SUBMITTAL

City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE
RayC
08/31/2025
7:51:21 AM

Approval of submitted plans is not an approval of omissions or oversight by this office or noncompliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable building codes and regulations of the local government.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

PRCTI20250324

RANGE
ELECTRIC COMPANY

Permit Condition:
Separate slab design is required for anchoring the equipment.
Provide engineered sealed foundation design for inspection by the engineer of record.
Submittal may be require submittal for review or may be accepted as field reviewed.

Puyallup Public Saftey Building

Generator and Anchors

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permitee on site for inspection.

1015 39th Ave SE, Puyallup, WA. 98374

8/07/2025

Range Electric Company, LLC
PO Box 1506 Enumclaw, WA 98022
253.886.1610
www.Range-Electric.com

City of Puyallup
Development & Permitting Services
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Fire	Traffic

PUYALLUP PUBLIC SAFETY BUILDING GENERATOR & ATS SUBMITTAL

Revision No. 0

June 18, 2025

Prepared for:

RANGE ELECTRIC

mtu Diesel Generator Set

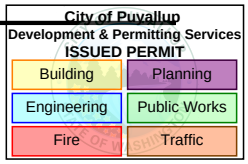
Rated 500kWe, 480V, 3Ph, 60 Hz

Proposal No:
38250

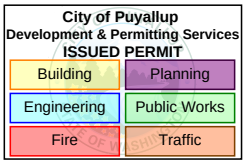
Project Manager: Sam Mogel | (253) 340-7717 (m)
smogel@pacificpowergroup.com

Sales Manager: Richard Qualey | (253) 880-2553 (m)
rqualey@pacificpowergroup.com

Bookmark Summary



- Color
- Enclosure and Sound



4. Generator Set Drawings
    - Genset Assembly
    - Open Power Unit
    - Enclosure
    - 48hr 1720 Gal Ext Tank
    - Vent Pipe Installation
    - Silencer
5. Documentation
    - Performance Assurance Certification
    - Prototype Test Summary
    - Generator Start Up Form
    - Form B - Engine Generator Set Installation and Commissioning
    - PPG - Generator & ATS Training
    - Standby Power Limited Warranty SYS-M-GEN-S-2503
6. Transfer Switches
    - SUBMITTAL-Puyallup Public Safety Bl-07-02-2025
        - COVER PAGE
        - BOM PAGE
        - H3ADTS DETAIL PAGE
            - OUTLINE 1001394-010
            - WIRING 1001660-003
        - J3ADTS DETAIL PAGE
            - OUTLINE 1001393-008
            - WIRING 978748-003
        - J03MTS DETAIL PAGE
            - OUTLINE 977099-008
        - EQUIPMENT STORAGE REQUIREMENTS
        - WARRANTY 300 SERIES
        - DATA SHEET/BROCHURE 300 SERIES
7. Stairs & Platforms
    - 000143885-LAYT-01

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About Pacific Power Group

MSHS Pacific Power Group is a leader in providing engines, service and engineering solutions for the equipment that powers our world: commercial automatic transmissions, marine power, power generation and industrial engines. With nine sales, service and parts warehousing facilities and extended service throughout the Western U.S., Alaska, Hawaii and the Gulf Coast, MSHS Pacific Power Group has what it takes to provide superior power and unmatched service for your business.

About the Power Generation Division

With more than 55 years of power generation expertise, MSHS Pacific Power Group's Power Generation division provides innovative solutions that give customers peace of mind. Our knowledgeable team has experience providing solutions for a wide range of applications, ranging from commercial and institutional applications to custom-engineered solutions for remote and prime power stations as well as mission-critical facilities. MSHS Pacific Power Group is conveniently located to support your power generation needs by providing service and parts not only for mtu and Detriot Diesel equipment, but for all makes and models of industrial engines, generator sets and marine engines.

For support call us at 877-769-7436!

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Scope of Supply & Clarifications

PACIFIC POWER GROUP

QUOTE

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

TO: PROSPECTIVE CUSTOMER QUOTE
Attn:
Phone:
Email:
Project: **Puyallup public Safety Bld**

Date: 6/16/2025
From: Richard Qualey
Phone: 253-880-2553
Email: Rqualey@pacificpowergroup.com
Quote #: **38250**

mtu a Rolls-Royce solution **Generator Set is rated at:** **500 kW** **480 Volt** **3 phase ph**

Engine
- ☒ Unit mounted radiator
- ☐ Battery
- ☒ Battery charger
- ☒ Lube oil & antifreeze
- ☒ Engine block heater 240 volt
- ☒ Alarms

Fuel System
- ☐ Nat gas ☐ LP gas ☐ LP liquid
- ☒ Diesel
- ☒ Sub-base tank **1,720** gal
- ☐ Free standing tank gal
- ☐ Remote fuel fill station
- ☐ Auto change NG/LP gas
- ☒ UL 142
- ☐ UL 2085
- ☐ Tank pumps & controls

Circuit Breaker
- ☒ Breaker 1 **800** Amps ☐ 100% rated ☐ GFI ☐ Shunt trip ☐ Aux contacts
- ☒ Breaker 2 **40** Amps ☒ 100% rated ☐ GFI ☐ Shunt trip ☐ Aux contacts
- ☐ Breaker 3 _____ Amps ☐ 100% rated ☐ GFI ☐ Shunt trip ☐ Aux contacts

Genset Digital Controller
- ☒ Overcurrent protection ☐ Analog meters
- ☒ Auxiliary contacts ☐ Load shed provisions
- ☒ Remote annunciator ☐ FCC remote
- ☐ RS 485 ☐ Ethernet ☐ Modbus comm

Indoor/Outdoor Application
- ☒ Outdoor enclosure, dBA: **76 @ 23 feet**
  Silencer: ☐ External ☒ Internal
- ☐ Indoor: Silencer & flexible exhaust connector

Miscellaneous
- ☒ UL 2200 ☒ Spare parts **thu** O&M manuals
- ☒ Seismically certified to Ip 1.5 ☒ Training
- ☒ Integral vibration isolation ☒ Alternator heater
- ☐ Loose spring isolators
- ☒ Warranty **2 yrs / 3000 hrs** years/ hours
- ☒ Jobsite start up with load bank
- ☐ Preventative maintenance

Additional Genset Items: Enclosure, 48 hour tank, Remote annunciator, steps and platforms

Automatic Transfer Switch

Qty: **2** Poles: **4** NEMA: **3R**
Volts: **480** Amps: **150 - 800 amp**
WCR **nominal** amps with coordinated breaker
WCR **nominal** amps .05 sec time based
WCR amps with current limiting fuse

- ☒ Standard open transition ☐ In-phase monitor
- ☒ Delayed transition ☒ Exerciser
- ☐ Closed transition ☐ Auxiliary contacts
- ☐ Service entrance rated ☐ Power meter
- ☐ Bypass isolation switch

Additional ATS options: Delayed transition, Seismic, Heater, NEMA 3R

Quick connects:
- ☐ Camlock panel _____ Amp
- ☒ Manual transfer switch **150** Amp ☐ Temp gen camlocks ☐ Load bank camlock

Clarifications:

Generator and ATS quoted per specification sections: **Based on Drawing E6.02 and Specification 26 32 13.13**

Bid to Spec. Approved Supplier.
Deviation. Spec 75 DBA, quoted 76 DBA at 23'.

Note: *Mechanical and electrical installation, off-engine piping, exhaust insulation, ducting, mounting hardware, fuel, required permits and independent testing are not included unless specifically listed. Results of coordination studies (by others) may affect our scope and pricing.*

Taxes not included. FOB: Job site, unloading by others. **Current lead time 26 - 28 weeks weeks after submittal approval and release for production. ALL PRICES ARE SUBJECT TO CHANGE DUE TO TARIFFS, DUTIES, EXCHANGE RATES, OR OTHER GOVERNMENTAL CHARGES.**
Terms: Net 30 OAC subject to standard PPG credit terms and conditions of sale. **Quote is valid for 30 days.**

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General Notes & Clarifications– applicable unless otherwise agreed to in writing:

Delivery & Storage

• Unloading/craning by others. Extended sub-base tanks are to be craned separately from genset.

• Delivery terms are FOB jobsite per lead time, offloading by others. Reconsignment to MSHS PPG facility will result in outbound freight charges for delivery from MSHS PPG facility to jobsite

• Monthly storage fees will be charged out at a rate of $4/sq. ft once equipment is received at an MSHS PPG facility.

• Long term storage prior to start-up may affect or limit manufacturer's warranty. Please refer to the specific warranty statement for clarification. No provision for preservation has been made for extended storage of components.

• Product delivered on-site must be protected from rain/water egress and other detrimental environmental factors.

On-Site Testing

• Fuel for testing and static fill by others.

• Installation or interconnection work required, such as plumbing, wiring, exhaust, mounting pad etc., including any off-engine/generator wiring or plumbing between loose items supplied and customer furnished systems are by others. Ship loose exhaust components (elbows, silencers, vents) to be installed by others.

• If load bank testing is required and quoted, access within 100' of the generator must be provided.

• Third party testing requirements including NETA are by others.

• Sound attenuation levels are based on a free field condition of site. Note excessive ambient sound levels will invalidate the results of on-site testing.

• Training to be conducted by MSHS PPG technician on last day of commissioning. Separate trips to site for training will be charged out at standard labor rates.

General

• Equipment is quoted with nominal AIC ratings, unless otherwise indicated. Changes in equipment sizing due to selective coordination/overcurrent protection/arc flash studies may require quote revision.

• A minimum cancellation or restocking fee of 30% will be charged for any returned or ordered product. Custom products do not qualify for return or restock.

• Mounting bolts and anchors are not included.

• Factory standard supplied fuel tank venting only, any additional venting required by local building or fire codes is not included.

• Warranty is limited to as stated by the equipment manufacturer, there is no other expressed or implied warranty unless it is in writing by the original equipment manufacturer, see warranty parchment.

• Mounting bolts and anchors are not included

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Generator Set Compliance Information

Certificate of Compliance

Certificate Number:

UL-US-2551685-0

Report Reference:

AU3559-20250109

Issue Date:

2025-01-09

Issued to:

Rolls-Royce Solutions America Inc
100 Power Dr Mankato, MN 56001-4790
United States

This certificate confirms that representative samples of:
FTSR - Engine Generators

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

UL 2200, 2nd Ed., Issue Date: 2012-06-01, Revision Date: 2015-07-29

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

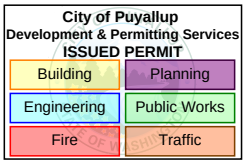
Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at https://www.ul.com/contact-us.

CERTIFICATE OF COMPLIANCE

Certificate number UL-US-2551685-0
Report reference AU3559-20250109
Date 2025-01-09



This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Product Description
Models 6, Models 6, followed by R, followed by a four-digit number, followed by D, followed by S, followed by a number ranging from 450 to 500. May have additional prefix or suffix letters or numbers.	Stationary engine generator assemblies (diesel fueled) for outdoor use and Indoor Use

Certificate of Compliance

Certificate Number:
UL-CA-2538985-0

Report Reference:
AU3559-20250109

Issue Date:
2025-01-09

Issued to:

Rolls-Royce Solutions America Inc
100 Power Dr Mankato, MN 56001-4790
United States

This certificate confirms that representative samples of:
FTSR7 - Engine Generators Certified for Canada

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

CSA C22.2 NO. 14-18, 13th Ed., Issue Date: 2018-03-01

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

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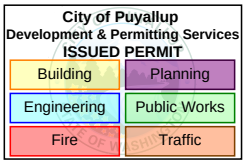

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-50974-01C (Revision 14)

Expiration Date: 8/31/2026

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are CERTIFIED[1] FOR SEISMIC APPLICATIONS in accordance with the following building code[2] releases.

IBC 2021, 2018, 2015, 2012, 2009

The following model designations, options, and accessories are included in this certification. Reference report number VMA-50974-01 as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Rolls-Royce Solutions America Inc.; Diesel Gensets

3R0096, 4R0113, 6R0113, 6R0150, 6R0225, 6R0269, 12V1600, 16V2000, 18V2000, 12V4000, 16V4000, 20V4000; 20 kW - 3250 kW

The above referenced equipment is **APPROVED** for seismic application when properly installed[3], used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance[4]. As limited by the tabulated values, below grade, grade, and roof-level installations, installations in essential facilities, for life safety applications, and/or of equipment containing hazardous contents are permitted and included in this certification with an Equipment Importance Factor assigned as I_p=1.5. The equipment is qualified by successful seismic shake table testing at the nationally recognized Environmental Testing Laboratories, University of California Berkeley Pacific Earthquake Engineering Research Center, and Dynamic Certification Laboratories under the witness of the ISO Accredited Product Certification Agency, the VMC Group.

Certified Seismic Design Levels			
Certified IBC	**Importance $I_p \leq 1.5$** Soil Classes A-E Risk Categories I-IV Design Categories A-F	z/h ≤ 1.0	z/h = 0.0
		$S_{DS} \leq 2.000$ g	$S_{DS} \leq 2.500$ g

Certified Seismic Installation Methods[8]	
Rigid Mounting From Unit Base To Rigid Structure	External Isolation Mounting From Unit Base To Rigid Structure
Rigid Mounting From Unit Base To Fuel Tank	External Isolation Mounting From Unit Base To Fuel Tank

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certified Product Table:

Model	Max Rating [kW]	Max Length [in]	Max Width [in]	Max Height [in]	Max Weight [lb]	Configuration Options
mtu 3R0096: DS20 - DS34	30	115	44	99	5,300	Open Off Tank, Enclosed Off Tank, Open On Tank, Enclosed On Tank
mtu 4R0113: DS40 - DS125	125	187	48	116	14,000	
mtu 6R0113: DS150 - DS200	200	270		123	18,000	
mtu 6R0150: DS230 - DS300	300	320	60	140	28,500	
mtu 6R0225: DS350, DS400	400	296	90	147	36,093	
mtu 6R0269: DS450 - DS500	500	396	82	138	40,000	
mtu 12V1600: DS550 - DS900	900	470	102	150	67,000	
mtu 16V2000: DS1000 - DS1250	1250	420	109	176	83,220	
mtu 18V2000: DS1400, DS1250			111	179	84,220	
mtu 12V4000: DS1250 - DS2000	1750	264	122	123	60,000	Open Off Tank
mtu 16V4000: DS2000 - DS2500	2500	302		141	66,000	
mtu 20V4000: DS2500 - DS3300	3250	320	132	150	69,400	

Notes:
1)Contact manufacturer for further details regarding maximum dimensional limitations for configuration options of certified genset models.
2)For equivalent kVA ratings, contact the manufacturer

Group	Type	S_{DS} (z/h=0)	S_{DS} (z/h=1)	A_{Flex-H}	A_{Rig-H}	A_{Flex-V}	A_{Rig-V}	F_p/W_p
Seismic	AC156	2.50	2.00	3.20	2.40	1.68	0.68	4.50

This certification includes the open generator set and the enclosed generator set when installed with or without the sub-base tank. The generator set and included options shall be a catalogue design and factory supplied. The generator set and applicable options shall be installed and attached to the building structure per the manufacturer supplied seismic installation instructions. This certification excludes all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, remote radiators, pumps and other electrical/mechanical components.

IBC CERTIFIED VMC GROUP

VMA-50974-01C (Revision 14)
Issue Date: May 24, 2017
Revision Date: March 6, 2025
Expiration Date: August 31, 2026

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Notes & Comments:

1. All equipment listed herein successfully passed the seismic acceptance criteria for shake testing non-structural components and systems as set forth in the ICC AC-156. The Test Response Spectrum (TRS) enveloped the Required Response Spectrum (RRS) for all units tested. The tested units were representative sample(s) of a contingent of models and all remained captive and structurally sound after the seismic shake simulation. The units also remained functionally operational after the simulation testing as functional testing was completed by the equipment manufacturer before and after the seismic simulations. Although a seismic qualified unit inherently contains some wind resisting capacity, that capacity is undetermined and is excluded from this certification. Snow/Ice loads have been neglected and thus limit the unit to be installed both indoors (covered by an independent protective structure) and out of doors (exposed to accumulating snow/ice) for ground snow loads no greater than 30 psf for all applications.

2. The following building codes are addressed under this certification:
   IBC 2021 referencing ASCE7-16 and ICC-ES AC-156
   IBC 2018 referencing ASCE7-16 and ICC-ES AC-156
   IBC 2015 referencing ASCE7-10 and ICC-ES AC-156
   IBC 2012 referencing ASCE7-10 and ICC-ES AC-156
   IBC 2009 referencing ASCE7-05 and ICC-ES AC-156

3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. Required anchor locations, size, style, and load capacities (tension and shear) may be specified on the installation drawings or specified by a 3rd party. Mounting requirement details such as anchor brand, type, embedment depth, edge spacing, anchor-to-anchor spacing, concrete strength, special inspection, wall design, and attachment to non-building structures must be outlined and approved by the Engineer of Record for the project or building. Structural walls, structural floors, and housekeeping pads must also be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads as defined on the installation drawings. The installing contractor is responsible for ensuring the proper installation of all anchors and mounting hardware.

4. For this certificate and certification to remain valid, this certificate must correspond to the "Seismic Certification Label" found affixed to the unit by the factory. The label ensures the manufacturer built the unit in conformance to the IBC seismic design criteria set forth by the Certified Seismic Qualification Agency, the VMC Group, and meets the seismic design levels claimed by this certificate.

5. Mechanical, Electrical, and Plumbing connections to the equipment must be flexibly attached as to not transfer load through the connection. The structural integrity of any conduit, cable trays, piping, ductwork and/or flexible connections is the responsibility of others. This certification makes no statements of compliance in regards to NEMA, IP, UL, CSA, or other relevant standards after a seismic event. For compliance to other relevant standards, please contact the manufacturer.

6. This certificate applies to units manufactured at:
   MTU Onsite Energy Corporation, 100 Power Drive, Mankato, MN 56001

7. This certification follows the VMC Group's ISO-17065 Scheme.

8. The certified seismic installation methods stated are a summary for all product lines this certificate covers. For individual certified seismic installation methods, see the certified product tables.

John P. Giuliano, PE
President, VMC Group

IAS ACCREDITED Product Certification Agency

VMA-50974-01C (Revision 14)
Issue Date: May 24, 2017
Revision Date: March 6, 2025
Expiration Date: August 31, 2026

IBC CERTIFIED VMC GROUP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2025 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **AB Volvo Penta**
(U.S. Manufacturer or Importer)

Certificate Number: SVPXL16.1ACC-012

Effective Date: 06/25/2024

Expiration Date: 12/31/2025

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/25/2024

Revision Date: N/A

Model Year: 2025
Manufacturer Type: Original Engine Manufacturer
Engine Family: SVPXL16.1ACC

Mobile/Stationary Indicator: Stationary
Emissions Power Category: kW>560
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, 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 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 compression-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.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 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 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.

VOLVO PENTA

NO: 164062

EXHAUST EMISSION DECLARATION

The emission data in this declaration are measured according to the test procedures specified below and on one member engine of the engine type. Emission data may vary among production engines.

TECHNICAL SPECIFICATION

Engine type:	TAD1641GE-B
Module No:	138110505
Rated crankshaft power *):	565 kW
Rated speed:	1800 rpm

*) Stand-by power without fan acc. to ISO 3046.

TEST INFORMATION

Test conditions	40 CFR Part 89
Test identification	21009870
Test date	September 27, 2018
Test cycle	D2 Test cycle

EXHAUST EMISSIONS (weighted cycle)

CO (g/kWh)	0,349
HC (g/kWh)	0,139
NOx (g/kWh)	5,56
PM (g/kWh)	0,04

EXHAUST EMISSIONS (per cycle mode)

Mode	#	1	2	3	4	5
Power	(kW)	576,1	432	288	144	57,67
NOx	(g/h)	3550	2375	1670	677,6	373,4
HC	(g/h)	42,07	40,58	34,94	32,46	52,22
CO	(g/h)	150,7	79,92	52,57	82,7	268,9
CO2	(kg/h)	378,1	281,5	186,9	106,8	56,19
NOx Dry	(ppm)	690,3	525,7	492,8	286,4	212,4
HC Wet	(ppm)	26,52	29,11	33,44	44,53	96,39
CO Dry	(ppm)	50,61	30,17	26,27	58,77	254
CO2	(%)	8,045	6,732	5,914	4,793	3,34
O2	(%)	9,787	11,58	12,71	14,27	16,27

TA-Luft

Test identification	21009870
Test date	September 27, 2018

Mode	#	1	2	3	4
Power	(kW)	576	432	288	144
NOx (O_2)	(mg/Nm^3)	2167	1941	2054	1456
HC (O_2)	(mg/Nm^3)	27,06	37,36	44,9	74,06
CO (O_2)	(mg/Nm^3)	93,07	63,85	62,81	173
PM	(mg/Nm^3)	14,5	11,5	9,3	19,8

Gothenburg 2019-05-29

Jennifer Åhlberg
Director Emission Compliance
Quality, Environment, Product Compliance
AB Volvo Penta

3

Generator Set Features & Accessories

Diesel Generator Set

mtu 6R0269 DS500

500 kWe/60 Hz/Standby/208 - 600V

System ratings

Voltage (L-L)	208V †	240V †	380V †		600V †
Phase	3	3	3		3
PF	0.8	0.8	0.8		0.8
Hz	60	60	60	60	60
kW	500	500	500	500	500
kVA	625	625	625	625	625
Amps	1,735	1,504	950	752	601
skVA@30% voltage dip	1,419	1,419	1,460	90	1,662
Generator model	572RSL6429	572RSL6429	573RSL6433		572RSS4270
Temp rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C		130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE		4 LEAD WYE

† UL 2200 offered

Certifications and standards

- Emissions
  - EPA Tier 2 certified
  - South Coast Air Quality Management District (SCAQMD)
- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- Seismic certification – optional
  - 2021 IBC certification
  - HCAI pre-approval (Pending)
- UL 2200 - optional (refer to *System ratings* for availability)
- CSA - optional
  - CSA C22.2 No. 100
  - CSA C22.2 No. 14
- Performance Assurance Certification (PAC)
  - Generator set tested to ISO 8528-5 for transient response
  - Verified product design, quality, and performance integrity
  - All engine systems are prototype and factory tested
- Power rating
  - Accepts rated load in one step per NFPA 110
  - Permissible average power output during 24 hours of operation is approved up to 85%.

