMENSIONS ARE IN MILLIMETERS [INCHES]

INSTALLATION DRAWING

ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
LIA ENCLOSURE
G9.0L 60HZ: SG/MG150
50HZ: SG/MG120
SG/MG130/150, SG/MG104/120-UPSIZE ALT

ISSUE DATE:

SIZE	CAGE NO	DWG NO	REV
B	N/A	10000019113	A

SCALE	WT-KG	SHEET
0.035	0.000	1 of 1

GENERAC
INDUSTRIAL POWER

DESIGN GUIDELINES

Natural Gas Supply System
Design Guide for Generac
Industrial Spark Ignited Generators

GENERAC
INDUSTRIAL POWER

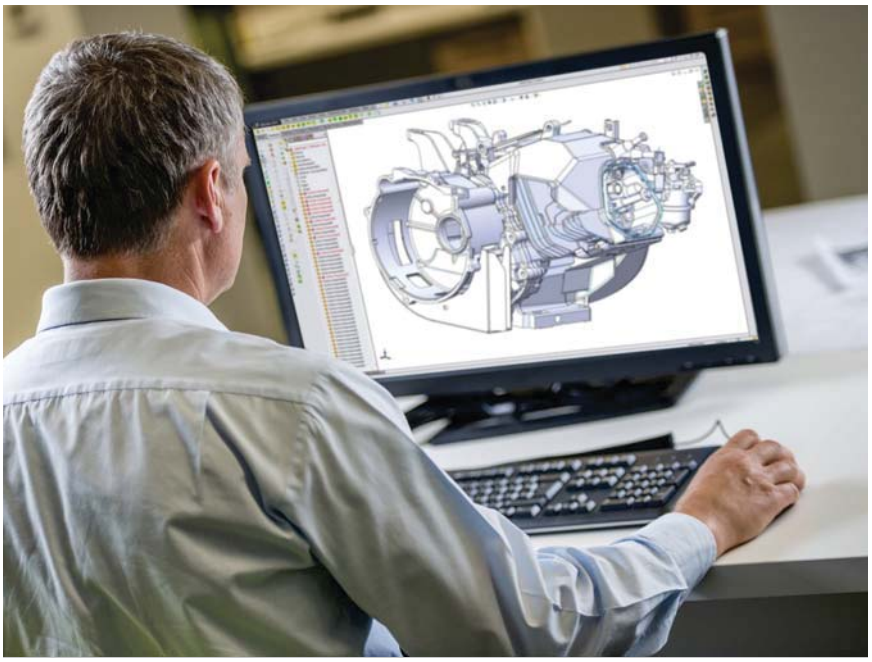
DESIGN GUIDE

Natural Gas Supply System Design Guide for Generac Industrial Spark Ignited Generators

INTRODUCTION

This design guidance document is to be provided to the consulting engineer during the project design phase and again at the time of submittal to the engineer and mechanical contractor for all Generac Industrial natural gas and propane fueled generator sets.

The following pages provide information and design best practices that have been demonstrated to minimize gas pressure instability and flow deficiency problems in the field. These design guidelines are to be used in combination with applicable national standards,[1] local fuel gas piping codes, and Generac's Installation Guidelines for Stationary Industrial Generators (Document #046622).



1. DESIGN OBJECTIVES

1.1. Provide the generator with a stable gas supply pressure over varying gas flow demand conditions. Maximum gas flow for all Generac generators are listed on the unit nameplate and generator data sheets.[2]

1.2. The pressure difference measured at the generator fuel pressure test port should typically be less than 2" water column (w.c.) from no-load running to full-load running condition.

1.3. The gas pressure must remain above the minimum specified for the generator set at all times, under all operating conditions. Failure to maintain adequate gas pressure and flow will result in operational problems such as extended crank cycles, inability to carry full load, and unstable engine speed.

1.4. Maintain a pressure and flow margin to allow for seasonal pressure variation on the upstream gas system. The emergency system must be before the facility shutoff.

1.5. Other facility loads must be factored in while sizing the Generator fuel system. It is recommended that the generator should have a dedicated fuel supply, which is not shared with any other appliances (furnace, water heaters, ranges, etc.) and the Generator fuel supply line shall be installed away from a high heat source so that the fuel temperature must remain at an acceptable operating rage.

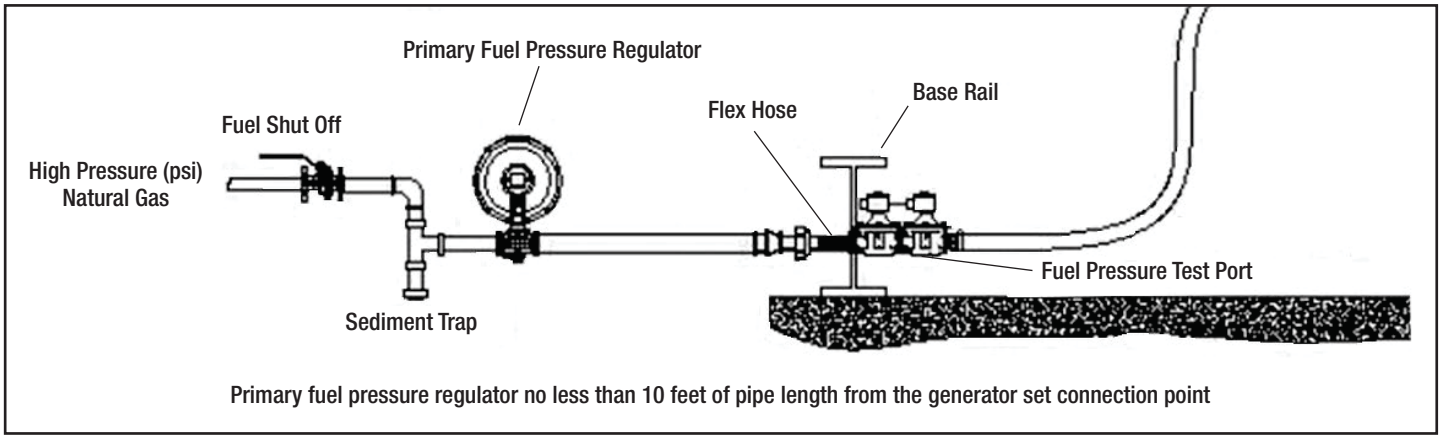


Figure 1: Typical natural gas supply regulator and piping configuration.

2. REGULATOR PERFORMANCE ATTRIBUTES[3]

2.1. Regulator Body Size: The inlet and outlet ports on a regulator are typically a single metal casting. The “body size” refers to the nominal diameter of the inlet and outlet pipe threads (or flange).

The regulator body size should never be larger than the pipe size, but it may be smaller provided the required flow can be obtained through the smaller regulator body size.

CONTINUED |

2.2. Pressure differential: The maximum flow rate of a service regulator is constrained by the gas pressure differential across the inlet and outlet port. When selecting a regulator for a specific gas flow requirement, it must correspond to the expected nominal upstream and downstream gas pressures. Consult manufacturers' published flow rate tables at various inlet and outlet pressure values to select an appropriate regulator *(See the example in Table 1).*

2.3. Flow and droop: Select a direct acting regulator that will deliver approximately 1.5 times the maximum gas flow required by the generator with 1" – 2" water column (w.c.) pressure droop at the expected nominal upstream and downstream gas pressures. Direct acting regulators provide the quick response required for controlling fast changing gas flow demands encountered in engine-generator applications.

For example, a Generac SG500 generator, configured for 7" – 11" w.c. nominal gas pressure, requires 6,000 CFH of gas at full load. The selected regulator must be rated to flow approximately 9,000 CFH (1.5 X 6000 CFH = 9000 CFH). Given an upstream gas pressure of 2 psi, a 1½" Model 122–12 regulator with a blue spring would be the first choice. However, assume there is a substantial risk of seasonal pressure variation where the upstream gas pressure may fall closer to 1 psi, a larger 2" Model 122–12 regulator with a blue spring will still provide the required flow at the lower upstream pressure.

INLET PRESSURE	Set Point 5" w.c.	Set Point 7" w.c.	Set Point 11" w.c.	Set Point 18" w.c.	Set Point 28" w.c.	Set Point 2 w.c.	REGULATOR SIZE AND MODEL
	Red Spring 1" w.c. DROOP	Blue Spring 1" w.c. DROOP	Green Spring 2" w.c. DROOP	Orange Spring 2" w.c. DROOP	Orange Spring 3" w.c. DROOP	Black Spring 1/4" PSI DROOP	
8" w.c.	4000	3000	-	-	-	-	
14" w.c.	4900	4500	3700	-	-	-	
1 psi	6600	6500	6000	5750	-	-	
2 psi	10500	10000	9800	9000	9500	-	1 ½" Model 122-12
3 psi	12000	12000	11100	10000	10500	8900	
5 psi	14500	14500	13900	12000	12700	10000	
10 psi	16000	16000	15000	13500	14000	12700	
15 psi	18000	18000	19000	19000	20000	18000	
8" w.c.	5000	4000	-	-	-	-	
14" w.c.	8800	8000	6600	-	-	-	
1 psi	12200	12000	11500	10700	-	-	
2 psi	18200	18000	17300	16500	16900	-	2 ½" Model 122-12
3 psi	25000	25000	24000	22300	23000	18000	
5 psi	32000	32000	30000	28100	29000	27400	
10 psi	38000	38000	35000	32200	33000	30000	
15 psi	38000	38000	40000	39000	40000	36000	

Table 1: Typical regulator flow capacity table. Note how the same model regulator will flow larger volumes of gas with a higher inlet pressure while maintaining a set downstream pressure. Courtesy of Sensus.

Gas pressure regulators are feedback control systems driven by the pressure differential across the diaphragm and the case spring. When gas flow on the low-pressure side of the regulator causes a pressure drop, spring force in the regulator case pushes on the diaphragm and opens the valve to increase gas flow to maintain the set pressure. The dynamic pressure maintained by the regulator decreases slightly as gas flow rate increases *(Figure 2).* This phenomenon is known as pressure droop or, more simply, “droop”. Regulator manufacturers design products to minimize pressure droop while still maintaining regulator stability for a given gas flow rate.

Regulators tend to exhibit the best stability and response time when they operate near the middle of their proportional band. Selecting a regulator with a published maximum gas flow of approximately 1.5 times the full-load gas flow required by the generator avoids operation very close to the fully open or fully closed position, minimizing the probability of unstable operation. A regulator that is too large, capable of flowing several times the maximum gas flow required by the generator, will operate very close to its fully closed position which may also result in unstable operation.

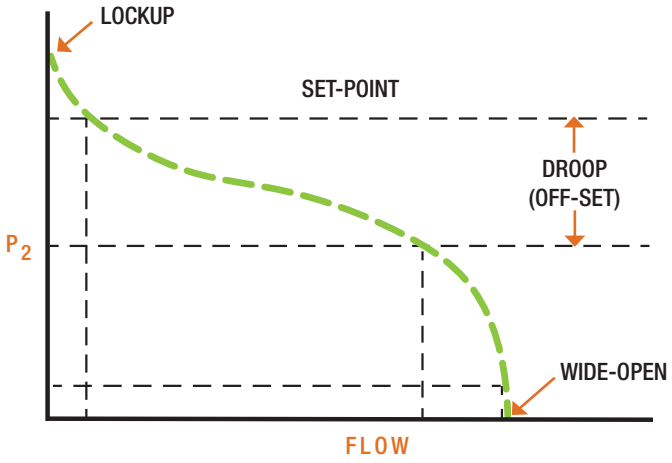


Figure 2: Pressure droop characteristic of a typical direct-operated regulator. Courtesy of Emerson-Fisher Natural Gas Application Guide.

2.4. Spring Rate, Accuracy, and Response Time:[4] The regulator spring provides the force required to open the regulator valve and maintain the desired operating pressure. There may be more than one spring covering a desired operating pressure. Spring selection plays a role in regulator accuracy and response time.

In general, using the lightest spring rate *(a blue spring from the prior example referencing Figure 2)* that achieves the desired operating pressure will provide the best accuracy, minimizing pressure droop across the range of expected gas flow rates. However, a response that is “too fast” can introduce oscillation and instability. If instability is experienced during operation, moving to the next higher spring *(a green spring from the prior example referencing Table 1)* that includes the desired operating pressure is one potential method to mitigate oscillations.

2.5. Orifice size: For regulators where various orifice sizes are available, select the smallest orifice that will provide approximately 1.5 times the maximum gas flow required by the generator. Selecting an orifice that is significantly larger than necessary will result in the valve operating very close to the seat (nearly closed) and may result in pressure instability, increased seal wear, or audible noise from the regulator.

2.6. Lockup or hard shutoff: A regulator with a lockup or hard shutoff feature must be used. Lockup is the pressure above the regulator setpoint that is required to shut the regulator off tight so no gas flows. Typically, the lockup pressure is 1"-3" W.C. above the dynamic pressure setpoint measured when a small volume of gas is flowing *(i.e. no-load running condition on the generator)*. The lockup feature prevents the low-pressure side of the regulator from

CONTINUED |

creeping up to the regulator line side pressure during long periods of zero gas flow when the generator is not running. If excessive gas pressure is allowed to build up on the low-pressure side of the regulator, the generator solenoid valves may be unable to open against the excessive pressure and the engine will not start.

2.7. Internal vs. external pressure registration:

Internally registered regulators are recommended because they generally have fewer operational problems in the field.

The diaphragm case of a regulator must have a connection to the low-pressure side in order to function. Internally registered regulators have a passage built into the body casting which provides a path for low-pressure gas to act against the diaphragm and spring force. Externally registered regulators lack this internal connection path but instead have an additional pipe fitting on the regulator case where a smaller diameter pipe is field-fabricated to a downstream location on the low-pressure side of the main gas piping system. Because all the pipe fabrication is done in the field, variation in the main gas piping system and the remote pressure registration line can cause unpredictable performance that is difficult to troubleshoot.

Externally registered regulators can be used, but the engineer and installation contractor must be aware of the dynamic effects introduced by variables such as; flow turbulence, length and diameter of the sensing line, location of the sensing point in the low pressure piping system, increases and decreases in pipe diameter.

If an externally registered regulator is used, locate the remote sensing point 8 to 10 pipe diameters downstream of the regulator in the largest diameter pipe section. The start of 8 to 10 pipe diameters is

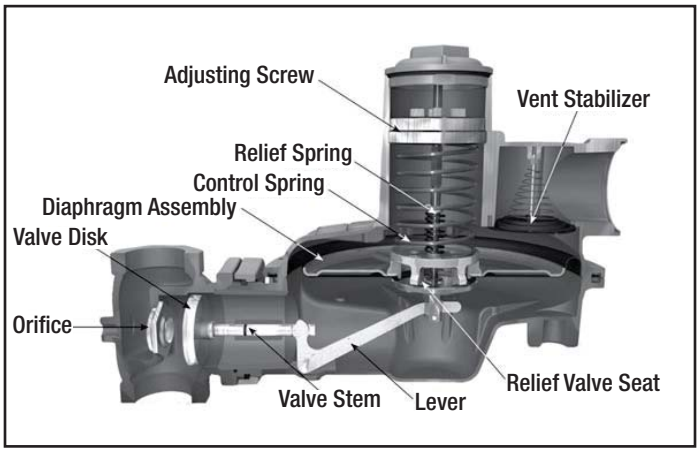


Figure 3: Major components of a direct-acting lever-type regulator, internally registered. *(Courtesy Emerson Fisher).*

after the transition to the largest diameter pipe or any other throttling devices, component and/or fittings that will disrupt flow and create turbulence. The sensing line should be taken off the top of the main line to keep it free of debris and condensate. If possible, it should horizontally slope back to the main so that any condensate will drain back into the main rather than accumulate in the regulator's diaphragm case. Minimize the fittings used in running the sensing line. An externally registered regulator will respond to the pressure changes sensed at the remote tap rather than within the regulator body. It is advisable to install a pressure gauge at the sensing line tap on the main as this will be the control point of the regulator.

2.8. Recommended gas regulators:

The list of regulators below is not an exhaustive list of all suitable regulators that are available in the market, nor is it a list of "Generac Approved" regulators. The list is intended to help design engineers and mechanical contractors identify a range of products that have demonstrated their suitability for engine-generator service in past projects. Consult your Generac Distributor or gas regulator supplier for additional information.

- Sensus[5]
- Emerson Fisher
- Itron

3. FLOW CHARACTERISTICS OF GAS PIPING SYSTEMS:

3.1. Elbows and Tees: Minimize the number of elbows and tee fittings that increase pressure drop and flow turbulence in the system. Where more than three elbows and/or tees are required, use of swept radius elbows (typical for welded pipe sections) will help reduce pressure loss.

3.2. Reducing bushings (swages): Pipe reducing bushings are the transition from a larger to smaller pipe diameter or vice versa. Gas flow velocity is slower in a larger diameter pipe compared to a smaller diameter pipe moving the same volume of gas. If a remote sensing regulator is used, it is important to understand the dynamic pressure effects caused by the gas flow velocities in different sized pipe sections and design accordingly.[6]

In some installations where it is impractical to run approximately 10 feet of pipe, swaging up to a larger diameter pipe is a practical method to increase the gas volume between the service regulator and the generator fuel system. For installations where this method is used, an internally registered regulator is strongly recommended.

3.3. Flexible fuel lines: Flexible fuel lines are intended to isolate the rigid gas piping system from vibrations on the generator set and must be installed as straight as possible. They are not intended to correct misaligned pipe sections or to serve as an elbow.

3.4. Regulator vent lines: Regulator vents must open downward and be screened to prevent insects and water from entering the regulator case. Regulator vent lines should be kept as short as possible to reduce the possibility of affecting the regulator response time.

4. DESIGN REQUIREMENTS:

4.1. Use Generac's Power Design Pro[7] gas pipe sizing module to determine the minimum recommended pipe size for the selected generator's gas flow given the anticipated length of the pipe run between the service regulator and the generator fuel inlet, including all elbows. Select the option to design for <0.5" water column pressure drop. Refer to the Table 1 for more detail.

4.2. The flexible fuel line shall be installed at the generator fuel inlet located on the frame rail and must exit the generator perpendicular to the frame rail. No pipe fittings (elbows or swages) are permitted between the flexible fuel line and the generator fuel inlet port.

4.3. The flexible fuel line must be as straight as possible. It is designed to isolate the rigid gas piping system from vibrations on the generator set. It is not intended to correct misaligned pipe sections or to serve as an elbow.

4.4. Given the combined effects of pipe friction loss and regulator droop, gas pressure should typically not drop more than 2" w.c. from no-load running to full-load running. Under no circumstances shall the gas pressure measured at the test port on the inside frame rail of the generator set drop below the minimum rated gas pressure listed on the generator nameplate.

4.5. Full-port ball valves, the same diameter as the pipe which they are connected to, are to be used for all shut-offs.

4.6. For multiple generator set installations (Generac MPS), each generator set must have its own regulator installed. Do not share a single large regulator across multiple generator sets.

CONTINUED |

Table 2: Natural Gas Fuel Pipe Sizing

	PIPE SIZE (inches)								
KW	1.00"	1.25"	1.5"	2"	2.5"	3"	4"	5"	6"
25	10	95	220	739					
30		60	147	565					
40		25	75	315	790				
50			50	220	560				
60			25	145	390	1185			
70			5	75	225	710			
80				65	195	630			
100				40	140	460			
130					50	215			
150					30	150			
200					15	95	475		
250						62	315	1020	
300						35	255	850	
350						10	145	535	
400							107	452	
500							42	245	650
625								120	395
750								112	380

TABLE VALUES ARE MAXIMUM PIPE RUN IN (feet)

NOTE: Pipe sizing is based on 0.5" H_2O pressure drop for Naural Gas. Also sizing includes nominal number of elbows and tees. Please verify adequate service and meter sizing.

5. RECOMMENDED DESIGN BEST PRACTICES:

5.1. Provide approximately 10 feet of pipe between the regulator and generator gas inlet. This does not have to be a single straight run. The pipe volume decouples the dynamic response of the generator throttle control system and the service regulator, reducing the probability of oscillation and unstable operation.

5.2. Avoid installing elbows or pipe swages immediately upstream or downstream of a regulator, unless specifically allowed by the regulator manufacturer. This will increase the turbulence of the gas flow, having a negative impact on pressure regulation accuracy and stability. Regulator manufacturers typically recommend 10 pipe diameters of straight pipe run upstream and downstream of a regulator. For example, on a regulator with 2" diameter pipe fittings, 20" of straight pipe should be fitted upstream and downstream of the regulator. When field conditions prohibit meeting both constraints, place the elbow on the high-pressure side of the regulator. The straight run on the low-pressure side is more critical for proper regulator operation.

5.3. Avoid installing pipe swages immediately before or after an elbow. The combined flow turbulence of the swage and elbow in close proximity can cause unexpectedly large pressure drops at high flow rates.

CONTINUED |

5.4. Minimize the number of 90-degree elbows. If more than three elbows are needed downstream of the regulator to accommodate the design, swept radius elbows are recommended to minimize pressure drop.

5.5. Use of an internally registered regulator is strongly recommended. Regulators with external pressure registration lines add an additional variable into the system that can be difficult to troubleshoot should the gas pressure become unstable under high-flow conditions.

5.6. For more stable gas flow with longer gas piping, the high pressure side may be raised as high as code allows and regulate it down to generator operating pressure at the generator. (This is the same design concept used in the electrical industry; "high voltage for long distances, transformation at the loads"). This may also help reduce cost as pipe diameters can be smaller, saving material and installation costs.

6. INSTALLATION AND COMMISSIONING RECOMMENDATIONS:

6.1. Refer to Generac's Installation Guidelines for Stationary Industrial Generators (Document #046622) for additional installation details.

6.2. Pig all gas pipes after installation to remove pipe dope, weld slag and other contaminants that could damage the regulator valve seat and cause pressure creep.

6.3. Install a dirt trap and/or screen before the gas regulator.

6.4. Set the regulator pressure with the generator running at no-load. Measurements are taken at the generator fuel pressure test port on the inside of the frame rail. For units configured for 7"-11" w.c. operating pressure, set the regulator to 11" w.c. no-load running. For units configured for 11-14" w.c. operating pressure, set the regulator to 14" w.c. no-load running. Pressure droop at full-load running will be a combination of regulator droop and pipe friction loss. Proper design will limit the no-load to full-load running pressure drop to no more than 2" w.c. and at no time can the gas pressure fall below the minimum pressure listed on the generator nameplate. Expect the lockup static pressure typically to be higher than the no-load running dynamic pressure.

7. METHODS FOR CORRECTING UNDESIRABLE PERFORMANCE:

7.1. Pressure surging and cycling: Should the regulator experience "hunting" or other unstable operating behavior, an extended vent line may be creating resonant condition on the atmospheric side of the regulator diaphragm. If this is suspected, temporarily disconnect the vent line or remove the cap from the regulator spring case and observe if the unstable behavior stops. Shortening the length or increasing the diameter of the vent line will often correct an instability caused by vent line resonance.

The pipe volume between the service regulator and the generator may be insufficient to decouple the control action of the regulator and the generator's throttle control system. Increase the pipe volume between the regulator and the generator.

Change the response time of the regulator. In some cases, a small adjustment of the regulator spring (up or down 1 w.c.) will be enough to restore stability to the system. If available for the selected regulator, using the next higher spring is another inexpensive and easy to implement option. This will slow the regulator response and can reduce or eliminate the instability. Keep in mind that changing to a higher spring rate will also increase pressure droop and reduce the regulator's maximum flow capacity which limits the applicability of this corrective measure.

CONTINUED | 8

7.2. Low gas pressure under high load: There are several potential causes of low gas pressure under high load.

Pipe runs with excessive friction loss caused by a pipe diameter that is too small for the required gas flow and pipe length and/or a large number of elbows. The only corrective action for this is to increase the pipe diameter between the regulator and the generator or to raise the pressure of the high pressure gas. Avoid this problem by using a gas pipe sizing tool during the design phase.

Insufficient regulator capacity. Confirm the upstream gas main and regulator flow capabilities for a given upstream gas pressure. If the upstream gas pressure is lower than originally anticipated, investigate the possibility adjusting the utility regulator (if present). If increasing upstream gas pressure is not possible, a larger orifice and/or different spring combination may be available for the existing regulator to increase flow and reduce pressure droop. If the previous steps fail to correct the situation, a larger regulator will be required. Avoid this problem by thoroughly reviewing the regulator manufacturer's flowrate tables prior to ordering.

7.3. Excessive transient pressure drop during generator crank cycle or block load application: If the transient pressure drop during a generator crank cycle or block load application is large enough to impact performance, speeding up the regulator response will reduce the transient pressure drop. Avoid this problem by using a direct-acting regulator that is suitable for engine-generator applications. If available for the selected regulator, using a lighter spring will increase the regulator response speed and reduce transient pressure dip. Finally, if a remotely registered regulator is used, increase the pipe diameter of the remote sensing line.

7.4. Pressure creep: Ensure the selected regulator has a lockup or hard-shutoff feature. Pressure creep is almost always caused by contaminants in the pipe system upstream of the regulator. The contaminants either get caught on the regulator valve disk or cause physical damage to the valve disk, making it impossible to achieve a hard shutoff. Avoid this problem by pigging all pipe components prior to installing the regulator and ensure a dirt trap is installed upstream of the regulator.

7.5. Failure to start, run smoothly, or accept 100% load: Barring a mechanical failure on the generator, failure to make 10-second start, run smoothly, or carry full load is almost always caused by an underlying gas supply problem.

8. PROPANE VAPOR AND LIQUID:

8.1. Propane vapor system: This type of system uses the vapors formed above the liquid fuel in the supply tank. The maximum tank liquid capacity is 80% and a minimum of approximately 20% of the tank capacity is required to boil off liquid into the vapor state. Gas pressure and volume requirements for an LPG system at the connection point of the generator are listed on the unit specification sheet. The piping system connecting the outlet of the first stage regulator to the connection point on the second stage regulator must be properly sized to provide the fuel volume required by the unit at 100% load.

The piping system between the outlet of the second stage regulator and the generator connection point must be sized to provide the fuel volume required by the generator at 100% load while also staying within the pressure range noted on the unit specification sheet.

8.2. Tank vaporization rate: In addition to sizing the gas piping system in a similar manner to natural gas, LP-vapor systems must also size the propane storage tanks to ensure a sufficient volume of gas will boil off

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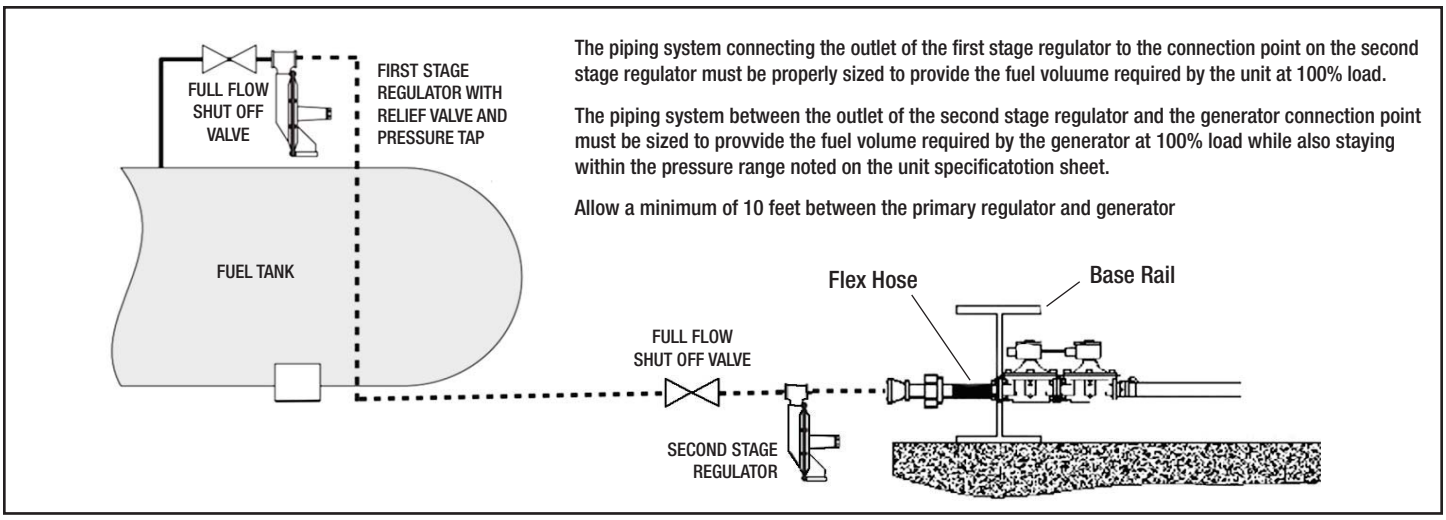


Figure 4: Typical LP vapor withdrawal system.

under a range of environmental conditions and various liquid levels in the tank. Liquid propane absorbs ambient heat from the surrounding environment to boil off liquid into a gas. Low liquid levels in a tank coupled with cold ambient temperatures can result in a condition where the tank boil off rate is insufficient to meet the demands of the generator.

The local propane supplier is often a good resource to help with tank sizing. The Emerson-Fisher LP-Gas Serviceman's Handbook is another valuable resource for sizing propane systems and includes tank vaporization tables.[8] In many cases, the tank volume must be larger (sometimes much larger) than the gas required to achieve a desired runtime. Where practical, buried tanks can improve the vaporization rate by protecting the tank from extremely low ambient air temperatures.

8.3. Liquid propane system: This system delivers propane in a liquid state (LPL) to the connection point on the generator set. Liquid propane systems are used where it is impractical to achieve the required boil off rate from the available fuel tank volume. For the engine to use the LPL fuel, the liquid must be vaporized prior to being delivered to the fuel mixer (carburetor). LPL will vaporize at a temperature of

Max. Intermittent Withdrawal Rate (BTU/HR) Without Tank Frosting* If Lowest Outdoor Temperature (Average for 24-Hours) Reaches . . .

	TANK SIZE (Gallons)			
TEMPERATURE	150	250	500	1,000
40°F	214,900	288,100	478,800	852,800
30°F	187,900	251,800	418,600	745,600
20°F	161,800	216,800	360,400	641,900
10°F	148,000	198,400	329,700	587,200
0°F	134,700	180,600	300,100	534,500
-10°F	132,400	177,400	294,800	525,400
-20°F	108,800	145,800	242,300	431,600
-30°F	107,100	143,500	238,600	425,000

* Tank frosting acts as an insulator, reducing the vaporization rate.

Table 3: Above ground AMSE Tank vaporization rate, LP-Gas Serviceman's Handbook.

(-44°F/-42.2°C). The generator set LPL fuel system delivery pressure operates over the range of 58-180 psi (400-1242 kPa), depending on the ambient temperature and liquid level in the storage tank. LPL enters the vaporizer and passes into a "flash" chamber. The pressure drop in this chamber vaporizes the liquid to a gas and is regulated to negative 11"-14" w.c. (2.9-3.5 kPa). Heated engine coolant from the jacket water heater is used to heat the flash chamber of the vaporizer and to prevent the vaporizer from icing.

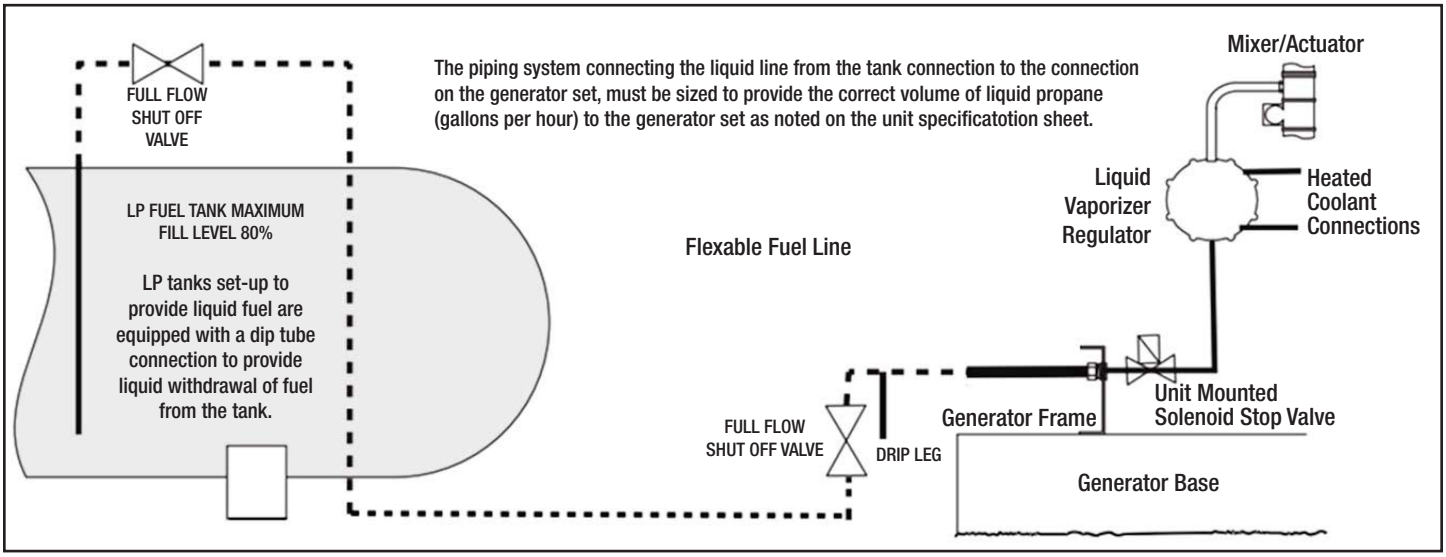


Figure 5: Typical LP liquid withdrawal system.

8.4. Dual fuel, natural gas primary and propane secondary: Some applications use a dual fuel system where the primary source may not be available during a power outage. Dual fuel systems use natural gas as the primary fuel and LPG or LPL withdrawal as the secondary fuel. For dual fuel units, the specific fuel pressure, volume, and pipe sizing requirements for each fuel type must be observed.

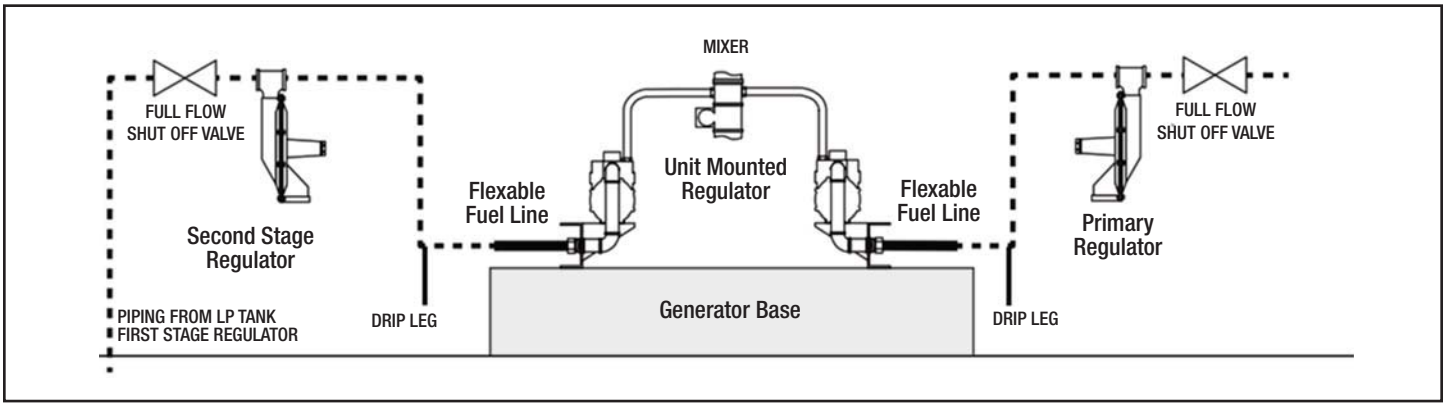


Figure 6: Typical dual-fuel system.

9. ADDITIONAL RESOURCES:

[1] NFPA 37 “Installation and use of Stationary Combustion Engines”
NFPA 54 “National Fuel Gas Code”
NFPA 58 “LP Gas Code”
Free access to view NFPA code documents can be found at:
https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/Free-access.

[2] Data sheets for Generac Industrial gas generator sets:
https://www.generac.com/Industrial/products/gaseous-generators.

[3] A more thorough description of the operational principles and performance attributes of gas regulators can be found in Emerson-Fisher’s Natural Gas Application Guide at:
http://www.emerson.com/en-us/automation/valves-actuators-regulators/regulators.

[4] Causes and Cures of Regulator Instability, Class #6010. William H Earney, Fisher Controls International Inc. 1995.
https://www.scribd.com/document/197653841/Causes-and-Cures-of-Regulator-Instability

[5] Sensus product data sheets: https://sensus.com/products/?utility=gas

[6] The Bernoulli Effect will cause a difference in gas pressure only when gas is flowing. When a remote sensing regulator is used, and the remote sensing point is located in a pipe section that is a larger diameter than the generator fuel inlet, under high-flow conditions it can result in an additional 1”-2” w.c. of pressure difference that cannot be eliminated. https://en.wikipedia.org/wiki/Bernoulli%27s_principle

[7] Power Design Pro is Generac’s web-based generator sizing tool that includes modules for gas supply pipe sizing and exhaust pipe sizing. It can be accessed and used free of charge at:
https://pdp.powerdesignpro.com.

[8] LP-Gas Serviceman’s Handbook, Emerson Fisher.
http://www.squibbtaylor.com/uploaded/lp10servicemaninst.pdf.

Generac Power Systems, Inc.
S45 W29290 Hwy. 59, Waukesha, WI 53189 | 1-888-GENERAC (1-888-436-3722) | 10000046207 10/2020

GENERAC.COM

FUEL SPECIFICATION
Natural Gas

Generac products are designed to run on natural gas and are tested for performance and reliability with clean, dry, pipeline quality natural gas. The properties presented in this standard represent the natural gas used in product testing. The performance and reliability of Generac products using non-conforming fuels are unknown and cannot be guaranteed.

Natural gas is, by definition, any gas that occurs organically, but this standard focuses on natural gas that is intended for use as fuel in reciprocating internal combustion engines. This natural gas is generally assumed to have specific properties, but compositional differences and contaminates greatly influence the fuel's quality and combustion stability. This variation can lead to lower power output, pre-ignition, detonation, and corrosion if the fuel does not meet this standard. This standard identifies an acceptable fuel composition for use in Generac products.

Fuel Specifications

The fuel used by Generac is clean, dry, pipeline quality natural gas adhering to the following:

Component / Property	Unit	Range
Methane	% Volume	80 Minimum
Ethane	% Volume	0-10
Propane	% Volume	0-5
Butanes	% Volume	0-2
Pentanes and Heavier	% Volume	0-0.5
Nitrogen and Other Inerts	% Volume	0-3
Carbon Dioxide	% Volume	0-3
Total Diluents Gases	% Volume	0-5
Hydrogen Sulfide	g/100scf (mg/m3)	0.25-0.3 (6-7)
Total Sulfur	g/100scf (mg/m3)	5-20 (115-460)
Water Vapor	lb/MMscf (mg/m3)	4-7 (60-110)
High Heating Value	Btu/scf (kJ/m3)	950-1,150 (35,400-42,800)
Methane Number	MN	80 Minimum

Notes:
- The fuel must be free of liquid water and hydrocarbons at delivery temperature and pressure.
- The fuel must be free of particulate matter.

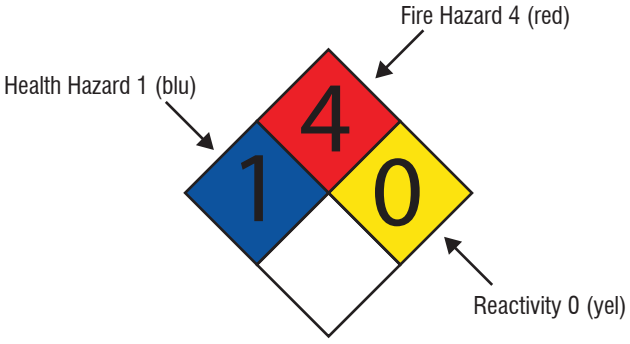
Hazards Information

Emergency Overview

DANGER!
EXTREMELY FLAMMABLE GAS - MAY CAUSE FLASH FIRE OR EXPLOSION!

High concentrations may exclude oxygen and cause dizziness and suffocation. Contact with pressurized vapor may cause frostbite or freeze burn.

NFPA 704 Hazard Identification System



4 - Severe | 3 - Serious | 2 - Moderate | 1 - Slight | 0 - Minimal

Part No. A0000641394
Rev. B 4/13/2020

FUEL SPECIFICATION
Liquid Petroleum Gas (LPG) - Odorized Commerical Propane (HD-5)

Commercial propane is a hydrocarbon product for use where high volatility is required. It is suitable for certain low severity internal combustion engine applications. At Generac, generators and other equipment using combustion engines are tested using LPG, typically available in USA and Canada, with chemical and physical properties listed below. The variations from this fuel standard can lead to lower power output, pre-ignition, detonation and corrosion.

Chemical Data

Chemical Name: Propane
Chemical Family: Liquid Petroleum Gas (Paraffinic Hydrocarbon)
Molecular Formula: C_3H_8
Allowable Contents of (by Volume):
- Minimum of 90% Propane
- Maximum of 5% Propylene
- Maximum of 2.5% Butane and Heavier
- Remainder - Other Gases (Methane, ect.)

Energy Density: 46.4 MJ/kg

Physical Properties

Description	Unit	Test Method	Results
Molar Mass	g/mol (lb/mol)	ASTM D2597	44.1(0.09722)
Density (Gas) @ STP	kg/m³ (lb/gal)	ASTM D1657	1.83 (0.0153)
Density (Liquid @ Boiling Point)	kg/m³ (lb/gal)	ASTM D1657	581.2 (4.85)
Boiling Point @ 1 atm (14.7 psia)	°C (°F)	ASTM D2887	-41.2 (-42.1)
Vapor Pressure @ 37.8°C (100°F)	kPa (psig)	ASTM D1267	1,434 (208)
Expansion Ratio @ 1 atm (14.7 psia)	-------	ASTM D1267	1 to 270
Solubility in Water	-------	-------	Slight
Appearance*	-------	-------	Colorless
Odor*	ppmv	ASTM D5305	5 or More

***Odorant Warning:** When LPG is first made it is colorless and odorless. An odorant is added to aid in the detection of leaks. One common odorant is Ethyl Mercaptan, CAS No. 75-08-01. Odorant has a foul smell. The ability of people to detect odors varies widely. In addition, certain chemical reactions with material in the propane system, or fugitive propane gas from underground leaks passing through certain soils can reduce the odor level. No odorant will be 100% effective in all circumstances. If odorant appears to be weak, notify propane supplier immediately.

Composition/Information of Ingredients

Ingredient Name/Cas Number	Percentage	OSHA PEL
Propane/74-98-6	90-100	1,000 ppm
Ethane/74-84-0	0-7.5	
Propylene/115-07-1	0-5	
Butanes/Various	0-2.5	800 ppm
Ethyl Mercaptan/75-08-1	16.25 ppm	0.5 ppm

Part No. A0000641396
Rev. A 4/8/2020

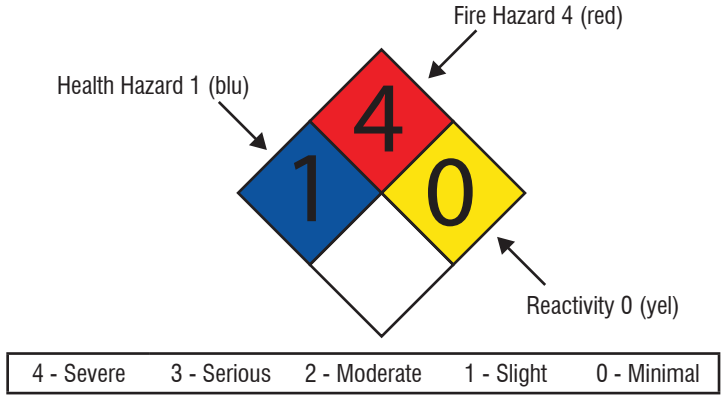
FUEL SPECIFICATION
Liquid Petroleum Gas (LPG) - Odorized Commerical Propane (HD-5)

Hazards Information

Emergency Overview

DANGER! Flammable liquefied gas under pressure. Keep away from heat, sparks, heat and all other ignition sources. Vapor replaces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing of vapor. Keep container valve closed when not in use.

NFPA 704 Hazard Identification System



Regulatory Information

The following information concerns selected regulatory requirements potentially apply to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state, county and local level.

U.S. Federal Regulations

EPA:

CERCLA – 40 CFR Parts 117 and 302
SARA – Section 302/304
– Section 311/312

OSHA: 29 CRF 1910.119

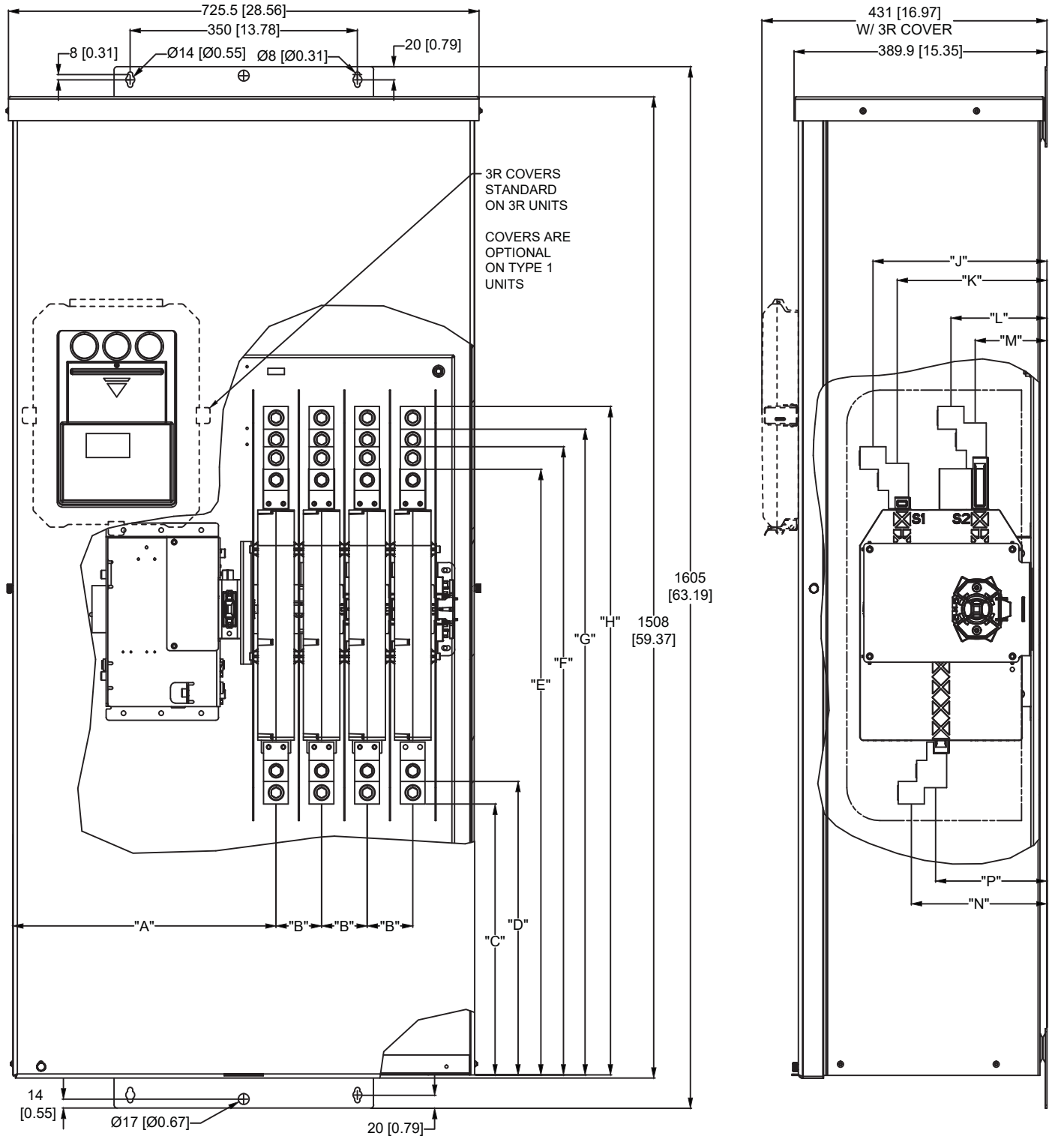
NFPA 58 *Liquefied Petroleum Code* and OSHA 29 CRF 1910.110 require that all persons employed in handling LP-gases be trained in proper handling and operating procedures, which the employer shall document. Contact your propane supplier to arrange for the required training. Allow only trained and qualified persons to install and service propane containers and systems.

Other Information

Special Precautions: Use piping and equipment adequately designed to withstand pressures to be encountered.

References

CAS Chemical Abstracts Services
LPS Liquefied Petroleum Gas
OSHA Occupational Safety and Health Administration
EPA Environmental Protection Agency
CERCLA Comprehensive Environmental Response, Compensation and Liability Act of 1980
SARA Superfund Amendment and Reauthorization Act
ASTM D1835 – 11
Farrellgas MSDS – Propane



ALL DIMENSION ARE: mm [inches]

DESCRIPTION	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"	DIM "F"	DIM "G"	DIM "H"	DIM "J"	DIM "K"	DIM "L"	DIM "M"	DIM "N"	DIM "P"	WEIGHT
600A NON SER 2 & 3 POLE	459.5	70.3	384.3	419.3	990.6	1025.5	1057.7	1092.6	245.2	207.6	125.2	87.6	185.2	147.6	111 kg
	[18.09]	[2.80]	[15.13]	[16.51]	[39.00]	[40.37]	[41.64]	[43.02]	[9.65]	[8.17]	[4.93]	[3.45]	[7.29]	[5.81]	245 lbs
600A NON SER 4 POLE	411.5	70.3	384.3	419.3	990.6	1025.5	1057.7	1092.6	245.2	207.6	125.2	87.6	185.2	147.6	116 kg
	[16.20]	[2.80]	[15.13]	[16.51]	[39.00]	[40.37]	[41.64]	[43.02]	[9.65]	[8.17]	[4.93]	[3.45]	[7.29]	[5.81]	256 lbs

REVISION: A
REVISION DATE: 01/18/2022

ID TX SWITCH NON SERVICE ENTRANCE 600A
A0001692525
NOT TO SCALE

LEGEND

AFS	– AIR/FUEL SOLENOID	IFT	– INTERFACE TRANSFORMER
AH1	– ALARM HORN	INS	– IGNITION NOISE SUPPRESSION
ALT	– DC CHARGE ALTERNATOR	J_	– ENGINE CONTROL MODULE CONN.
ATS_	– AIR TEMPERATURE SENDER	LFP	– LOW FUEL PRESSURE SWITCH
AVR	– AUTOMATIC VOLTAGE REGULATOR	MLCB	– MAIN LINE CIRCUIT BREAKER
BCC	– BATTERY CHARGER CONNECTOR	MOD	– MODEM CONNECTOR
BCH	– BATTERY CHARGER	MPU1	– MAGNETIC PICKUP
CB	– CIRCUIT BREAKER DPE	NB	– NEUTRAL BLOCK
CO	– CROSSOVER CONNECTOR	OPS1	– OIL PRESSURE SENDER
COM	– COMMUNICATIONS PORT	OS	– OXYGEN SENSOR
CT_	– CURRENT TRANSFORMER	OTC	– OIL TEMPERATURE CONNECTOR
DB	– DIODE BRIDGE	OTS_	– OIL TEMPERATURE SENDER
DIST	– DISTRIBUTOR	R1	– RESISTOR
ES1	– EMERGENCY STOP SWITCH	RB_	– RELAY BOARD
EXC	– EXCITER	RB_A	– RELAY BOARD CONNECTOR
F_	– FUSE	SC	– START CONTACTOR
FS_	– FUEL SOLENOID	SM	– STARTER MOTOR
FSP	– FUEL SOLENOID PLUG	SW1	– OFF/AUTO/MANUAL SWITCH
FSR	– FUEL SOLENOID RECEPTACLE	SWC	– OPERATOR SWITCH CONNECTOR
GA_	– GOVERNOR ACTUATOR	TB_	– TERMINAL BLOCKS
GD	– GOVERNOR DRIVER	WLS_	– COOLANT LEVEL SENDER
GFCI	– GROUND FAULT CURRENT INTERRUPT	WTS_	– COOLANT TEMPERATURE SENDER
GND	– GROUND BAR CONNECTION		

NOTE: ALL WIRES 18 AWG 300V UL LISTED UNLESS SHOWN OTHERWISE.

AWG SIZE

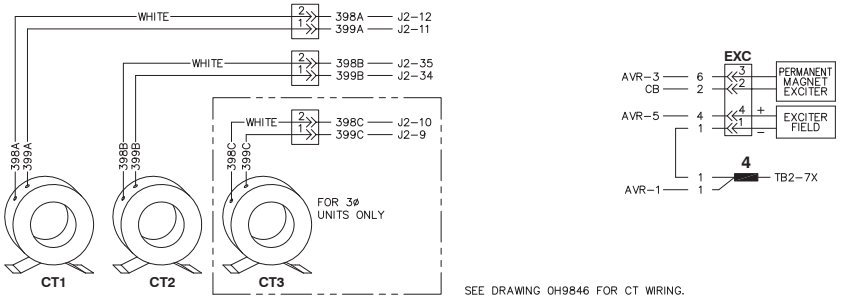
12

SPLICE NUMBER

3

WIRE SPLICE

COMPONENTS LOCATED IN ALTERNATOR CONNECTION BOX



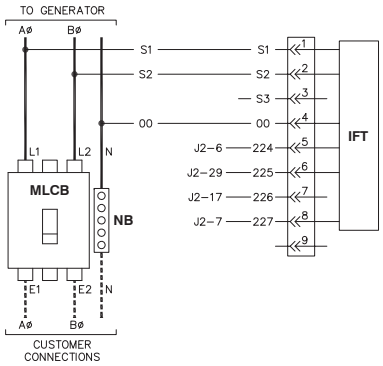
SEE DRAWING 0H9846 FOR CT WIRING.

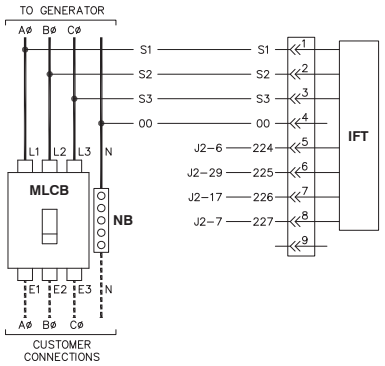
COMPONENTS LOCATED IN HIGH VOLTAGE CUSTOMER CONNECTION MODULE

CONNECTIONS FOR 1Ø UNIT

NOTE: ALL WIRES IN THIS SECTION ARE 600V RATED

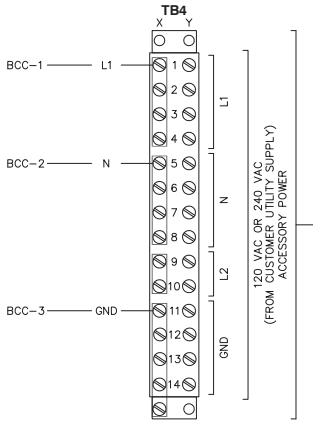
CONNECTIONS FOR 3Ø UNIT





COMPONENTS LOCATED IN HIGH VOLTAGE CUSTOMER CONNECTION MODULE

NOTE: ALL WIRES ON THIS PAGE ARE 600V RATED



NOTE:
FOR FIELD WIRING TO CUSTOMER CONNECTIONS (TERMINAL STRIP)
MAXIMUM WIRE SIZE: #10 AWG
RECOMMENDED TIGHTENING TORQUE: 14 LB–IN

OR

US & CANADA ONLY

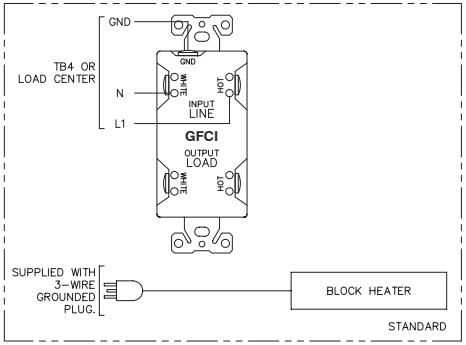
GND
N
L1

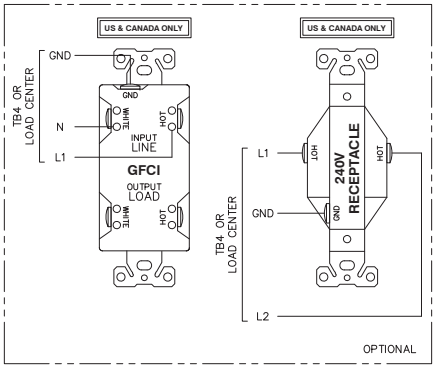
120/240 VAC UTILITY SUPPLY (BY CUSTOMER)

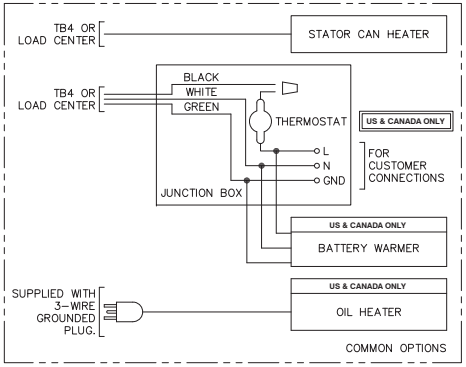
125A LOAD CENTER

L1
GND
L2

VERIFY COMPONENT RATINGS FOR PROPER SUPPLY VOLTAGE TO BE PROVIDED.