Standard features *

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- TAD1641GE-B diesel engine
  - 16.1 liter displacement
  - Common rail fuel injection
  - 4-cycle
- HVO and GtL fuels meeting fuel specification EN15940
- Engine-generator resilient mounted
- Complete range of accessories
- Cooling system
  - Integral set-mounted
  - Engine-driven fan
- Generator
  - Brushless, rotating field generator
  - 2/3 pitch windings
  - Permanent Magnet Generator (PMG) supply to regulator
  - 300% short circuit capability
- Digital control panel(s)
  - UL recognized, CSA certified, NFPA 110
  - Complete system metering
  - LCD display

Standard equipment *

Engine

- Air cleaners
- Oil pump
- Oil drain extension and shut-off valve
- Full flow oil filters
- Closed crankcase ventilation
- Jacket water pump
- Thermostats
- Blower fan and fan drive
- Radiator - unit mounted
- Electric starting motor - 24V
- Governor - electronic isochronous
- Base - formed steel
- SAE flywheel and bell housing
- Charging alternator - 24V
- Battery rack and cables
- Flexible fuel connectors
- Flexible exhaust connection
- EPA certified engine

Generator

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
- Self-ventilated and drip-proof
- Superior voltage waveform
- Digital, solid state, volts-per-hertz regulator
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 130 °C standby temperature rise
- 1-bearing, sealed
- Flexible coupling
- Full amortisseur windings
- 125% rotor balancing
- 3-phase voltage sensing
- ± 0.25% voltage regulation no load to full load
- 100% of rated load - one step
- 5% maximum total harmonic distortion

Digital control panel(s)

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- CANBus ECU communications
- Windows®-based software
- Multilingual capability
- Communications to remote annunciator
- Programmable input and output contacts
- UL recognized, CSA certified, CE approved
- Event recording
- IP 54 front panel rating with integrated gasket
- NFPA 110 compatible

* Represents standard product only. Consult the factory/***mtu*** Distributor for additional configurations.

Application data

Engine

Manufacturer	Volvo
Model	TAD1641GE-B
Type	4-cycle
Arrangement	6-R
Displacement: L (cu in)	16.12 (983.9)
Bore: cm (in)	14.4 (5.67)
Stroke: cm (in)	16.5 (6.5)
Compression ratio	16.8:1
Rated rpm	1,800
Engine governor	electronic isochronous (Volvo EMS 2.4)
Maximum. power: kWm (bhp)	565 (768)
Steady state frequency band	± 0.25%
Air cleaner	dry

Liquid capacity

Total oil system: L (gal)	48 (12.7)
Engine jacket water capacity: L (gal)	33 8.72)
System coolant capacity: L (gal)	60 (15.85)

Electrical

Electric volts DC	24
Cold cranking amps under -17.8 °C (0 °F)	950
Batteries: group size	31
Batteries: quantity	2

Fuel system

Fuel supply connection size	-10 JIC 37° female
Fuel return connection size	-6 JIC 37° female
Maximum fuel lift: m (ft)	2 (6.6)
Recommended fuel	diesel #2/HVO
Total fuel flow: L/hr (gal/hr)	122 (32.2)

Fuel consumption

At 100% of power rating: L/hr (gal/hr)	134.9 (35.6)
At 75% of power rating: L/hr (gal/hr)	100.5 (26.5)
At 50% of power rating: L/hr (gal/hr)	66.6 (17.6)

Cooling - radiator system

Ambient capacity of radiator: °C (°F)	50 (122)
Maximum restriction of cooling air: intake and discharge side of radiator: kPa (in. H_20)	0.124 (0.5)
Water pump capacity: L/min (gpm)	462 (122)
Heat rejection to coolant: kW (BTUM)	231 (13,137)
Heat rejection to after cooler: kW (BTUM)	147 (8,360)
Heat radiated to ambient: kW (BTUM)	61.5 (3,497)
Fan power: kW (hp)	21 (28)

Air requirements

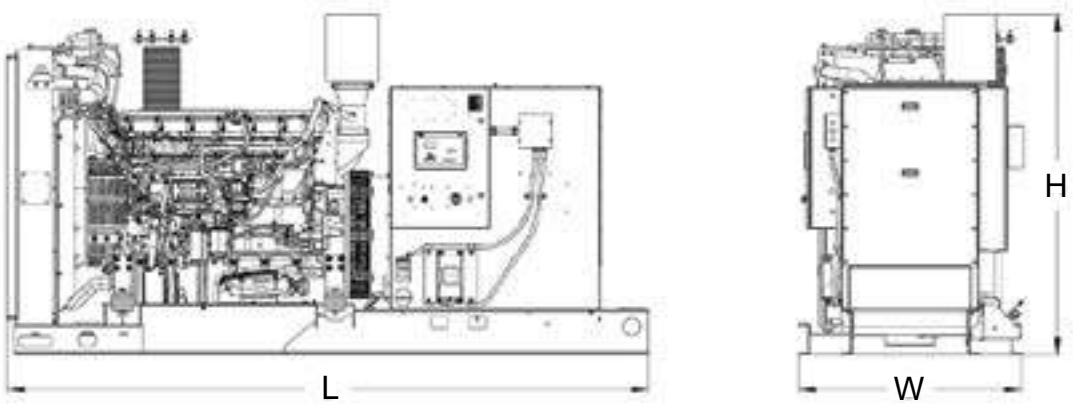
Aspirating: *m^3/min (SCFM)	45.8 (1,617)
Air flow required for radiator cooled unit: *m^3/min (SCFM)	625.8 (22,100)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m^3/min (SCFM)	224.8 (7,939)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

Exhaust system

Gas temperature (stack): °C (°F)	436 (817)
Gas volume at stack temperature: m^3/min (CFM)	110.4 (3,899)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H_20)	10 (40.2)

Weights and dimensions



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight
Open Power Unit (OPU)		

Weights and dimensions are based on open power unit [redacted] dimensions for your specific generator set.

Sound data

Unit type	Standby full load
Level 0 (OPU): dB(A)	92.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

Emissions data

NO_x + NMHC	CO	PM
6.24	0.26	0.04

— All units are in g/kW-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA standards.

Rating definitions and conditions

— Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.
— Nominal ratings at standard conditions: 25 °C and 300 meters (77 °F and 1,000 feet).
— Deration factor:
  - Consult your local ***mtu*** Distributor for altitude derations.
  - Consult your local ***mtu*** Distributor for temperature derations.

C/F = Consult Factory/***mtu*** Distributor
N/A = Not Available

Digital Generator Set Controller Data Sheet

MGC-2000 Series

The MGC-2000 Series controllers include the following models which are described throughout this document.*
— MGC-2010
— MGC-2020
— MGC-2050

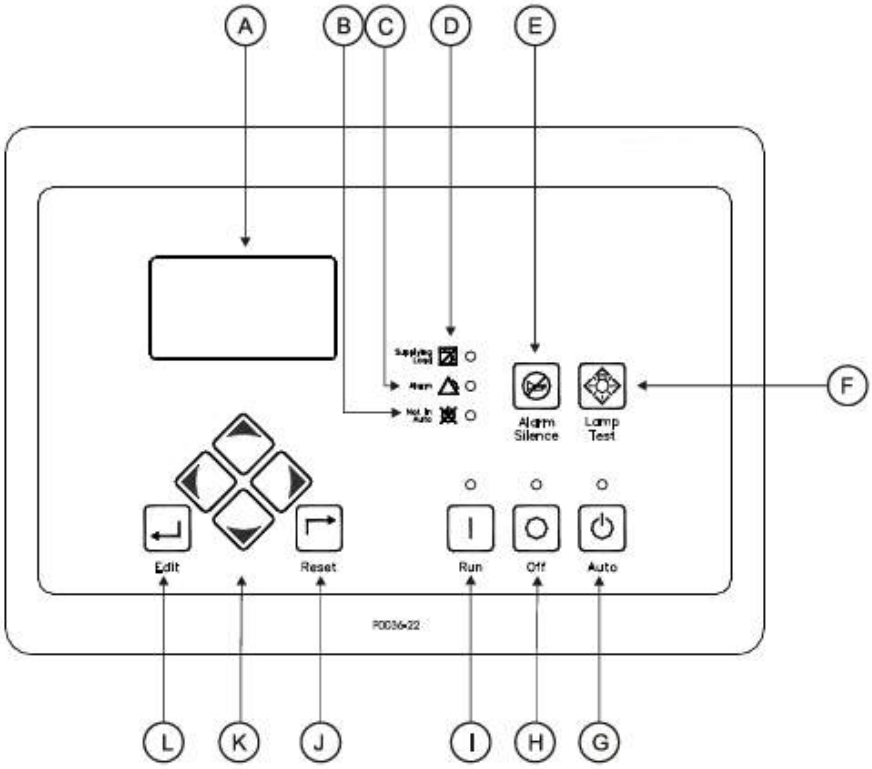
mtu Generator Set Controllers (MGC Series) are highly advanced integrated digital generator set control systems. The MGC-2000 Series is perfectly focused, combining rugged construction and microprocessor technology to offer a product that will hold up to almost any environment and is flexible enough to meet your application's needs. The MGC-2000 Series provides generator set control, transfer switch control, metering, protection, and programmable logic in a simple, easy-to-use, reliable, rugged, and cost effective package.

PRODUCT HIGHLIGHTS

— Three-phase generator metering
— Engine metering
— Generator set control
— Engine and generator protection
— Var sharing over Ethernet
— BESTCOMS*Plus*®
  - Windows®-based software for optional remote operation (Software can be downloaded at www.mtu-solutions.com)
  - Programming and setup software
  - Intuitive and powerful
  - Remote control and monitoring
  - Programmable logic
  - USB communications
— Automatic transfer switch compatible
— Exercise timer
— Suitable for use on rental generator sets with high/low line sensing, single or three phase sensing override, and wye/delta/grounded delta
— SAE J1939 Engine Control Unit (ECU) communications
— Automatic generator configuration detection
— Selection of integrating reset of instantaneous reset characteristics for overcurrent protection
— Multilingual capability
— Remote annunciation to RDP-110
— Extremely rugged, fully potted design
— 16 programmable contact inputs, 12 programmable contact outputs
— ModBus™ communications with RS-485 (Refer to *Configuration Options*.)
— UL recognized, CSA certified, CE approved
— Highly Accelerated Life Tests (HALT) tested
— IP 54 front panel rating with integrated gasket
— NFPA-110 compatible
— Microprocessor based
— Complete system metering
— Expandable to meet customer needs

*Please refer to the last page of this data sheet for available MGC-2000 Series configuration options. The MGC Series Controller Comparison Data Sheet is available as a reference for all MGC Series configuration options.

DIAGRAM



Front Panel Descriptions

A. Liquid Crystal Display
B. Not in Auto Indicator
C. Alarm Indicator
D. Supplying Load Indicator
E. Alarm Silence Pushbutton
F. Lamp Test Pushbutton
G. Auto Pushbutton and Mode Indicator
H. Off Pushbutton and Mode Indicator
I. Run Pushbutton and Mode Indicator
J. Reset Pushbutton
K. Arrow Pushbuttons
L. Edit Pushbutton

FUNCTIONS

Generator set protection

Generator ANSI codes

- Overvoltage (59)
- Overfrequency (81o)
- Reverse power (32)
- Undervoltage (27)
- Underfrequency (81u)
- Loss of excitation (40q)
- Phase imbalance (47)
- Overcurrent (51) (optional)
- Vector shift (78) (optional)
- Rate of change of frequency (ROCOF) (81R) (Refer to *Configuration Options*.)

All generator set protection features are programmable as alarms, pre-alarms, status, or not used.

Alarms (Shutdowns)

- Low oil pressure
- High coolant temperature
- Low coolant level
- Overspeed
- Overcrank
- Coolant temp sender fail (non-ECU engines)
- Oil pressure sender fail (non-ecu engines)
- Emergency stop
- Critical low fuel level (Refer to *Configuration Options*.)

FUNCTIONS, continued:

Generator Set Protection, continued:

Pre-alarms (Warnings)
- Low oil pressure
- High coolant temperature
- Low coolant temperature
- Battery overvoltage
- Weak battery voltage
- Aem comms failure
- Breaker open failure
- Cem comms failure
- Generator reverse rotation
- Engine kw overload (three levels)
- Loss of sensing
- Checksum failure
- Ecu comms fail
- Low fuel level
- High fuel level
- Active diagnostic trouble codes (DTC)
- Breaker close failure
- Low battery voltage

All alarms and pre-alarms can be enabled or disabled via the BESTCOMS*Plus*® PC software or the front panel. Additional custom alarms and pre-alarms are available upon request.

Generator set metering
- Generator parameters include voltage, current, real power (watts), apparent power (VA), and power factor (PF).
- Engine parameters include oil pressure, coolant temperature, battery voltage, speed, fuel level, engine load, coolant level (from ECU), ECU specific parameters, and run-time statistics.

Engine control
- Cranking control: cycle or continuous (quantity and duration fully programmable)
- Engine cooldown: smart cooldown function saves fuel and engine life
- Successful start counter: counts and records successful engine starts
- Timers:
  - Engine cooldown timer
  - Engine maintenance timer
  - Pre-alarm time delays for weak/low battery voltage
  - Alarm time delay for overspeed
  - Alarm time delay for sender failure
  - Arming time delays after crank disconnect:
    - Low oil pressure
    - High coolant temperature
  - Pre-crank delay
  - Continuous or cycle cranking time delay
  - Programmable logic timers

Event recording
The MGC-2000 Series has an event recorder that provides a record of alarms, pre-alarms, engine starts, engine runtime loaded, engine runtime unloaded, last run date, and many other events that are all date and time stamped to help the user determine the cause and effect of issues related to the generator set. Contains 30 event records each retaining up to 99 occurrences in memory. Time, date, and engine hour detail is available for the most current 30 occurrences within each event record.

Transfer switch control (Mains failure)
The MGC-2000 Series has the ability to detect a mains failure via a single- or three-phase bus input. A mains failure is established when any one of the following conditions are met:

- Any phase of bus voltage falls below the dead bus threshold
- Any phase of bus voltage is unstable due to overvoltage or undervoltage
- Any phase of bus voltage is unstable due to overfrequency or underfrequency

When conditions are met, the MGC-2000 Series will start the generator set and, when ready, will send generator and mains breaker commands to apply power to the load from the generator set. The MGC-2000 Series implements open or closed breaker transitions to and from the mains. When the mains returns and is considered stable, the MGC-2000 Series will transfer the load back to the mains and stop the engine.

ModBus™ RTU
When utilized, the user can send and receive information from the MGC-2000 Series via the RS-485 communications port and ModBus™ RTU protocol. This feature allows the MGC-2000 Series controlled generator set to be fully integrated into the building management system. Please see the *MGC-2000 Series Controller Manual* for the ModBus™ register list.

Programmable logic
The MGC-2000 Series offers a very powerful, yet easy-to-use, programmable logic scheme, BESTlogic™*Plus*, for custom programming of the various inputs, outputs, alarms, and pre-alarms. It allows these elements to be integrated into a complete logic scheme so that the user can meet even the most complex specification. The programmable logic control includes the selection of logic gates and timers, with drag-and-drop technology to make it fast and simple.

FUNCTIONS, continued:

Remote display panel annunciation

The MGC-2000 Series can communicate to a remote display panel, Model RDP-110. This requires only two wires to annunciate all of the alarms and pre-alarms required by NFPA-110 Level I and II. External power is required.

External modem interface

The MGC-2020 and MGC-2050 controllers include an external modem interface permitting an external modem to be connected to the MGC controller via RS-232. A dial-out modem enables remote control, monitoring, and setting of the MGC-2000 Series. When an alarm or pre-alarm condition occurs, the MGC-2000 Series can dial up to four telephone numbers in sequence until an answer is received and the condition is annunciated.

Note: Only an external modem interface is provided. The external modem must be provided by a third party. The external modem is only available on the MGC-2020 and MGC-2050 controller configurations of the MGC-2000 Series.

SAE J1939 communications

SAE J1939 CANBus communications allows the MGC-2000 Series to communicate with the ECU to gather critical engine information like oil pressure, engine coolant temperature, RPM, battery voltage, and much more. By utilizing the ECU, the addition of analog engine senders is no longer required. This can save substantial money for the installer. It also eliminates any errors or discrepancies between the ECU data and the data displayed on the MGC-2000 Series that may be present due to analog sender inaccuracies or incompatibility. An additional benefit is access to the ECU's diagnostic troubleshooting codes (DTCs). The DTCs provide information about the engine's operating conditions and communicates these, via SAE J1939, to the MGC-2000 Series, eliminating the need for hand-held service tools to diagnose simple engine issues.

SPECIFICATIONS

Operating power

- Nominal: 12 or 24 VDC
- Range: 6 to 32 VDC
- Power consumption:
  - Sleep Mode: 5W with all relays non-energized
  - Normal operational mode: 7.9W - run mode, LCD heater off, six relays energized
- Battery ride-through: withstands cranking ride-through down to 0 V for 50 ms, starting at 10 VDC.

Current sensing (5 A CT inputs)

- Continuous rating: 0.1 to 5.0 Aac
- One second rating: 10 Aac
- Burden: 1 VA

Voltage sensing

- Range: 12 to 576 V rms, line-to-line
- Frequency range: 10 to 72 Hz
- Burden: 1 VA
- One second rating: 720 V rms

Input contacts

Contact sensing inputs include one emergency stop input and 16 programmable inputs. The emergency stop input accepts normally closed, dry contacts. The remote emergency stop is limited to 75 ft. standard. Extended runs are available with optional relay. All programmable inputs accept normally open, dry contacts. The factory utilizes up to three of these inputs.

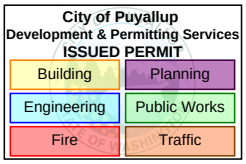
Engine System Inputs

- Fuel Level Sensing Resistance Range: 0 to 250 Ω nominal
- Coolant Temperature Sensing Resistance Range: 10 to 2,750 Ω nominal
- Oil Pressure Sensing Resistance Range: 0 to 250 Ω nominal
- Engine Speed Sensing:
  - Magnetic Pickup or CANBus
    - Magnetic Pickup Voltage Range: 3 to 35 V peak (6 to 70 V peak to peak)
    - Magnetic Pickup Frequency Range: 32 to 10,000 Hz
  - Generator Frequency (alternate or redundant)
    - Voltage Range: 12 to 576 V rms

Output contacts

- (15) total programmable outputs: (3) 30 A @ 28 VDC and (12) 2 A @ 30 VDC
- The factory utilizes the following on each generator set which can be reprogrammed as needed:
  - (3) 30 A @ 28 VDC for pre-start, start, and run
  - (12) 2 A @ 30 VDC for general purpose

SPECIFICATIONS, continued:



Metering

Generator and bus voltage (rms)
- Metering range: 0 to 576 VAC (direct measurement); up to 9,999 VAC (with appropriate voltage transformer)
- Accuracy: ±1% of programmed rated voltage of ±2 VAC (subject to accuracy of voltage transformer when used)

Generator current (rms)
- Generator current is measured at the secondary windings of 5 A CTs.
- Metering range: 0 to 5,000 Aac
- CT primary range: 1 to 5,000 Aac, in primary increments of 1 Aac
- Accuracy: ±1% of programmed rated current or ±2 Aac (subject to accuracy of CTs)

Generator and bus frequency
- Metering range: 10 to 72 Hz
- Accuracy: ±0.25% or 0.05 Hz

Apparent power
- Indicates total kVA and individual line kVA (four-wire, line-to-neutral or three-wire, line-to-line).
- Accuracy: ±3% or the full-scale indication or ±2 kVA

Power factor
- metering range: 0.2 leading to 0.2 lagging
- Accuracy: ±0.02

Real power
- Indicates total kW and individual line kW (four-wire, line-to-neutral or three-wire, line-to-line)
- Accuracy: ±3% of the full-scale indication or ±2 kW

Oil pressure
- Metering range: 0 to 150 psi or 0 to 1,034 kPa
- Accuracy: ±3% of actual indication or ±2 psi or ±12 kPa (subject to accuracy of sender)

Coolant temperature
- Metering range: 0 °C to 204 °C (32 °F to 410 °F)
- Accuracy: ±3% of actual indication or ±2° (subject to accuracy of sender)

Fuel level
- Metering range: 0 to 100%
- Accuracy: ±2% (subject to accuracy of sender)

Battery voltage
- Metering range: 6 to 32 VDC
- Accuracy: ±3% of actual indication or ±0.2 VDC

Engine RPM
- Metering range: 0 to 4,500 rpm
- Accuracy: ±2% of actual indication or ±2 rpm

Engine run time
- Engine run time is retained in non-volatile memory.
- Metering range: 0 to 99,999 h; update interval: 6 min
- Accuracy: ±1% of actual indication or ±12 min

Maintenance timer
- Maintenance timer indicates the time remaining until generator set service is due. Value is retained in non-volatile memory.
- Metering range: 0 to 5,000 h; update interval: 6 min
- Accuracy: ±1% of actual indication or ±12 min

Generator protection functions

Overvoltage (59) and undervoltage (27)
- Pickup range: 70 to 576 VAC
- Activation delay range: 0 to 30 s

Overfrequency (81O) and underfrequency (81U)
- Pickup range: 45 to 66 Hz
- Pickup increment: 0.1 Hz
- Activation delay range: 0 to 30 s

Reverse power (32)
- Pickup range: –50 to 5%
- Pickup increment: 0.1%
- Hysteresis range: 1 to 10%
- Hysteresis increment: 0.1%
- Activation delay range: 0 to 30 s
- Activation delay increment: 0.1 S

Loss of excitation (40Q)
- Pickup range: –150 to 0%
- Pickup increment: 0.1%
- Hysteresis range: 1 to 10%
- Hysteresis increment: 0.1%
- Activation delay range: 0 to 30 s
- Activation delay increment: 0.1 S

SPECIFICATIONS, continued:

Generator protection functions, continued:

Phase imbalance (47)
- Pickup range: 5 to 100 VAC
- Pickup increment: 1 VAC
- Activation Delay Range: 0 To 30 S
- Activation Delay Increment: 0.1 S

ROCOF (81R) (optional)
- Pickup range: 0.2 to 10 Hz/s
- Pickup increment: 0.1 Hz/s
- Activation delay range: 0 to 10,000 ms
- Activation delay increment: 1 ms
- Accuracy: 0.2 Hz/s
-

Overcurrent (51)
- Pickup range: 0.18 to 1.18 Aac (1 A current sensing)
- Time dial range: 0

Vector shift (78) (optional)
- Pickup range: 2 to 90°
- Pickup increment: 1°
- Accuracy: ±1°

Environmental

- Temperature
  - Operating: -40 °C to 70 °C (-40 °F to 158 °F)
  - Storage: -40 °C to 85 °C (-40 °F to 185 °F)
- Humidity: IEC 68-2-38
- Salt fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
- Ingress protection: IEC IP54 for front panel
- Shock: 15 G in three perpendicular planes
- Vibration: 5 to 29 to 5 Hz at 1.5 G peak for 5 min.
  29 to 52 to 29 Hz at 0.036" DECS-A for 2.5 min.
  52 to 500 to 52 Hz at 5 G peak for 7.5 min.
  - Swept over the above ranges for 12 sweeps in each of three mutually perpendicular planes with each 15 minute sweep

Agency approvals

- UL/CSA approvals: "cURus" approved to UL 6200 and CSA C22.2 No.14
- NFPA compliance: complies with NFPA Standard 110, standard for emergency and standby power
- CE marked: complies with applicable EC directives

ADDITIONAL SPECIFICATIONS

Battery backup for real time clock

The MGC-2000 Series provides a real-time clock with an internal backup battery. The battery will maintain timekeeping for approximately 10 years (depending on conditions) after power is removed from the controller. The clock is used by the event recorder and sequence of events functions to time-stamp events, and the exercise timer is used to start and stop the generator set when the exercise feature is utilized.

Breaker management

The MGC-2000 Series is capable of controlling the generator breaker and the mains breaker. The status of the breakers is determined by using BESTlogic™*Plus* programmable logic to set up the GENBRK and MAINSBRK logic blocks. These logic blocks have outputs that can be configured to energize an output contact and control a breaker, as well as inputs for breaker control and status. The MGC-2000 Series will attempt to close a breaker only after verifying that it can be closed. If the breaker cannot be closed, the close request will be ignored. Only one breaker can be closed at a time. Synchronization is required before closing the breaker to a live bus. Closure to a dead bus can be performed after meeting dead bus threshold and timing requirements set by the user.

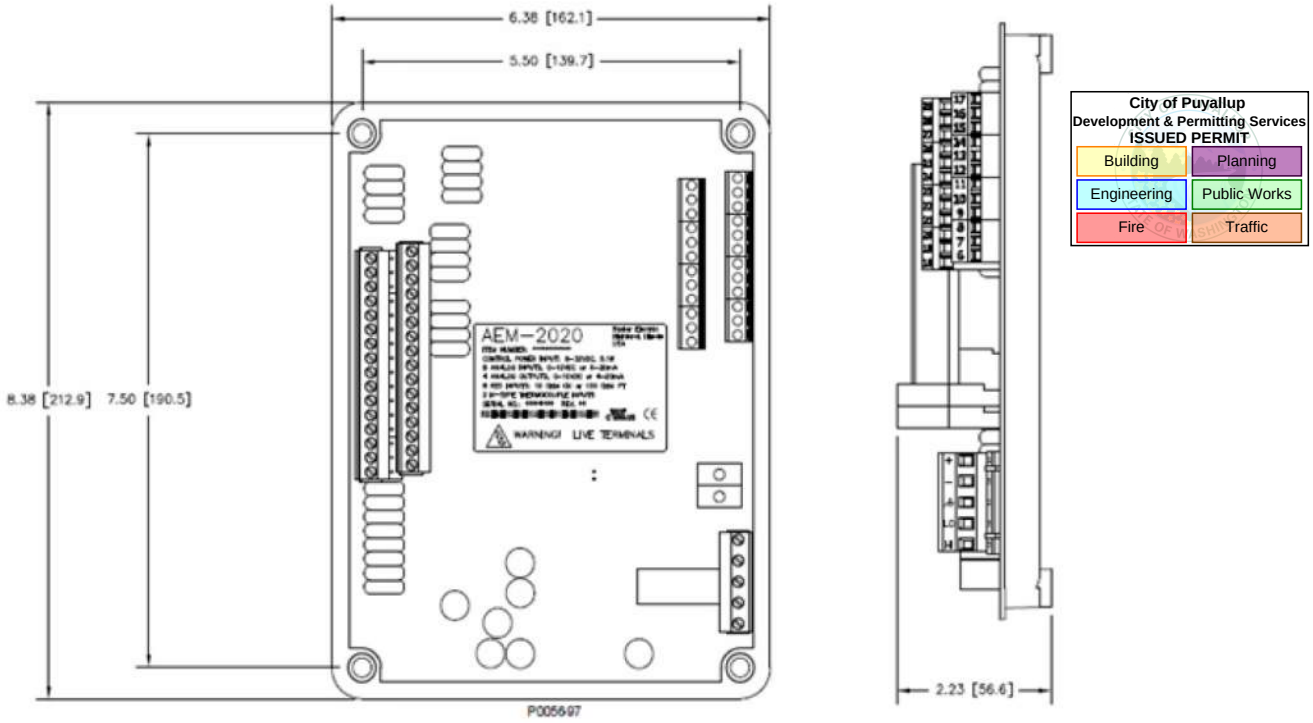
- .

OPTIONAL ACCESSORIES

Analog Extension Module 2020 (AEM–2020)

The optional AEM-2020 is a remote auxiliary device that provides additional MGC-2000 Series analog inputs and outputs. Its features include:

- **Eight analog inputs:** The AEM-2020 provides eight analog inputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. Each analog input has under/over thresholds that can be configured as status only, alarm, or pre-alarm. When enabled, an out of range alarm alerts the user of an open or damaged analog input wire. The label text of each analog input is customizable
- **Eight Resistance Temperature Detector (RTD) inputs:** The AEM-2020 provides eight user-configurable RTD inputs for monitoring generator set temperature. Each RTD input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged RTD input wire. The label text of each RTD input is customizable.
- **Two thermocouple inputs:** The AEM-2020 provides two thermocouple inputs for monitoring generator set temperature. Each thermocouple input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged thermocouple input wire. The label text of each thermocouple input is customizable.
- **Four analog outputs:** The AEM-2020 provides four analog outputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. A wide selection of parameters including oil pressure, fuel level, generator voltage, and bus voltage can be configured as analog outputs. Refer to *Section 4, BESTCOMSPlus® Software* of the *MGC-2000 Series Controller Manual,* for a full list of parameter selections.
- **Communications via CANBus:** A Control Area Network (CAN) is a standard interface that enables communication between the AEM-2020 and the MGC-2000 Series.



Input and Output Terminals

OPTIONAL ACCESSORIES, CEM-2020, continued

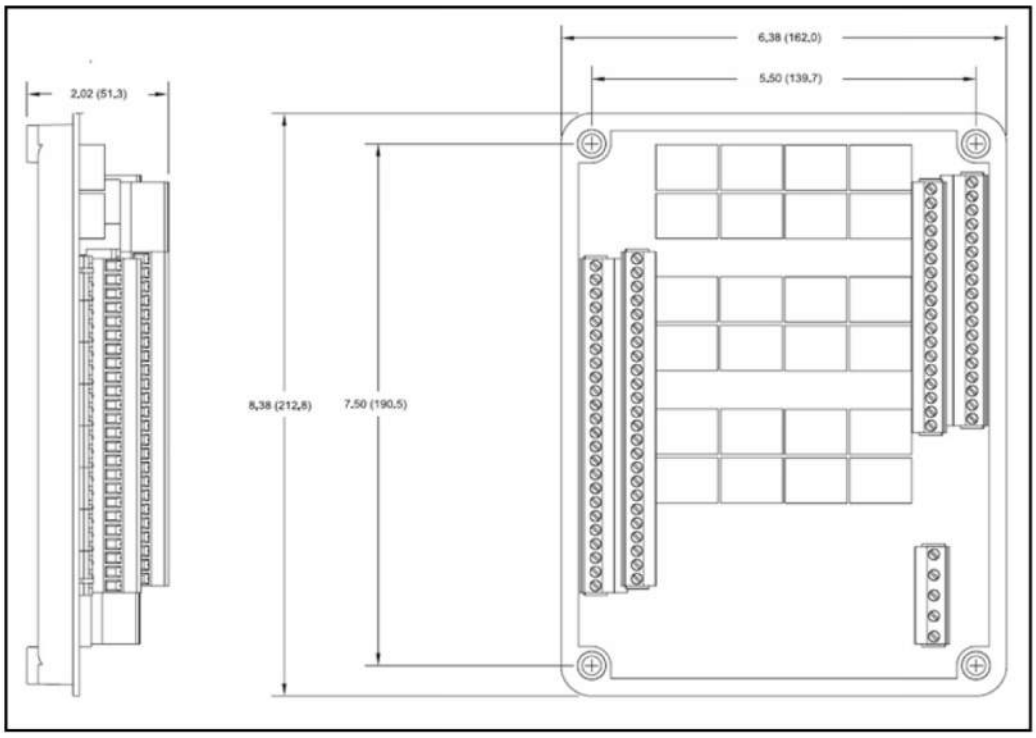
Contact Expansion Module 2020 (CEM-2020)

The CEM-2020 is a remote device that provides additional MGC-2000 Series contact inputs and outputs, giving the user flexibility to use the same model MGC-2000 Series generator set controller for simple or complicated applications that require contact functionality or duplication of contacts for remote annunciation. Its features include:

- **10 Contact Inputs:** The CEM-2020 provides 10 programmable contact inputs with the same functionality as the contact inputs on the MGC-2000 Series.
- **24 Output Contacts:** The CEM-2020 provides 24 Form C programmable output contacts with the same functionality as the output contacts on the MGC-2000 Series. The output ratings of the Form C contacts are:

Output No.	Rating (Cont.)	Additional Information
13–24	1 A @ 30 VDC	This is a gold flash contact for low current circuits.
25–36	4 A @ 30 VDC	

- **Communications via CANBus:** The CEM-2020 communicates to the MGC-2000 Series via SAE J1939 CANBus communications and allows the user to program the functionality of these inputs and outputs in the BESTCOMS*Plus*® software.
- The user can add labels for the inputs and outputs that appear in BESTCOMS*Plus*®, show up on the front panel, and in programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the MGC-2000 Series. The CEM-2020 module has all of the environmental ratings of the MGC-2000 Series, including a model for UL Class1 Div2 applications. The CEM-2020 terminals accept a maximum wire size of 12 AWG, while the chassis ground requires 12 AWG wire. Flexibility is one of the benefits of the MGC-2000 Series, and this add-on module enhances that benefit even further.



CEM-2020 Overall Dimensions

CONFIGURATION OPTIONS

Generator protection	MGC-2010		MGC-2050
Standard			
Phase Imbalance (47)		✓	✓
Overcurrent (50)			
Overvoltage (59)	✓	✓	✓
Undervoltage (27)	✓	✓	✓
Underfrequency (81U)	✓	✓	✓
Overfrequency (81O)	✓	✓	✓
Reverse Power (32)	✓	✓	✓
Loss of Excitation (40Q)	✓	✓	✓
Enhanced			
Overcurrent (51)			✓
Vector Shift (78)			✓
Rate of Change of Frequency (81R)			✓
Ground Fault			

Inputs	MGC-2010		MGC-2050
Controller			
Digital	16	16	16
Analog (Dedicated)	3	3	3
Analog	-	-	-
CEM			
Digital	10	10	10
AEM			
Analog	8		8
TC	2		2
RTD	8		8

Outputs	MGC-2010		MGC-2050
Controller			
Digital Form A, 30 Amp	3	3	3
Digital Form A, 5 Amp	-	-	-
Digital Form A, 2 Amp	12		12
Analog	-		-
CEM			
Digital Form C, 4 Amp	12	12	12
Digital Form C, 1 Amp	12	12	12
AEM			
Analog	4	4	4
External to Controllers / (CEM)			
Digital Form C, 10 Amp (Interposing Relay)	10	10	10

Communication	MGC-2010		MGC-2050
ModBus RTU (RS-485)	✓	✓	✓
ModBus TCP-IP			
RDP-110	✓	✓	✓
CANBus	✓	✓	✓
Modem Interface (RS-232)			✓
Ethernet			

Metering	MGC-2010		MGC-2050
Bus 1 Voltage			
Single Phase	✓	✓	✓
Three Phase	✓	✓	✓
Bus 2 Voltage			
Single Phase			
Three Phase			
Current Transformers			
Generator	3		3
Auxiliary	-		-

Remote Display Panel Data Sheet

RDP-110C Annunciator

DESCRIPTION

The RDP-110C is a remote annunciation device used in conjunction with digital generator set controllers to provide remote annunciation of the emergency standby generator system. This panel allows for two programmable alarms, two programmable pre-alarms, and is compatible with NFPA 110. The digital generator set controller detects an alarm or pre-alarm condition and communicates via RS-485 to the RDP-110C. The RDP-110C is available with a universal configuration that can be surface- or semi-flush-mounted.

Image for illustration purposes only.
Refer to dimensional drawings on page 3.

HIGHLIGHTS

- Annunciation of eight alarms and seven pre-alarms as detected by the digital generator set controller
- Four programmable LEDs via BESTlogic™ *Plus*
- RS-485 communications reduces the number of interconnection wires to four
- Interconnect distance up to 1,219 m (4,000 ft)
- UL Listed
- CSA Certified

STANDARD FEATURES

- Eight LED alarms
  - Low coolant level
  - Low oil pressure
  - Engine overspeed
  - Fuel leak*
  - High coolant temperature
  - Engine overcrank
  - Emergency stop activated
  - Sender failure*
- Seven LED Pre-Alarms
  - High coolant temperature
  - Low oil pressure
  - Battery overvoltage*
  - Battery charger failure*
  - Low coolant temperature
  - Low fuel level
  - Weak battery
- Three LED operating conditions
  - Switch not in auto
  - EPS supplying load
  - Display panel on
- Audible alarm horn rated at 90 dB (from a distance of two feet)
- Lamp test and alarm silence
- Power supply inputs for 12 VDC or 24 VDC
- Surface- or semi-flush-mounted
- Conduit box included
- Designed for use in harsh environments
- Interconnect distance up to 1,219 m (4,000 ft)
- UL Listed
- CSA Certified

* Pre-configured, but can be reprogrammed and relabeled to match the function of the indicator.

A Rolls-Royce solution

SPECIFICATIONS

Ordering Information

mtu part number: X00A30900392

Power Input

— DC voltage: 8 to 32 VDC (2W)

Environmental and Physical

— Operating temperature: -40 °C to 70 °C (-40 °F to 158 °F)
— Storage temperature: -40 °C to 85 °C (-40 °F to 185 °F)
— Salt fog: qualified to ASTM 117B-1989
— Vibration: The device withstands 2 g in each of the three mutually perpendicular planes, swept over the range of 10 to 500 Hz for a total of six sweeps, 15 minutes each sweep, without structural damage or degradation of performance.
— Shock: 15 g
— Weight: 1.04 kg (2.3 lb)

Agency Approvals

— NFPA 110 Level 1 compliant
— UL Listed to UL 6200, file E97035
— CSA Certified to CSA C22.2 No. 14, file LR 23131

Connections

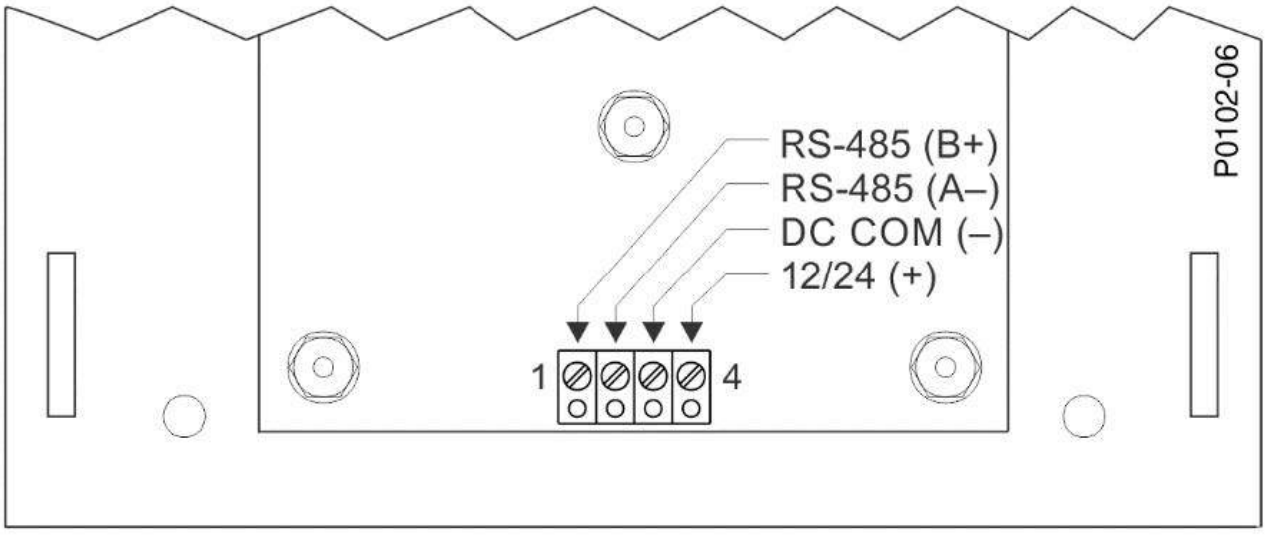


Figure 1: RDP-110C Circuit Board Connections

DIMENSIONS

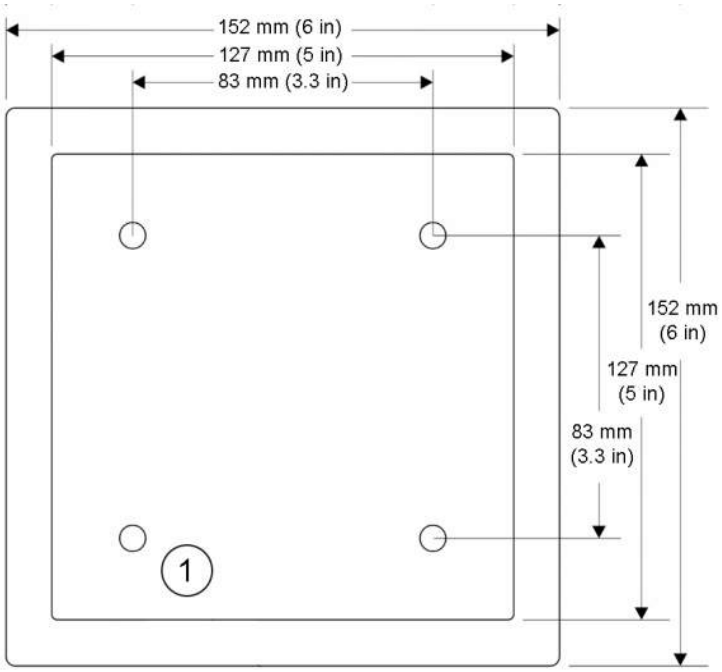


Figure 2: RDP-110C Mounting Dimensions (Rear Panel)