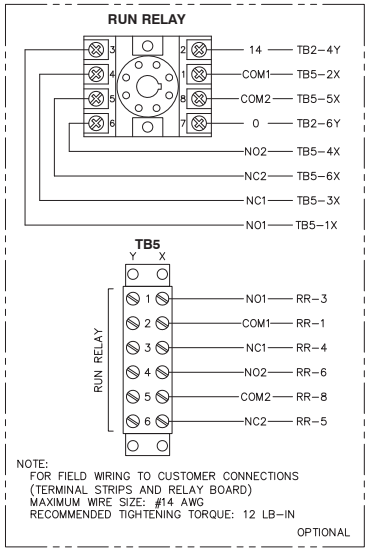




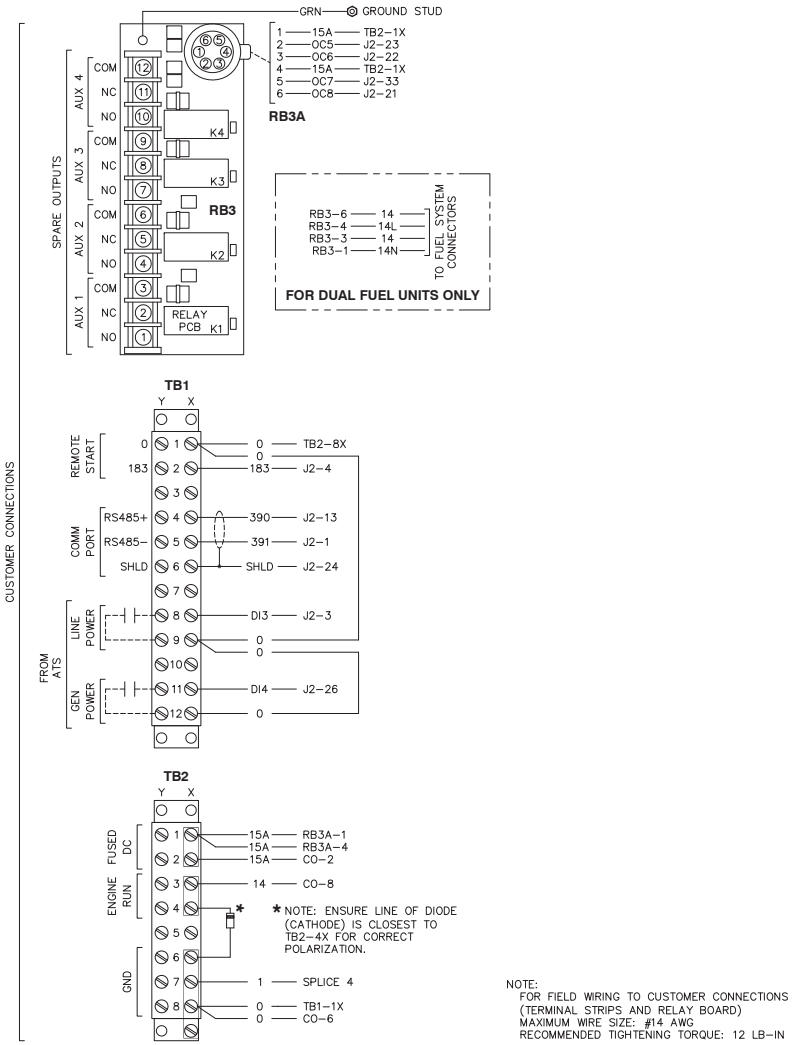


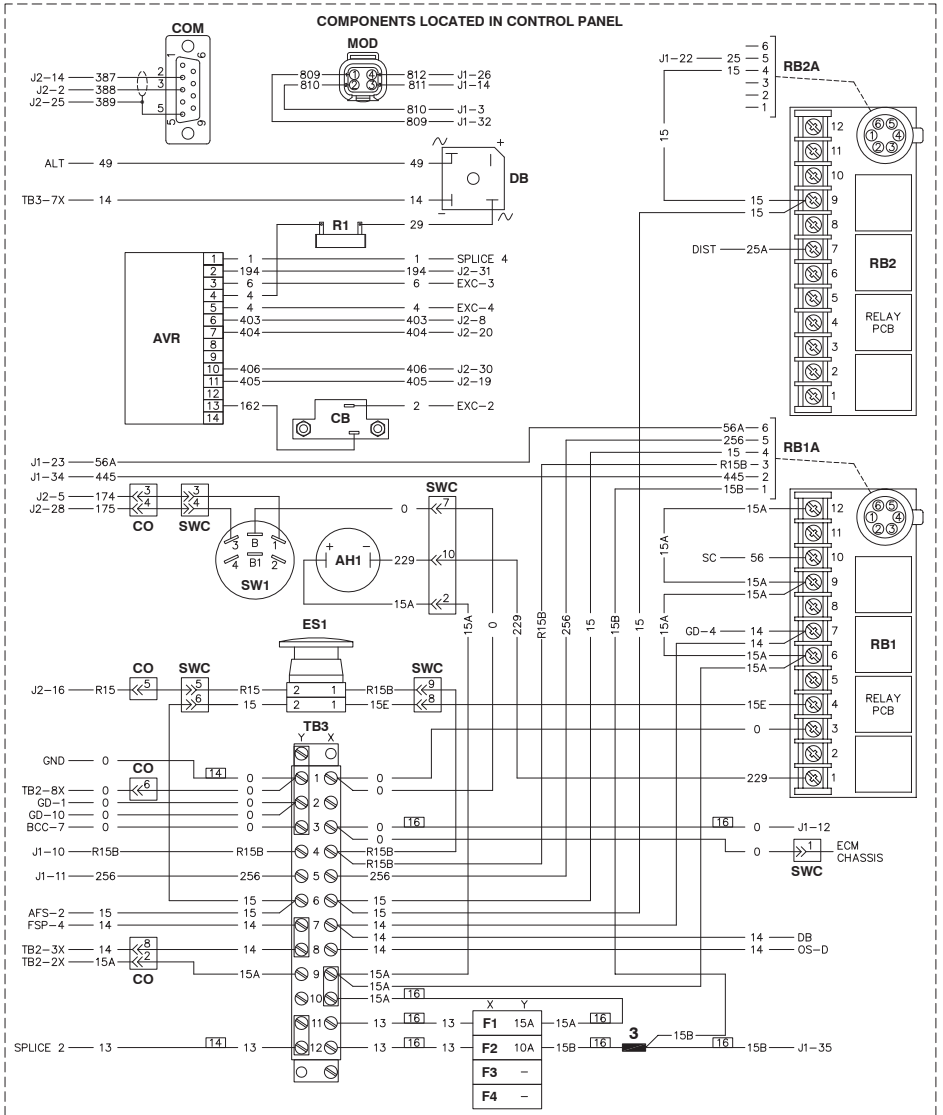
COMPONENTS LOCATED IN HIGH VOLTAGE CUSTOMER CONNECTION MODULE

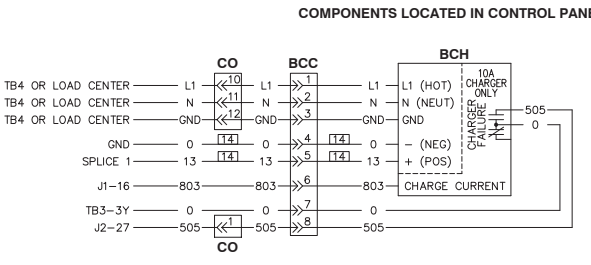
NOTE: ALL WIRES ON THIS PAGE ARE 600V RATED

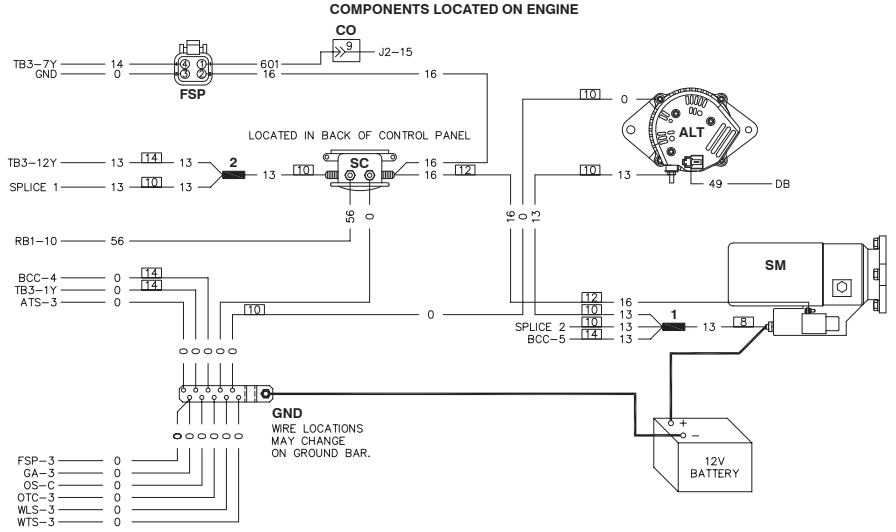


COMPONENTS LOCATED ON LOW VOLTAGE CUSTOMER CONNECTION PANEL

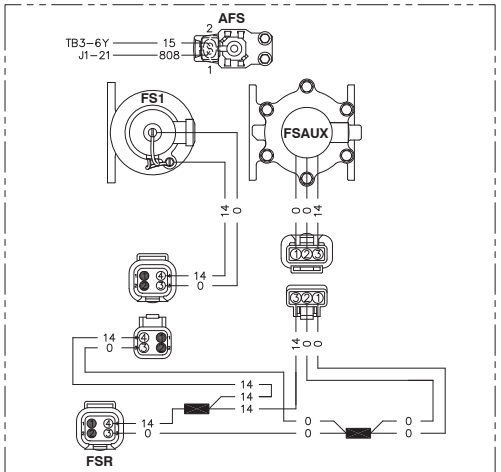



COMPONENTS LOCATED IN CONTROL PANEL
COM
MOD
J2-14 387
J2-2 388
J2-25 389
809
810
812 J1-26
811 J1-14
810 J1-3
809 J1-32
ALT 49
49
DB
TB3-7X 14
14
R1
29
AVR
1 SPLICE 4
194 J2-31
6 EXC-3
4 EXC-4
403 J2-8
404 J2-20
406 J2-30
405 J2-19
162
2 EXC-2
CB
J1-22 25
15
RB2A
DIST 25A
RB2
RELAY PCB
J1-23 56A
J1-34 445
RB1A
J2-5 174
J2-28 175
CO
SWC
SW1
AH1
229
15A
SC 56
GD-4 14
RB1
ES1
J2-16 R15
R15B
15E
TB3
GND 0
TB2-8X 0
GD-1 0
GD-10 0
BCC-7 0
J1-10 R15B
J1-11 256
AFS-2 15
FSP-4 14
TB2-3X 14
TB2-2X 15A
SPLICE 2 13
F1 15A
F2 10A
F3 –
F4 –
J1-12
ECM CHASSIS
DB
OS-D
J1-35

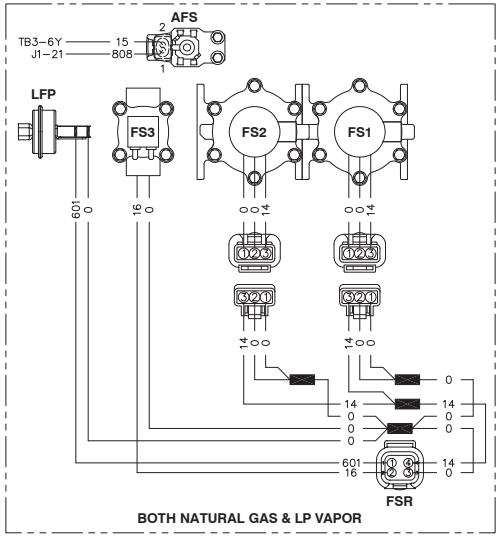

COMPONENTS LOCATED IN CONTROL PANEL
CO
BCC
BCH
TB4 OR LOAD CENTER L1
TB4 OR LOAD CENTER N
TB4 OR LOAD CENTER GND
GND 0
SPLICE 1 13
J1-16 803
TB3-3Y 0
J2-27 505
L1 (HOT)
N (NEUT)
GND
– (NEG)
+ (POS)
CHARGE CURRENT
10A CHARGER ONLY
CHARGER FAILURE
505
0


COMPONENTS LOCATED ON ENGINE
CO
TB3-7Y 14
GND 0
601
16
J2-15
FSP
LOCATED IN BACK OF CONTROL PANEL
TB3-12Y 13
SPLICE 1 13
SC
ALT
49
DB
RB1-10 56
BCC-4 0
TB3-1Y 0
ATS-3 0
SM
SPLICE 2 13
BCC-5 13
GND
WIRE LOCATIONS MAY CHANGE ON GROUND BAR.
12V BATTERY
FSP-3 0
GA-3 0
OS-C 0
OTC-3 0
WLS-3 0
WTS-3 0

COMPONENTS LOCATED ON ENGINE

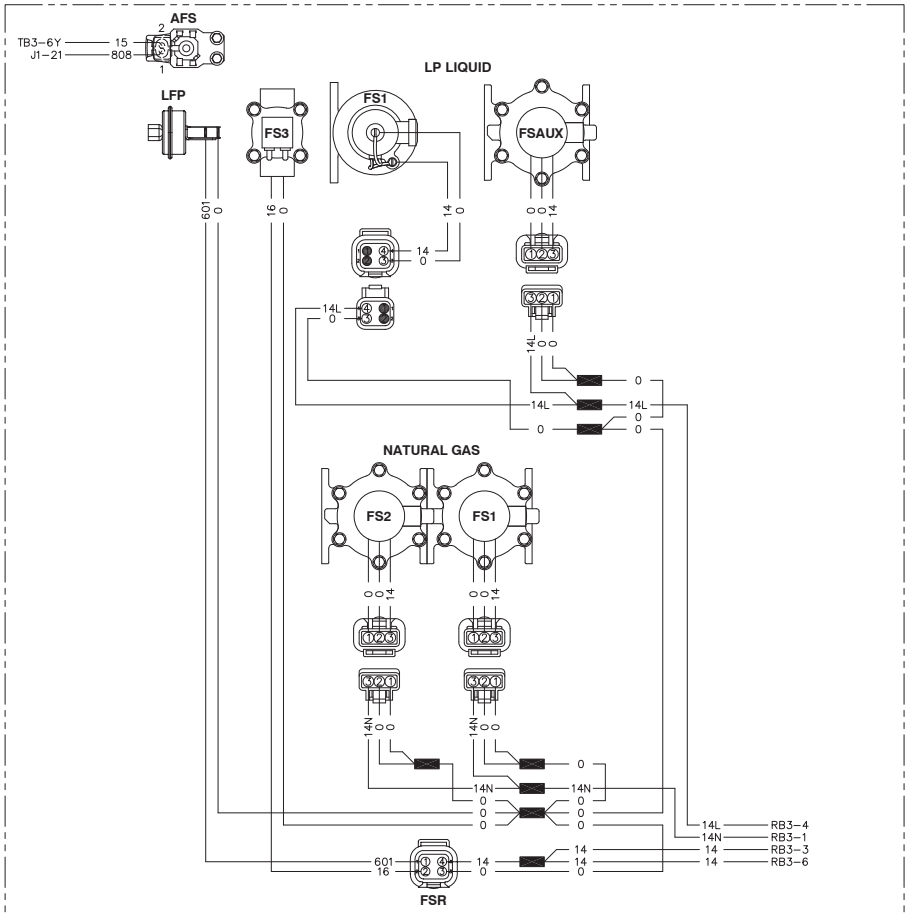


LP LIQUID



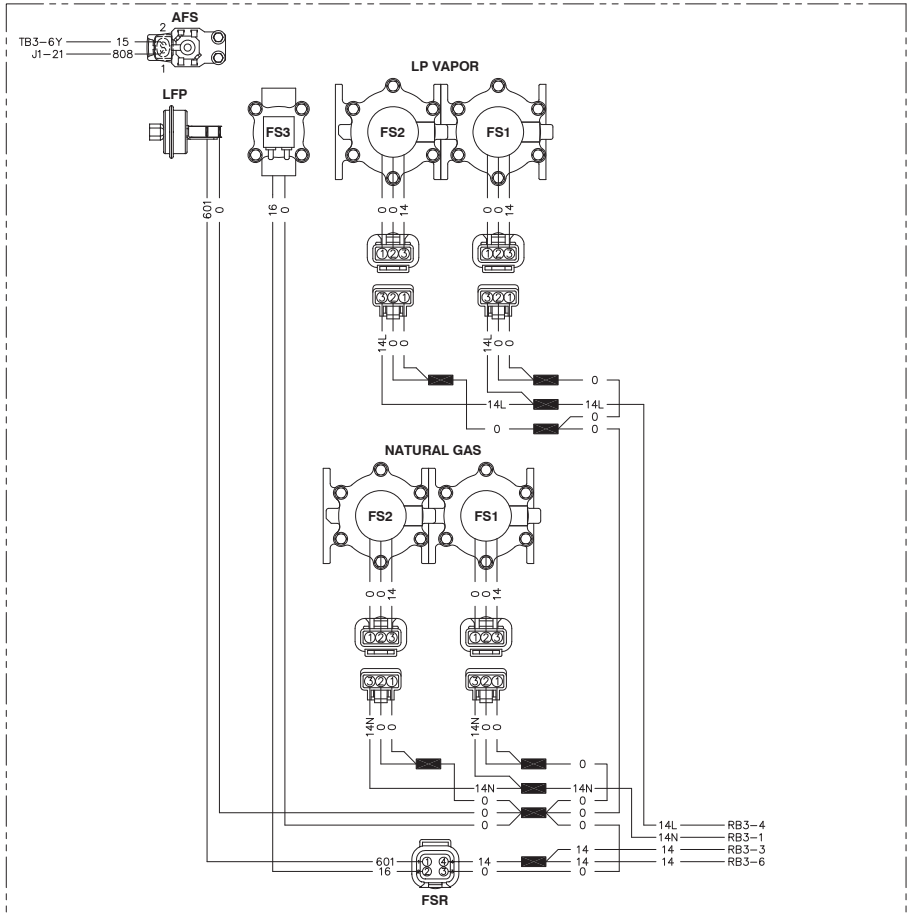
BOTH NATURAL GAS & LP VAPOR

COMPONENTS LOCATED ON ENGINE



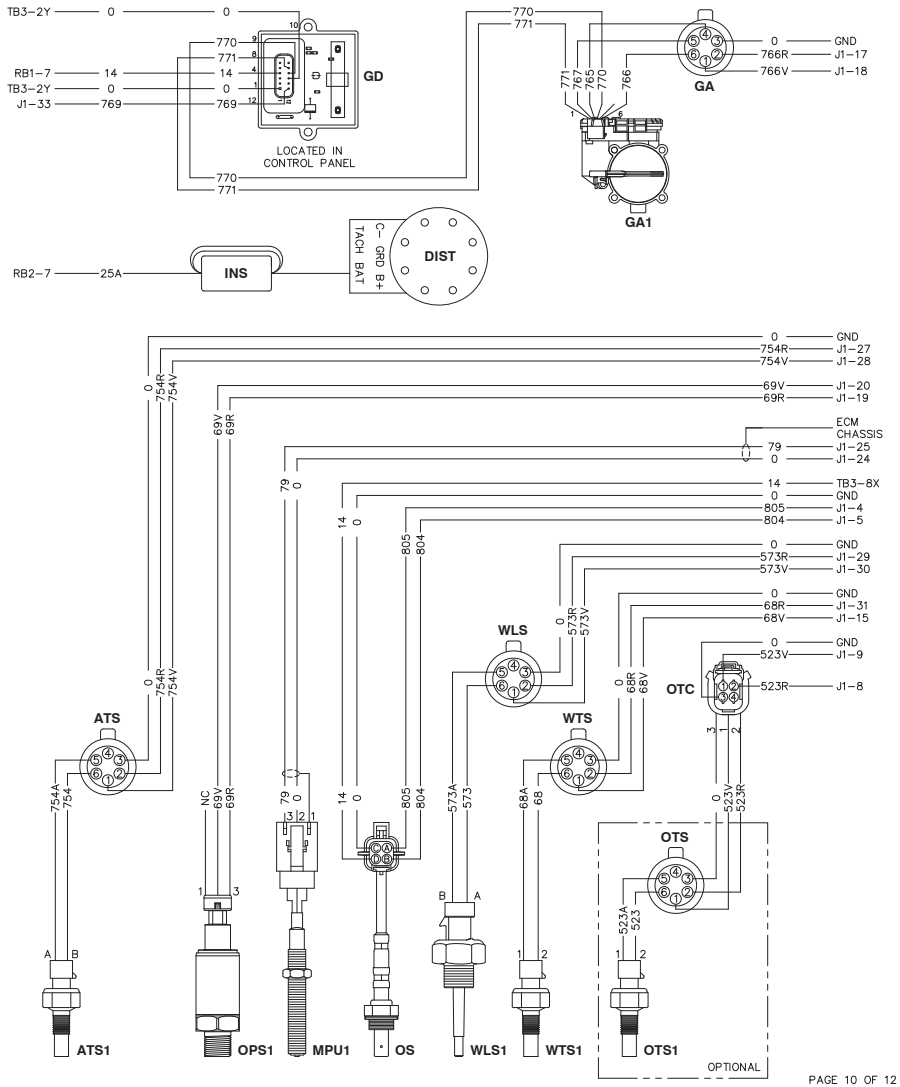
FOR DUAL FUEL NG/LPL UNITS ONLY

COMPONENTS LOCATED ON ENGINE



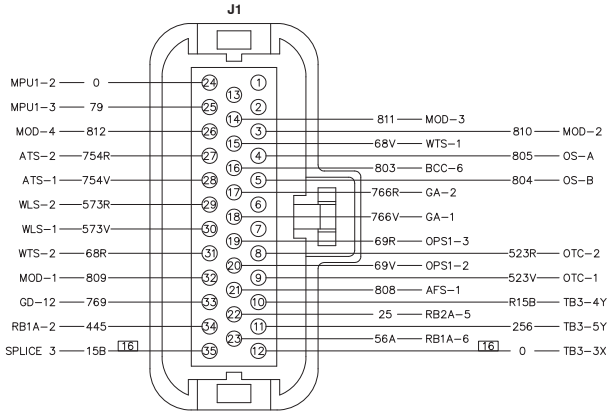
FOR DUAL FUEL NG/LPV UNITS ONLY

COMPONENTS LOCATED ON ENGINE

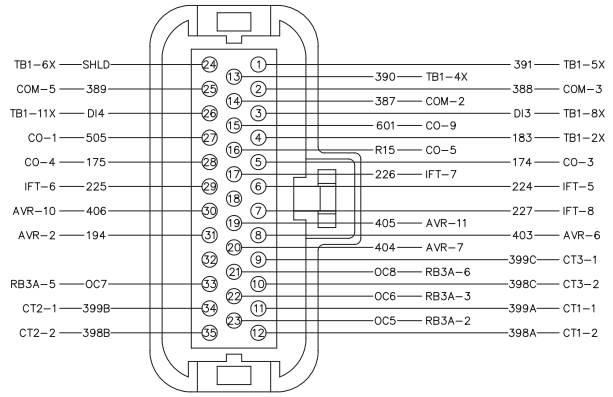


ENGINE CONTROL MODULE CONNECTORS

J1



J2



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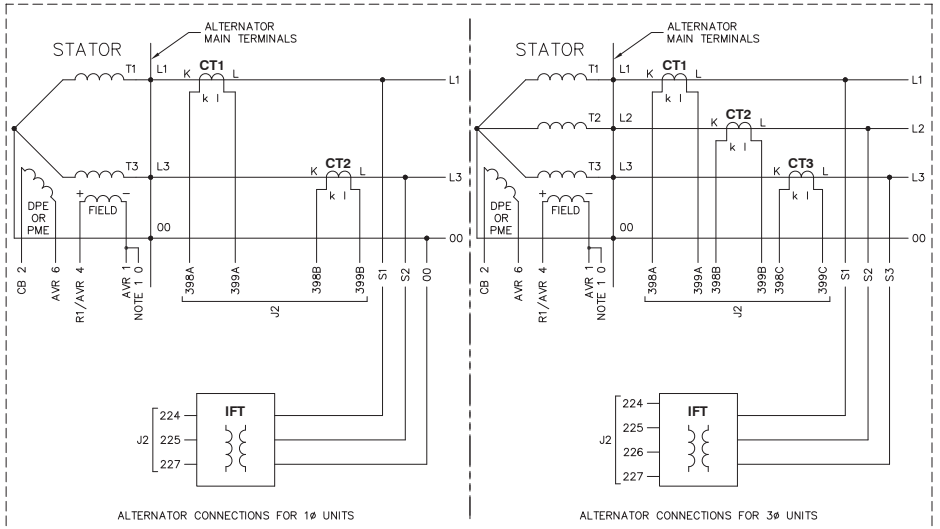
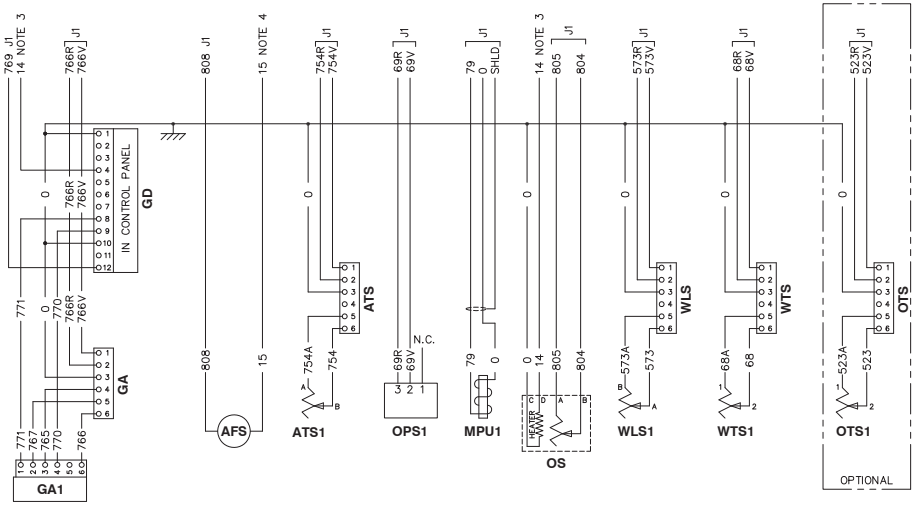
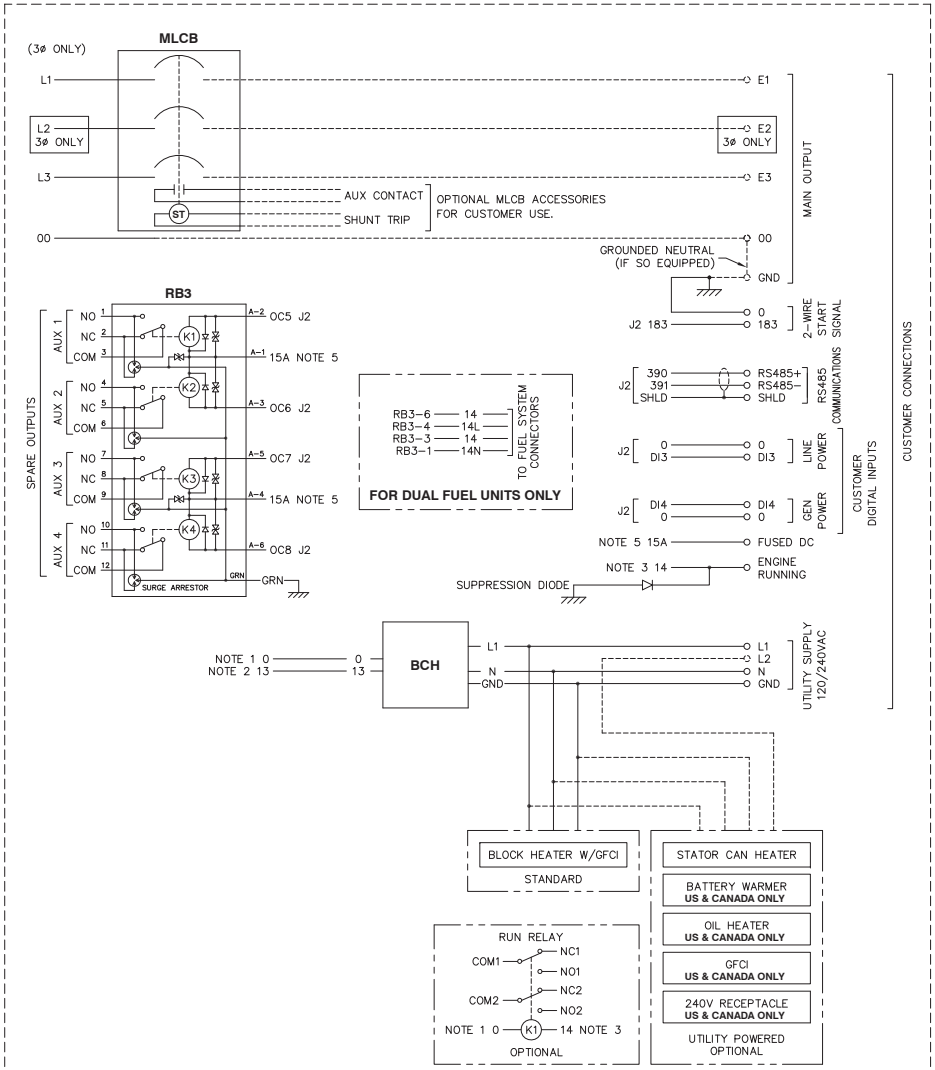
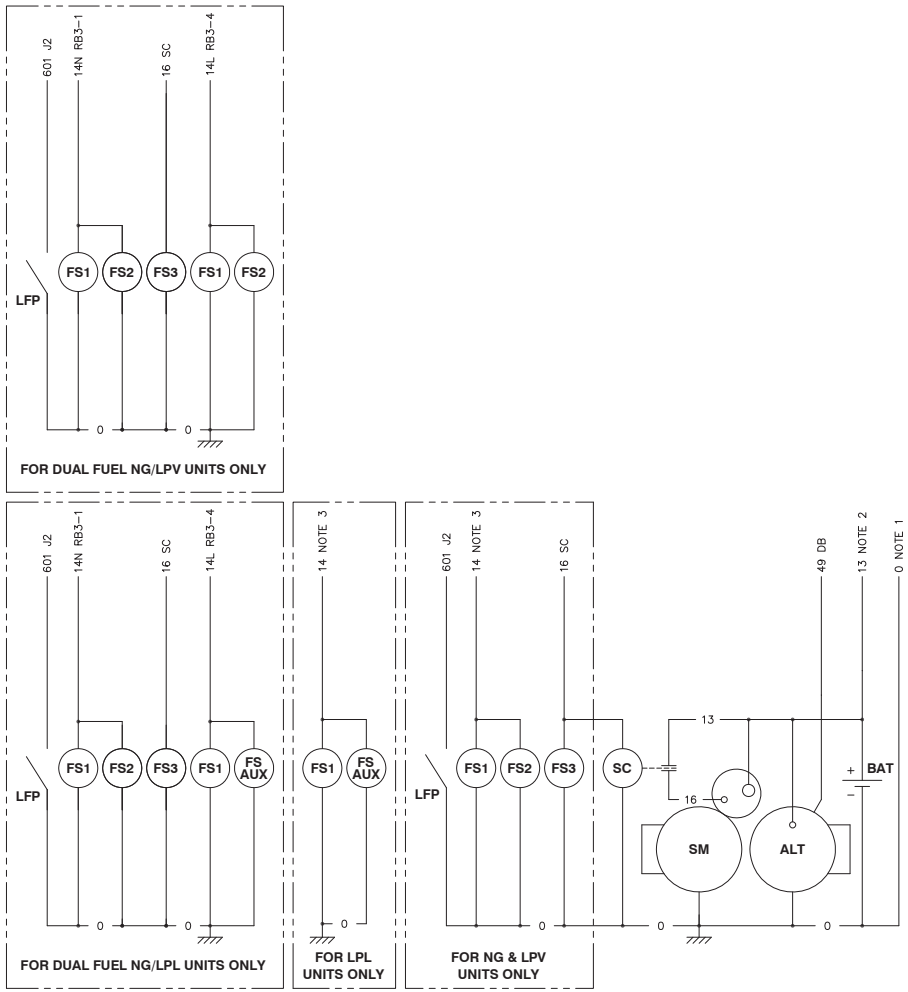




SCHEMATIC - DIAGRAM
G9.0L G18 TURBO H-PANEL
DRAWING #: 0K9430

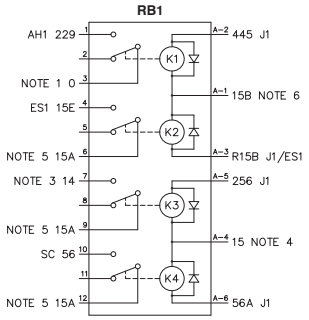


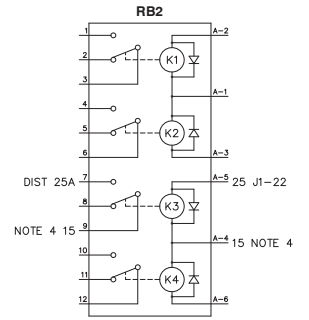
SCHEMATIC - DIAGRAM
G9.0L G18 TURBO H-PANEL
DRAWING #: 0K9430

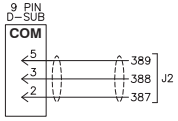


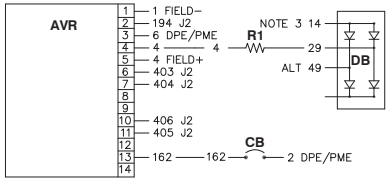
SCHEMATIC - DIAGRAM
G9.0L G18 TURBO H-PANEL
DRAWING #: 0K9430

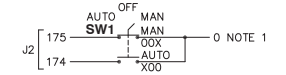
REVISION: J-1105-B
DATE: 10/24/14

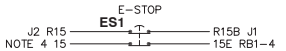


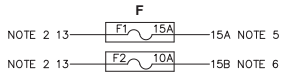


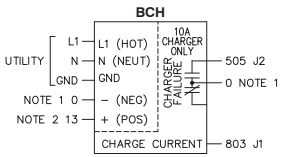


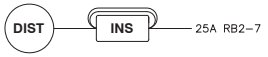












SCHEMATIC - DIAGRAM
G9.0L G18 TURBO H-PANEL
DRAWING #: 0K9430

REVISION: J-1105-B
DATE: 10/24/14

AVR CONNECTOR

PIN	WIRE	TO	FUNCTION
1	1	FIELD	– FIELD
2	194	J2–31	+12VDC
3	6	DPE/PME	EXCITER OUTPUT
4	4	R1/FIELD	+ FIELD
5	4	R1/FIELD	+ FIELD
6	403	J2–8	GATE TRIGGER B
7	404	J2–20	GATE TRIGGER A
10	406	J2–30	ZERO CROSSING INPUT
11	405	J2–19	GROUND (ISO)
13	162	CB	EXCITER OUTPUT (AFTER CB)

GD CONNECTOR

PIN	WIRE	TO	FUNCTION
1	0	GND	NOTE 1
4	14	RB1–7	NOTE 3
8	771	GA1–1	THROTTLE DRIVE LO
9	770	GA1–4	THROTTLE DRIVE HI
10	0	GND	NOTE 1
12	769	J1–33	THROTTLE PULSE WIDTH MODULATION

NOTES:

1) WIRE# 0 IS CHASSIS GROUND (BATTERY–) UNLESS NOTED OTHERWISE.