1. Mounting hole diameter (4 places, on rear wall of enclosure) is 7 mm (0.281 in).

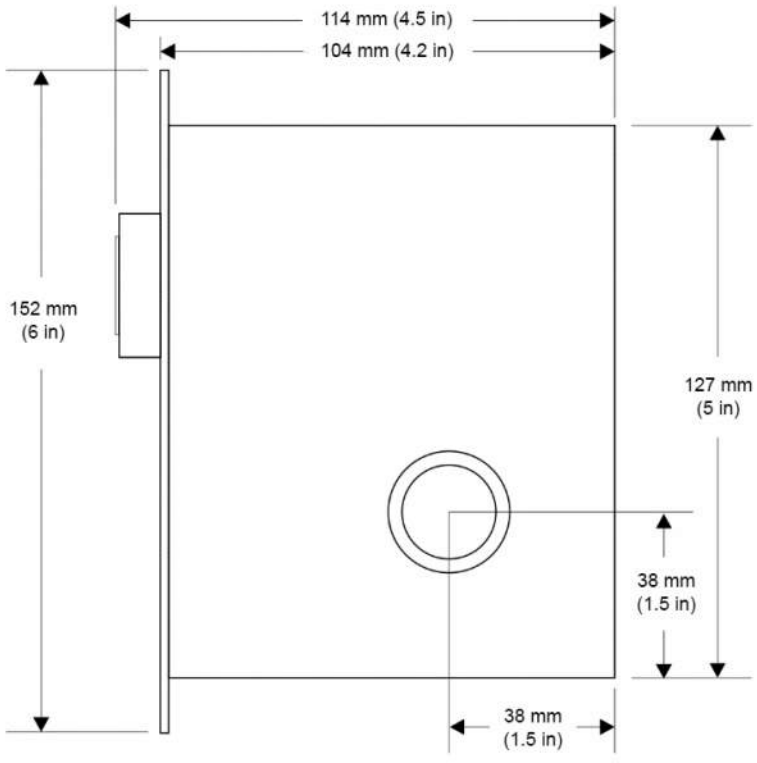


Figure 3: RDP-110C Mounting Dimensions and Knockout Locations (Left Side)

PANEL DISPLAY

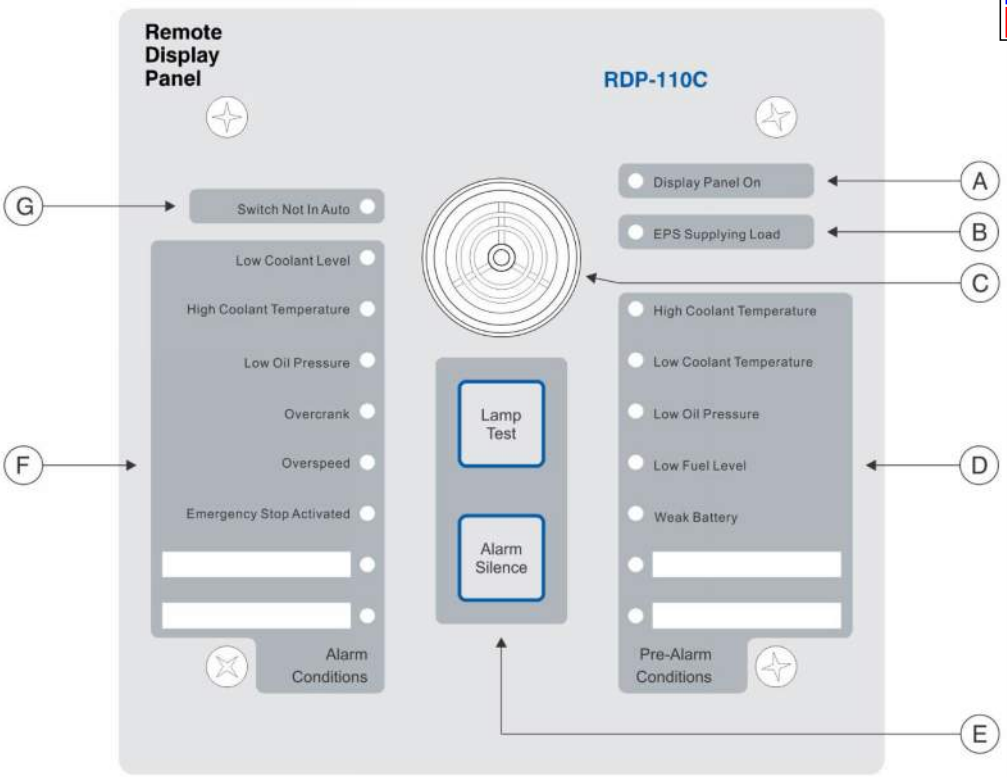
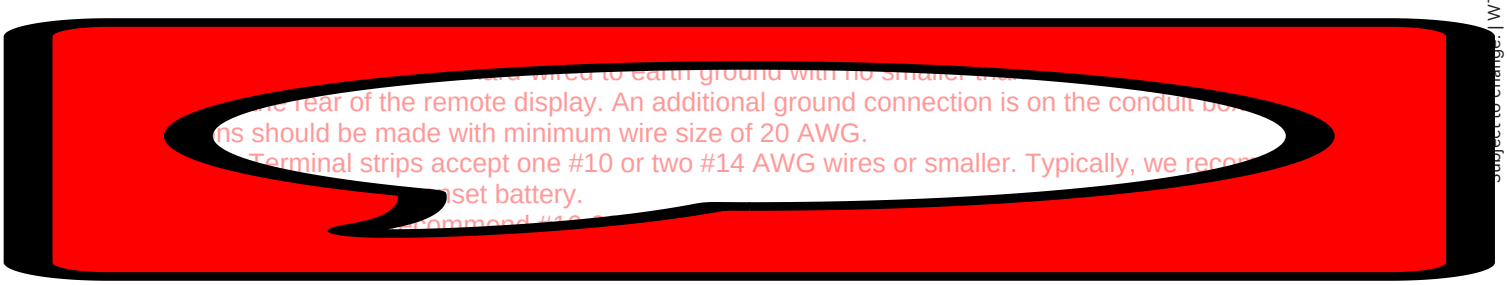


Figure 4: RDP-110C Front Panel Controls and Indicators

A. Green LED lights when power is applied to the RDP-110C.
B. Green LED lights when the generator set is supplying more than 2% of rated load.
C. The horn sounds when an alarm or pre-alarm exists or the connected digital generator set controller is not operating in Auto mode.
D. Amber Pre-Alarm LEDs light when the corresponding pre-alarm setting is exceeded.
E. RDP-110C controls consist of two pushbuttons. The Alarm Silence pushbutton silences the horn. The Lamp Test pushbutton can be used to verify operation of all RDP-110C LEDs and the horn.
F. Red Alarm LEDs light when the corresponding alarm setting is exceeded.
G. Red LED lights when the digital generator set controller is not operating in Auto mode.



Control Station Data Sheet

Break Glass Pushbutton

DESCRIPTION

The break glass pushbutton control station is designed for special applications in the emergency shutdown of electric circuits. The pushbutton is depressed, and the contacts are closed while the glass disc is in place. When the glass is broken with the hammer, the button returns to a normal extended position, opening the contacts. This action prevents the flow of the electric circuit during emergency shutdowns.

This control station with operators includes control station enclosure, emergency break glass pushbutton operator, hammer, and five glass discs.

FEATURES

- Heavy-duty indoor/outdoor constructed enclosure
- One or two snap-action contact blocks
- “STOP” legend

SPECIFICATIONS

- ***mtu*** Part Number: SUA35133
- Enclosure Material: Die cast zinc (painted red)
- Weight: 1.47 kg (3.25 lbs)
- Size: 30 mm (1.18 in)
- Contact Configuration: 1 N.O. / 1 N.C.
- Terminal Type: Screw clamp
- Enclosure Rating: NEMA 3/4/13
- Maximum Voltage Rating: 300 V
- Ampere Rating: 10 Amps
- Ratings: UL Listed, CE Marked, CSA Certified

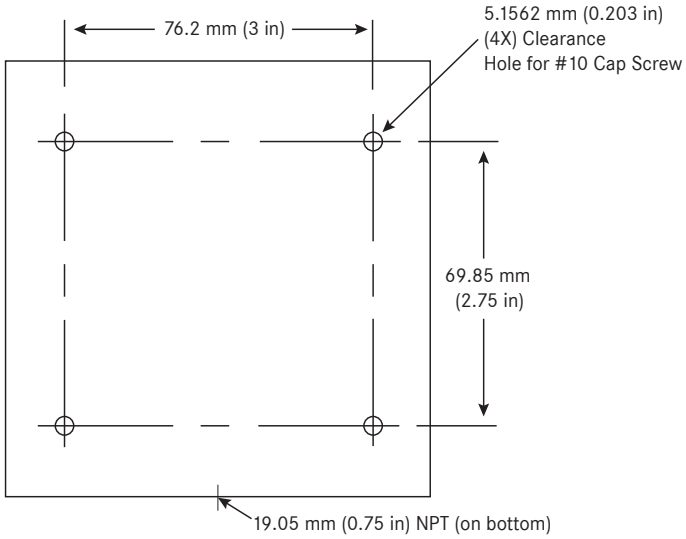


Figure 1: Mounting Dimensions

Subject to change. | WT00032338 | 2021-09

Product data sheet
Characteristics

MGL36800
MOLDED CASE CIRCUIT BREAKER 600V 800A

Main

Product or component type	Circuit breaker
Range of product	PowerPact M
Current sensor rating range	800 A
Breaking capacity code	G
Trip unit technology	Electronic basic ET 1.0 LI

Complementary

Line Rated Current	800 A
System Voltage	600 V AC
Mounting mode	Unit mount
Poles description	3P
Breaking capacity	65 kA at 240 V AC 35 kA at 480 V AC 18 kA at 600 V AC
[Ics] rated service short-circuit breaking capacity	80 %
Electrical connection	Lugs load Lugs line
AWG gauge	AWG 3/0...500 kcmil (aluminium/copper) for 3 cable(s)

Environment

Product certifications	UL listed IEC CSA

Ordering and shipping details

Category	01205 - MG, MJ UNIT MOUNT BREAKER
Discount Schedule	DE2

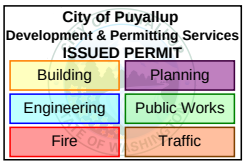
GTIN	00785901575801
Nbr. of units in pkg.	1
Package weight(Lbs)	28.77
Returnability	Y
Country of origin	US

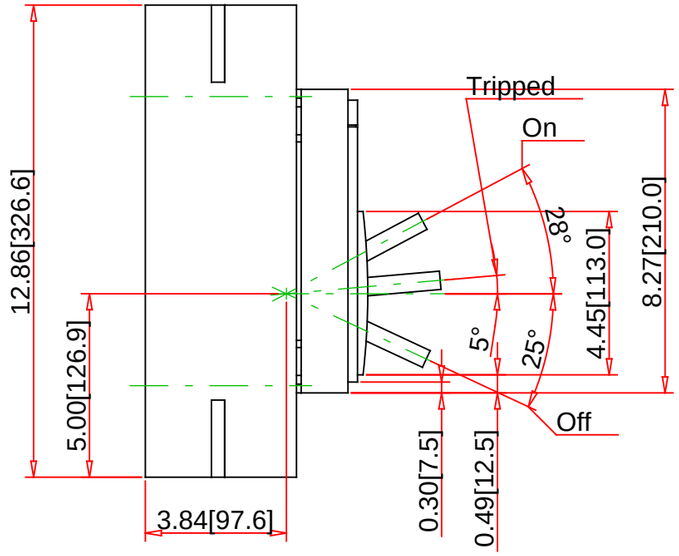
Offer Sustainability

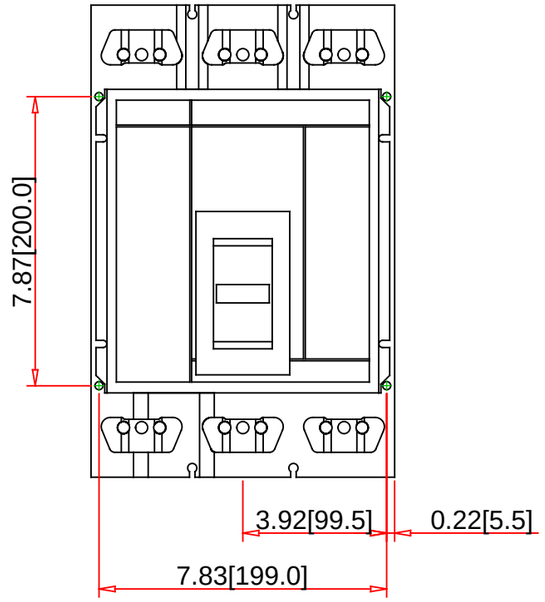
Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1323 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold
Product environmental profile	Available
Product end of life instructions	Available

Contractual warranty

Warranty period	18 months

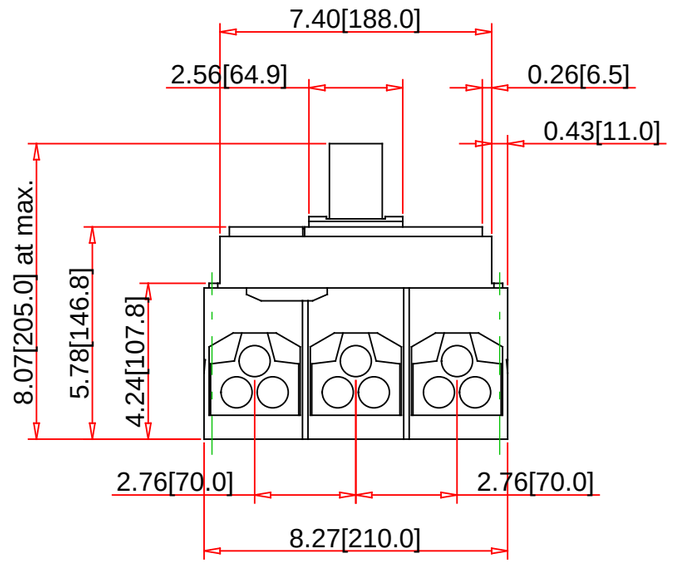






City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



Note:
- Drawings Not To Scale
- Drawings Subject to Change Without Notice
- Dimensions are inches next to [Millimeters]

Part No.:

MGL36800

SQUARE D by Schneider Electric

Schneider Electric United States
North American Division
Boston One Campus
800 Federal Street
Andover, MA 01810, USA
Phone:+1 8773425173
Email: CCC@us.schneider-electric.com

Technical Information:

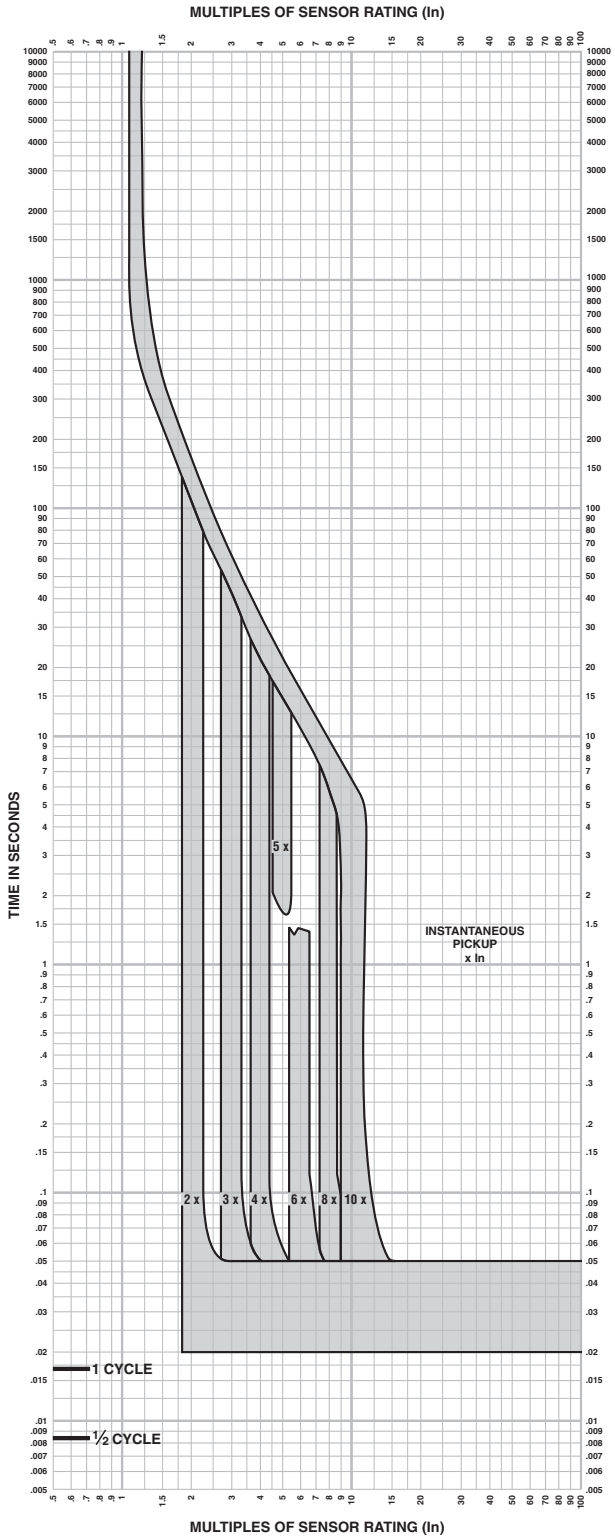
General Application:	Provides overload and short circuit protection
For Use With:	Industrial Enclosures and Switchboards
Approvals:	UL Listed - CSA Certified - IEC Rated
Mounting Type:	Unit Mount
Terminal Type:	Line: Lug - Load: Lug
Wire Size:	(3) 3/0 through 500 kcmil Al or Cu
Weight:	
Depth:	8.06 Inches
Height:	12.86 Inches
Width:	8.27 Inches

Specification:

Description:	PowerPact M-frame Molded Case Circuit Breaker
Number of Poles:	3-Pole
Ampere Rating:	800A
Voltage Rating:	600VAC
Interrupting Rating:	65kA at 240VAC - 35kA at 480VAC - 18kA at 600VAC
Circuit Breaker Rating:	80% Rated

Section 13—Trip Curves

Basic Electronic Trip Unit ET 1.0I, M-Frame 800 A Characteristic Trip Curve



ELECTRONIC TRIP 1.0
CHARACTERISTIC TRIP CURVE NO. 613-14

Long-time Pickup and Delay
Instantaneous Pickup and Delay
2x–10x

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -25°C to +70°C (-13°F to +158°F) ambient temperature.

Instantaneous override values are given on 613-10.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Product data sheet
Characteristics

HDL36060CU33X
PowerPact H Circuit Breaker,Micrologic3.2S,60A,3P,600V,14kA

Main

Product or component type	Circuit breaker
Range of product	PowerPact H
Trip unit technology	Electronic standard Micrologic 3.2 S LSI
Breaking capacity code	D

Complementary

Line Rated Current	60 A
Poles description	3P
Breaking capacity	18 kA at 480 V AC 25 kA at 240 V AC 14 kA at 600 V AC
System Voltage	600 V AC
[Ics] rated service short-circuit breaking capacity	100 %
Mounting mode	Unit mount
Electrical connection	Lugs load Lugs line
AWG gauge	AWG 14...AWG 3/0 (aluminium/copper)

Environment

Product certifications	IEC CE UL listed CSA CCC
Ambient air temperature for operation	104 °F (40 °C)

Ordering and shipping details

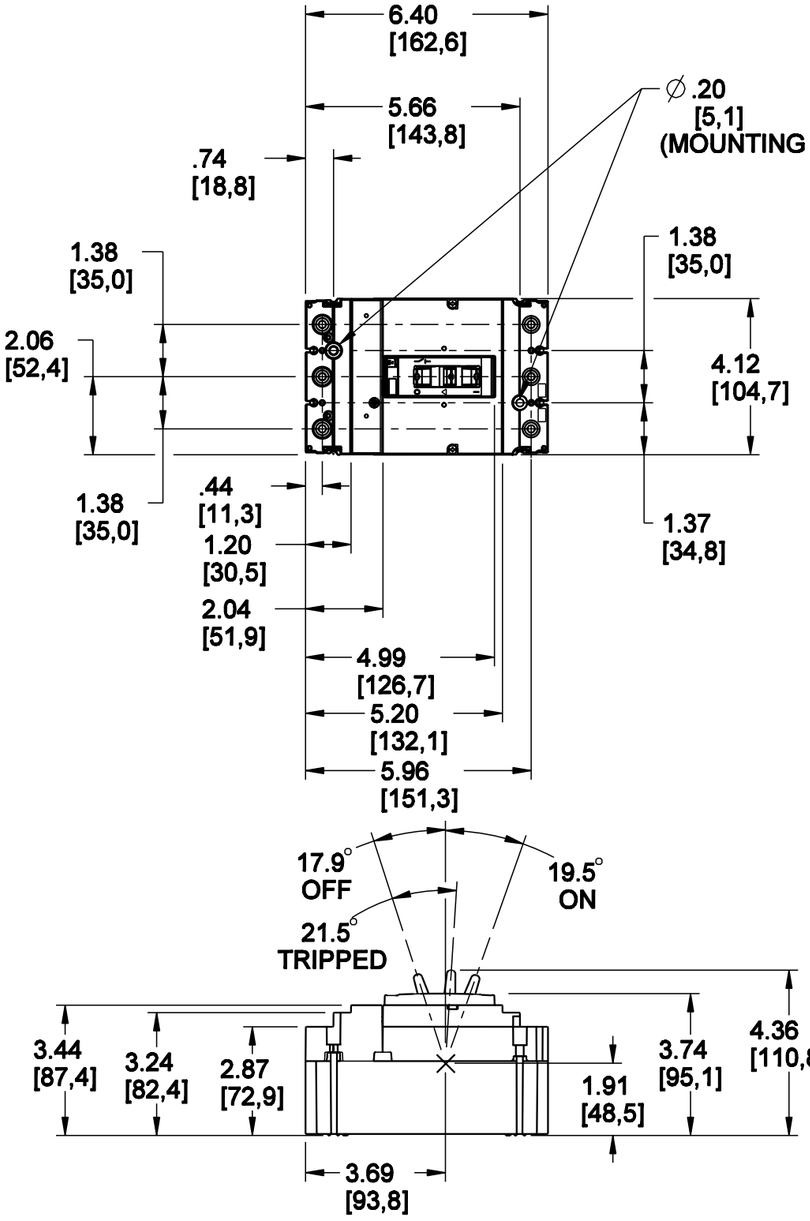
Category	01107 - H/J ELEC TRIP UNIT MOUNT BREAKER/SW
Discount Schedule	DE2
GTIN	00785901950233
Nbr. of units in pkg.	1
Package weight(Lbs)	5
Returnability	N
Country of origin	US

Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1132 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold
Product environmental profile	Available
Product end of life instructions	Available

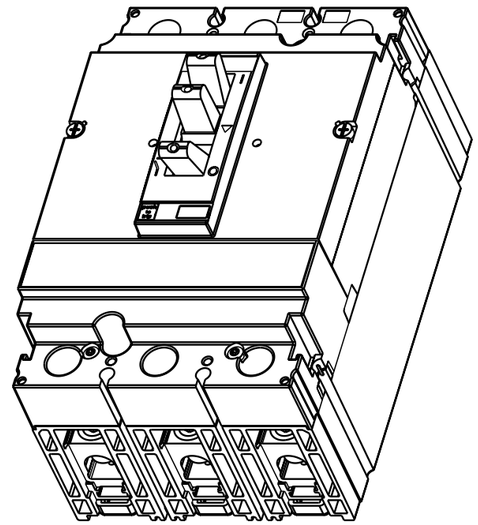
Contractual warranty

Warranty period	18 months

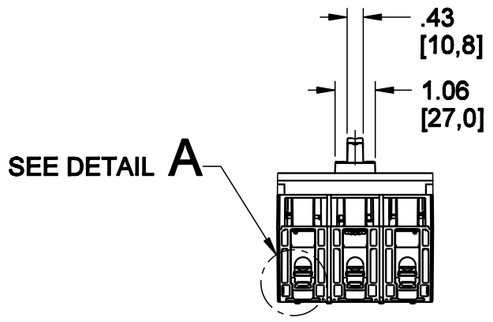


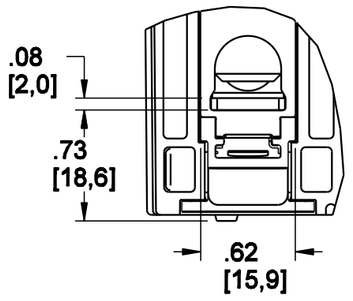
City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



ISOMETRIC VIEW
SCALE 1:2





DETAIL A
SCALE 1:1

CATALOG NUMBER:			
DESCRIPTION:	H-Frame 15A - 150A 3P Toggle Lug-Lug		
DRAWN BY:	LRG	DATE:	12AUG2003
CHECKED BY:	RLS	DATE:	11MAR2004
DRAWING FILE:	48996-012-01 .DRW		
ECN: J582			

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE
IN / mm

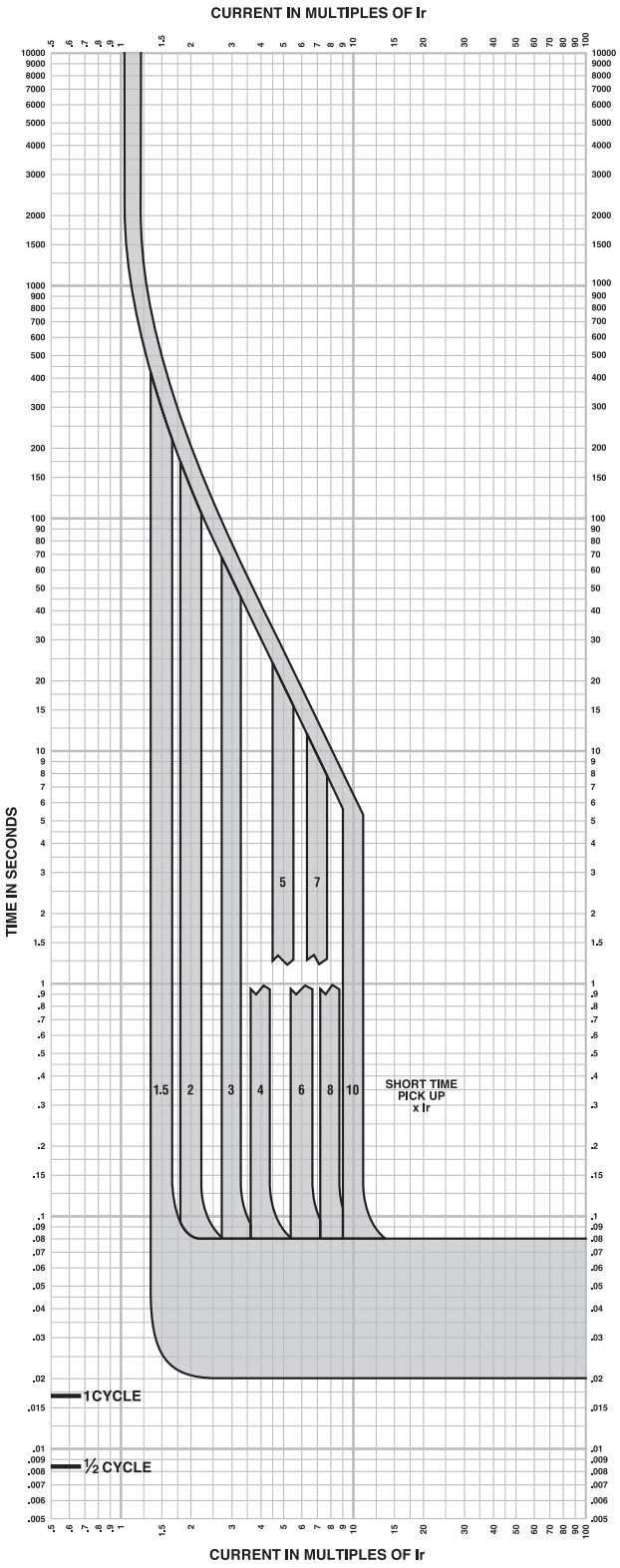
THIRD ANGLE

SQUARE D
Schneider Electric

DRAWING NUMBER 48996-012-01

REVISION 0

Figure 102: Micrologic 3.2S Electronic Trip Unit Long Time / Short Time Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.2S Long Time/
Short Time Trip Curve
60A, 100A, 150A H-Frame

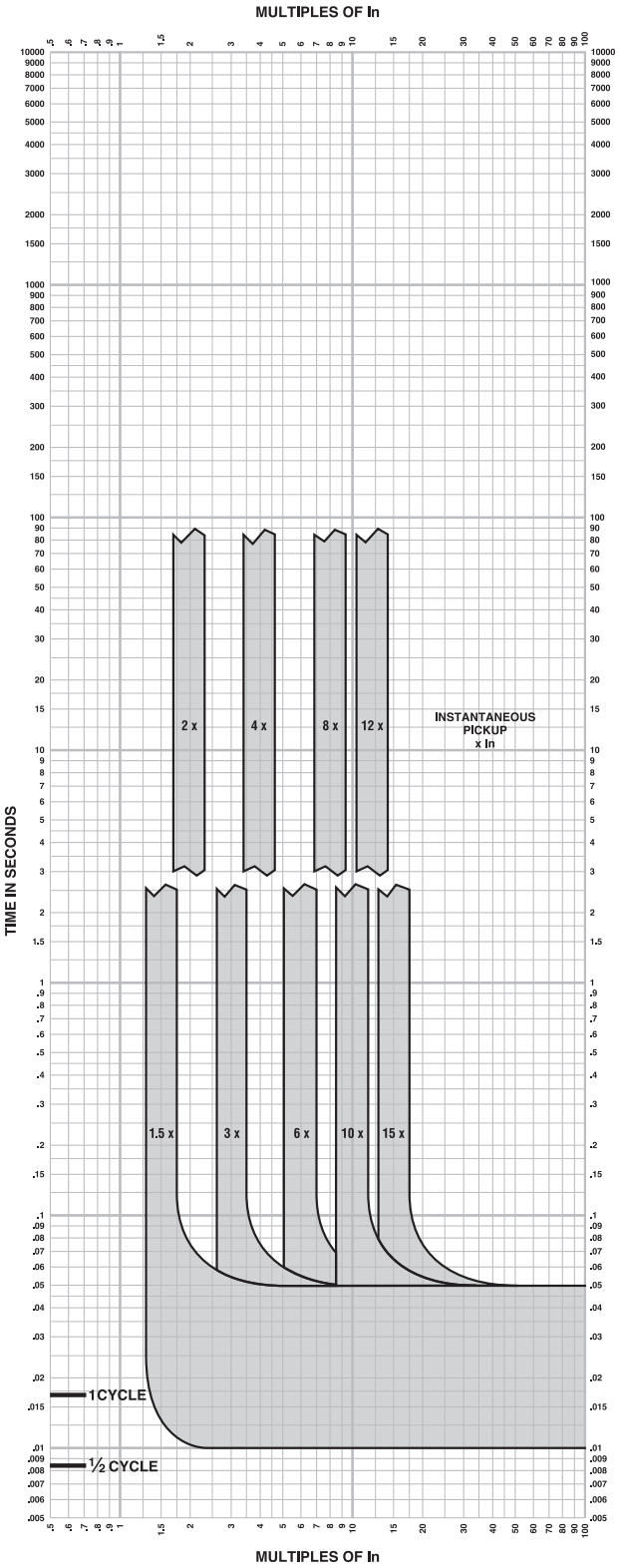
The time-current curve information is to be used for application and coordination purposes only.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Curves apply from -35ºC to +70ºC (-31ºF to +158ºF) ambient temperature.

Figure 103: Micrologic 3.2/3.2S/5.2A/5.2E/6.2A/6.2E Electronic Trip Unit Instantaneous Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.2/3.2S/5.2A or E/6.2A or E
Instantaneous Trip Curve
60A, 100A, 150A H-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. In = Maximum dial setting of Ir.
   60A H-Frame: In = 60A = Max Ir setting
   100A H-Frame: In = 100A = Max Ir setting
   150A H-Frame: In = 150A = Max Ir setting

Curves apply from -35ºC to +70ºC (-31ºF to +158ºF) ambient temperature.

Circuit Breaker Enclosure Data Sheet

450-600 kW Diesel and 300-500 kW Gas

DESCRIPTION

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation, specification requirements, and installation. This document summarizes the enclosure dimensions and mounting positions for the circuit breakers, including single, dual, and triple enclosures. The dimensional drawings will govern and should be referenced for installation.

15A-250A H-, J-FRAME ENCLOSURE

— Reference Figure 7 for available breaker mounting positions.

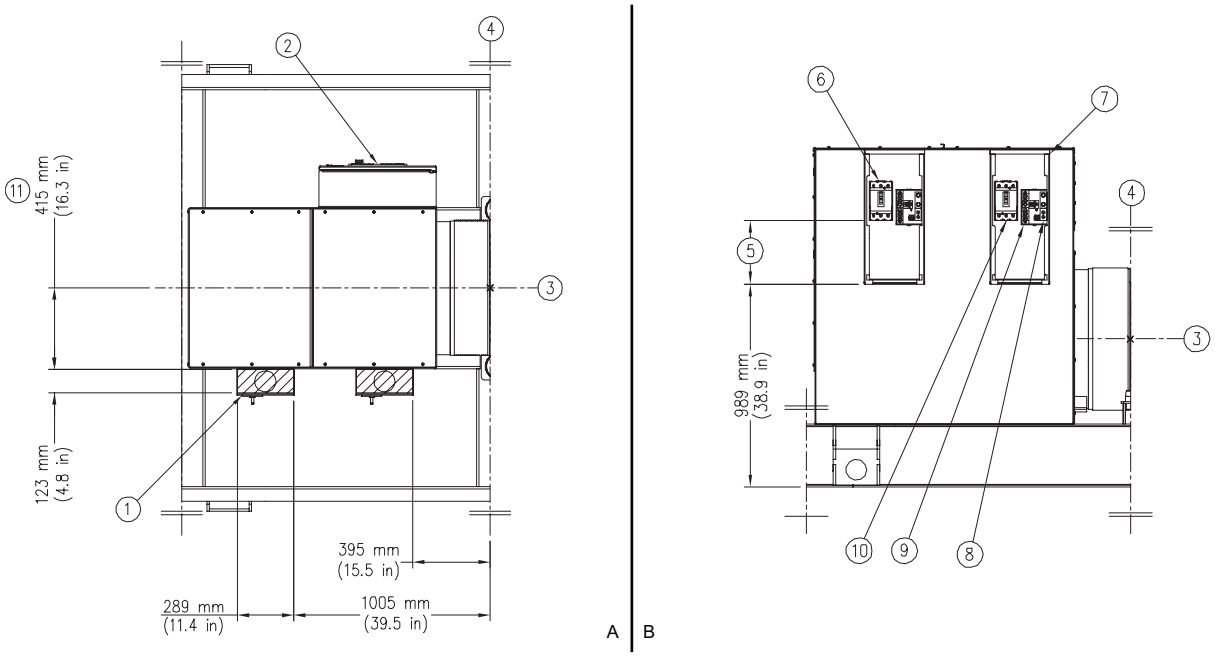


Figure 1: 15A-250A H-, J-Frame Enclosure

A. Top view, bottom entry conduit area
B. Right view, breaker enclosure detail (enclosure cover not shown)

1. One conduit maximum per breaker
2. Controls position
3. Generator centerline
4. Rear face of flywheel housing
5. Dimension A (see Table 1)
6. Breaker position one
7. Breaker position two
8. Equipment ground wire binding torque: 275 lb-in
9. Neutral wire binding torque: 375 lb-in
10. Customer connect end breaker wire binding torque: 50 lb-in (H-frame), 225 lb-in (J-frame)
11. Breaker extension box adds 333 mm (13.11 in), if configured

250A-800A M-, P-FRAME ENCLOSURE

— Reference Figure 7 for available breaker mounting positions.

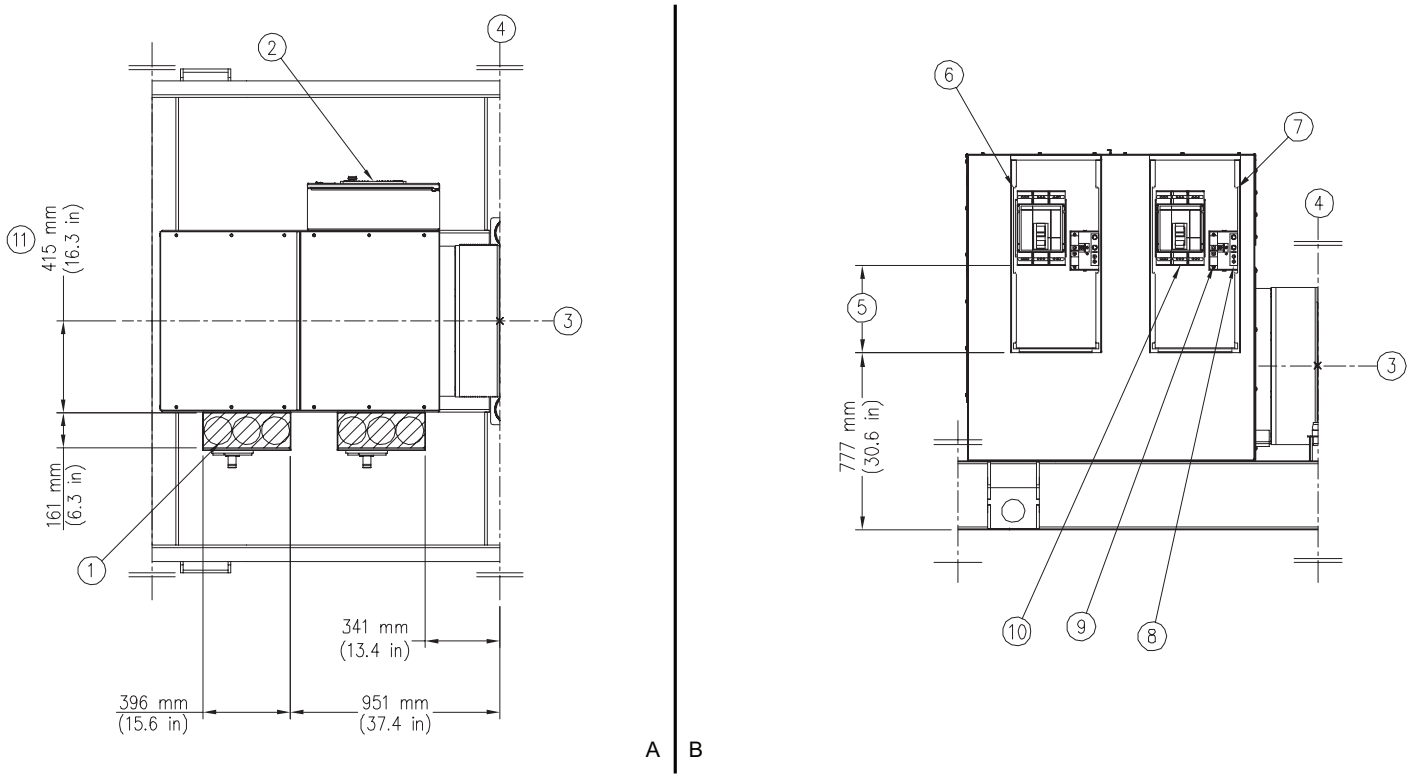


Figure 3: 250A-800A M-, P-Frame Enclosure

A. Top view, bottom entry conduit area
B. Right view, breaker enclosure detail (enclosure cover not shown)

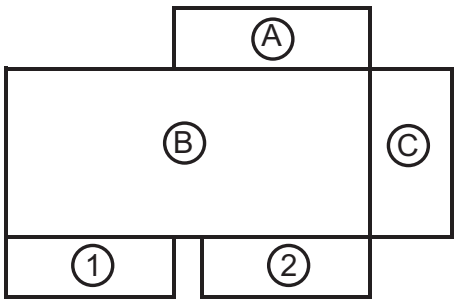
1. Three conduit maximum per breaker
2. Controls position
3. Generator centerline
4. Rear face of flywheel housing
5. Dimension A (see Table 1)
6. Breaker position one
7. Breaker position two
8. Equipment ground wire binding torque: 275 lb-in
9. Neutral wire binding torque: 375 lb-in
10. Customer connect end breaker wire binding torque: 442 lb-in
11. Breaker extension box adds 333 mm (13.11 in), if configured

Available Circuit Breakers		Enclosure Data			
Breaker Frame	Amperage	Output Wire Range 90 °C Cu (wires per lug)	Wire Bending Space [1] mm (in)	Conduit Quantity	Conduit Size[2] in
[illegible]	20-150	(1) 8-3/0	531 (20.91)	1	[illegible]
J-Frame	175	(1) 4-4/0	517 (20.35)	1	2.5
J-Frame	200-250	(1) 3/0-350	517 (20.35)	1	3
L-Frame 100%	300-400	(2) 2/0-500	443 (17.44)	2	3.5
L-Frame 80%	300-600	(2) 2/0-500	443 (17.44)	2	3.5
[illegible]	250-800	(3) 3/0-500	465 (18.31)	3	[illegible]
P-Frame	1,000-1,200	(4) 3/0-500	416 (16.38)	4	3.5
R/MTZ-Frame	1,600-2,500	(8) 1/0-750	604 (23.78)	8	4
R-Frame 80%	3,000	(8) 1/0-750	604 (23.78)	8	4
R/MTZ-Frame 100%	3,000	(9) 1/0-750	604 (23.78)	9	4

[1] Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B)
[2] Based on flexible metal conduit at 40% fill using THHN wire.