2) WIRE# 13 IS UNFUSED +12VDC (BATTERY+).

3) WIRE# 14 IS FUSED +12VDC WHEN GENERATOR IS CRANKING OR RUNNING.

4) WIRE# 15 IS FUSED +12VDC WHEN E–STOP IS NOT ACTIVATED.

5) WIRE# 15A IS FUSED +12VDC FOR GENERAL USE.

6) WIRE# 15B IS FUSED +12VDC FOR THE ENGINE CONTROL MODULE.

7) WIRE# 15E IS FUSED +12VDC CONTROLLED BY ENGINE CONTROL MODULE PRIOR TO E–STOP.

ENGINE CONTROL MODULE CONNECTIONS

J1

PIN	WIRE	TO	FUNCTION
3	810	MOD–2	MODEM SIGNAL RETURN
4	805	OS–A	OXYGEN SENSOR RETURN
5	804	OS–B	OXYGEN SENSOR +
8	523R	OTS–2	OIL TEMPERATURE RETURN
9	523V	OTS–1	OIL TEMPERATURE +
10	R15B	RB1A–3/ES1	OVERSPEED/WATCHDOG
11	256	RB1A–5	FUEL RELAY
12	0	GND	NOTE 1
14	811	MOD–3	MODEM DATA CARRIER DETECT
15	68V	WTS–1	COOLANT TEMPERATURE +
16	803	BCH	BATTERY CHARGER CURRENT
17	766R	GA–2	THROTTLE POSITION RETURN
18	766V	GA–1	THROTTLE POSITION +
19	69R	OPS1–3	OIL PRESSURE RETURN
20	69V	OPS1–2	OIL PRESSURE +
21	808	AFS	AIR/FUEL SOLENOID
22	25	RB2A–5	DELAYED IGNITION RELAY
23	56A	RB1A–6	STARTER RELAY
24	0	MPU1–2	MPU1 SIGNAL (–)
25	79	MPU1–3	MPU1 SIGNAL (+)
26	812	MOD–4	MODEM ENABLE
27	754R	ATS–2	AIR TEMPERATURE RETURN
28	754V	ATS–1	AIR TEMPERATURE +
29	573R	WLS–2	COOLANT LEVEL RETURN
30	573V	WLS–1	COOLANT LEVEL +
31	68R	WTS–2	COOLANT TEMPERATURE RETURN
32	809	MOD–1	MODEM 12V POWER
33	769	GD–12	THROTTLE PULSE WIDTH MODULATION
34	445	RB1A–2	ALARM RELAY
35	15B	F2	NOTE 6

J2

PIN	WIRE	TO	FUNCTION
1	391	CUST CON	RS485– (TRANSFER SWITCH)
2	388	COM–3	RS232 TX (GENLINK)
3	DI3	CUST CON	LINE POWER SIGNAL
4	183	CUST CON	REMOTE START
5	174	SW1	"AUTO" START
6	224	IFT	V SENSE GENERATOR A PHASE
7	227	IFT	V SENSE RETURN
8	403	AVR–6	AVR GATE TRIGGER B
9	399C	CT3	GENERATOR C PHASE CURRENT –
10	398C	CT3	GENERATOR C PHASE CURRENT +
11	399A	CT1	GENERATOR A PHASE CURRENT –
12	398A	CT1	GENERATOR A PHASE CURRENT +
13	390	CUST CON	RS485+ (TRANSFER SWITCH)
14	387	COM–2	RS232 RX (GENLINK)
15	601	LFP	LOW FUEL PRESSURE
16	R15	ES1	EMERGENCY STOP
17	226	IFT	V SENSE GENERATOR C PHASE
19	405	AVR–11	AVR GROUND
20	404	AVR–7	AVR GATE TRIGGER A
21	OC8	RB3A–6	SPARE OUTPUT 4
22	OC6	RB3A–3	SPARE OUTPUT 2
23	OC5	RB3A–2	SPARE OUTPUT 1
24	SHLD	CUST CON	RS485 DRAIN (TRANSFER SWITCH)
25	389	COM–5	RS232 COM (GENLINK)
26	DI4	CUST CON	GENERATOR POWER SIGNAL
27	505	BCH	BATTERY CHARGER FAIL
28	175	SW1	"MANUAL" START
29	225	IFT	V SENSE GENERATOR B PHASE
30	406	AVR–10	AVR ZERO CROSSING INPUT
31	194	AVR–2	AVR +12VDC
33	OC7	RB3A–5	SPARE OUTPUT 3
34	399B	CT2	GENERATOR B PHASE CURRENT –
35	398B	CT2	GENERATOR B PHASE CURRENT +

LEGEND

AFS – AIR/FUEL SOLENOID
AH1 – ALARM HORN
ALT – DC CHARGE ALTERNATOR
ATS_ – AIR TEMPERATURE SENDER
AVR – AUTOMATIC VOLTAGE REGULATOR
BAT – BATTERY
BCH – BATTERY CHARGER
CB – CIRCUIT BREAKER
COM – COMMUNICATIONS PORT
CT_ – CURRENT TRANSFORMER
CUST CON – CUSTOMER CONNECTION
DB – DIODE BRIDGE
DIST – DISTRIBUTOR
DPE – EXCITER
ES1 – EMERGENCY STOP SWITCH
F_ – FUSE
FS_ – FUEL SOLENOID
GA_ – GOVERNOR ACTUATOR
GD – GOVERNOR DRIVER
GFCI – GROUND FAULT CIRCUIT INTERRUPT
GND – GROUND
IFT – INTERFACE TRANSFORMER
INS – IGNITION NOISE SUPPRESSION
J_ – ENGINE CONTROL MODULE CONNECTOR
LFP – LOW FUEL PRESSURE SWITCH
MLCB – MAIN LINE CIRCUIT BREAKER
MOD – MODEM CONNECTOR
MPU1 – MAGNETIC PICKUP
OPS1 – OIL PRESSURE SENDER
OS – OXYGEN SENSOR
OTS_ – OIL TEMPERATURE SENDER
PME – PERMANENT MAGNET EXCITER
R1 – RESISTOR
RB_ – RELAY BOARD
RB_A – RELAY BOARD CONNECTOR
SC – STARTER CONTACTOR
SM – STARTER MOTOR
SW1 – OFF/AUTO/MANUAL SWITCH
WLS_ – COOLANT LEVEL SENSOR
WTS_ – COOLANT TEMPERATURE SENDER

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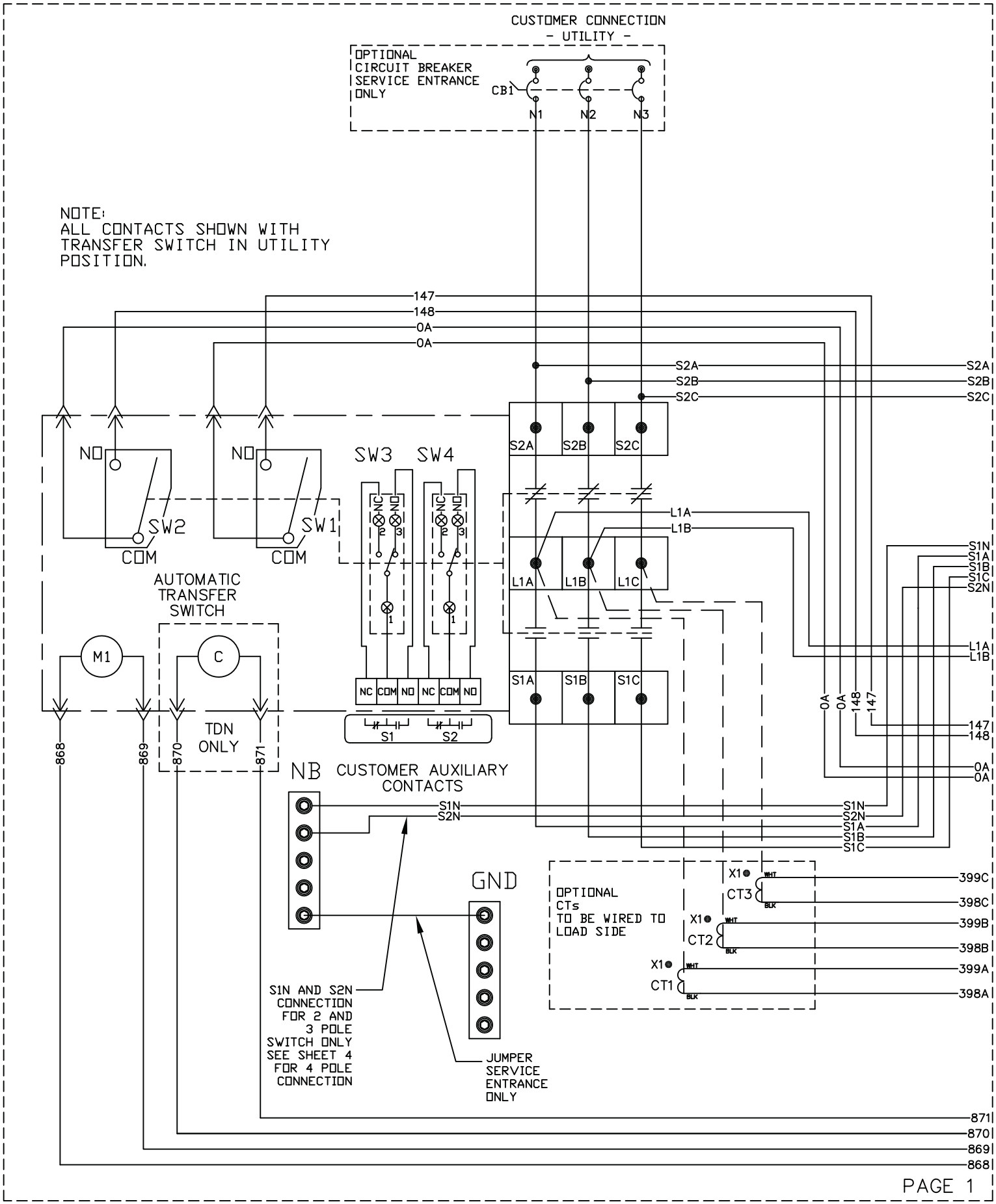
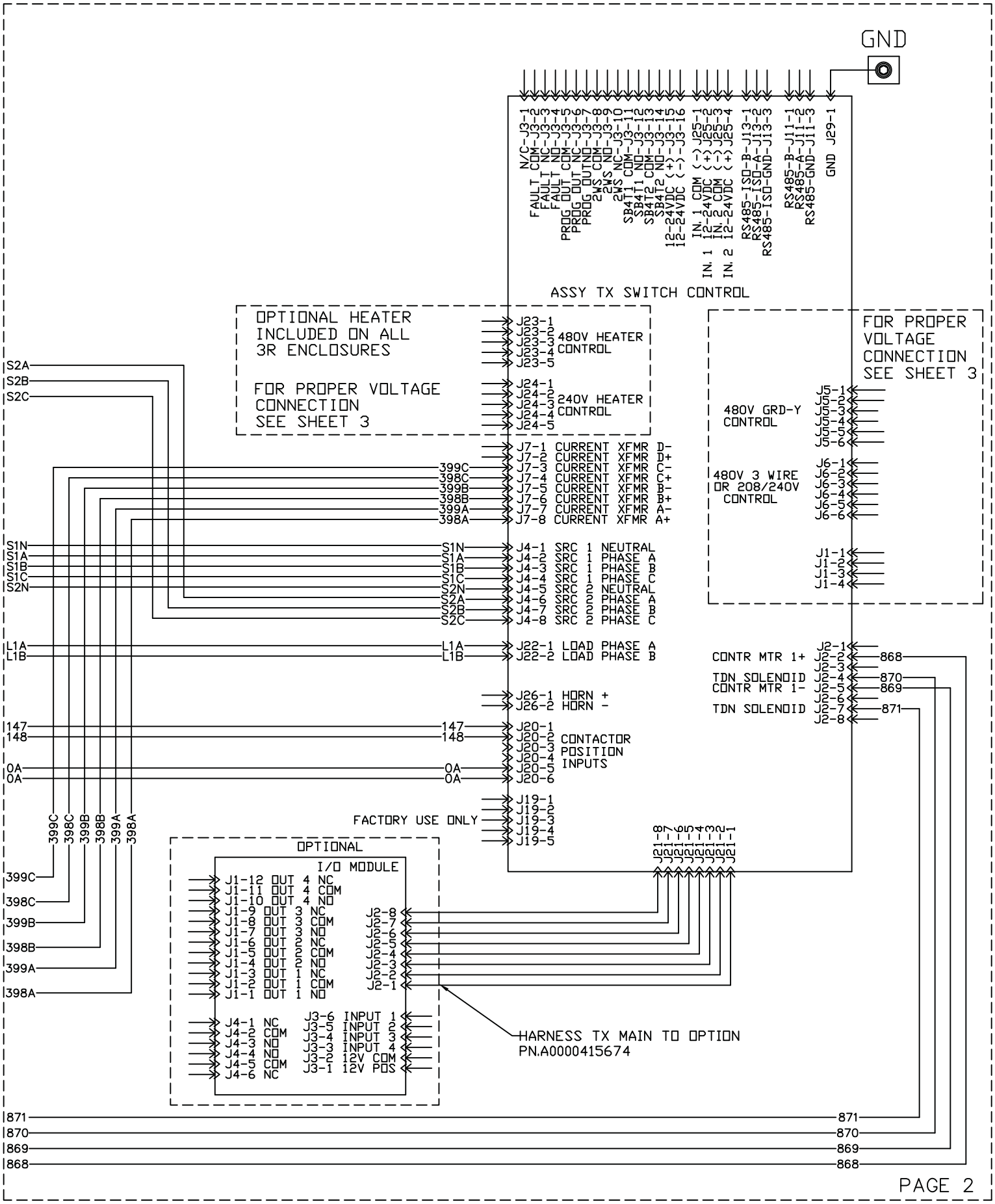


PAGE 1

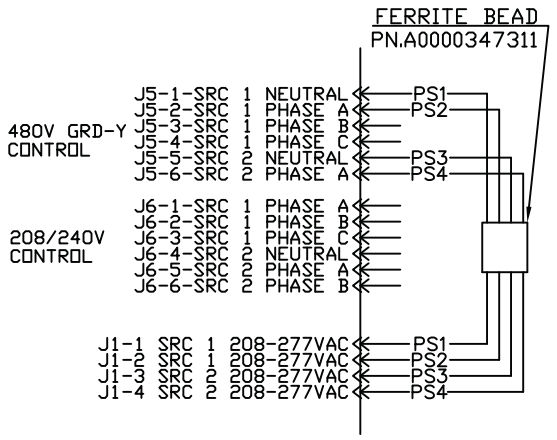
SCHEMATIC - DIAGRAM



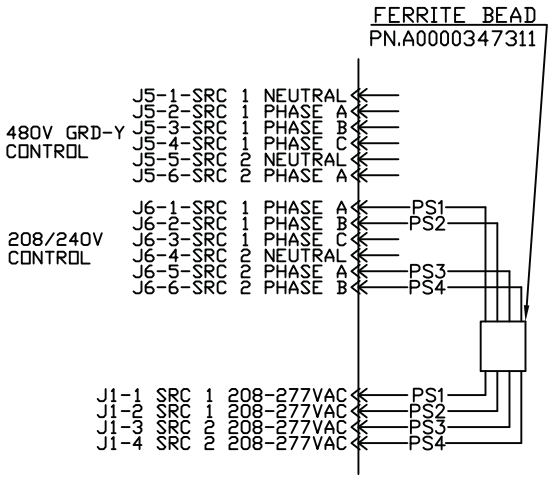
SCHEMATIC - DIAGRAM

TX CONTROL 600A TRANSFER SW

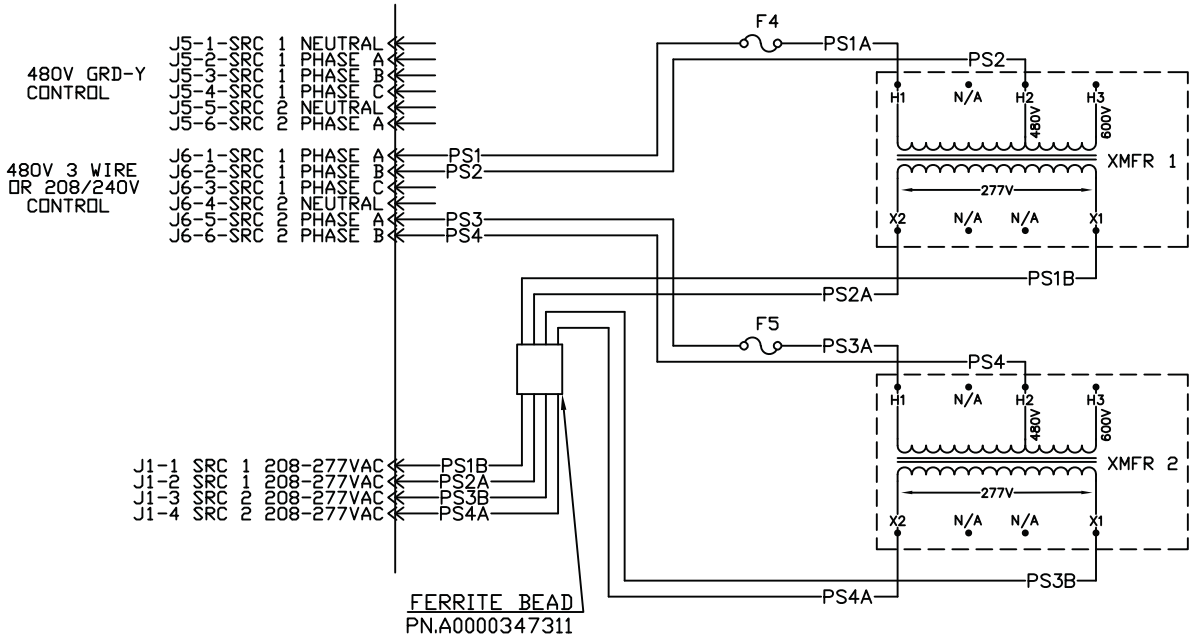
480V GRD-Y CONTROL



208/240V CONTROL

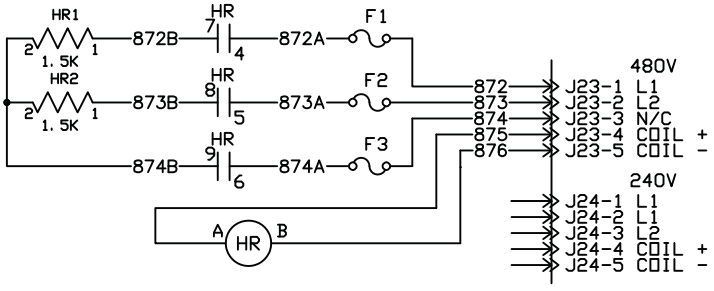


480V CONNECTION WITH TRANSFORMERS



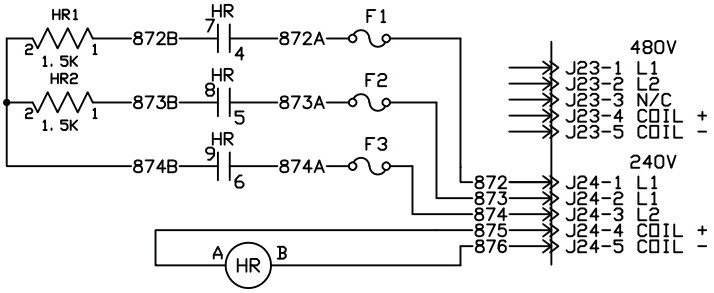
480V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



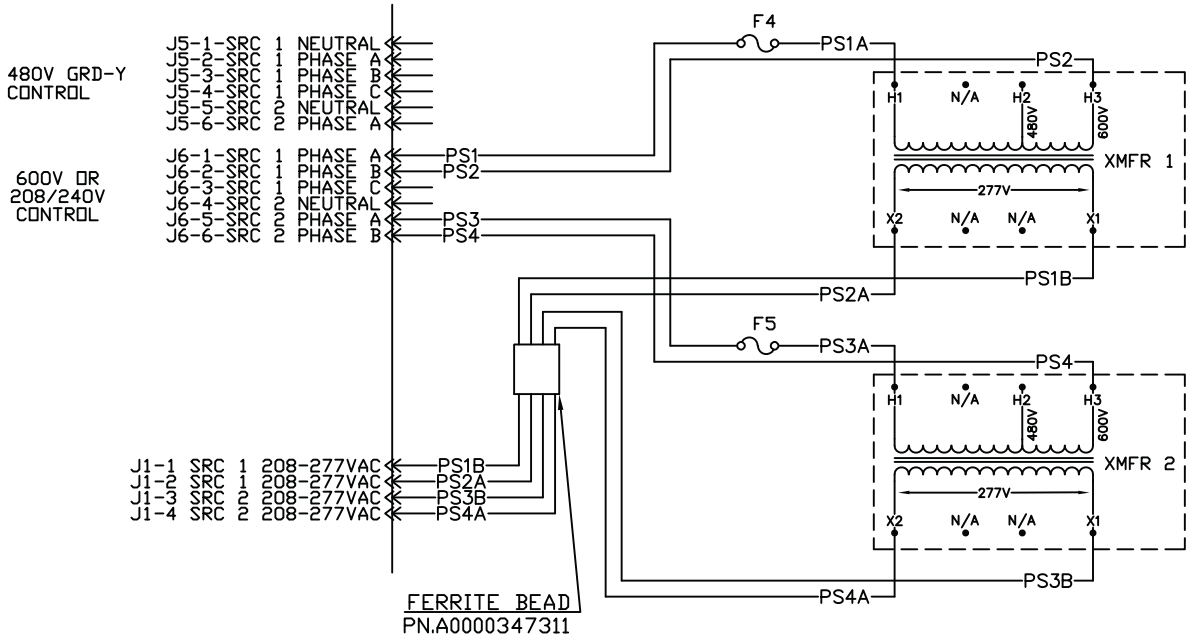
208/240V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