NOTE: Equipment grounding terminal wire range: 6 AWG - 350 kcmil

Table 1: Enclosure Data



Top View, Left Side Controls: Single and Dual Breakers

Figure 7: Available Breaker Mounting Positions for Single, Dual, or Three Breakers

A. Controls
B. Outlet box
C. Alternator

1. Position 1
2. Position 2
3. Position 3

MAGNAMAX®

TYPICAL SUBMITTAL DATA

BASE MODEL: 572RSL6427 **Winding:** 570072 **Date:** 01/28/25

Kilowatt ratings at	1800 RPM	60 Hertz		12 Leads With Bus Bars	
kW (kVA)	3 Phase	0.8 Power Factor		Dripproof or Open Enclosure	
	CONTINUOUS [1, 2]			STANDBY [1, 2]	
Voltage*	NEMA B / 80 °C	NEMA F / 105 °C	NEMA H / 125 °C	NEMA F / 130 °C	NEMA H / 150 °C
240/480	440 (550)	500 (625)	515 (644)	515 (644)	560 (700)
220/440	410 (513)	460 (575)	485 (606)	500 (625)	520 (650)
208/416	400 (500)	445 (556)	470 (588)	475 (594)	505 (631)
200/400	382 (478)	427 (534)	441 (551)	443 (554)	459 (574)
190/380	360 (450)	405 (506)	405 (506)	405 (506)	405 (506)

① Rise by resistance method, Mil-Std-705, Method 680.1b. ② Machine rated for Max Ambient of 40 °C, Max Altitude 3300 ft

Submittal Data: 480 Volts*, 515 kW, 644 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase **High Wye CONNECTION**

Mil-Std-705B Method	Description	Value	Units	Mil-Std-705C Method	Description	Value	Units
301.1b	Insulation Resistance	>1.5 Meg	Ohms	505.3b	Overspeed	2250	RPM
302.1a	High Potential Test			507.1c	Phase Sequence CCW-ODE	ABC	
	Main Stator	1960	Volts	508.1c	Voltage Balance, L-L or L-N	0.2%	
	Main Rotor	1500	Volts	601.4a	L-L Harmonic Max - Total (Distortion Factor)	5.0%	
	Exciter Stator	1500	Volts				
	Exciter Rotor	1500	Volts	601.4a	L-L Harmonic Max - Single	3.0%	
	PMG Stator	1500	Volts	601.1c	Deviation Factor	5.0%	
401.1a	Stator Resistance, Line to Line High Wye Connection	0.01260	Ohms	---	TIF (1960 Weightings)	<50	
				---	THF (IEC, BS & NEMA Weightings)	<2%	
	Rotor Resistance	0.398	Ohms	---	Winding Pitch	2/3	
	Exciter Stator	23	Ohms				
	Exciter Rotor	0.045	Ohms				
	PMG Stator	2.1	Ohms				
410.1a	No Load Exciter Field Amps at 480 Volts Line to Line	0.69	A DC	**Additional Prototype Mil-Std Methods are Available on Request.**			
420.1a	Short Circuit Ratio	0.591					
421.1a	Xd Synchronous Reactance	2.670	PU	--	Generator Frame	572	
		0.956	Ohms	--	Type	MagnaMax	
422.1a	X2 Negative Sequence React.	0.226	PU	--	Insulation	Class H	
		0.081	Ohms	--	Coupling - Single Bearing	Flexible	
423.1a	X0 Zero Sequence Reactance	0.056	PU	--	Amortisseur Windings	Full	
		0.020	Ohms	--	Excitation	Ext. Voltage Regulated, Brushless	
425.1a	X'd Transient Reactance	0.162	PU	--	Voltage Regulator	DVR2400	
		0.058	Ohms	--	Voltage Regulation	0.25%	
426.1a	X''d Subtransient Reactance	0.137	PU				
		0.049	Ohms				
--	Xq Quadrature Synchronous Reactance	1.100	PU	--	Cooling Air Volume	1520	CFM
		0.394	Ohms	--	Heat rejection rate	1744	Btu's/min
427.1a	T'd Transient Short Circuit Time Constant	0.114	Sec	--	Full load current	774.3	Amps
				--	Minimum Input hp required	731.5	HP
428.1a	T''d Subtransient Short Circuit Time Constant	0.01	Sec	--	Full load torque	2134	Lb-ft
				--	Efficiency at rated load :	94.4%	
430.1a	T'do Transient Open Circuit Time Constant	1.68	Sec				
432.1a	Ta Short Circuit Time Constant of Armature Winding	0.017	Sec	--	Weight	2840	lbs

** Voltages refer to wye (star) connection, unless otherwise specified.*

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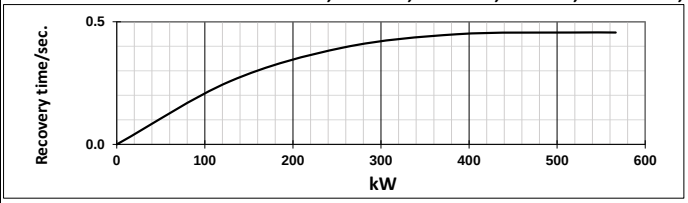
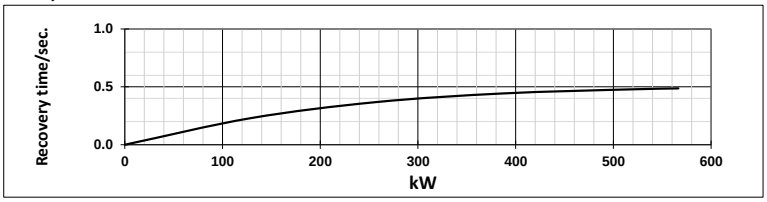
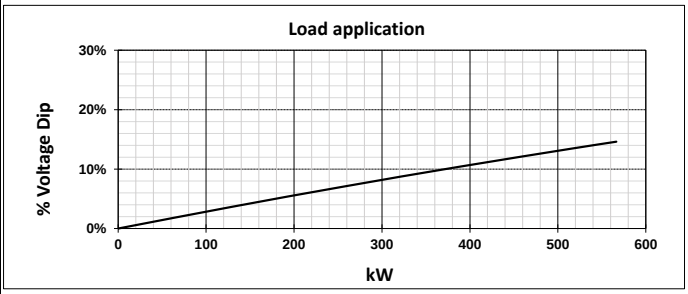
TYPICAL DYNAMIC CHARACTERISTICS

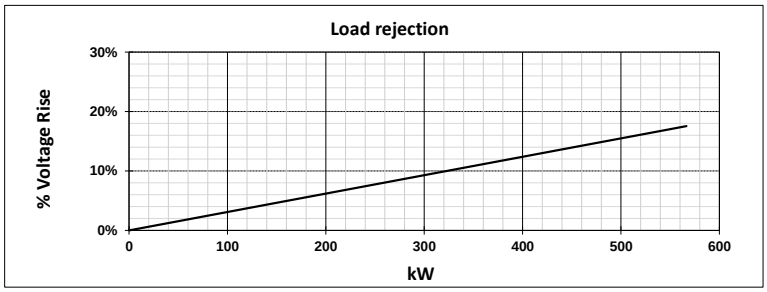
BASE MODEL: 572RSL6427 **Date:** 01/28/25

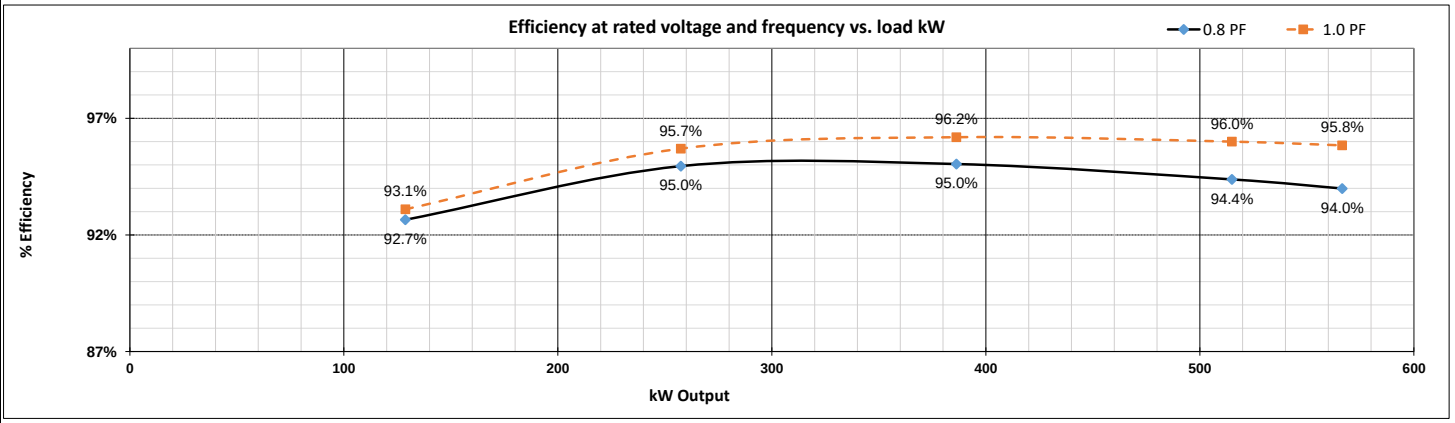
Submittal Data: 480 Volts*, 515 kW, 644 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase

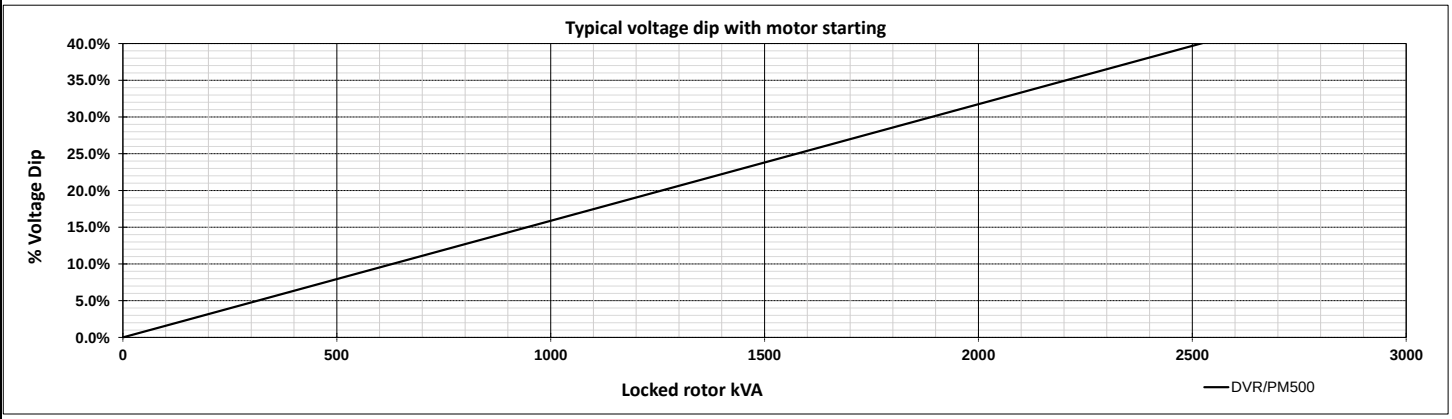












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DECREMENT CURVE

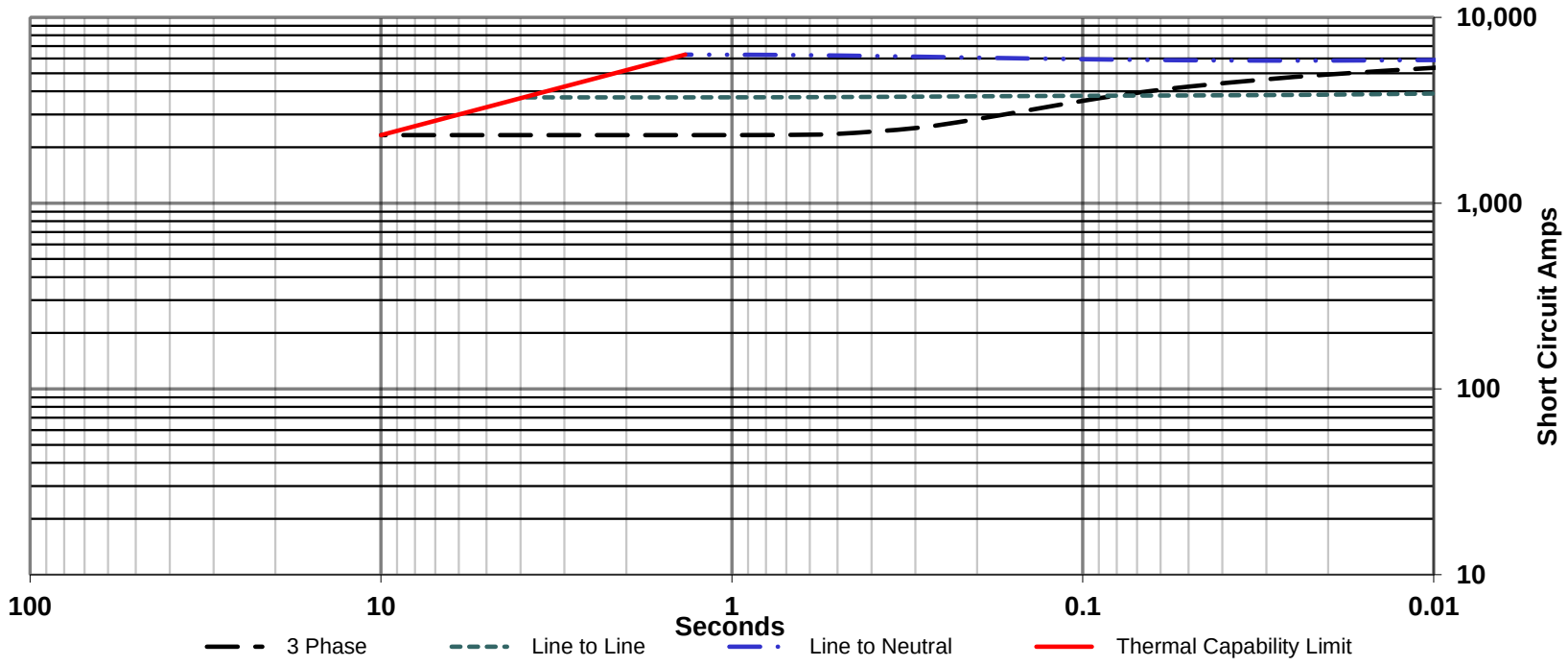
BASE MODEL: 572RSL6427

Submittal Data: 480 Volts*, 515 kW, 644 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase **Date : 01/28/25**

Full Load Current : 774.3 amps
Steady State S.C. Current : 2322.9 amps

Max. 3 ph. Symm. S.C. Current : 5652 amps
INCLUDES EXCITATION SUPPORT (PMG)

Symmetrical Component values, Maximum Asymmetrical Values Are 1.732 Times Symmetrical Values



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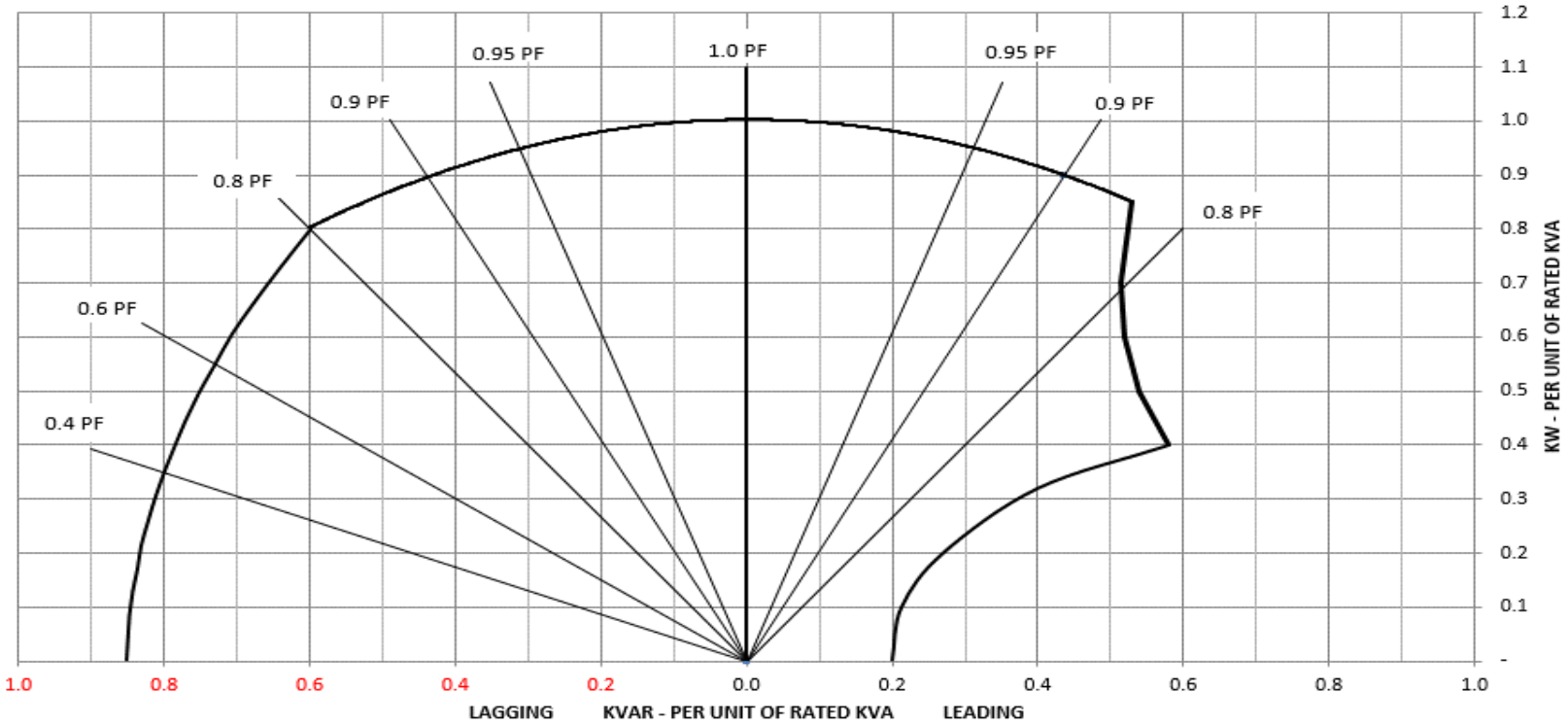
Typical Reactive Capability Curve

Date : 01/28/25



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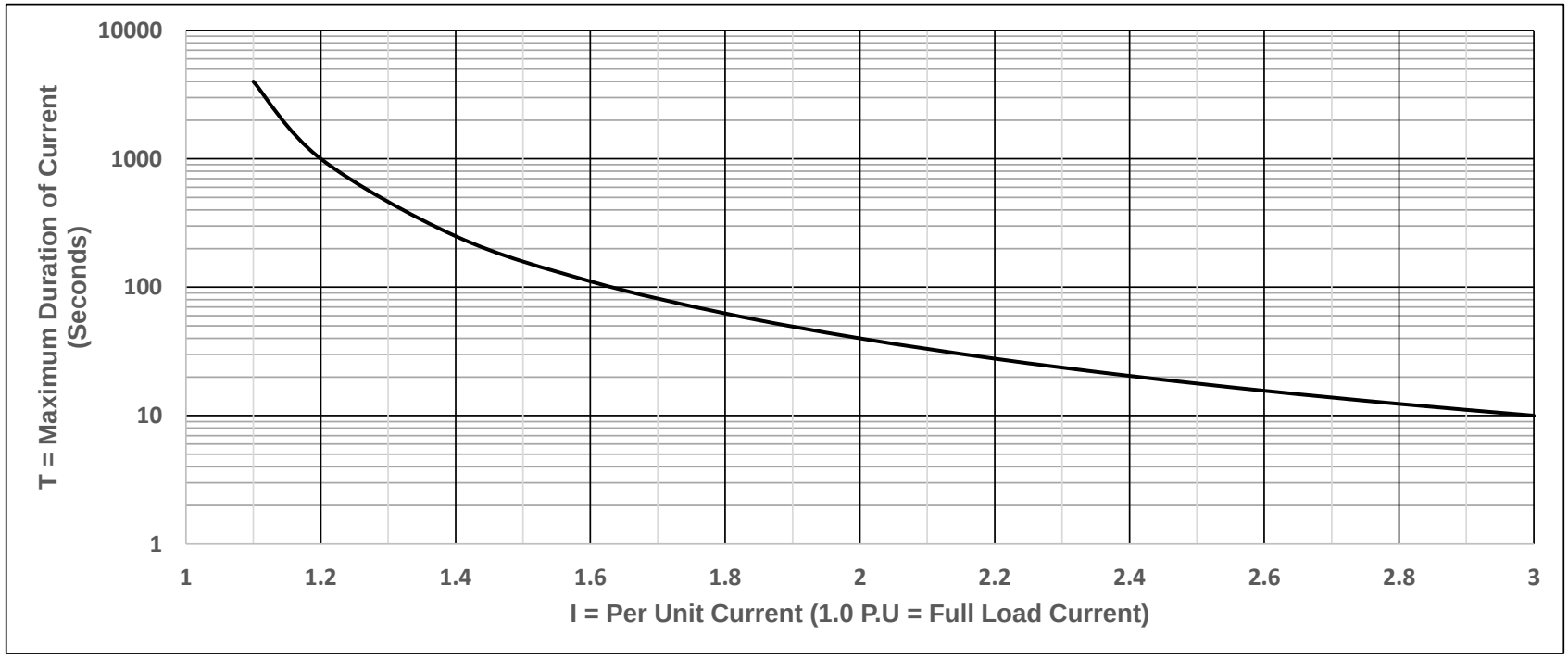
THERMAL DAMAGE CURVE

Date : 01/28/25

Base is 3.0 P.U. current for 10 seconds from T = 40/(I-1)^2
Windings at operating temperature



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Generators

DVR® 2400
DIGITAL VOLTAGE REGULATOR

NEW FEATURES
- USB 2.0 access through front panel
- Euro style connector for low voltage connections
- Event Logging
- PMG voltage metering
- Polarity configuration for external inputs
- Configurable cut-in and cut-out frequencies
- Retain/reset configuration of remote adjust

FOUR DIGIT HMI DISPLAY
From intial setup to monitoring regulator status, this display provides innovative, fast and easy setup.