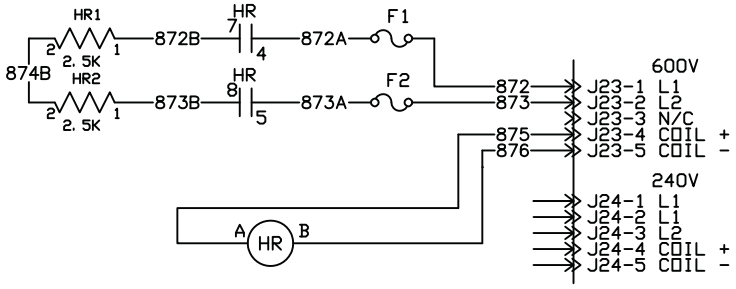
PAGE 3

600V CONNECTION WITH TRANSFORMERS



600V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



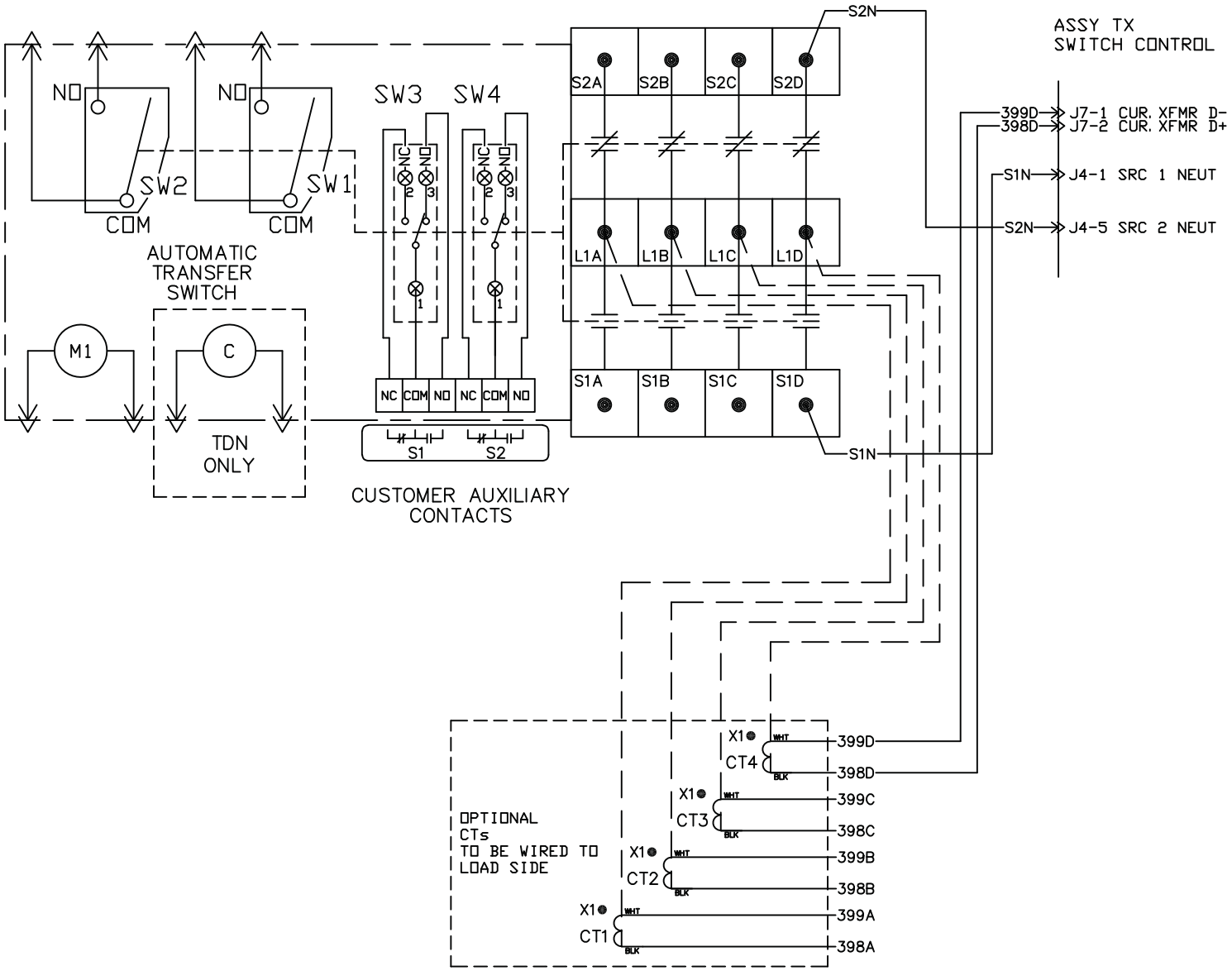
SCHEMATIC - DIAGRAM

REVISION: CN-0066457-B
DATE: 2/7/23

PAGE 4 OF 6

TX CONTROL 600A TRANSFER SW
DRAWING #: A0000347536

4 POLE SWITCHED NEUTRAL CONNECTIONS



SCHEMATIC - DIAGRAM

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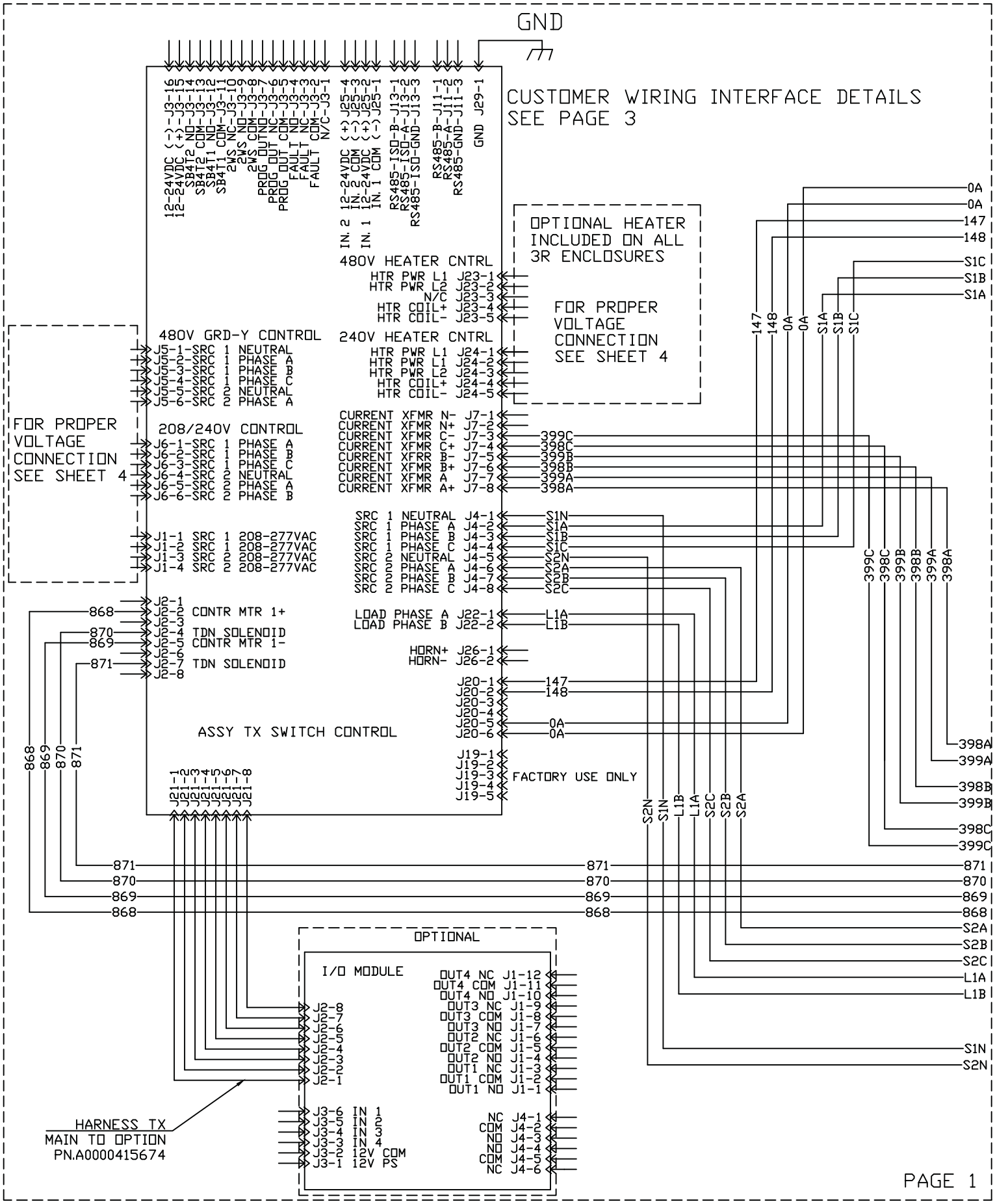
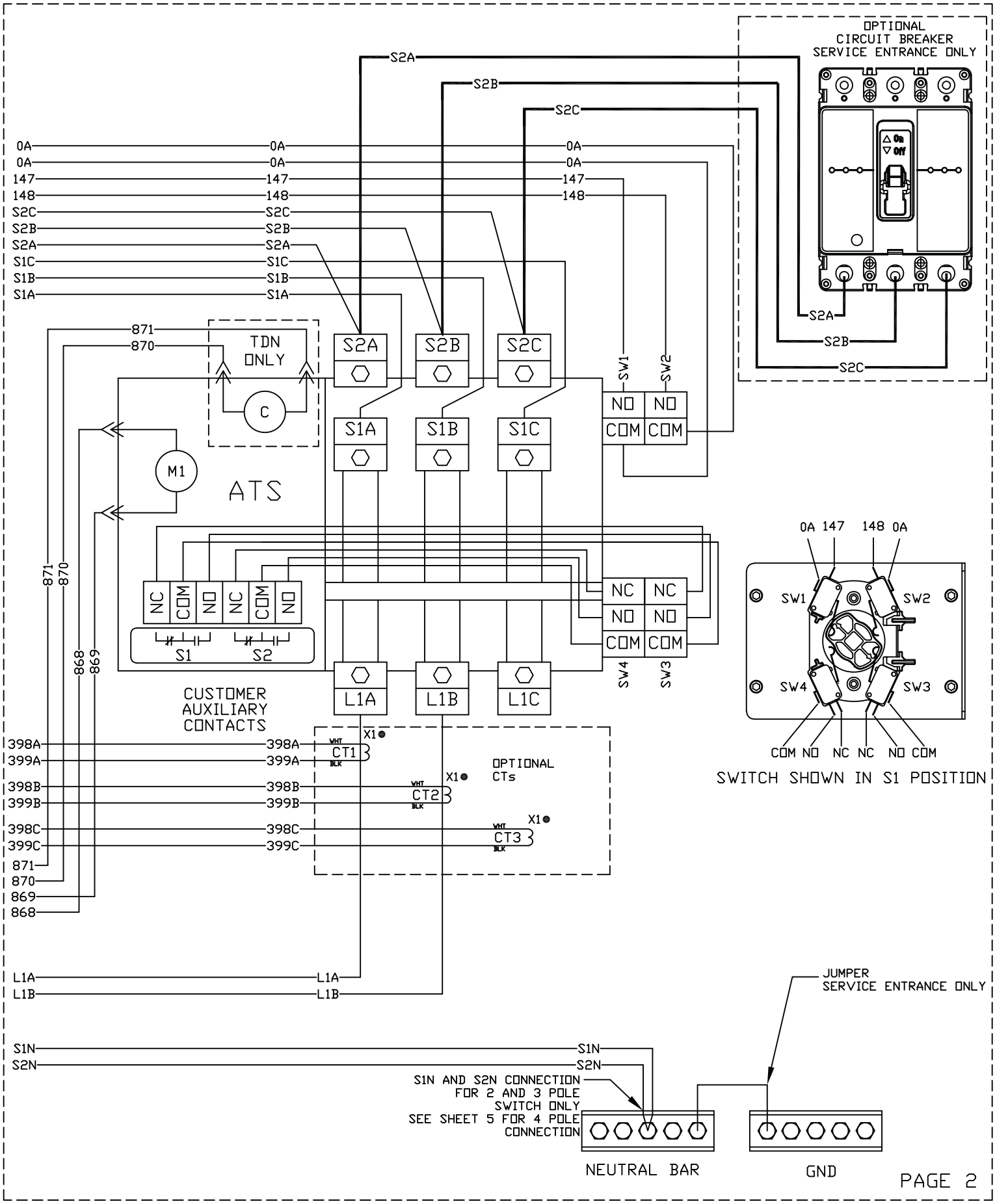
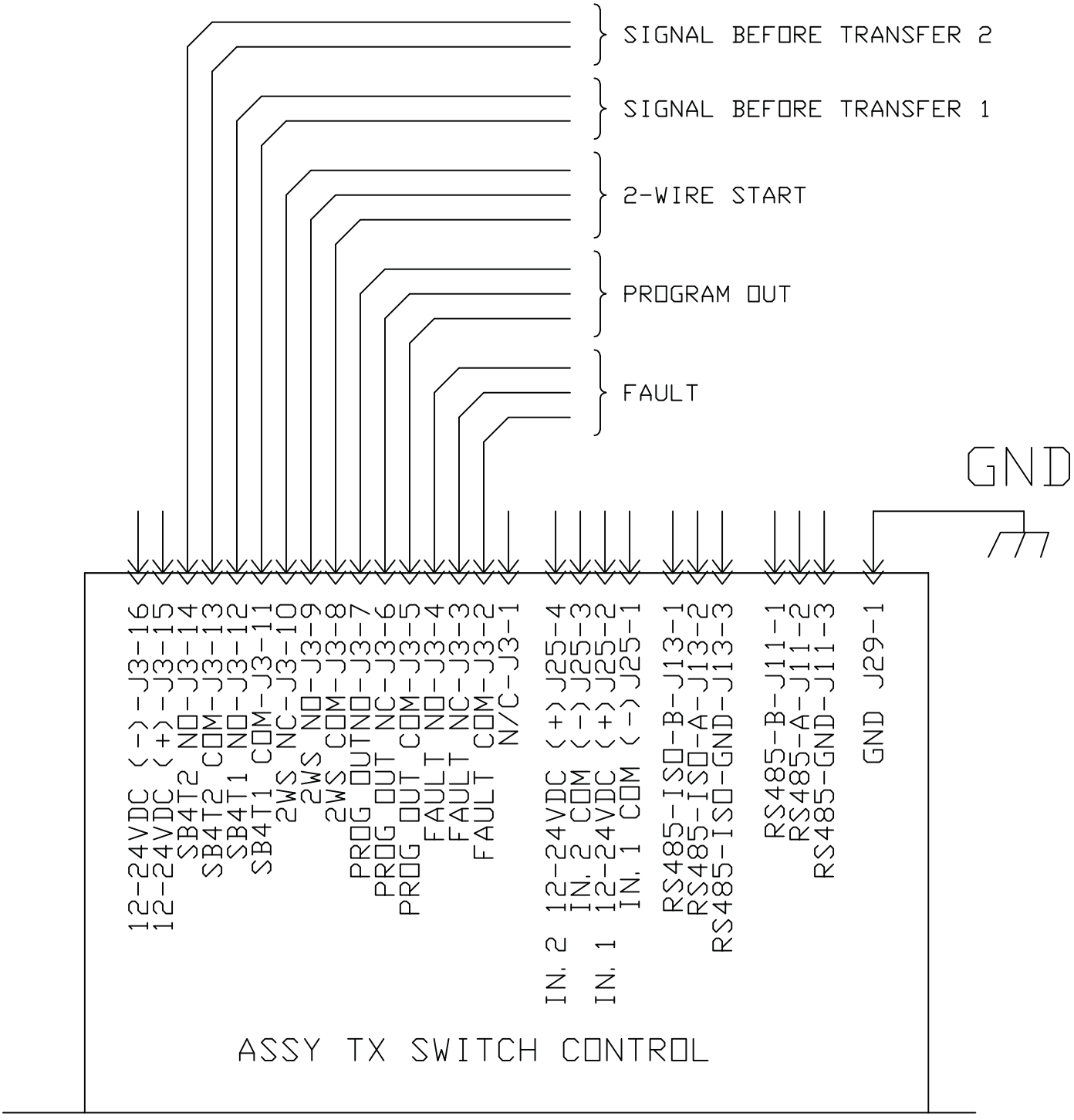

GND
CUSTOMER WIRING INTERFACE DETAILS
SEE PAGE 3
OPTIONAL HEATER
INCLUDED ON ALL
3R ENCLOSURES
FOR PROPER
VOLTAGE
CONNECTION
SEE SHEET 4
480V HEATER CNTRL
240V HEATER CNTRL
480V GRD-Y CONTROL
208/240V CONTROL
ASSY TX SWITCH CONTROL
FACTORY USE ONLY
OPTIONAL
I/O MODULE
HARNESS TX
MAIN TO OPTION
PN.A0000415674
PAGE 1

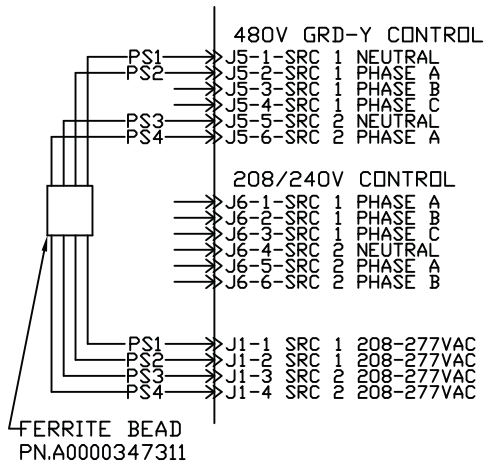


WIRING - DIAGRAM

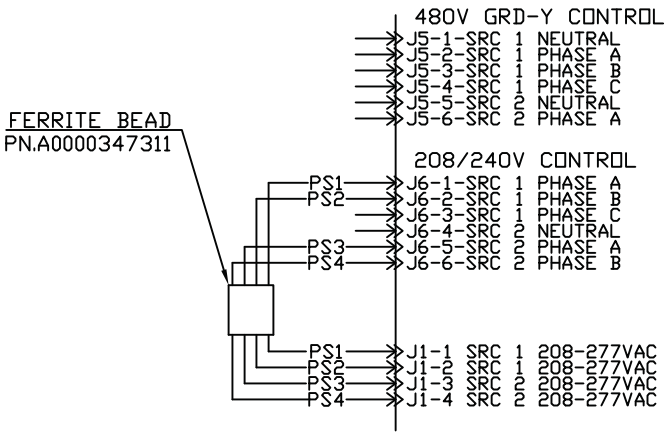

SIGNAL BEFORE TRANSFER 2
SIGNAL BEFORE TRANSFER 1
2-WIRE START
PROGRAM OUT
FAULT
GND
12-24VDC (-) - J3-16
12-24VDC (+) - J3-15
SB4T2 NO - J3-14
SB4T2 COM - J3-13
SB4T1 NO - J3-12
SB4T1 COM - J3-11
2WS NC - J3-10
2WS NO - J3-9
2WS COM - J3-8
PROG OUT NO - J3-7
PROG OUT COM - J3-6
PROG FAULT NC - J3-5
FAULT NO - J3-4
FAULT NC - J3-3
FAULT COM - J3-2
FAULT N/C - J3-1
12-24VDC (+) J25-4
IN. 2 COM (-) J25-3
12-24VDC (+) J25-2
IN. 1 COM (-) J25-1
IN. 2
IN. 1
RS485-ISO-B - J13-1
RS485-ISO-A - J13-2
RS485-ISO-GND - J13-3
RS485-B - J11-1
RS485-A - J11-2
RS485-GND - J11-3
GND J29-1
ASSY TX SWITCH CONTROL

PAGE 3

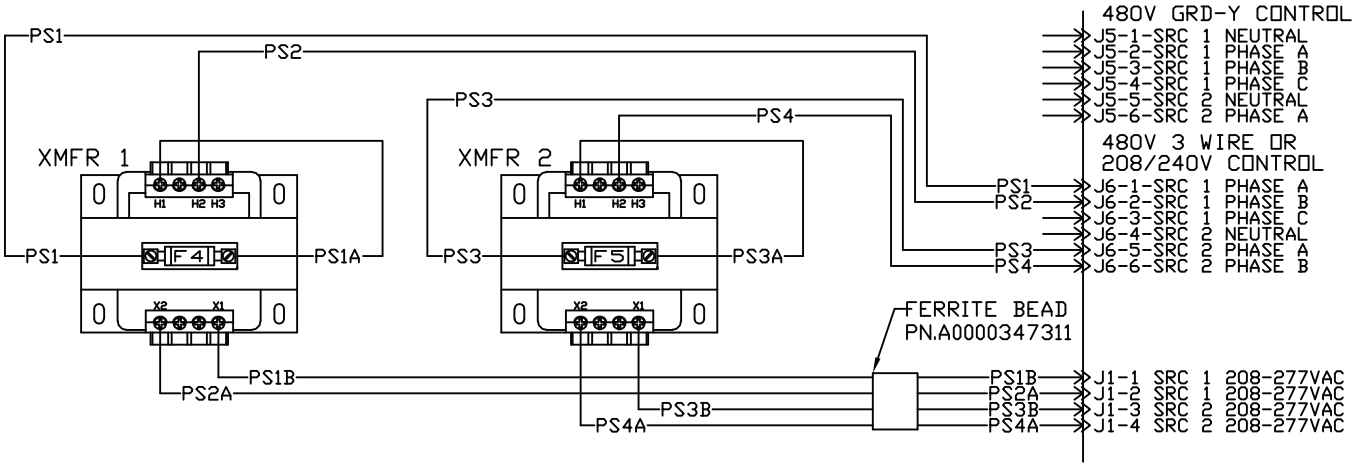
480V GRD-Y CONTROL



208/240V CONTROL

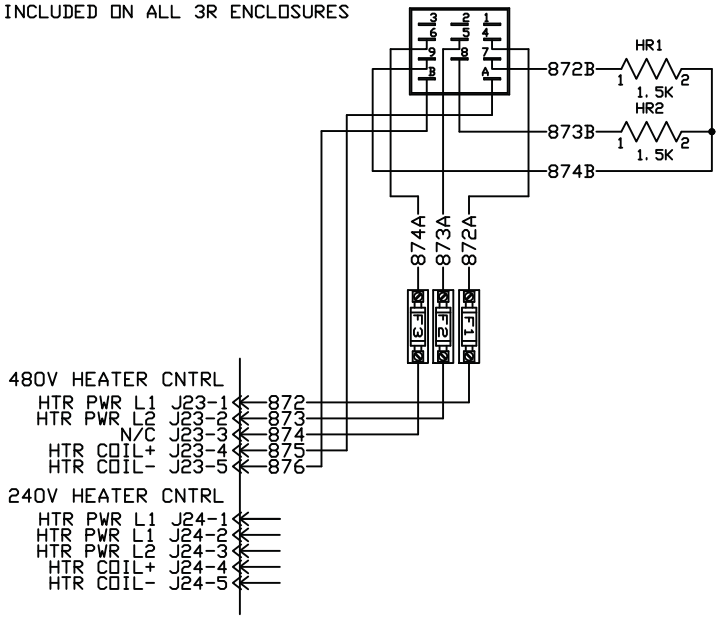


480V 3 WIRE CONNECTION WITH TRANSFORMERS



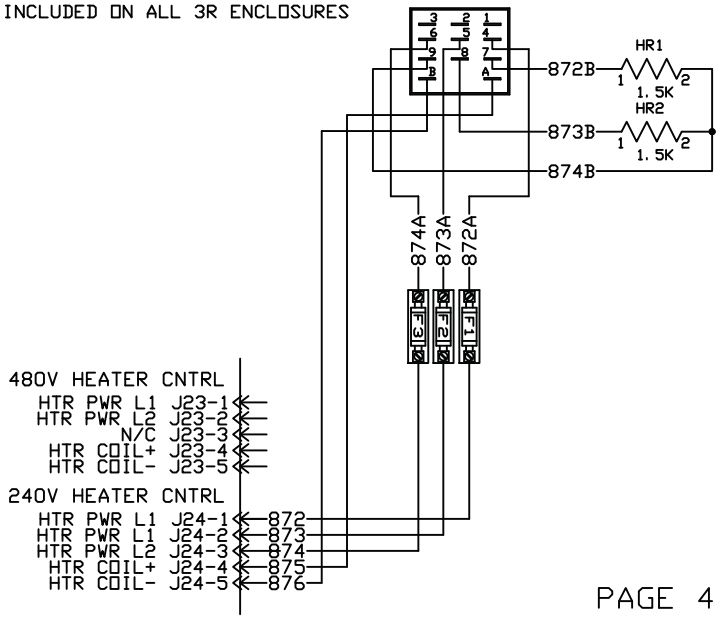
480V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



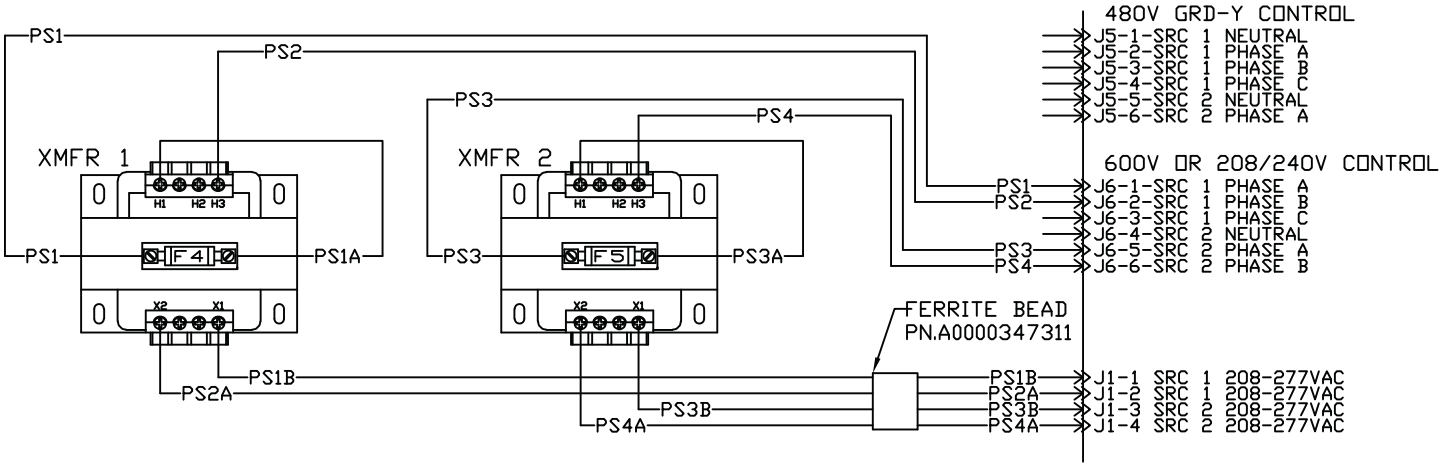
208/240V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



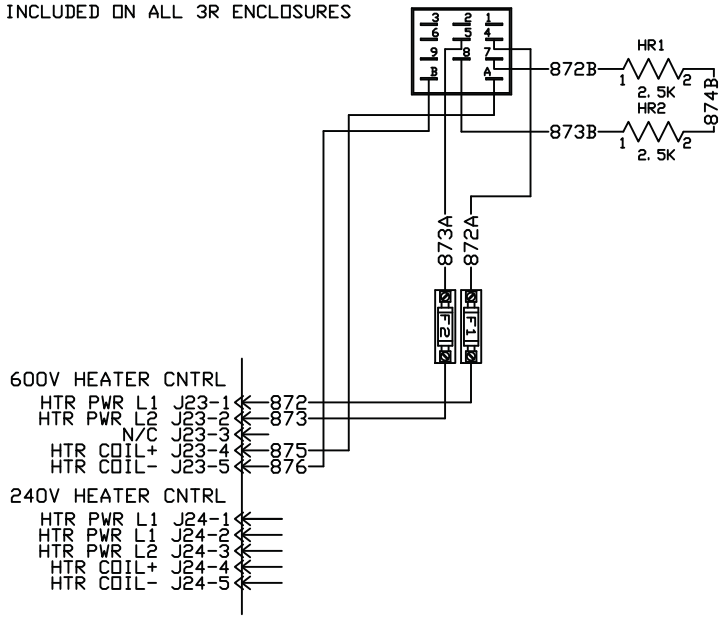
PAGE 4

600V CONNECTION WITH TRANSFORMERS



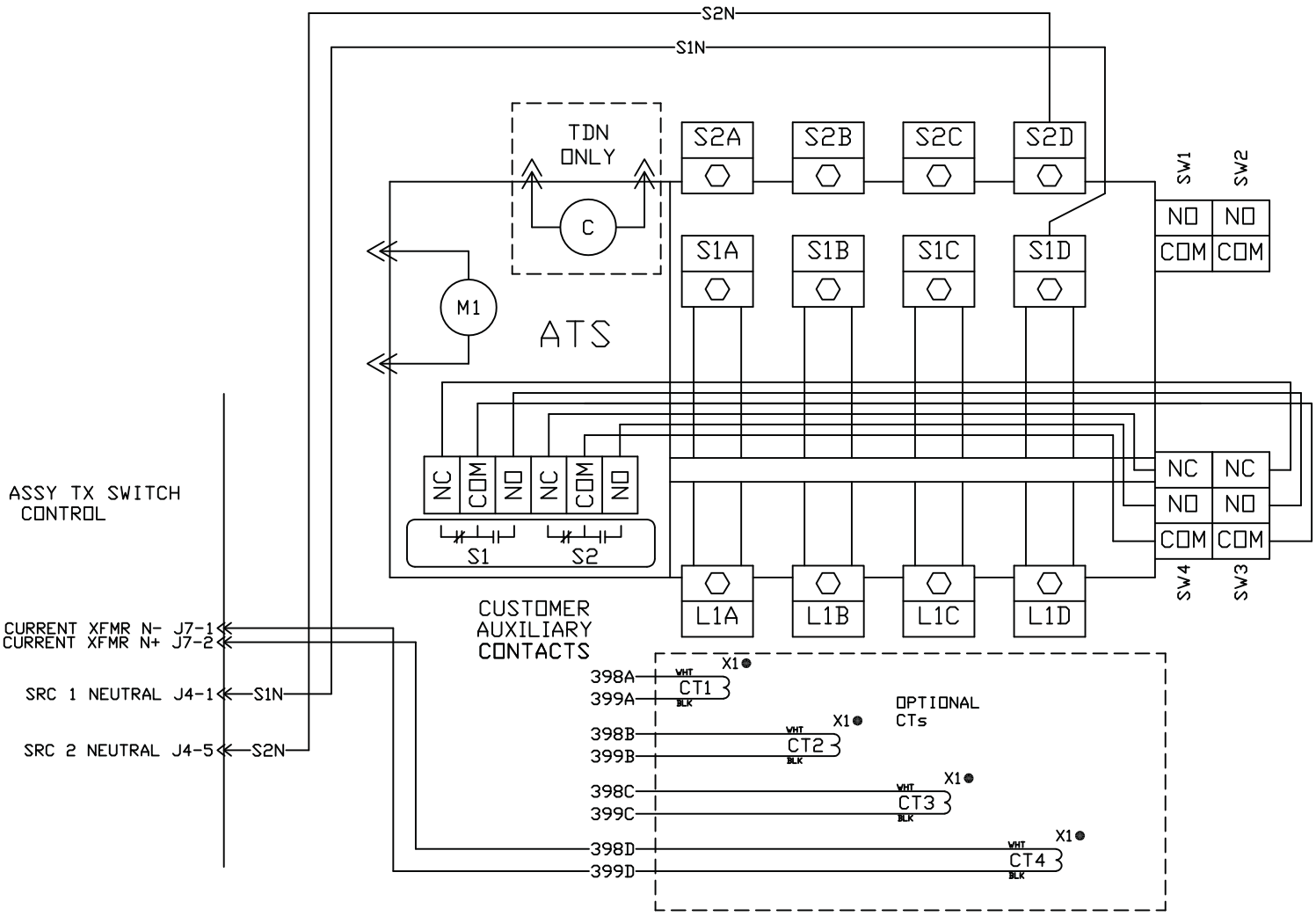
600V HEATER CONTROL

OPTIONAL HEATER
INCLUDED ON ALL 3R ENCLOSURES



PAGE 5

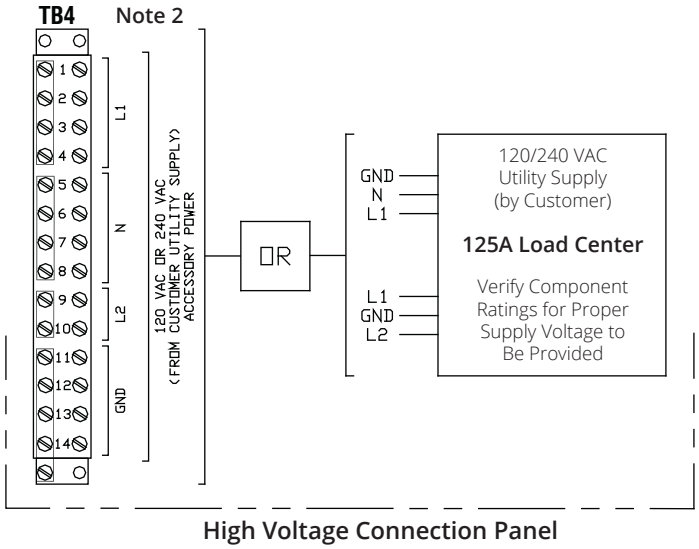
4 POLE SWITCHED NEUTRAL CONNECTIONS



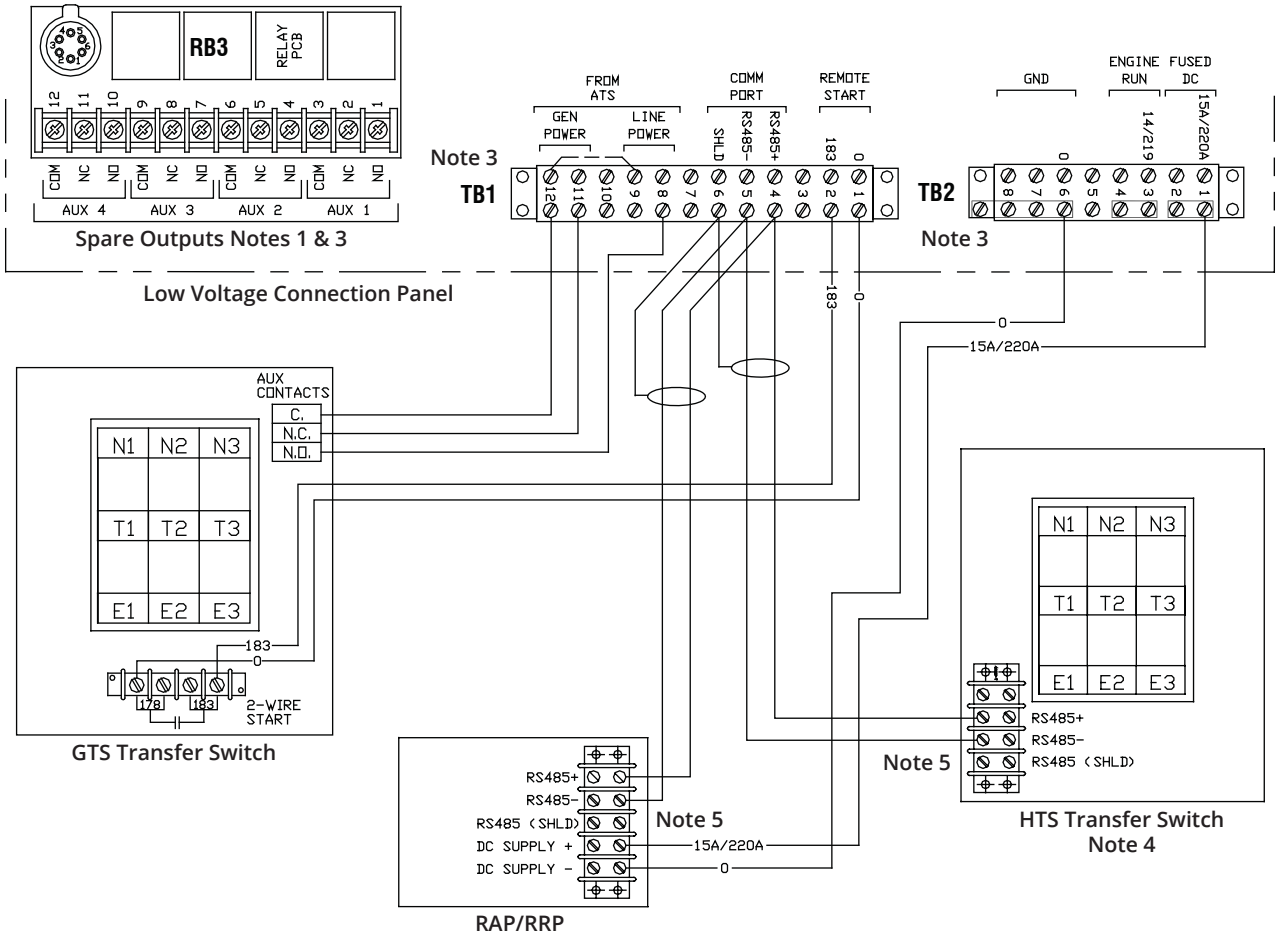
H-PANEL CONTROL INTERCONNECTIONS

Notes:

1. Spare Outputs are Standard on Industrial Product Only. GenLink® Required for Programming. Contacts Rated at 5A at 30VAC/30VDC
2. TB4 Max Wire Size: #10 AWG, Recommended Tightening Torque: 14 LB-IN
3. TB1, TB2, TB9 & RB3 Max Wire Size: #14 AWG, Recommended Tightening Torque: 12 LB-IN
4. Refer to H-Panel Manual for Instructions on Enabling HTS Transfer Switch. Refer to HTS Transfer Switch Manual for Dip Switch Settings for Multiple HTS Application
5. Connect the RS-485 Overall Shield at Genset Connection Terminal Only



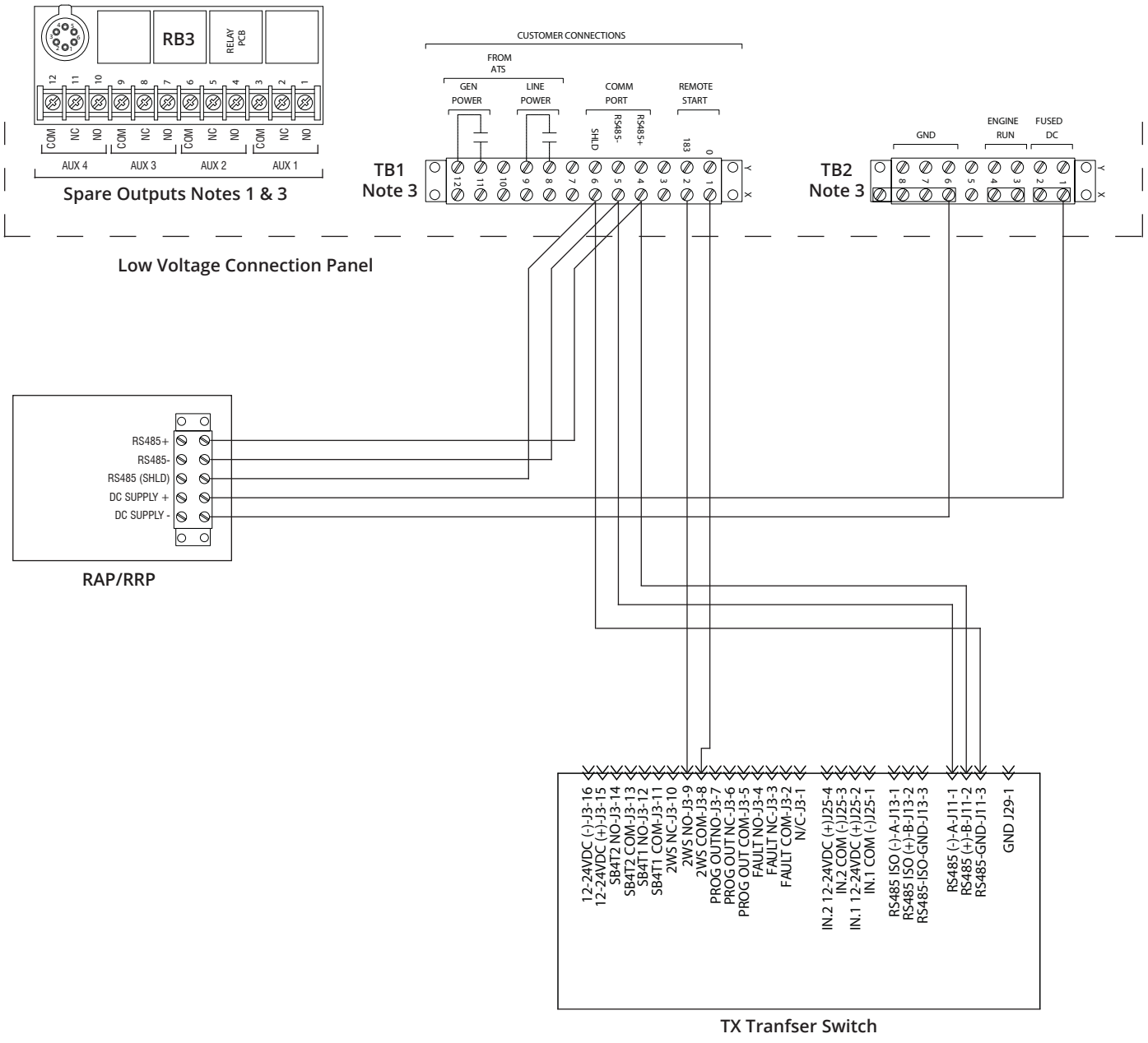
GTS or HTS Transfer Switch



Part No. 0191120SSD
Rev. G 08/15/23

H-PANEL CONTROL INTERCONNECTIONS

TX Transfer Switch



Part No. 0191120SSD
Rev. G 08/15/23

Certification of Quality

Generac Power Systems certifies that the products we manufacture have been built and tested in accordance with strict internal and external standards for quality. Our quality management system has been registered with the internationally recognized ISO 9001:2008 standard and our products comply with external standards that include, but are not limited to, CSA, NEMA, EGSA, ISO, and UL.

The Generac Quality Management System (GQMS) ensures the highest standards of quality at every level of production, from raw materials to the finished product. This includes receiving inspection, in-process checks, product and process audits, testing, final inspections, and shipping standards.

Tests of our products are performed in accordance with our internal procedures and controlled through the GQMS to ensure accuracy and effectiveness. The testing process and product designs comply with external standards which may include, but are not limited to: ISO 8528-5, ISO 3046, NFPA 99, NFPA 110, BS 5514, SAE J1349, and DIN 6271.

Generac Power Systems has over one million square feet of manufacturing space and over 2000 employees dedicated to designing and manufacturing power generation equipment in our multiple State of Wisconsin, USA factories. All of our installed and mobile generators are built with pride by our skilled American workforce to ensure our customers receive the quality that they expect from Generac.

We are committed to producing quality products for both our internal and external customers. We will continuously improve our processes and diligently measure all aspects of our business.

Daniel Waschow

Vice President of Quality
Generac Power Systems, Inc.
Waukesha, Wisconsin USA

Part No. 0184520SSD
Rev. B 03/01/12

Generac Power Systems 2 Year (2B) Limited Warranty for Industrial Transfer Switch Systems

For the period of warranty noted below, which begins upon the successful start-up and/or on-line activation/registration of the unit, Generac Power Systems, Inc. “Generac” warrants that its transfer switch will be free from defects in material and workmanship for the items and period set forth below. Generac will, at its discretion, repair or replace any part(s) which, upon evaluation, inspection and testing by Generac or an Independent Authorized Service Dealer, is found to be defective. Any equipment that the purchaser/owner claims to be defective must be evaluated by the nearest Independent Authorized Service Dealer.

Warranty Coverage in Year(s): 1	Warranty Coverage in Year(s): 2
Parts, Labor and Limited Travel	Limited Parts Only

Guidelines:

1. Unit must be registered and proof of purchase available.
2. Any and all warranty repairs and/or concerns must be performed and/or addressed by an Independent Authorized Service Dealer, or branch thereof. Repairs or diagnostics performed by individuals other than Independent Authorized Service Dealers not authorized in writing by Generac will not be covered.
3. Warranty is transferable between ownership of original installation site.
4. Generac may choose to repair, replace or refund a piece of equipment in its sole discretion.
5. Warranty only applies to permanently wired and mounted units.
6. Enclosures are warranted for the first year of ownership only. Damage caused after receipt of generator is the responsibility of the owner and is not covered by this warranty. Nicks, scrapes, dents or scratches to the painted enclosure should be repaired promptly by the owner.
7. Proof of performance of all required maintenance must be available.
8. Travel allowance is limited to 300 miles maximum or seven and a half (7.5) hours maximum (per occurrence, whichever is less) round trip from the nearest Independent Authorized Service Dealer. Any additional travel required will not be covered.

The following will NOT be covered by this warranty:

1. Costs of normal maintenance (i.e. associated part(s), adjustments, installation or start-up).
2. Damage to the transfer switch system caused by accidents, shipping, handling or improper storage.
3. Damage/failures caused by operation with loads or installations other than what’s recommended or specified by Generac. Unauthorized modification/misapplication will not be warranted unless authorized by Generac in writing.
4. Rental equipment used while warranty repairs are being performed and/or any extraordinary equipment used for removal and/or reinstallation of transfer switch (i.e. cranes, hoists, lifts, et. al.).
5. Planes, ferries, railroad, buses, helicopters, snowmobiles, snow-cats, off-road vehicles or any other mode of transport deemed not standard by Generac.
6. Failures due to normal wear and tear, accident, misuse, abuse, neglect, improper installation, or improper sizing.
7. Damage to any covered components or consequential damages caused by the use of a non-OEM part will not be covered by this warranty.
8. Damage related to rodent, reptile, and/or insect infestation.
9. Repairs or diagnostics performed by individuals other than Independent Authorized Service Dealers not authorized in writing by Generac.
10. Steel enclosures that rust as a result of improper installation, location in a harsh or salt water environment, or are scratched where the integrity of applied paint is compromised.
11. Fuses, light bulbs and any related labor.
12. Units sold, rated or used for “Prime Power,” “Trailer Mounted” or “Rental Unit” applications as defined by Generac. Contact an Independent Authorized Service Dealer for definitions.
13. Failures caused by any act of God or external cause including without limitation, fire, theft, freezing, war, lightning, earthquake, windstorm, hail, water, tornado, hurricane, or any other matters which are reasonably beyond the manufacturer’s control.
14. Shipping costs associated with expedited shipping.
15. Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective part(s).
16. Any unit built/manufactured prior to 2014 models.
17. Overtime, holiday or emergency labor.
18. Living or travel expenses of person(s) performing service, except as specifically included within the terms of a specific unit warranty period.

THIS WARRANTY SUPERSEDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. SPECIFICALLY, GENERAC MAKES NO OTHER WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTIES WHICH ARE ALLOWED BY LAW, SHALL BE LIMITED IN DURATION TO THE TERMS OF THE EXPRESS LIMITED WARRANTY PROVIDED HEREIN. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. GENERAC'S ONLY LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF PART(S) AS STATED ABOVE. IN NO EVENT SHALL GENERAC BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF GENERAC’S NEGLIGENCE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU COULD ALSO HAVE OTHER RIGHTS UNDER APPLICABLE LAW.

FOR AUSTRALIA ONLY: Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
FOR NEW ZEALAND ONLY: Nothing in this warranty statement excludes, restricts or modifies any condition, warranty right or remedy which pursuant to the New Zealand Legislation (Commonwealth or State) including the Fair Trading Practices Act of 1986 or the Consumer Guarantees Act 1993 (“CGA”) applies to this limited warranty and may not be so excluded, restricted or modified. Nothing in this statement is intended to have the effect of contracting out of the provisions of the CGA, except to the extent permitted by that Act, and these terms are to be modified to the extent necessary to give effect to that intention. If you acquire goods from Generac Power Systems or any of its authorized resellers and distributors for the purposes of a business, then pursuant to section 43(2) of the CGA, it is agreed that the provisions of the CGA do not apply.

GENERAC POWER SYSTEMS, INC. • P.O. BOX 8 • Waukesha, WI, USA 53187
Ph: (888) GENERAC (436-3722) • Fax: (262) 544-4851
To locate the nearest Independent Authorized Service Dealer and to download schematics, exploded views and parts lists
visit our website: www.generac.com

Part No. 0J4302 Revision H (4/21)

Garantía limitada de 2 años (2B) de Generac Power Systems para interruptores de transferencia industriales

Para el periodo de garantía que se indica a continuación y que comienza a partir de la fecha en la que la unidad se ponga en marcha de manera correcta y/o se active/registre online, Generac Power Systems, Inc. “Generac” garantiza que este interruptor de transferencia está libre de todo defecto en material y mano de obra para los elementos y periodo de tiempo que se indican a continuación. Generac, según su propio criterio, reparará o sustituirá cualquier componente o componentes que, una vez evaluados, inspeccionados y probados por Generac, o por un servicio técnico autorizado independiente, se consideren defectuosos. Cualquier equipo que el comprador/propietario reclame como defectuoso deberá ser evaluado por el servicio técnico autorizado independiente más cercano.

Cobertura de la garantía en año(s): 1	Cobertura de la garantía en año(s): 2
Piezas, mano de obra y desplazamiento limitado	Piezas limitadas solamente

Directrices:

1. La unidad debe estar registrada y tener prueba de compra disponible.
2. Sean cuales sean los tipos de problemas y reparaciones de la garantía, deben ser efectuados y/o dirigidos por un concesionario de servicio autorizado independiente, o una sucursal de este. Las reparaciones o los diagnósticos efectuados por personas diferentes de los concesionarios de servicio autorizados independientes, y que no estén autorizados por escrito por Generac, no serán cubiertos.
3. La garantía es transferible entre el propietario del sitio de la instalación original.
4. Generac puede elegir reparar, sustituir una pieza del equipo o reembolsar el dinero correspondiente a su exclusivo criterio.
5. La garantía solamente se aplica a las unidades montadas y conectadas de manera permanente.
6. Los gabinetes tienen garantía durante el primer año de propiedad solamente. El daño causado después de la recepción del generador es responsabilidad del comprador y no está cubierto por esta garantía. Las muescas, raspaduras, abolladuras o ralladuras del gabinete pintado deben ser reparadas inmediatamente por el propietario.
7. Debe tener disponible una prueba de ejecución de todas las tareas de mantenimiento requeridas.
8. Los gastos de desplazamiento están limitados a un máximo de 482.8 Km (300 millas) o a un tiempo máximo de siete horas y media (7.5) (por ocurrencia, lo que sea menos costoso) por viaje de ida y vuelta desde el servicio técnico independiente autorizado más cercano. Cualquier otro gasto de desplazamiento no está cubierto por la garantía.

Esta garantía NO cubrirá los siguientes aspectos:

1. Los costos del mantenimiento normal (es decir, pieza(s) relacionada(s), ajustes, instalación o puesta en marcha).
2. Los daños en el interruptor de transferencia ocasionados por accidentes, durante el envío, la manipulación o el almacenamiento incorrecto del mismo.
3. Los daños/fallas causados por la operación con cargas o instalaciones diferentes a las recomendadas o especificadas por Generac. Las modificaciones o aplicaciones inadecuadas no autorizadas no estarán cubiertas por la garantía a menos que Generac lo autorice por escrito.
4. El equipo alquilado utilizado mientras se lleven a cabo reparaciones cubiertas por la garantía y/o cualquier equipo extraordinario utilizado para realizar los traslados y/o reinstalaciones del interruptor de transferencia (es decir, grúas, montacargas, elevadores y otros).
5. Los daños en aviones, barcos, carreteras, autobuses, helicópteros, vehículos para la nieve, tractores para la nieve, vehículos todoterreno o cualquier otro medio de transporte considerado no estándar por Generac.
6. Las fallas debidas a desgaste y deterioro normal, accidente, uso indebido, abuso, negligencia, instalación incorrecta o dimensionamiento incorrecto.
7. Los daños causados en cualquiera de los componentes cubiertos por esta garantía o los daños derivados del uso de piezas que no sean originales no están cubiertos por esta garantía.
8. Los daños causados por plagas de roedores, reptiles y/o insectos.
9. Las reparaciones o los diagnósticos efectuados por personas diferentes de los concesionarios de servicio autorizados independientes, y que no estén autorizados por escrito por Generac.
10. Los gabinetes de acero que se oxidan debido a una instalación incorrecta, ubicación en entornos con condiciones difíciles o de agua salada, o que están rayados en algún lugar en el que la integridad de la pintura aplicada se pueda ver afectada.
11. Los fusibles, bombillas y cualquier trabajo relacionado con los mismos.
12. Las unidades vendidas, usadas o clasificadas para aplicaciones de “Alimentación eléctrica principal”, “Montada en remolque” o “Unidad en alquiler” tal y como las define Generac. Contacte con un servicio técnico independiente autorizado para obtener las definiciones.
13. Las averías provocadas por cualquier acto de fuerza mayor, o causa externa, incluyendo entre otros, incendios, robos, congelación, guerras, relámpagos, terremotos, vendavales, granizo, agua, tornados, huracanes, o cualquier otro motivo que se escape del control del fabricante.
14. Los gastos de envío asociados a envíos rápidos.
15. Cualquier daño accidental, consecuente o indirecto provocado por defectos en el material o la mano de obra, o cualquier daño en la reparación o sustitución del o de los componentes defectuosos.
16. Cualquier unidad diseñada/fabricada antes de los modelos del 2014.
17. La mano de obra en situaciones de emergencia, festivos y horas extraordinarias.
18. Los gastos de viaje y estadía de la/las persona(s) que realizan el servicio, salvo que estén incluidos específicamente en los términos de un determinado periodo de la garantía de la unidad.

ESTA GARANTÍA SUSTITUYE CUALQUIER OTRA GARANTÍA, EXPRESA O IMPLÍCITA. ESPECÍFICAMENTE, GENERAC NO OFRECE NINGUNA OTRA GARANTÍA EN CUANTO A LA COMERCIALIZACIÓN O IDONEIDAD PARA UN PROPÓSITO PARTICULAR. CUALQUIER GARANTÍA IMPLÍCITA PERMITIDA POR LA LEY TENDRÁ UNA VIGENCIA LIMITADA A LOS TÉRMINOS DE LA GARANTÍA EXPRESA AQUÍ INCLUIDOS. ALGUNAS JURISDICCIONES NO PERMITEN LIMITACIONES DE LA DURACIÓN DE UNA GARANTÍA IMPLÍCITA; POR LO TANTO, LA LIMITACIÓN PRECEDENTE PUEDE NO APLICARSE A USTED. LA ÚNICA RESPONSABILIDAD DE GENERAC SERÁ LA REPARACIÓN O SUSTITUCIÓN DEL COMPONENTE O COMPONENTES ARRIBA INDICADOS. EN NINGÚN CASO GENERAC SERÁ RESPONSABLE DE NINGÚN DAÑO INCIDENTAL O CONSECUENTE, INCLUSO SI TALES DAÑOS SON RESULTADO DIRECTO DE UNA NEGLIGENCIA DE GENERAC. ALGUNAS JURISDICCIONES NO PERMITEN LA EXCLUSIÓN O LIMITACIÓN DE DAÑOS ACCESORIOS O EMERGENTES, DE MANERA QUE LA LIMITACIÓN PRECEDENTE PUEDE NO APLICARSE A USTED. ESTA GARANTÍA LE CONCEDE DERECHOS LEGALES ESPECÍFICOS. USTED PUEDE CONTAR CON OTROS DERECHOS QUE LE OTORGAN LAS LEYES VIGENTES.

SÓLO PARA AUSTRALIA: Nuestros productos se presentan con garantías que no se pueden excluir en virtud de la Ley del Consumidor de Australia. Usted tiene derecho a un reemplazo o sustitución por una avería grave y a una compensación por cualquier otro daño o pérdida razonablemente previsible. Asimismo, también tiene derecho a la reparación o sustitución de los productos si estos no cumplen con la calidad aceptable y si la avería no constituye una avería importante.
SÓLO PARA NUEVA ZELANDA: Nada en esta declaración de garantía excluye, restringe o modifica ninguna condición, derecho de garantía o remedio que de conformidad con la legislación de Nueva Zelanda (Commonwealth o Estado), incluyendo la Ley sobre Prácticas de Comercio Justo de 1986 o la Ley de Garantías del Consumidor de 1993 ("CGA" por sus siglas en inglés), se aplique a esta garantía limitada y no puede ser así excluida, restringida o modificada. Nada en esta declaración se prevé que tenga el efecto de renuncia de las cláusulas de la CGA, excepto en la medida que así lo permita dicha Ley, y estos términos se modificarán en la medida que sea necesario para dar efecto a tal intención. Si adquiere productos de Generac Power Systems, o de cualquiera de sus revendedores o distribuidores autorizados con fines empresariales, entonces, de conformidad con el artículo 43(2) de la CGA, se acuerda que no se apliquen las cláusulas de la CGA.

GENERAC POWER SYSTEMS, INC. • P.O. BOX 8 • Waukesha, WI, EE.UU. 53187
Tel.: (888) GENERAC (436-3722) • Fax: (262) 544-4851
Para localizar el distribuidor autorizado independiente más cercano y para descargar los esquemas, vistas ampliadas y listas de componentes, visite nuestro sitio web: www.generac.com

N.º de pieza 0J4302SP Revisión H (4/21)

Garantie limitée de 2 ans (2B) de Generac Power Systems des systèmes de commutateur de transfert

Pour la période de garantie mentionnée ci-dessous, qui débute lors du démarrage et/ou de l'activation/enregistrement en ligne de l'appareil, Generac Power Systems, Inc. « Generac » garantit que son commutateur de transfert sera exempt de défauts de matériaux et de fabrication pour les articles et la période indiqués ci-dessous. Generac, à son entière discrétion, réparera ou remplacera toute pièce dont le défaut a été établi, après évaluation, inspection et contrôle par Generac ou par un concessionnaire de service agréé indépendant. Tout équipement jugé défectueux par l'acheteur/le propriétaire devra être vérifié par le concessionnaire réparateur indépendant agréé le plus proche.

Couverture de garantie en année(s) : 1	Couverture de garantie en année(s) : 2
Pièces, main-d'œuvre et déplacement limité	Limitée sur les pièces uniquement

Directives :

1. Le groupe électrogène doit être enregistré et une preuve d'achat doit être fournie.
2. Les réparations ou les questions touchant à la garantie doivent être confiées ou communiquées à un concessionnaire réparateur indépendant agréé. Les réparations ou les diagnostics effectués par d'autres personnes qu'un concessionnaire réparateur indépendant agréé, non autorisés par écrit par Generac, ne seront pas couverts.
3. Cette garantie est transférable entre propriétaires du lieu d'installation d'origine.
4. Generac décidera, à son entière discrétion, de réparer, de remplacer ou de rembourser toute pièce dont le défaut a été établi.
5. Cette garantie s'applique uniquement aux groupes électrogènes fixes et câblés en permanence.
6. Les enceintes sont garanties pendant la première année de possession seulement. Les dommages subis après la réception du générateur relèvent de la responsabilité du propriétaire et ne sont pas couverts par cette garantie. Les éraflures, les marques superficielles, les rayures ou les bosses sur l'enveloppe peinte doivent être réparées sans délai par le propriétaire.
7. Une preuve de l'entretien obligatoire ayant été effectué doit être fournie.
8. L'allocation de déplacement est limitée à un aller-retour de 480 km et de sept heures et demie (7,5) maximum (par cas, le moindre des deux prévalant) à partir du concessionnaire réparateur indépendant agréé le plus proche. Les déplacements supplémentaires requis ne seront pas couverts.

Les éléments suivants NE seront PAS couverts par cette garantie :

1. Les coûts d'entretien normal (c.-à-d., pièce(s) connexe(s), réglages, installation ou mise en route).
2. Les dommages au commutateur de transfert causés par : un accident, l'expédition, la manutention, ou un mauvais entreposage.
3. Les dommages/les défaillances causés par : l'utilisation de charges ou des installations non recommandées ou non indiqués par Generac. Les modifications/mauvaises utilisations non autorisées ne seront pas couvertes par cette garantie, sauf autorisation écrite de Generac.
4. Le matériel de location utilisé pendant les réparations de garantie ou tout équipement spécial utilisé pour le retrait ou la réinstallation du commutateur de transfert (c.-à-d., grues, treuils, appareils de levage, etc.).
5. Les avions, les traversiers, les trains, les autobus, les hélicoptères, les motoneiges, les autoneiges, les véhicules hors route et tout autre moyen de transport jugés comme étant non standard par Generac.
6. Les défectuosités causés par : l'usure normale, un accident, une mauvaise utilisation, une utilisation abusive, une négligence, une mauvaise installation, un mauvais dimensionnement.
7. Cette garantie ne couvre pas les dommages causés par l'utilisation de pièces non d'origine, y compris les dommages consécutifs subis par une pièce sous garantie.
8. Les dommages causés par une infestation d'insectes ou de rongeurs.
9. Les réparations ou les diagnostics effectués par d'autres personnes qu'un concessionnaire réparateur indépendant, non autorisés par écrit par Generac.
10. Les enveloppes de protection en acier attaquées par la rouille en raison d'une mauvaise installation; installées dans un milieu agressif ou salin; qui ont subies des rayures compromettant l'intégrité de la couche de peinture.
11. Les fusibles, les ampoules et la main-d'œuvre connexe.
12. Les appareils vendus, classés ou utilisés pour des utilisations « source principale d'alimentation », « monté sur remorque » ou « unité de location », tel que défini par Generac. Informez-vous auprès d'un concessionnaire réparateur indépendant agréé au sujet des définitions.
13. Les défaillances causées par une catastrophe naturelle ou une cause externe, y compris sans s'y limiter, un incendie, un vol, un gel, une guerre, la foudre, un tremblement de terre, une tempête de vent, la grêle, l'eau, une tornade, un ouragan ou autres circonstances étant à juste titre indépendantes de la volonté du fabricant.
14. Les frais d'expédition associés à l'expédition accélérée.
15. Tout dommage consécutif ou indirect causé par des défauts de matériaux ou de fabrication, ou tout retard de réparation ou de remplacement de la (des) pièce(s) défectueuse(s).
16. Tout groupe électrogène fabriqué avant les modèles 2014.
17. Les heures supplémentaires, les congés et la main-d'œuvre d'urgence.
18. Les frais de subsistance ou de déplacement des personnes qui effectuent la réparation, sauf s'ils sont expressément prévus dans les conditions de période de garantie d'un groupe électrogène particulier.

CETTE GARANTIE REMPLACE TOUTES LES AUTRES GARANTIES, EXPRESSES OU IMPLICITES. SPÉCIFIQUEMENT, GENERAC N'EFFECTUE AUCUNE AUTRE GARANTIE QUANT À LA VALEUR MARCHANDE OU L'ADAPTATION À UN USAGE PARTICULIER. TOUTES LES GARANTIES IMPLICITES QUI SONT PERMISES PAR LA LOI SERONT LIMITÉES DANS LE TEMPS À LA DURÉE DE LA GARANTIE LIMITÉE EXPRESSE FOURNIE AUX PRÉSENTES. LES LOIS APPLICABLES INTERDISANT PARFOIS LES LIMITATIONS SUR LA DURÉE DES GARANTIES IMPLICITES, LA LIMITATION CI-DESSUS PEUT NE PAS S'APPLIQUER À VOTRE CAS. LA SEULE RESPONSABILITÉ DE GENERAC SERA DE RÉPARER OU DE REMPLACER LA (LES) PIÈCE(S) COMME IL EST INDIQUÉ CI-DESSUS. GENERAC NE SERA EN AUCUN CAS RESPONSABLE DES DOMMAGES INDIRECTS OU CONSÉCUTIFS, MÊME SI CES DOMMAGES SONT UNE CONSÉQUENCE DIRECTE DE LA NÉGLIGENCE DE LA PART DE GENERAC. LES LOIS APPLICABLES INTERDISANT PARFOIS L'EXCLUSION OU LA LIMITATION DES DOMMAGES INDIRECTS OU CONSÉCUTIFS, LA LIMITATION CI-DESSUS PEUT NE PAS S'APPLIQUER À VOTRE CAS. CETTE GARANTIE VOUS CONFÈRE DES DROITS PRÉCIS, RECONNUS PAR LA LOI. VOUS POURRIEZ AUSSI AVOIR D'AUTRES DROITS EN VERTU DE LA LOI EN VIGUEUR.