REGULATION MODES
Single and Three phase (AVR), Manual Field Current Regulation (FCR), Reactive Power Regulation (VAR) and Power Factor Regulation (PF). All modes compatible with control by external devices.

GENERATOR SOFT START
Controlled increase to rated voltage limits overshoot during voltage build-up in AVR modes.

TRUE RMS VOLTAGE SENSING - SINGLE OR THREE PHASE
Directly sense 100 to 600 Volts at 50/60 Hz. Circuitry senses true RMS voltage for superior regulation.

SINGLE PHASE POWER METERING

FRAME SIZE SPECIFIC PID SELECTION
Simply select the appropriate frame size and your gains are set.

ROBUST GENERATOR PROTECTION FEATURES
9 different Alarm and Shutdown protection features, many are customizable for your application including:
- Field Over & Under Excitation
- Instantaneous Field Over Current
- Generator Over & Under Voltage
- Generator Voltage Imbalance
- Generator Loss of Sensing

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DVR®2400 DIGITAL VOLTAGE REGULATOR

SPECIFICATIONS

Voltage Regulation - 0.25% over load range at rated power factor and constant generator frequency.

Output Power - 100 Vdc, 4.0 Adc continuous rating and 190 Vdc, 7.5 Adc forcing capability for one minute.

Exciter Field DC Resistance - 18 to 25Ω Range

Remote Voltage Adjustment - ±30% of nominal via analog input, ±15% via external contacts.

Input Power - 180 to 240 Vac, 250 to 300 Hz PMG power supply

Regulator Sensing - 100 to 600 Vac, 50/60 Hz, 1-phase/3phase

Operating Temperature - From -40˚C to +70˚C (-40˚F to + 158˚F)

Storage Temperature - From -40˚ C to +85˚C (-40˚F to +185˚F)

Ingress Protection - IP52 (front side mounted in conduit box along with swing cover); IP10 (rear side with protective cover)

Shock - 20G in 3 perpendicular planes

Vibration - 2.5G at 5 to 26 Hz; 0.050" double amplitude (27 to 52 Hz); 7G at 53 to 500 Hz

Weight - 3.5 lb. (1361 g)

Humidity Testing - Per MIL-STD-705B, Method 711-D

Salt Fog Testing - Per MIL-STD-810E

EMI Compatibility

Immunity

Meets EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) -Part 6-2: Generic standards- immunity for industrial environments.

Emission

- Meets EN 61000-6-4: 2007 Electromagnetic compatibility (EMC) - Part 6-4: Generic Standards - emmission standard for industrial environments

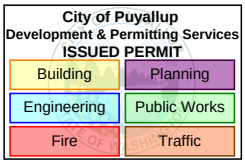
EMI Compatibility Tests

Immunity

- Electrostatic Discharge (ESD): IEC 61000-4-2
- Radiated RF: IEC 61000-4-3
- Electrical Fast Transient (EFT) /Burst: IEC 61000-4-4
- Conducted RF: IEC 61000-4-6
- Power Frequency and Magnetic Field: IEC 61000-4-8

Emission

- Radiated RF: EN 61000-6-4: 2007, 30 MHz to 1000 MHz



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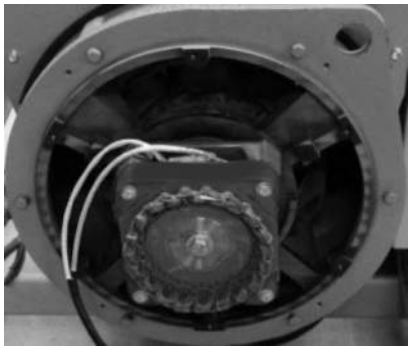
Generator System Data Sheet

Permanent Magnet Generator (PMG)

DESCRIPTION

A permanent magnet generator (PMG) is available as an optional accessory on all systems. The PMG is an improved method of supplying power to the voltage regulator and adds distinct advantages over shunt type power supply.



Permanent Magnet Generator*

FEATURES

Improved transient response

When a generator is subject to a large step load, the generator's terminal voltage experiences a sudden voltage dip. With a shunt style regulator, reduced voltage means the regulator's ability to increase excitation is reduced and voltage recovery will take longer. Power from a PMG is only dependent on the speed of rotation so voltage regulator power, and therefore excitation power, is not compromised during a load step.

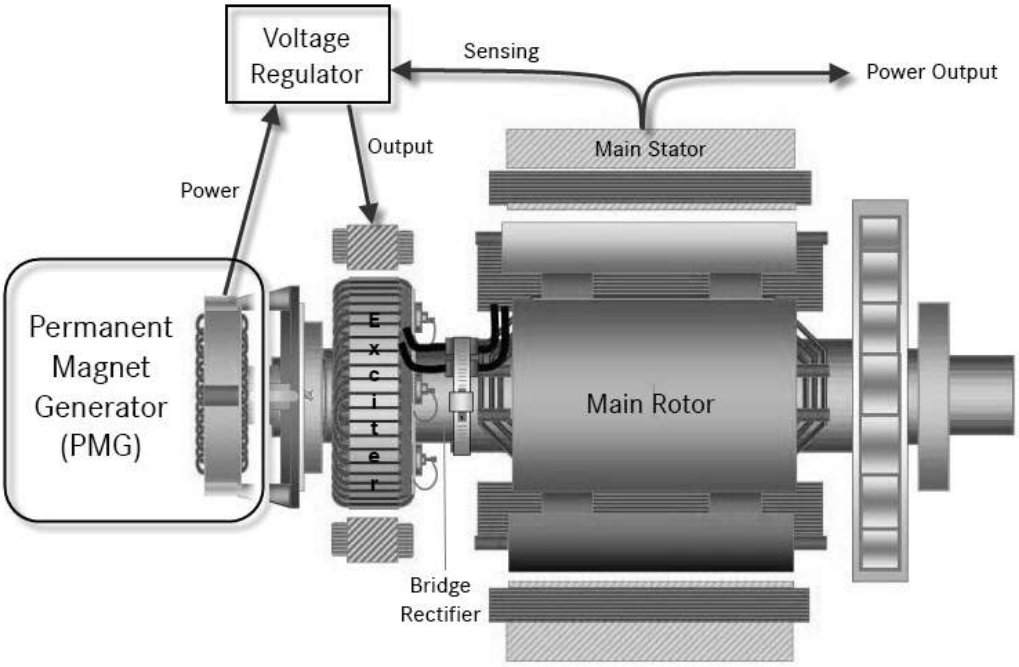
300% short circuit capability

The PMG enables the generator to provide up to 300% short circuit current for 10 seconds. This is important when a fault occurs to ensure current continues to flow long enough for downstream breakers to trip and clear the fault. When a fault occurs with a shunt type regulator, the sudden drop in voltage indicates the regulator has no power to increase excitation to keep current flowing. Without current flow, the downstream breakers may not trip.

Resistant to the effects of harmonics

A PMG is also beneficial in applications with harmonic producing loads. When rectifier-type loads are present and cause voltage wave form notching, the disrupted voltage wave form can affect voltage regulator operation on shunt powered regulators. Unlike a shunt regulator, the PMG supplies the regulator with a power source which is isolated from the electrical system.

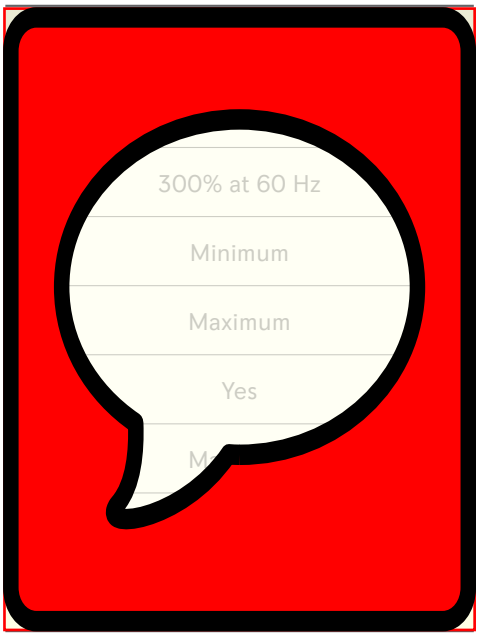
Permanent Magnet Generator (PMG) Data Sheet



Generator Equipped with PMG*

EXCITATION SYSTEM COMPARISON CHART

	Auxiliary Winding
Motor starting capability	High
Short circuit current capability	300% at 60 Hz
Susceptibility to non-linear loads	Minimum
Number of components	Minimum
Retrofitability	No
Generator length	Minimum
Stator design	Special
Voltage buildup	Uses residual magnetism and permanent magnet inserts on some frames



* Note: Visual appearance may vary.

Strip Heater Data Sheet

Marathon Generator

DESCRIPTION

Strip heaters are used when engine generator sets are installed in cold temperature or high humidity climates. The heater maintains the generator windings at a suitable temperature to prevent corrosion due to condensation.

FEATURES

— Rugged, dependable construction
— Minimum maintenance cost
— High-emissivity black oxide finish*

SPECIFICATIONS

— Chrome steel sheath*
— Operational to 648 °C (1,200 °F)*
— Supply voltage: 120 V, 60 Hz. Two heaters may be wired in series for 240 V operation.

Generator Frame	Watts per Element	Elements per Generator	Dimension A**	Dimension B**	Dimension C**
280	42	2	88.9 mm (3.5 in)	328.4 mm (12.93 in)	N/A
360	250	2	304.8 mm (12 in)	279.4 mm (11 in)	431.8 mm (17 in)
430	250	2	304.8 mm (12 in)	279.4 mm (11 in)	266.7 mm (10.5 in)
5	500	2	454 mm (17.9 in)	428.6 mm (16.9 in)	415.9
740	250	4	454 mm (17.9 in)	428.6 mm (16.9 in)	415.9 mm (16.4 in)
1,000	625	2	152.4 mm (6 in)	1168.4 mm (46 in)	N/A

* 430-740 generator frame models only
** Refer to Dimensional Diagrams below for dimension reference points
N/A = Not Available

CERTIFICATIONS AND STANDARDS

— UL listed
— CSA certified

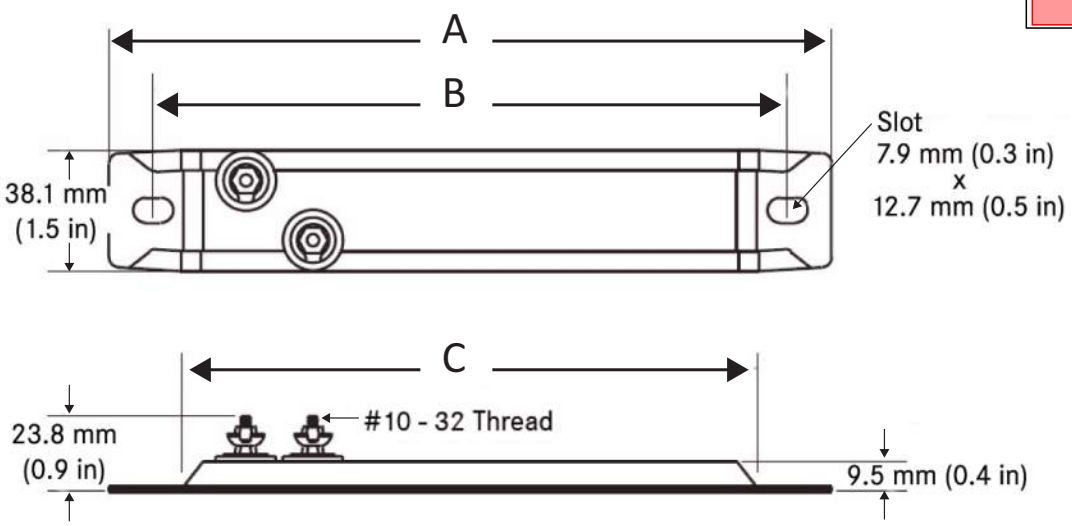


Figure 3: 430, 570, and 740 Frame Dimensional Diagram

Starting System Data Sheet

Commercial Battery

Extra ruggedness and resistance to vibration, heat, chemicals, and physical abuse are built into every commercial battery provided with an ***mtu*** generator set. The battery design features the latest in power storage technology for lead-acid batteries, as well as incorporates proven designs developed with the most experience in the business.

PRODUCT FEATURES

- **Case Design:** Tough, high-impact reinforced polypropylene case is heat sealed under extreme pressure to withstand heavy commercial service usage. This helps to prevent electrolyte leakage, improves reliability, and reduces breakage.
- **Internal Design:** Full-frame power path grids avoid sharp wires protruding through separators and directs the power straight to the lug for low resistance and higher cranking amps.
- **Terminals:** Standard terminals are solidly built preventing porosity, corrosion, black post, and harmful acid leaks.
- **Power Density:** Extra heavy-duty batteries deliver more cranking amps per pound.
- **Maintenance:** The battery uses pure de-mineralized electrolytes for reduced water loss, reduced gassing, longer battery life, and low maintenance.
- **Reliability:** Narrow ribs reduce separator corrosion to protect against shorts while deep-pocket envelopes dramatically improve reliability and extend service life.
- **Quality:** Over 250 quality control checks, combined with computer-aided design technology, provide a tough, durable battery in each commercial battery provided with an ***mtu*** generator set.

						Overall Dimension			
BCI Group Size	Terminal Type	*mtu* Part Number	Volt	Cranking Performance CCA (Cold Cranking Amps) -18° C / 0° F	Reserve Capacity	Length mm (in)	Width mm (in)	Height mm (in)	Weight (Wet) kg (lbs)
24	Post	SUA102538	12	650	115	273 (10.75)	171 (6.75)	229 (9)	18.1 (40)
31	Post	SUA120299	12	950	175	330 (13)	171 (6.75)	241 (9.5)	25.7 (56.5)
[redacted]									
8D	Post	SUA102492	12	1,400	430	527 (20.75)	279 (11)	254 (10)	59.3 (130.5)

Subject to change. | WT00037987 | 2021-09

Battery Charger Data Sheet

MicroGenius Battery Charger

BENEFITS AND FEATURES

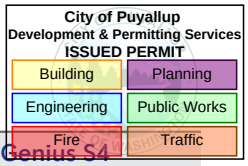
Designed for mission-critical applications, the MicroGenius® 2, MicroGenius S2, and MicroGenius S4 battery charger packs advanced technology charging into a small, lightweight, and rainproof package. MicroGenius is the only charger that delivers high-performance charging while prolonging useful life of batteries and significantly reducing risk of sudden battery failure. Rigorous worst-case analysis design processes and extensive abuse testing ensure reliable operation in adverse environments.

- Dynamic Boost™ Charge safely recharges batteries faster than competing products
- HELIX™ technology increases battery life and cuts risk of sudden battery failure
- Field-selectable 12/24 volt output
- Hardened switchmode powertrain delivers first-class abuse resistance and state-of-the-art energy efficiency
- Small, lightweight, water-resistant, and rugged
- Standard J-1939 and Modbus communications

SPECIFICATIONS

AC input

	MicroGenius 2	MicroGenius S2	MicroGenius S4
VAC, Hz	90-265 VAC, 47-63 Hz		
Protection	Supplementary overcurrent protection fuse, transient protected to EN61000-4-5 level 4		
Power factor and efficiency	PF > 0.95 typical; efficiency to 93%; meets CEC Title 20 Efficiency Regulations; standby AC draw < 3W		



SPECIFICATIONS, continued

DC output

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Volts	12V / 24V		
Amps	**MicroGenius 180:** 10A/6A **MicroGenius 300:** 10A **MicroGenius 450:** 15A **MicroGenius 600:** 20A	20A	45A
Charging modes	Multi-stage, including float, boost, and commissioning charge modes		
Current limit	Factory set at 100% of rating. Field adjustable w/optional keypad or from PC[1]		
Charging characteristic	Constant voltage, current limited; patented Dynamic Boost control		
Line and load regulation	± 0.5%		
Output ripple	< 30 mVrms with or without battery. Delivers fast-responding, stable, well-filtered DC without battery.		
Battery temperature compensation	Standard. Optional remote battery temperature probe[2]		
Output protection	Current limit, supplementary overcurrent protection fuse, transient protected		
Dead battery charge	Starts into and recharges zero volt battery without user intervention		
Parallel operation	Two or more chargers operate with all modes sychronized for increased current or fault tolerance[3]		

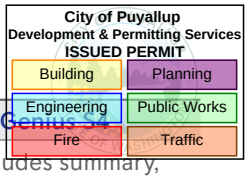
Adjustment and controls

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Charge mode control	Fully automatic patented Dynamic Boost system. Manual boost and battery commissioning available from keypad.		
Adjustments	12 or 24 volt; battery type program; fine voltage setting, alarm setpoints; alarm relay mapping		
Battery type programs	Flooded lead-acid, Ni-Cd, VRLA, ultracapacitor, lithium[4]		
Field voltage adjustment	Three methods: jumper pins, from front panel keypad (requires that model number digit 12 be F), or from PC[1]	Two methods: from front panel keypad or from PC[1]	

Status display

	MicroGenius 2	MicroGenius S2	MicroGenius S4
LEDs	Two multi-color front panel status LEDs		
Metering and status display	Voltmeter accurate to + 2%; ammeter to + 5%. 20-character display of status and alarm messages		

SPECIFICATIONS, continued



Alarms

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Alarms	Factory set and field reconfigurable. Standard generator set configuration includes summary, AC fail, charger fail, high DC volts, low DC volts, low cranking volts.		
Form C contact alarms	**MicroGenius 180 (X00A42500005):** N/A **MicroGenius 180 (XG3042500013)/ 300/450/600:** Two Form C contacts, each rated 30V, 2A resistive, assignable. Standard configuration includes summary, AC fail, charger fail, high DC volts, low DC volts and discharging battery.	Five Form C contacts, each rated 30V, 2A resistive, assignable. Standard configuration includes summary, AC fail, charger fail, high DC volts, low DC volts and discharging battery.	