POUR L'AUSTRALIE SEULEMENT : Nos produits sont offerts avec des garanties qui ne peuvent pas être exclues en vertu de la loi sur la protection des consommateurs de l'Australie. Vous avez droit à un remplacement ou un remboursement pour toute défaillance majeure et à une compensation pour les autres pertes et dommages raisonnablement prévisibles. Vous avez aussi droit à ce que les produits soient réparés ou remplacés s'ils ne répondent pas à des critères de qualité acceptables et si la défaillance n'est pas un défaillance majeure.
POUR LA NOUVELLE-ZÉLANDE SEULEMENT : Rien dans cette déclaration de garantie n'exclut, ne restreint ni modifie toute condition, droit de garantie ou recours qui, en vertu de la législation de la Nouvelle-Zélande (Commonwealth ou d'État), y compris la loi sur les pratiques commerciales équitables de 1986 ou la loi sur la protection du consommateur de 1993 (« LPC »), s'appliquent à cette garantie limitée et ne peuvent pas être exclus, restreints ou modifiés. Rien dans cette déclaration n'est conçu pour avoir comme effet d'externaliser les dispositions de la LPC, à l'exception de ce qui est permis par cette loi, et ces conditions doivent être modifiées dans la mesure nécessaire pour donner effet à cette intention. Si vous achetez des produits Generac Power Systems ou d'un de ses revendeurs ou distributeurs autorisés pour des besoins commerciaux, en vertu de la section 43(2) de la LPC, il est entendu que les dispositions de la LPC ne s'appliquent pas.

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Pour trouver le concessionnaire réparateur indépendant le plus proche et pour télécharger les schémas, les vues éclatées et les listes de pièces, visitez notre site Web : www.generac.com

Pièce n° 0J4302FR Révision H (4/21)

Generac Power Systems 2 Year (2B) Limited Warranty for Industrial Standby Generators

For the period of warranty noted below, which begins upon the successful start-up and/or on-line activation of the unit, Generac Power Systems, Inc. “Generac” warrants that its Generator will be free from defects in material and workmanship for the items and period set forth below. Generac will, at its discretion, repair or replace any part(s) which, upon evaluation, inspection and testing by Generac or an Independent Authorized Service Dealer, is found to be defective. Any equipment that the purchaser/owner claims to be defective must be evaluated by the nearest Independent Authorized Service Dealer. Emissions components are excluded from coverage under this extended warranty. Emissions warranty coverage is detailed in a separate emissions warranty.

Warranty Coverage: Warranty coverage period is for Two (2) years or two-thousand (2,000) hours, whichever occurs first.

Warranty Coverage in Year(s): 1	Warranty Coverage in Year(s): 2
Parts, Labor and Limited Travel	Limited Parts Only

Limited Gearbox Coverage:

Year(s): 1-5 Coverage	Year(s): 6-10 Coverage
Limited Parts and Labor	Limited Parts Only

Guidelines:

1. Unit must be registered and proof of purchase available.
2. Any and all warranty repairs and/or concerns must be performed and/or addressed by an Independent Authorized Service Dealer, or branch thereof. Repairs or diagnostics performed by individuals other than Independent Authorized Service Dealers not authorized in writing by Generac will not be covered.
3. This Warranty is transferable between ownership of original install site.
4. Generac supplied engine coolant heaters (block-heaters), heater controls and circulating pumps are only covered during the first year of the warranty provision.
5. Generac may choose to repair, replace or refund a piece of equipment in its sole discretion.
6. Enclosures are warranted against rust for the first year of ownership only. Damage caused after receipt of generator is the responsibility of the owner and is not covered by this warranty. Nicks, scrapes, dents or scratches to the painted enclosure should be repaired promptly by the owner.
7. Warranty only applies to permanently wired and mounted units.
8. Damage to any covered components or consequential damages caused by the use of a non-OEM part will not be covered by the warranty.
9. Proof of performance of all required maintenance must be available.
10. Travel allowance is limited to 300 miles maximum and seven and one half (7.5) hours maximum (per occurrence, whichever is less) round trip from the nearest Independent Authorized Service Dealer. Any additional travel required will not be covered.
11. Engines, driven components and fuel tanks used in Generac’s standby power products system can carry a separate manufacturer’s (OEM) warranty (the “OEM Warranties”), unless otherwise expressly stated. OEM Warranties are in addition to this Warranty. All warranty claims for defects in material and/or workmanship on Generac product OEM components, may be directed through the OEM distributor/dealer network. OEM Warranties may vary and are subject to change. Generac shall have no liability under OEM warranties.

The following will NOT be covered by this warranty:

1. Costs of normal maintenance (i.e. tune-ups, associated part(s), adjustments, loose/leaking clamps, installation and start-up).
2. Damage/failures to the generator and/or transfer switch system caused by accidents, shipping, handling, or improper storage.
3. Damage/failures caused by operation with improper fuels, speeds, loads or installations other than what’s recommended or specified by Generac Power Systems.
4. Damage to the generator and/or transfer switch due to the use of non-Generac parts and/or equipment, contaminated fuels, oils, coolants/antifreeze or lack of proper fuels, oil or coolants/antifreeze.
5. Failures due to normal wear and tear, accident, misuse, abuse, neglect, improper installation, improper sizing, or rodent, reptile, and/or insect infestation.
6. Rental equipment used while warranty repairs are being performed and/or any extraordinary equipment used for removal and/or reinstallation of generator (i.e. cranes, hoists, lifts, et. al.).
7. Planes, ferries, railroad, buses, helicopters, snowmobiles, snow-cats, off-road vehicles or any other mode of transport deemed not standard by Generac.
8. Products that are modified or altered in a manner not authorized by Generac in writing.
9. Starting batteries, fuses, light bulbs, engine fluids and any related labor.
10. Steel enclosures that rust as a result of improper installation, location in a harsh or salt water environment, or are scratched where the integrity of applied paint is compromised.
11. Units sold, rated or used for "Prime Power", "Trailer Mounted" or "Rental Unit" applications as defined by Generac. Contact an Independent Authorized Service Dealer for definitions.
12. Shipping costs associated with expedited shipping.
13. Additional costs for overtime, holiday or emergency labor costs for repairs outside of normal business hours.
14. Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective part(s).
15. Failures caused by any act of God or external cause including without limitation, fire, theft, freezing, war, lightning, earthquake, windstorm, hail, water, tornado, hurricane, or any other matters which are reasonably beyond the manufacturer’s control.

THIS WARRANTY SUPERSEDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. SPECIFICALLY, GENERAC MAKES NO OTHER WARRANTIES AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTIES WHICH ARE ALLOWED BY LAW, SHALL BE LIMITED IN DURATION TO THE TERMS OF THE EXPRESS WARRANTY PROVIDED HEREIN. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. GENERAC'S ONLY LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF PART(S) AS STATED ABOVE. IN NO EVENT SHALL GENERAC BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF GENERAC’S NEGLIGENCE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU ALSO HAVE OTHER RIGHTS UNDER APPLICABLE LAW.

FOR AUSTRALIA ONLY: Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
FOR NEW ZEALAND ONLY: Nothing in this warranty statement excludes, restricts or modifies any condition, warranty right or remedy which pursuant to the New Zealand Legislation (Commonwealth or State) including the Fair Trading Practices Act of 1986 or the Consumer Guarantees Act 1993 (“CGA”) applies to this limited warranty and may not be so excluded, restricted or modified. Nothing in this statement is intended to have the effect of contracting out of the provisions of the CGA, except to the extent permitted by that Act, and these terms are to be modified to the extent necessary to give effect to that intention. If you acquire goods from Generac Power Systems or any of its authorized resellers and distributors for the purposes of a business, then pursuant to section 43(2) of the CGA, it is agreed that the provisions of the CGA do not apply.

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To locate the nearest Independent Authorized Service Dealer and to download schematics, exploded views and parts lists
visit our website: www.generac.com

Part No. 0K3486 Revision E (2/16)

Garantía limitada de 2 años (2B) de Generac Power Systems para los generadores de respaldo industriales

Durante el período de garantía indicado abajo, que comienza desde la puesta en marcha y/o activación exitosa en línea de la unidad, Generac Power Systems, Inc. "Generac" garantiza que generador estará libre de defectos de material y/o mano de obra para los ítems y el período indicados a continuación. Generac, a su discreción, reparará o sustituirá cualquier pieza o piezas que, por medio de la evaluación, inspección y prueba efectuada por Generac o un Concesionario de servicio autorizado independiente de Generac, se determine que es o son defectuosa(s). Todo equipo que el comprador o propietario reclame como defectuoso debe ser evaluado por el Concesionario de servicio autorizado independiente de Generac más cercano. Los componentes relacionados con emisiones están excluidos de la cobertura bajo esta garantía extendida. La cobertura de la garantía de emisiones se detalla por separado en una garantía de emisiones.

Cobertura de la garantía: El período de cobertura de la garantía es de dos (2) años o dos mil (2000) horas, lo que ocurra primero.

Cobertura de la garantía en el o los año(s): 1	Cobertura de la garantía en el o los año(s): 2
Sobre piezas, mano de obra y gastos de viaje limitados	Limitada solo sobre piezas

Cobertura limitada sobre la caja de engranajes:

Año(s) de cobertura: 1-5 Cobertura	Año(s) de cobertura: 6-10 Cobertura
Limitada sobre piezas y mano de obra	Limitada solo sobre piezas

Directrices:

1. La unidad debe estar registrada y tener prueba de compra disponible.
2. Cualquiera y todas las reparaciones y/o preocupaciones por garantía deben ser efectuadas y/o dirigidas por un Concesionario de servicio autorizado independiente de Generac, o una sucursal de este. No serán cubiertas las reparaciones o los diagnósticos efectuados por personas diferentes de los Concesionarios de servicio autorizados independientes de Generac no autorizados por escrito por Generac.
3. Esta garantía es transferible entre propietarios del sitio de instalación original.
4. Los calentadores de refrigerante de motor (calentadores de bloque), los controles del calentador y las bombas de circulación suministrados por Generac solo están cubiertos durante el primer año de prestación de la garantía.
5. Generac puede elegir reparar, sustituir o reembolsar una pieza del equipo a su exclusiva discreción.
6. Los gabinetes están garantizados contra corrosión solamente durante el primer año de propiedad. El daño causado después de la recepción del generador es responsabilidad del comprador y no está cubierto por esta garantía. Las muescas, raspaduras, abolladuras o rayaduras de gabinete pintado deben ser reparadas sin demora por el propietario.
7. La garantía corresponde solamente a las unidades conectadas y montadas en forma permanente.
8. Los daños a cualquier componente o los daños emergentes causados por el uso de una pieza que no sea OEM no estarán cubiertos por la garantía.
9. Debe haber disponible prueba de la ejecución de todo el mantenimiento requerido.
10. Las asignaciones para viaje están limitadas a 300 millas como máximo y siete horas y media (7.5) horas como máximo (por ocurrencia, lo que sea menor), viaje de ida y vuelta, desde el Concesionario de servicio autorizado independiente de Generac más cercano. Todo gasto de viaje adicional requerido no será cubierto.
11. Los motores, los componentes accionados y los tanques de combustible usados en los productos de respaldo de Generac pueden llevar una garantía de fabricante (OEM) separada (las "Garantías de OEM"), a menos que se estipule expresamente lo contrario. Las garantías de OEM son un agregado a esta garantía. Todos los reclamos de garantía por defectos de material y/o mano de obra en los componentes OEM del producto Generac, pueden ser dirigidos a través de la red de distribuidores/concesionarios OEM. Las garantías de OEM pueden variar y están sujetas a cambios. Generac no tendrá responsabilidad bajo las garantías de OEM.

Lo siguiente NO será cubierto por esta garantía:

1. Costes del mantenimiento normal (es decir: afinaciones, pieza[s] relacionada[s], ajustes, abrazaderas sueltas o con fugas, instalación y puesta en marcha).
2. Daños/fallos del sistema de generador y/o interruptor de transferencia causados por accidentes, envío, manipulación, o almacenamiento incorrecto.
3. Los daños/fallos causados por la operación con combustibles, velocidades, cargas, o instalaciones incorrectas diferentes de las recomendadas o especificadas por Generac Power Systems.
4. Los daños al generador y/o el interruptor de transferencia debidos al uso de piezas y/o equipos que no sean de Generac; combustibles, aceites, refrigerantes/anticongelantes contaminados; o falta de combustibles, aceites, refrigerantes/anticongelantes apropiados.
5. Fallos debidos a: desgaste y daño normal, accidente, uso indebido, abuso, negligencia, instalación incorrecta, dimensionamiento incorrecto, o plagas de roedores y/o insectos.
6. Equipos arrendados usados mientras se llevan a cabo reparaciones de garantía y/o todos los equipos extraordinarios usados para retirar y/o reinstalar el generador, (esto es: grúas, malacates, elevadores, etc.).
7. Aeronaves, transbordadores, ferrocarril, autobuses, helicópteros, motocicletas para nieve, camiones para nieve, vehículos fuera de ruta o cualquier otro modo de transporte no considerado estándar por Generac.
8. Productos que se modifiquen o alteren en forma no autorizada por Generac por escrito.
9. Baterías de arranque, fusibles, bombillas de luz, fluidos para el motor y mano de obra relacionada.
10. Los gabinetes de acero que se corroen debido a instalación incorrecta, ubicación en un entorno agresivo o con agua salada, o se rayen donde esté comprometida la integridad de la pintura aplicada.
11. Las unidades vendidas, calificadas para, o usadas en aplicaciones de "Alimentación eléctrica principal", "Montada en remolque" o "Unidad en alquiler" como las define Generac. Comuníquese con un Concesionario de servicio autorizado independiente para las definiciones.
12. Costes de envío asociados con envío urgente.
13. Costes adicionales por horas extra y feriados o los costes de mano de obra de emergencia por reparaciones fuera del horario de trabajo normal.
14. Todos los daños accesorios, emergentes o indirectos causados por defectos en los materiales o mano de obra o toda demora en la reparación o sustitución de la(s) pieza(s) defectuosa(s).
15. Los fallos causados por cualquier acto de fuerza mayor o causa externa, que incluyen, sin limitaciones, incendio, robo, congelamiento, guerra, rayos, terremoto, tormenta de viento, granizo, agua, tornado, huracán, o cualesquiera otros asuntos que estén fuera del control razonable del fabricante.

ESTA GARANTÍA SUSTITUYE CUALQUIER OTRA GARANTÍA, EXPRESA O IMPLÍCITA. ESPECÍFICAMENTE, GENERAC NO EXTIENDE NINGUNA OTRA GARANTÍA ACERCA DE LA COMERCIALIZACIÓN O APTITUD PARA UN PROPÓSITO EN PARTICULAR. LA DURACIÓN DE TODAS LAS GARANTÍAS IMPLÍCITAS PERMITIDAS POR LA LEY ESTARÁ LIMITADA A LAS CONDICIONES DE LA GARANTÍA EXPRESA ESTIPULADA EN LA PRESENTE. ALGUNAS JURISDICCIONES NO PERMITEN LIMITACIONES DE LA DURACIÓN DE UNA GARANTÍA IMPLÍCITA; POR LO TANTO, LA LIMITACIÓN PRECEDENTE PUEDE NO APLICARSE A USTED. LA ÚNICA RESPONSABILIDAD DE GENERAC SERÁ REPARAR O SUSTITUIR LA(S) PIEZA(S) COMO SE ESTIPULÓ PRECEDENTEMENTE. GENERAC NO SERÁ RESPONSABLE EN NINGÚN CASO POR NINGÚN DAÑO ACCESORIO O EMERGENTE, AÚN CUANDO TAL DAÑO SEA RESULTADO DIRECTO DE LA NEGLIGENCIA DE GENERAC. ALGUNAS JURISDICCIONES NO PERMITEN LA EXCLUSIÓN O LIMITACIÓN DE DAÑOS ACCESORIOS O EMERGENTES, DE MANERA QUE LA LIMITACIÓN PRECEDENTE PUEDE NO APLICARSE A USTED. ESTA GARANTÍA LE OTORGA DERECHOS LEGALES ESPECÍFICOS. TAMBIÉN TIENE OTROS DERECHOS BAJO LA LEY CORRESPONDIENTE.

SOLO PARA AUSTRALIA: Nuestros productos se entregan con garantías que no pueden ser excluidas según la Australian Consumer Law (Ley australiana de consumidores). Usted tiene derecho a sustitución o reembolso por un fallo mayor y a compensación por cualquier otra pérdida o daño razonable previsible. Usted también tiene derecho a que los bienes sean reparados o sustituidos si los bienes no son de calidad aceptable y la falla no llega a ser un fallo mayor.
SOLO PARA NUEVA ZELANDA: Nada de esta declaración de garantía excluye, restringe o modifica ninguna condición, derecho de garantía o solución que, conforme a la legislación de Nueva Zelanda (Comunidad o Estado), incluso la Fair Trading Practices Act (Ley de transacciones comerciales justas) de 1986 o la Consumer Guarantees Act (Ley de garantías de los consumidores, "CGA") de 1993, se aplique a esta garantía limitada y por lo tanto no puede ser sometida a exclusiones, restricciones o modificaciones. Nada de esta declaración tiene el propósito de tener efecto de contratar fuera de las previsiones de la CGA, excepto con el alcance permitido por la ley y estos términos se deben modificar con el alcance necesario para hacer efectiva esta intención. Si adquiere bienes de Generac Power Systems o alguno de sus revendedores y distribuidores autorizados con propósitos comerciales, entonces, conforme a la sección 43(2) de la CGA, se acuerda que no se aplican las previsiones de la CGA.

GENERAC POWER SYSTEMS, INC. • P.O. BOX 8 • Waukesha, WI 53187, EE. UU.
Tel.: (888) GENERAC (436-3722) • Fax: (262) 544-4851

Para ubicar el Concesionario de servicio autorizado independiente más cercano y descargar diagramas esquemáticos, despieces y listas de piezas
visite nuestro sitio Web: www.generac.com

Núm. de pieza 0K3486 Revisión E (02/16)

Garantie limitée de 2 ans (2B) de Generac Power Systems sur les générateurs de secours industriels

Pendant la période de garantie mentionnée ci-bas, qui débute dès le démarrage réussi de l'appareil ou l'activation en ligne de l'appareil, Generac Power Systems, Inc. (Generac) garantit que son générateur sera exempt de vices de matériaux et fabrication en ce qui concerne les éléments et la période indiqués ci-dessous. À sa seule discrétion, Generac réparera ou remplacera toute pièce qui est jugée défectueuse après l'évaluation, l'inspection et la mise à l'essai par Generac ou un fournisseur de services d'entretien agréé indépendant. Tout équipement que l'acheteur/propriétaire prétend être défectueux doit être évalué par le fournisseur de services d'entretien agréé indépendant le plus près. Les composantes relatives aux émissions ne sont pas couvertes en vertu de la présente garantie. La couverture des composantes relatives aux émissions est détaillée dans une garantie distincte.

Couverture de la garantie : La période de garantie est de deux (2) ans ou de deux mille (2000) heures, selon la première éventualité.

Période de garantie : 1	Période de garantie : 2
Pièces, main-d'œuvre et couverture limitée des déplacements	Couverture limitée – pièces seulement

Couverture limitée de la boîte à engrenages :

Période : couverture de 1 à 5 ans	Période : couverture de 6 à 10 ans
Couverture limitée – pièces et main-d'œuvre	Couverture limitée – pièces seulement

Lignes directrices :

1. L'appareil doit être enregistré et la preuve d'achat doit être présentée sur demande.
2. Toute réparation sous garantie doit être effectuée par un fournisseur de services d'entretien agréé indépendant ou l'une de ses succursales, et toute préoccupation doit être également traitée par un fournisseur de services d'entretien agréé indépendant de Generac ou l'une de ses succursales. Toute réparation ou évaluation effectuée par des personnes autres que des fournisseurs de services d'entretien agréés indépendants qui n'a pas été autorisée par écrit par Generac ne sera pas couverte.
3. La présente garantie est transférable conjointement à la propriété du site d'installation d'origine.
4. Les chaufferettes à liquide de refroidissement du moteur (chauffe-moteur), les commandes de chauffage et les pompes de circulation fournies par Generac ne sont couvertes que pendant la première année de la période de garantie.
5. Generac peut choisir, à sa seule discrétion, de réparer, de remplacer ou de rembourser une pièce d'équipement.
6. Les boîtiers sont garantis contre la rouille pendant la première année de possession seulement. Les dommages causés après la réception du générateur sont la responsabilité du propriétaire et ne sont pas couverts par la présente garantie. Les entailles, éraflures, bosses ou égratignures au boîtier peint doivent être réparées sans délai par le propriétaire.
7. La garantie s'applique uniquement aux appareils montés et câblés en permanence.
8. Aucun dommage ou dommage indirect à toute pièce couverte découlant de l'utilisation de pièces non fabriquées par un fabricant d'équipement d'origine ne sera couvert par la garantie.
9. Une preuve d'exécution de tous les travaux d'entretien requis doit être présentée sur demande.
10. La présente garantie couvre les déplacements aller-retour d'un maximum de 480 km (300 miles) et de sept heures et demie (7,5) (par déplacement, selon le moindre des deux) à partir du fournisseur de services d'entretien agréé indépendant le plus près. Tout déplacement supplémentaire requis ne sera pas couvert.
11. Les moteurs, les pièces d'entraînement et les réservoirs de carburant utilisés dans les systèmes d'alimentation de secours de Generac peuvent être protégés au titre de la garantie d'un fabricant d'équipement distinct (les « garanties des fabricants d'équipement d'origine »), sauf indication expresse à l'effet contraire. Les garanties des fabricants d'équipement d'origine s'ajoutent à la présente garantie. Toute réclamation au titre de la garantie pour vices de matériaux ou de fabrication de pièces d'un fabricant d'équipement d'origine sur un produit Generac peut être faite auprès du distributeur ou du réseau de fournisseurs de ce fabricant d'équipement d'origine. Les garanties des fabricants d'équipement d'origine peuvent varier et faire l'objet de modifications. Generac n'a aucune responsabilité découlant des garanties offertes par les fabricants d'équipement d'origine.

Les éléments suivants ne seront PAS couverts par la présente garantie :

1. Les coûts d'entretien normal (c'est-à-dire mises au point, réglages de pièces associées, ajustements, resserrage de fixations, installation et démarrage).
2. Les dommages ou défaillances du générateur et/ou du commutateur de transfert causés par un accident, le transport, la manutention ou un entreposage inadéquat.
3. Les dommages/défaillances causés par l'utilisation de carburants inappropriés ou l'utilisation à des vitesses, avec des charges ou selon une installation autres que ce qui est recommandé ou spécifié par Generac Power Systems.
4. Les dommages au générateur et/ou au commutateur de transfert causés par l'utilisation de pièces ou d'équipement non fabriqués par Generac, de carburant, d'huile, de liquide de refroidissement et d'antigel contaminé ou encore du manque de carburant, d'huile, de liquide de refroidissement et d'antigel.
5. Les défaillances causées par l'usure normale, un accident, une utilisation inappropriée, une utilisation abusive, une négligence, une installation inadéquate, un dimensionnement inadéquat ou une infestation de rongeurs, de reptiles ou d'insectes.
6. L'équipement de location utilisé pendant que des réparations sous garantie sont effectuées et/ou tout équipement extraordinaire utilisé pour retirer ou réinstaller le générateur (c'est-à-dire grues, appareils de levage, élévateurs, etc.).
7. Les avions, les traversiers, les trains, les autobus, les hélicoptères, les motoneiges, les dameuses, les véhicules hors route ou tout autre moyen de transport jugé non standard par Generac.
8. Les produits modifiés ou altérés d'une manière qui n'a pas été autorisée par écrit par Generac.
9. Les batteries de démarrage, les fusibles, les ampoules électriques, les fluides de moteur et toute main-d'œuvre connexe.
10. Les boîtiers en acier qui rouillent en raison d'une installation inadéquate, d'une installation dans un environnement difficile ou salin ou d'égratignures qui compromettent l'intégrité de la peinture appliquée sur le boîtier.
11. Les appareils vendus, cotés ou utilisés selon les applications suivantes, telles qu'elles sont définies par Generac : « puissance électrique de base », « monté sur remorque » ou « unité de location ». Veuillez communiquer avec un fournisseur de services d'entretien agréé indépendant pour obtenir les définitions.
12. Les coûts d'expédition liés à l'expédition accélérée.
13. Les coûts supplémentaires liés aux heures supplémentaires, aux jours fériés ou aux services d'urgence pour toute réparation effectuée en dehors des heures normales de bureau.
14. Tout dommage accessoire, subséquent ou indirect causé par un défaut de matériau et de fabrication ou par tout retard dans la réparation ou le remplacement de pièces défectueuses.
15. Les défaillances causées par un cas de force majeure ou une cause externe y compris, sans toutefois s'y limiter, le feu, le vol, le gel, la guerre, la foudre, un tremblement de terre, une tempête, la grêle, la pluie, une tornade, un ouragan ou toute autre situation raisonnablement hors du contrôle du fabricant.

LA PRÉSENTE GARANTIE REMPLACE TOUTES LES AUTRES GARANTIES, EXPLICITES OU IMPLICITES. EN PARTICULIER, GENERAC N'OFFRE AUCUNE AUTRE GARANTIE QUANT À LA QUALITÉ MARCHANDE OU À LA CONVENANCE À UN USAGE PARTICULIER. TOUTE GARANTIE IMPLICITE AUTORISÉE PAR LA LOI SERA LIMITÉE À LA DURÉE DE LA PÉRIODE DE LA PRÉSENTE GARANTIE EXPLICITE. CERTAINS ÉTATS OU PROVINCES NE PERMETTENT PAS LES LIMITATIONS SUR LA DURÉE D'UNE GARANTIE IMPLICITE ET, PAR CONSÉQUENT, LA PRÉSENTE LIMITATION PEUT NE PAS S'APPLIQUER. LA RESPONSABILITÉ DE GENERAC SE LIMITERA À LA RÉPARATION OU AU REMPLACEMENT DES PIÈCES, COMME INDIQUÉ PRÉCÉDEMMENT. EN AUCUN CAS GENERAC NE POURRA ÊTRE TENUE RESPONSABLE DE DOMMAGES ACCESSOIRES OU SUBSÉQUENTS, MÊME SI LES DOMMAGES RÉSULTENT DIRECTEMENT DE LA NÉGLIGENCE DE GENERAC. CERTAINS ÉTATS OU PROVINCES N'AUTORISENT PAS L'EXCLUSION NI LA LIMITATION DES DOMMAGES ACCESSOIRES OU INDIRECTS ET, PAR CONSÉQUENT, LA LIMITATION ÉNONCÉE CI-DESSUS PEUT NE PAS S'APPLIQUER. CETTE GARANTIE VOUS CONFÈRE DES DROITS LÉGAUX PRÉCIS. VOUS POUVEZ ÉGALEMENT JOUIR D'AUTRES DROITS EN VERTU DES LOIS APPLICABLES.

POUR L'AUSTRALIE UNIQUEMENT : Nos produits sont fournis avec des garanties qui ne peuvent être exclues en vertu de la loi australienne sur la consommation (Australian Consumer Law). Vous avez droit à un remplacement ou à un remboursement pour une défaillance majeure et à une indemnisation pour toute autre perte ou tout dommage raisonnablement prévisible. Vous disposez également d'un droit à la réparation ou au remplacement si les produits ne sont pas d'une qualité acceptable et si cette défaillance n'est pas considérée comme majeure.
POUR LA NOUVELLE-ZÉLANDE UNIQUEMENT : Cette garantie n'exclut, ne restreint ni ne modifie aucune condition, aucun droit de garantie ou recours qui, conformément à la législation de Nouvelle-Zélande (Commonwealth ou État), y compris la loi sur la pratique commerciale loyale de 1986 (Fair Trading Practices Act) ou la loi sur la protection du consommateur de 1993 (CGA ou Consumer Guarantees Act), s'applique à cette garantie limitée et ne peut pas être exclue, restreinte ou modifiée. Cette garantie ne vise en aucun cas à contourner les dispositions de la CGA, sauf dans la mesure permise par cette loi, et ces termes doivent être modifiés dans la mesure nécessaire pour donner effet à cette intention. Si vous faites l'acquisition d'un produit de Generac Power Systems ou d'un de ses distributeurs et revendeurs autorisés à des fins commerciales, alors, conformément à l'article 43(2) de la CGA, il est convenu que les dispositions de la CGA ne s'appliquent pas.

GENERAC POWER SYSTEMS, INC. • C.P. 8 • Waukesha, WI (É.-U.) 53187
Téléphone : (888) GENERAC (436-3722) • Télécopieur : (262) 544-4851

Pour trouver le fournisseur de services d'entretien agréé indépendant le plus près et pour télécharger les schémas, les vues éclatées et les listes de pièces
visitez notre site Web : www.generac.com

Pièce no 0K3486 Révision E (2/16)

CERTIFICATE

This is to certify that

Generac Power Systems, Inc.

S45 W29290 Hwy. 59
Waukesha, WI 53189
United States of America

with the organizational units/sites as listed in the annex

has implemented and maintains a **Quality Management System**.

Scope:
Design, Manufacture, and Distribution of Power Products and Solutions.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.	10012920 QM15
Date of original certification	2013-12-09
Date of revision	2021-06-25
Date of certification	2021-07-16
Valid until	2024-07-15

DQS Inc.

Brad McGuire
Managing Director

Annex to certificate
Registration No. 10012920 QM15

Generac Power Systems, Inc.

S45 W29290 Hwy. 59
Waukesha, WI 53189
United States of America

Location	Scope
10012920 **Generac Power Systems, Inc.** **S45 W29290 Hwy. 59** **Waukesha, WI 53189** **United States of America**	Design and Support of Power Products and Solutions.
10012922 **Generac Power Systems, Inc.** **211 Murphy Dr.** **Eagle, WI 53119** **United States of America**	Manufacture and Distribution of Power Products and Solutions.
10012923 **Generac Power Systems, Inc.** **757 N. Newcomb St.** **Whitewater, WI 53190** **United States of America**	Manufacture and Distribution of Power Products and Solutions.
10012924 **Generac Power Systems, Inc.** **900 N. Parkway** **Jefferson, WI 53549** **United States of America**	Manufacture of Power Products and Solutions.
10013528 **Generac Power Systems** **3815 Oregon St.** **Oshkosh, WI 54902** **United States of America**	Manufacture and Distribution of Power Products.
10017103 **Generac Mobile** **215 Power Drive** **Berlin, WI 54923** **United States of America**	Manufacture and Distribution of Power Products.

Annex to certificate
Registration No. 10012920 QM15

Generac Power Systems, Inc.

S45 W29290 Hwy. 59
Waukesha, WI 53189
United States of America

Remote Location	Scope
10014175 **Generac Power Systems, Inc.** **351 Collins Road** **Jefferson, WI 53549** **United States of America**	The remote location at Jefferson, WI performs the following primary functions: Parts and Components Receiving, Inventory, Return and Reconditioning of Product, and Distribution to Generac Locations.
10017439 **Generac Mobile** **745 E. Knopf St.** **Berlin, WI 54923** **United States of America**	The remote location at Berlin, WI performs the following primary functions: Warehousing and Shipping.
10018422 **Generac Power Systems, Inc.** **303 Venture Court** **Janesville, WI 53546** **United States of America**	The remote location at Janesville, WI performs the following primary functions: Parts and Components Receiving, Kitting, Warehousing, Inventory, and Distribution to Generac locations.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2023 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Generac Power Systems, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: PGNXB08.92O3-023

Effective Date: 09/01/2022

Expiration Date: 12/31/2023

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 09/01/2022

Revision Date: N/A

Manufacturer: Generac Power Systems, Inc.
Engine Family: PGNXB08.92O3
Mobile/Stationary Certification Type: Stationary
Fuel : Natural Gas (CNG/LNG)
Emission Standards :
Part 60 Subpart JJJJ Table 1
NOx (g/Hp-hr) : 2.0
CO (g/Hp-hr) : 4.0
VOC (g/Hp-hr) : 1.0
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

United States Environmental Protection Agency Warranty Statement (Stationary Emergency Spark-Ignited Generators)

Warranty Rights, Obligations and Coverage

The United States Environmental Protection Agency (EPA) and Generac Power Systems, Inc. (Generac) are pleased to explain the Emission Control System Warranty on your new stationary emergency engine. If during the warranty period, any emission control system or component on your engine is found defective in materials or workmanship, Generac will repair your engine at no cost to you for diagnosis, replacement parts and labor provided it be done by a Generac Authorized Warranty Service Facility. Your emission control system may include parts such as the fuel metering, ignition, and exhaust systems and other related emission related components listed below. Generac will warrant the emissions control systems on your 2009 and later model year engines provided there has been no abuse, neglect, unapproved modification, or improper maintenance of your engine. For engines less than 130 HP the warranty period is two years from the date of sale to the ultimate purchaser. For engines greater than or equal to 130 HP the warranty period is three years or 2500 hours of operation, whichever comes first, from the date of the engine being placed into service. For high-cost warranted components, the Emission Control System warranty is valid for 5 years or 3500 hours of operation, whichever comes first.

Purchaser's/Owner's Warranty Responsibilities

As the engine purchaser/owner you are responsible for the following: 1) The engine must be installed and configured in accordance to Generac's installation specifications. 2) The completion of all maintenance requirements listed in your Owner's Manual. 3) Any engine setting adjustment must be done in accordance and consistent with the instructions in the Owner's Manual. 4) Any emission control system or component must be maintained and operated appropriately in order to ensure proper operation of the engine and control system to minimize emissions at all times.

Generac may deny any/or all Emission Control System Warranty coverage or responsibility of the engine, or an emission control system or component on your engine thereof, if it has failed due to abuse, neglect, unapproved modification or improper maintenance, or the use of counterfeit and/or “gray market” parts not made, supplied or approved by Generac. Warranty service can be arranged by contacting either your selling dealer or a Generac Authorized Warranty Service dealer, 1-800-333-1322 for the dealer nearest you. The purchaser/owner shall be responsible for any expenses or other charges incurred for service calls and/or transportation of the product to/from the inspection or repair facilities. The purchaser/owner shall be responsible for any and/or all damages or losses incurred while the engine is being transported/shipped for inspection or warranty repairs. Contact Generac Power Systems Inc. for additional Emission Control System Warranty related information, Generac Power Systems, Inc., PO. Box 8, Waukesha, WI 53187, or call 1-800-333-1322 or www.generac.com.

Important Note

This warranty statement explains your rights and obligations under the Emission Control System Warranty, which is provided to you by Generac pursuant to federal law. Note that this warranty shall not apply to any incidental, consequential, or indirect damages caused by defects in materials or workmanship or any delay in repair or replacement of the defective part(s). This warranty is in place of all other warranties, expressed or implied. Specifically, Generac makes no other warranties as to the merchantability or fitness for a particular purpose. Any implied warranties which are allowed by law, shall be limited in duration to the terms of the express warranty provided herein. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Emission Related Parts Include the Following (if so equipped)

1) Fuel Metering System

1.1) Gasoline Carburetor Assembly and Internal Components
A) Fuel Filter, B) Carburetor, C) Fuel Pump

1.2) Carburetion Assembly and Its Components
A) Fuel Controller, B) Carburetor and Its Gaskets, C) Mixer and Its Gaskets, D) Primary Gas Regulator, E) Liquid Vaporizer

1.3) Fuel Regulator

2) Air Induction System Including A) Intake Pipe/Manifold, B) Air Cleaner

3) Ignition System Including A) Spark Plug, B) Ignition Module, C) Ignition Coil, D) Spark Plug Wires

4) Exhaust System
A) Catalyst Assembly*, B) Exhaust Manifold, C) Muffler, D) Exhaust Pipe, E) Muffler Gasket

5) Crankcase Breather Assembly Including
A) Breather Connection Tube, B) PCV Valve

6) Oxygen Sensor

7) Diagnostic Emission-Control System

*High-Cost Warranted Component

United States Environmental Protection Agency Compliance Requirements (Stationary Emergency Spark-Ignited Generators)

Purchaser's/Owner's Record Keeping Responsibilities

The United States Environmental Protection Agency (EPA) and Generac Power Systems, Inc. (Generac) are pleased to explain your record keeping requirements for compliance with Subpart JJJJ- Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as listed in the Electronic Code of Federal Regulations Title 40 Part 60. As the engine purchaser/owner who operates and maintains their certified emergency stationary engine and emission control system according to applicable emission related guidelines as specified in this Owner's Manual, you are required to meet the following notification and record keeping requirements to demonstrate compliance: 1) Maintain documentation that the engine is certified to meet emission standards. 2) Record keeping of maintenance conducted. 3) Record keeping of the provision allowing natural gas engines to operate using propane for a maximum of 100 hours per year as an alternate fuel solely during emergency operations provided the engine is not certified to operate on propane. 4) Meet all compliance notifications submitted to the purchaser/owner and maintain all supporting documentation. 5) Record keeping of hours of operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. For emergency engines greater than or equal to 130 HP, record keeping of hours of operation begins January 1, 2011. For emergency engines less than 130 HP, record keeping of hours of operation begins January 1, 2009; engines are equipped with non-resettable hour meters to facilitate record keeping.

Specific Air Quality Management or Air Pollution Control Districts may have different and additional record keeping/reporting requirements. Your permit to construct and/or operate the engine may be contingent upon compliance with those requirements. Check with your local Air Quality Management or Air Pollution Control District for specific requirements.

Emergency stationary internal combustion engines (ICE) may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, Generac, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The purchaser/owner may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing.

The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For purchaser/owner of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section is prohibited.

If you operate and maintain your certified emergency stationary SI internal combustion engine and emissions control systems in accordance to the specifications and guidelines in this Owner’s Manual, EPA will not require engine performance testing. If not, your engine will be considered non-certified and you must demonstrate compliance according to Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as listed in the Electronic Code of Federal Regulations Title 40 Part 60.

Emission-Related Installation Instructions

Your certified emergency stationary engine has pre-set emission control systems or components that require no adjustment. Inspection and replacement of an emissions related component is required to be done so in accordance with the requirements cited in the United States Environmental Protection Agency Warranty Statement or can be arranged by contacting either your selling dealer or a Generac Authorized Warranty Service dealer, 1-800-333-1322 for the dealer nearest you. Failing to follow these instructions when installing a certified engine in a piece of non-road equipment violates federal law 40 CFR 1068.105 (b), subject to fines or penalties as described in the Clean Air Act.

tbrowne@rj-miller.com

From: All Tech Electric <ate@alltech-electric.com>
Sent: Thursday, November 2, 2023 1:28 PM
To: tbrowne@rj-miller.com
Subject: Re: 911 Call Center UPS for Server Room Racks

we can leave it there

Dan Godwin
All-Tech Electric Inc
3101 Arrow Lane
Sansom Park, TX 76114

From: tbrowne@rj-miller.com <tbrowne@rj-miller.com>
Sent: Thursday, November 2, 2023 12:48 PM
To: All Tech Electric <ate@alltech-electric.com>
Subject: FW: 911 Call Center UPS for Server Room Racks

Panel "B" response/question about moving back to electrical room. Sounds like maybe leave it as shown??:

> It doesn't have to be in the server room since it no longer needs to be directly tied to a UPS.
>
> Would it be to much trouble to keep it in there though in case we did want to upgrade to a whole server room UPS down the line?
>
> Just thinking about the future if we ever need to supply a larger unit that has to be hard wired in.

Trevor Browne
President
RJM Contractors Inc.
817-377-0971 ext. 103
Fax: 817-377-0973
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From: Cameron George <cgeorge@johnsoncountytx.org>
Sent: Thursday, November 2, 2023 12:27 PM
To: tbrowne@rj-miller.com; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>

Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: Re: 911 Call Center UPS for Server Room Racks

It doesn't have to be in the server room since it no longer needs to be directly tied to a UPS.

Would it be to much trouble to keep it in there though in case we did want to upgrade to a whole server room UPS down the line?

Just thinking about the future if we ever need to supply a larger unit that has to be hard wired in.

Regards,

Cameron George
System Administrator
Johnson County IT
Email: cgeorge@jocotx.org
Phone: 817-556-6366

From: tbrowne@rj-miller.com <tbrowne@rj-miller.com>
Sent: Thursday, November 2, 2023 12:20:08 PM
To: Cameron George <cgeorge@johnsoncountytx.org>; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

Cameron,

Does panel "B" have to be in the server room per NCT-911 and/or Motorola, since the large UPS goes away, or can we put it in the electrical room if it fits?

Thanks

Trevor Browne
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From: tbrowne@rj-miller.com <tbrowne@rj-miller.com>
Sent: Thursday, November 2, 2023 10:53 AM
To: 'Cameron George' <cgeorge@johnsoncountytx.org>; 'Josh Green' <jgreen@johnsoncountytx.org>; 'robert durham'

<robert@rdurhamarchitecture.com>
Cc: 'Dan Milam' <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

I'll pass this along.

Trevor Browne
President
RJM Contractors Inc.
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From: Cameron George <cgeorge@johnsoncountytx.org>
Sent: Wednesday, November 1, 2023 6:03 PM
To: tbrowne@rj-miller.com; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

Good Afternoon,

Attached are two documents showing the placement of the receptacles for the Server Racks. They will need to be mounted along the backside, top of the server racks ladder system(see both attachments). The racks and ladder system above them are being provided and installed by ACI, so if we need to coordinate the outlet install it will be with Adrian Martinez (Contact info below).

I hope this clears up the outlet location. Below is ACI's response:

"Here is what I got, we will be placing the vertical and horizontal racks. The racks are typically 7ft. I still need to check my parts list, but this is a typical installation. If you have any questions feel free to let me know. Thanks

Adrian Martinez
Project Manager
2015 McKenzie Drive Suite #120
Carrollton, Texas, 75006
Adrian.martinez@acicabling.com
Cell: [817]822-4285 | ***Phone:*** [972]988-3080

EPH 2:8
"

Please let me know if there is anything else I can help with,

Thank you,

Cameron George
System Administrator
Johnson County IT
Email: cgeorge@jocotx.org
Phone: 817-556-6366

From: Cameron George
Sent: Wednesday, November 1, 2023 12:08 PM
To: tbrowne@rj-miller.com; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

Wanted to send a quick follow up, I spoke with ACI and they are going to email me how they want to plugs above the server rack. The PM is out this afternoon and he said he should have it to me by tomorrow.

Regards,

Cameron George
System Administrator
Johnson County IT
Email: cgeorge@jocotx.org
Phone: 817-556-6366

From: Cameron George
Sent: Tuesday, October 31, 2023 5:50 PM
To: tbrowne@rj-miller.com; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

Hey Trevor,

I agree and below are some answers for your questions that I can provide:

1. The UPS information needs to be provided on the plans (It was decided we will not be using a whole server room UPS that gets hardwired in, so it will not have its own circuits and power requirements. What's critical is all server room plugs, server rack circuits and dispatch console outlets are on the emergency generator. We will have the smaller rack UPS units & UPS units at each console to hold the equipment over long enough for the generator to kick on)
    a. What circuits go where (The current circuit setup for server room & console locations looked great to me as far as which ones were dedicated and how they were combined)
    b. Power requirements (UPS will be stand alone smaller units plugged into emergency generator outlets. These units were sized appropriate to our rack equipment and sent to NCT & Motorola to confirm it would be adequate for them as well and they said yes.)
    c. Etc.
2. Server room needs:

a. Are plugs for server racks wall or ceiling mounted (I will discuss with our Cable Vendor and get back with you on rack installation, initial discussion was up above the top of rack, but I will confirm)
b. In either case what are plug heights and locations (Plugs in server room wall need to be standard height around the room, except for the back outside wall where AT&T equipment will be wall mounted. That plug needs to be higher up and accessible when we mount the 4ft x 8ft sheet of fireproof plywood for all the services on that wall. Grounding bar will need to have enough space for all 5 server racks and equipment mounted on wall.)
c. Panel "B" and UPS standby goes away in server drawing? (Since the UPS solution is now changed and is just small individual units in the racks, my assumption is the "UPS B Panel" can just be a normal panel?. As long as the Circuits all stay the same and dedicated to where they show now)

3. Dispatch
    a. Is power coming thru the floor or located on the walls as previously described with specific measurements (My preference would be the power going through the floor and mount the boxes inside the dispatch consoles for easier access. Trying to line them up against the wall plate seemed like a good idea at first but much more difficult once we started looking at it)
    b. Either case we need locations given
    c. Will it be whips, plugs below floor plug on floor, etc.? (If all electrical outlets going to dispatch consoles could be mounted inside them that would be ideal and exactly like they are setup currently. If needed I can go over and get pictures of their current setup for reference? This will probably need to be some coordination done with whatever company is installing the consoles)

4. Once all plans are completed, everyone reviews and agrees this is all that is needed (NCT-911, Motorola, Johnson County, Sherriff/911 Office)

5. Then a final approved revision is issued for construction.

This is my current understanding of these questions. Please let me know if there is anything I can help with. I will follow up when I hear back from ACI about the server rack installs and where to best place the circuits for them.

Thank you,

Cameron George
System Administrator
Johnson County IT
Email: cgeorge@jocotx.org
Phone: 817-556-6366

From: tbrowne@rj-miller.com <tbrowne@rj-miller.com>
Sent: Tuesday, October 31, 2023 5:14 PM
To: Cameron George <cgeorge@johnsoncountytx.org>; Josh Green <jgreen@johnsoncountytx.org>; 'robert durham' <robert@rdurhamarchitecture.com>
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: RE: 911 Call Center UPS for Server Room Racks

In my opinion, we need:

1. The UPS information needs to be provided on the plans
    a. What circuits go where
    b. Power requirements
    c. Etc.
2. Server room needs:
    a. Are plugs for server racks wall or ceiling mounted
    b. In either case what are plug heights and locations
    c. Panel “B” and UPS standby goes away in server drawing?

3. Dispatch
    a. Is power coming thru the floor or located on the walls as previously described with specific measurements
    b. Either case we need locations given
    c. Will it be whips, plugs below floor plug on floor, etc.?

4. Once all plans are completed, everyone reviews and agrees this is all that is needed (NCT-911, Motorola, Johnson County, Sherriff/911 Office)

5. Then a final approved revision is issued for construction.

Thanks

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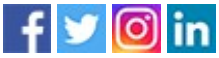


From: Cameron George <cgeorge@johnsoncountytx.org>
Sent: Tuesday, October 31, 2023 2:08 PM
To: Josh Green <jgreen@johnsoncountytx.org>; robert durham (robert@rdurhamarchitecture.com) <robert@rdurhamarchitecture.com>; tbrowne@rj-miller.com
Cc: Dan Milam <dmilam@johnsoncountytx.org>
Subject: 911 Call Center UPS for Server Room Racks

Good Afternoon,

After speaking with everyone the last week or two regarding the UPS, it was decided we will be installing 2 UPS units per server rack. I will be sending the quote and pricing for them over to Josh & his team.

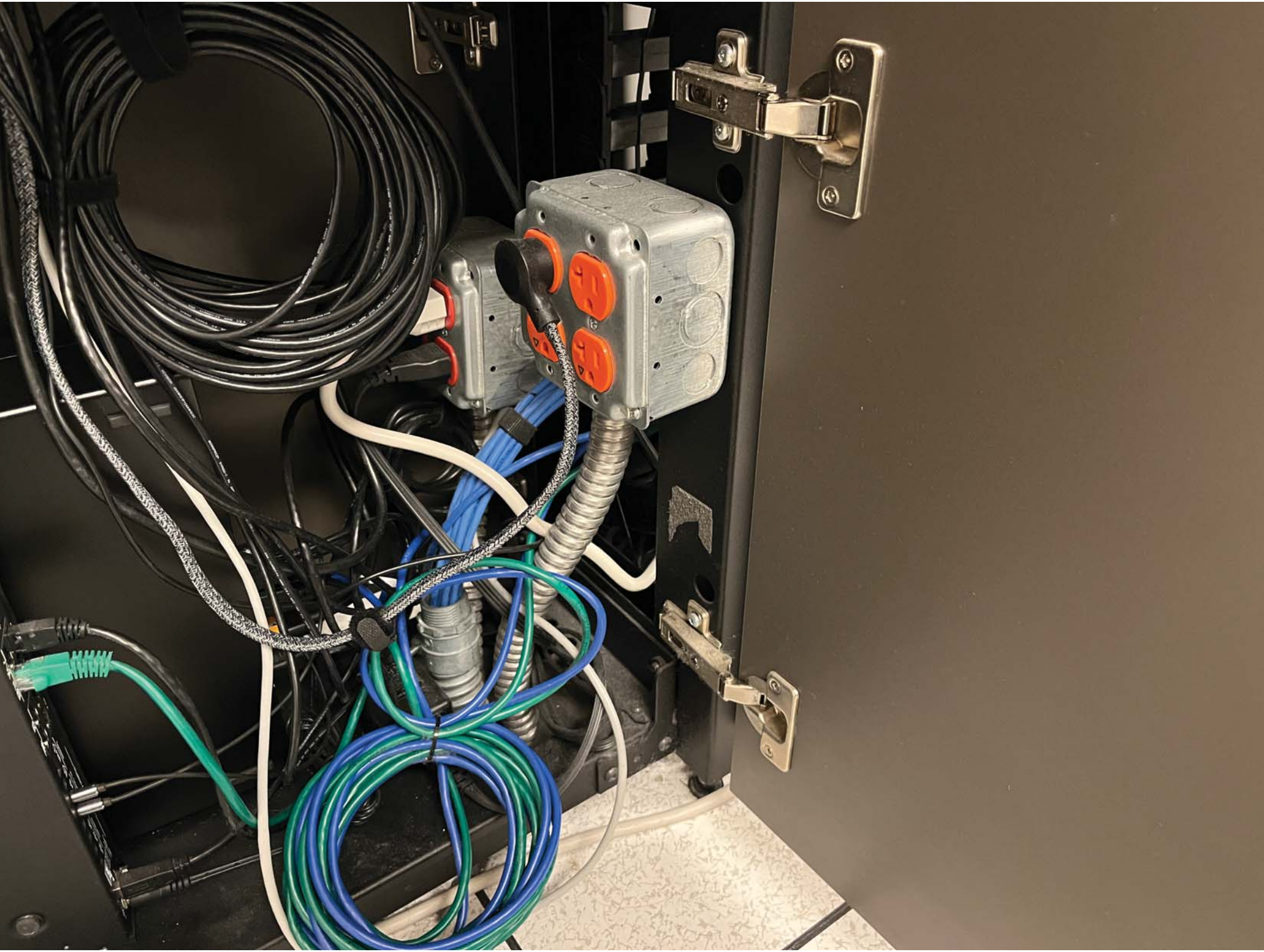
I have also confirmed with both NCT-911 & Motorola on an acceptable UPS model and it works for everyone. These UPS units will be just big enough to get us cut over to the generator, about 6min runtime under full load before they cut off.

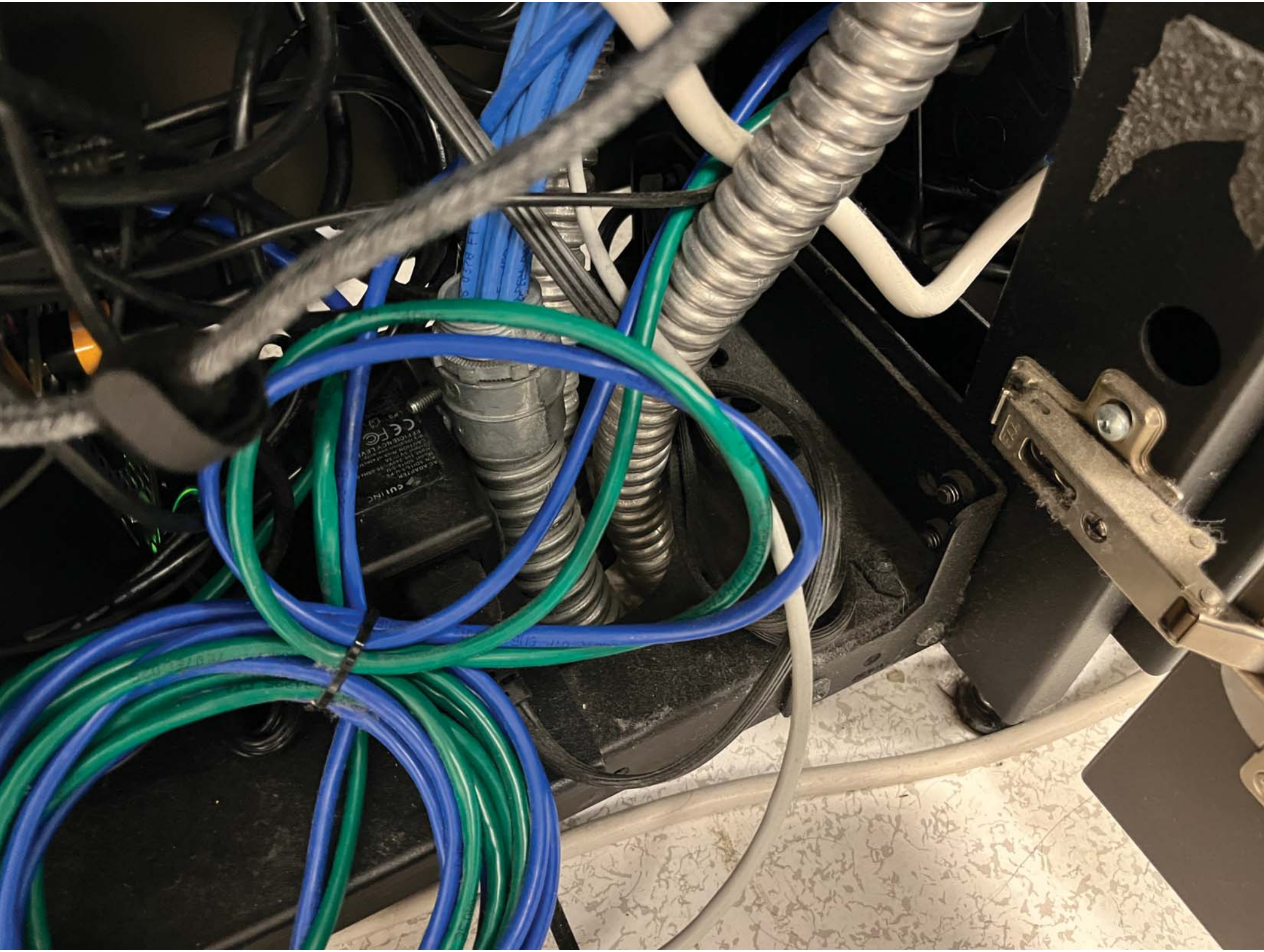
As far at the electrical in the server room. If have attached the most recent documents I was forwarded by Bob and those look good to me.

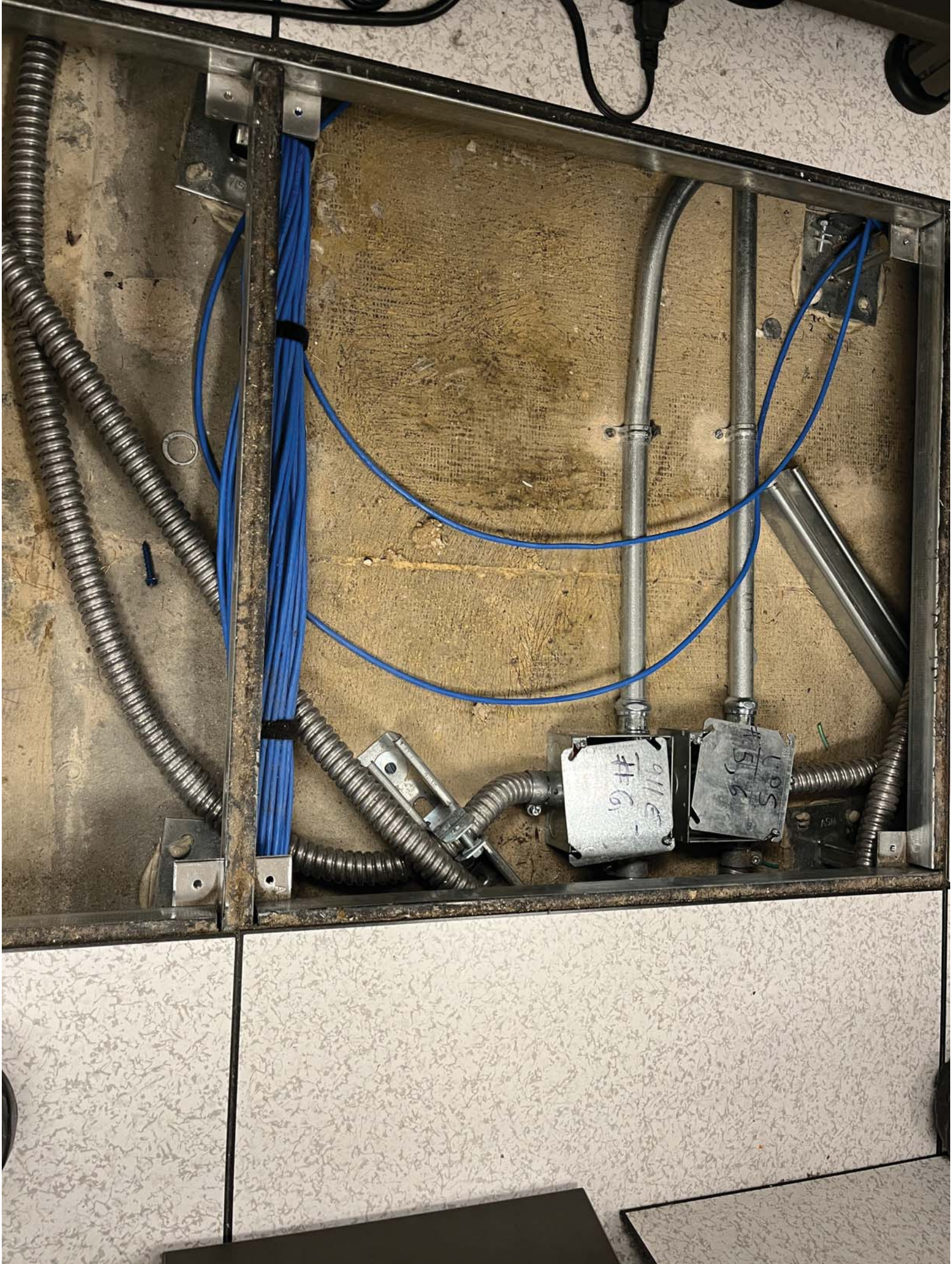
Please let me know if there needs to be any confirmation on the outlet locations in the server room or if you need anything from me.

Thank you,

Cameron George
System Administrator
Johnson County IT
Email: cgeorge@jocotx.org
Phone: 817-556-6366








UPS
#5,6
911 E-
#6