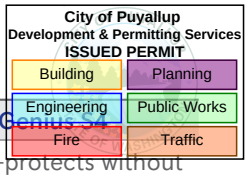
Networking

	MicroGenius 2	MicroGenius S2	MicroGenius S4
J-1939 communications	CAN 2.0 extended ID on RJ-45 port		
Modbus communications	Modbus RS-485 on RJ-45 port or Modbus TCP/IP on RJ-45 port.		Uses only Modbus TCP/IP. Do not use Modbus RS-485 for serial port communication.
SENSbus	Proprietary bus for connection of parelleled chargers and SENS accessories		

Environmental

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Operating temp[5] (convection cooled)	**MicroGenius 180:** Meets full specification from -40 °C to +60 °C (-40 °F to +140 °F) **MicroGenius 300/600:** Meets full specification from -40 °C to +50 °C (-40 °F to +122 °F) **MicroGenius 450:** Meets full specification from -40 °C to +40 °C (-40 °F to +104 °F)	Meets full specification from -40 °C to +40 °C (-40 °F to +104 °F)	
Humidity	5% to 95%, non-condensing		
Ingress protection	IP 22; NEMA 3R; UL Listed "Rainproof"	IP 20; NEMA 1. Optional drip shield for IP 22/NEMA 3R rating.	
Vibration	Swept Sine (EN60068-2-6); 4G, 18-500 Hz, 3 axes. Random: 20-500 Hz, 0.01G2/Hz		
Shock	EN 60068-2-27 (15G)		
Electrical transient	ANSI/IEEE C62.41 and EN 61000-4-12 on power terminals		

SPECIFICATIONS, continued



Abuse protection

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Reverse polarity	Charger self-protects without fuse clearing. Indication via LED and optional LCD.	Charger self-protects without fuse clearing. Indication via LED and LCD.	Charger self-protects without output protective device clearing. Indication via LED and LCD.
Wrong voltage battery	Charger-battery voltage mismatch shuts down charger. Indication via LED and LCD		
Overvoltage shutdown	Selective: Shutdown only operates if charger causes the overvoltage condition		
Overtemp protection	Gradual output power reduction if heatsink temperature becomes excessive		

Regulatory compliance

	MicroGenius 2	MicroGenius S2	MicroGenius S4
North America	C-UL Listed for US and Canada: UL 1236 categories BBGQ, BBHH, BBJY and QWIR[6], CSA 22.2, No. 107.2. Certified to UL 1236 supplements SB (marine), SC (fire pump) and SE (emergency generator)		
	NFPA-70, NFPA-1107 **Note:** MicroGenius 2 180 (X00A42500005) meets NFPA-70 only.		
	FCC Part 15, Class B	FCC Part 15, Class A	
	Seismic: Rigid and non-structure wall mount; max SDS of 2.5G. IBC 2000-2015, Calif. BC 2007-2016		
	American Bureau of Shipping, type approved		
European Union (CE)	EMC: 2014/30/EU (EN 61000-6-2 and EN 61000-6-4)		
	LVD: 2014/35/EU (EN 60335-1 and EN 60335-2-29)		
	RoHS 2: 2011/65/EU (EN 50581)		

Construction

	MicroGenius 2	MicroGenius S2	MicroGenius S4
Housing/Configuration	Die-cast aluminum heatsink base with stainless steel covers and fasteners	Aluminum with powder coated finish	
Connections	AC and DC terminal blocks: 20 to 10 AWG J-1939 and Modbus-485: RJ-45. Form C alarms: 28 to 16 AWG	AC and DC terminal blocks: 20 to 2 AWG J-1939 and Modbus: RJ-45. Form C alarms: 28 to 16 AWG	AC and DC terminal blocks: 14 AWG to 2/0 AC and DC breakers < 50A (optional): 14 to 2 AWG AC to DC breakers, ≥ 50 A (optional): 12 AWG to 2/0 J-1939 and Modbus: RJ-45 Form C alarms: 28 to 16 AWG

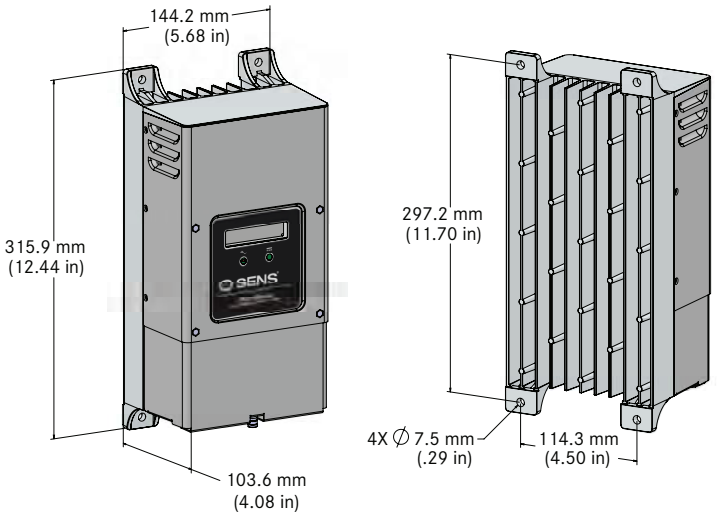
1 Requires optional computer-to-charger adapter. To order, contact ***mtu*** Parts Department.
2 Remote battery temp sensor is optional. To order, contact ***mtu*** Parts Department.
3 Requires standard RJ-45 network cable to connect paralleling bus. To order, contact ***mtu*** Parts Department.
4 Contact factory to determine compatibility with the battery management system (BMS) of your lithium battery.
5 At 65 °C (149 °F) and above, the LCD display may be unreadable and display life will be reduced.
6 Except 180 W unit in 24-V configuration, which is not listed to QWIR
7 All chargers equipped with an alarm/display board meet NFPA-110 requirements. For chargers without an alarm/display board to meet NFPA-110, charger performance and alarm data available on the J-1939 port must be annunciated by the generator set control panel.

MICROGENIUS ORDERING INFORMATION

Battery charger	*mtu* part #	Output volts	Output amps
	X00A42500005	12/24 Volts	10/6 Amps
MicroGenius 2 180**	XG3042500013	12 Volts	10 Amps
MicroGenius 2 300**	X54942500005	24 Volts	10 Amps
MicroGenius 2 450**	XG3042500014	24 Volts	15 Amps
MicroGenius 2 600**	XG4842500003	24 Volts	20 Amps
MicroGenius S2	X54942500003	12/24 Volts	20 Amps
MicroGenius S4	X54942500002	12/24 Volts	45 Amps

*Meets NFPA-70 only.
Includes ***mtu*-specific programming

DIAGRAMS AND DIMENSIONS



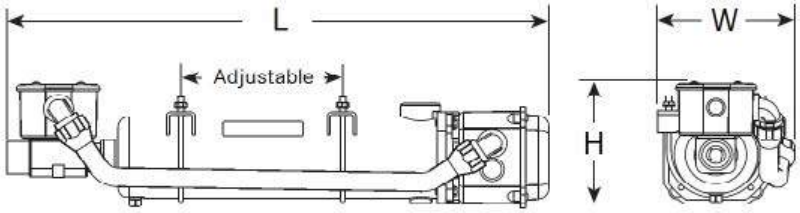
MicroGenius 2 Dimensions

Water Heater Data Sheet

CB, CL, and WL Series

The CB, CL, and WL tank-style engine heaters are designed to preheat diesel and gas engines in generator set applications. With easy start-up regardless of ambient temperature, they feature a built-in thermostat and heat engines from 6L to 25L displacement. Thermosiphon circulation of the coolant delivers heat throughout the entire engine for optimum performance.

CL Model with Thermostat



CL Model

CERTIFICATIONS AND STANDARDS

- CB and CL Models: c-UL-us Listed, CSA Certified, and CE Compliant
- WL Model: CE Compliant

SPECIFICATIONS

	CL Model
Height:	147 mm (5.8 in)
Length:	597 mm (23.5 in)
Width:	158 mm (6.2 in)
Weight:	4.5 kg (10 lb)

SPECIFICATIONS, continued

- Heating Fluid: Engine coolant (50% glycol/50% water)
- Power: 1.5, 2, 2.5, 3, 4, and 5 kW
- Rated Voltage: 120V – 575V
- Phase: 1 and 3
- Enclosure: IP44
- Fluid Capacity:
  - CL and WL Models: 2 L (0.5 gal)
  - CB Models: 1.2 L (0.3 gal)
- Max Pressure: 8.61 bar (125 psi)
- Inlet / Outlet: 1" NPT Male / 1" NPT Female
- Thermostat Range:
  - On: 38 °C (100 °F)
  - Off: 49 °C (120 °F)

Model Number	*mtu* Part Number	Watts	Volts	Phase	Hz	Amps
CB115410-200	SUA98952	1,500	480	1	60	3.1
CB120210-200	SUA98996	2,000	240	1	60	8.3
CB120410-200	SUA98953	2,000	480	1	60	4.2
CB120810-200	SUA98404	2,000	208	1	60	9.6
CB125210-200	SUA96723	2,500	240	1	60	10.4
CB125410-200	SUA90334	2,500	480	1	60	5.2
CB125810-200	SUA96727	2,500	208	1	60	12
CL130410-200	SUA97791	3,000	480	1	60	6.3
[redacted]	SUA99109	4,000	240	1	60	[redacted]
CL140410-200	SUA52741	4,000	480	1	60	8.3
CL140810-200	SUA99110	4,000	208	1	60	19.2
CL150210-200	SUA98913	5,000	240	1	60	20.8
CL150212-200	SUA82416	5000	240	1	60	20.8
CL150412-200	SUA83334	5000	480	1	60	10.4
CL150810-200	SUA96725	5,000	208	1	60	24
WL325410-200	SUA96568	2,500	480	3	60	3
WL325810-200	SUA97254	2,500	208	3	60	6.9
WL340410-200	SUA96787	4,000	480	3	60	4.8
WL340810-200	SUA99286	4,000	208	3	60	11.1
WL350410-200	SUA98951	5,000	480	3	60	6
WL350810-200	SUA92800	5,000	208	3	60	13.9

Subject to change. | WT00043030 | 2021-07

Air Filter Data Sheet

DESCRIPTION

Air filters offer engine protection and minimal downtime during normal maintenance. The air filters on ***mtu*** generator sets are easy to install, durable, and reliable.

FEATURES

- Designed to withstand severe intake pulsation and high humidity
- Sturdy, self-supporting, one-piece construction
- Lightweight and compact

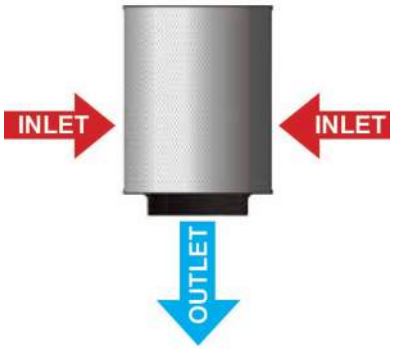
SPECIFICATIONS

mtu Part #	Airflow @ Inches of Water Restriction (refer to *Airflow Diagrams* below)			Weight	Maximum Temp	
	m^3/min (SCFM) @ 4 in. H_2O	m^3/min (SCFM) @ 6 in. H_2O	m^3/min (SCFM) @ 8 in. H_2O	kg (lb)	Continuous °C (°F)	Intermittent °C (°F)
SUA106417	4.3 (150)	5.1 (180)	6.1 (215)	1 (2.2)	83 (180)	105 (220)
SUA90069	43.9 (1,550)	52 (1,836)	60 (2,118)	3.6 (8)	83 (180)	105 (220)
SUA86885 XG4812300007	13.7 (485)	17.6 (620)	21.5 (760)	2.6 (5.8)	83 (180)	105 (220)
SUA77166	3.8 (135)	4.6 (163)	5.3 (190)	1.3 (2.9)	N/A	N/A
SUA40198	3.1 (112)	4.1 (145)	4.8 (170)	0.64 (1.4)	83 (180)	105 (220)
XG3012100019	23.5 (830)	31.43 (1,110)	36.67 (1,295)	1.45 (3.2)	83 (180)	105 (220)
XG2112100001 XG2512100002	9.63 (340)	13.03 (460)	15.85 (560)	1.59 (3.5)	N/A	N/A

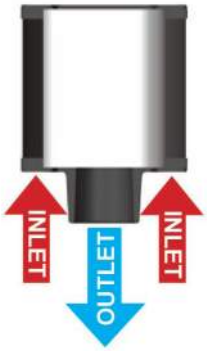
mtu Part #	Dimensions (refer to *Dimension Diagrams* on next page)				Minimum Removal Clearance
	Body Length (D) mm (in)	Body Diameter (A) mm (in)	Outlet Length (F) mm (in)	Outlet Diameter (C) mm (in)	mm (in)
SUA106417	127 (5)	216 (8.5)	35 (1.38)	76 (3)	38.1 (1.5)
SUA90069	400 (15.75)	318 (12.5)	48 (1.89)	198 (7.8)	38.1 (1.5)
SUA86885 XG4812300007	279 (11)	318 (12.5)	35 (1.38)	127 (5)	38.1 (1.5)
SUA77166	172 (6.75)	216 (8.5)	27 (1.08)	75 (2.96)	38.1 (1.5)
SUA40198	102 (4)	216 (8.5)	35 (1.38)	64 (2.5)	38.1 (1.5)
XG3012100019	381 (15)	318 (12.5)	35 (1.38)	152 (6)	38.1 (1.5)
XG2112100001 XG2512100002	267 (10.5)	267 (10.5)	35 (1.38)	102 (4)	38.1 (1.5)

N/A = Not Available

AIRFLOW DIAGRAMS



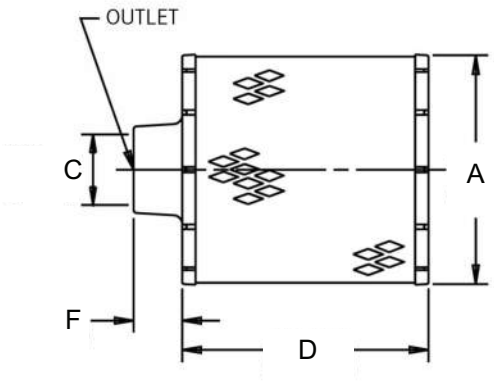
Airflow Diagram: SUA90069, XG3012100019



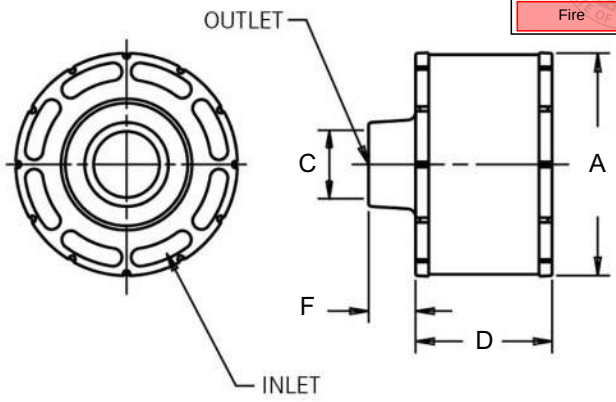
Airflow Diagram: SUA106417, SUA86885, SUA77166, SUA40198, XG4812300007

Airflow Diagram: XG2112100001, XG2512100002

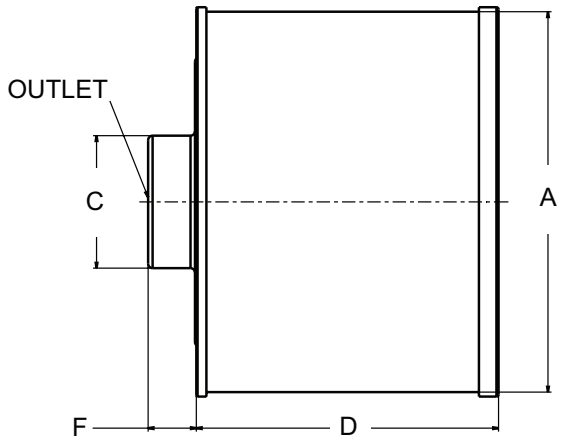
DIMENSION DIAGRAMS



Dimension Diagram: SUA90069, XG3012100019



Dimension Diagram: SUA106417, SUA86885, SUA40198, XG4812300007



Dimension Diagram: SUA77166, XG2112100001, XG2512100002

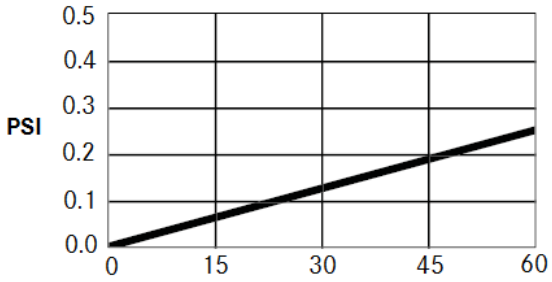
Fuel Water Separator Data Sheet (Diesel)

500FG (Non-Switchable)

Filter assemblies are designed of heavy duty construction and three-stage filtration using 10 or 30 Micron filter element(s). High capacity water separation (99% water removal efficiency) and fuel filtration process protects engine components from dirt, rust, algae, asphaltines, varnishes, and especially water, which is prevalent in engine fuels. These filters are easy to service with clear collection bowl(s) and self-venting water drain(s).

SPECIFICATIONS

Racor Model Number:	500FG
mtu Part Number (10 Micron filter element):	SUA100603
mtu Part Number (30 Micron filter element):	SUA95404
Generator Set Model Power Range (Standby):	230-400 kWe
Generator Set Model Power Range (Prime):	210-365 kWe
Height:	29.2 cm (11.5 in)
Depth:	12.2 cm (4.8 in)
Width:	14.7 cm (5.8 in)
Weight (dry):	1.8 kg (4 lb)
Maximum Flow Rate: (one unit online)	227 lph (60 gph)
Port Size:	3/4 in – 16 UNF (SAE J1926 female threads)
Minimum Service Clearance:	
(above assembly)	12.7 cm (5 in)
(below assembly)	5.1 cm (2 in)
Clean Pressure Drop:	1.7 kPa (0.25 psi)
Maximum Pressure:	1.03 bar (15 psi)
Water In Bowl Capacity (per bowl):	109 ml (3.7 oz)
Operating Temperature:	-40 °C to 124 °C / -40 °F to 255 °F



SAE J905 Fuel Flow Restriction
Flow in Gallons Per Hour
Note: Controlled lab tests. Field results may vary.

Subject to change. | WT00043051 | 2021-09

Diesel Fuel System Data Sheet

Sub-Base Tank

DESCRIPTION

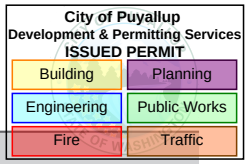
The sub-base fuel tanks used with ***mtu*** generator sets are manufactured and listed per UL142 and ULC-S601 standards for steel above-ground tanks. These certifications ensure that our tanks meet the structural and mechanical integrity requirements for mounting generator sets directly on top, providing our customers with a safe and efficient fuel storage system. These tanks are suitable for above-ground storage of non-corrosive, stable, flammable, or combustible liquids that have a specific gravity not exceeding that of water. They are intended for installation and use in accordance with the codes referenced in the *Certifications and Standards* section. The secondary containment construction consists of a steel tank within a closed steel containment dike that is capable of being monitored for leakage.

STANDARD FEATURES

- Normal vent
- Emergency vent
- Manual fill
- Cam lockable fill cap
- Basin drain (plugged)
- Removable supply and return dip tubes
- Leak detection
- Black paint finish
- Secondary containment
- Electrical stub-up area: Provides space for generator set electrical connections and internal wiring capabilities
- Baffles: Separate cold engine supply fuel from hot returning fuel (additional baffling as required for structural integrity)
- Fuel level gauge: A direct-reading fuel level gauge with electric sender

OPTIONAL FEATURES

- Fuel fill drop tube
- Level alarm
- High fuel pre-alarm and low fuel level shutdown
- Five-gallon spill/fill containment box with lockable hatch
- Optional selectable accessories to meet regional codes/ jurisdictions
- IBC certification 2012, 2015, and 2018



CERTIFICATIONS AND STANDARDS

United States	Canada
UL 142	ULC-S601

In addition, this equipment is compatible with the following certifications when properly installed in accordance with all applicable codes, standards, regulations, and laws pertaining to the installation and application of the product. Reference the prevailing codes for installation requirements.

United States	Canada
NFPA 30	Part 4: National Fire Code of Canada
NFPA 37	CSA B139
NFPA 110	CSA C282
International Fire Code	CCME PN 1326

SUGGESTED REGIONAL CODE REQUIREMENTS

Pre-engineered accessories can be added to sub-base fuel tanks on 30-1,250 kW generator sets to meet regional codes/ jurisdictions. Reference the table on page 3 for available options.

Fuel System Data Sheet
Sub-Base Tank

Regional Codes/ Jurisdiction	Suggested Accessories for Regional Codes/Jurisdiction																		
	Audible and Visual Alarm				Fuel Fill Spill Containment (5 Gallon)	Overfill Prevention Valve (OFPV) (95%)*	Fire Rated Fuel Lines	Camlock Fill	Hazmat Label	Vent Whistle	Regional Labeling	Fuel Fill Drop Tube	Fuel Supply Dip Tube Valve	Fuel Supply Ball Valve	Tank Risers**	Extended Vents (12 ft above grade)	Fuel Leak Switch	IBC (Optional)
	Low Fuel Switch (50%)	High Fuel Switch (90%)	Critical High Switch (95%)	Fuel Alarm Panel															
California	x	x		x	x	x		x	x			x	x			x	x	x	
Colorado	x	x		x	x	x		x	x			x	x		x	x	x	x	
Dallas, TX		x		x	x	x		x	x			x	x			x	x	x	
Denver, CO	x	x		x	x	x		x	x			x	x			x	x	x	
Florida (FDEP)		x		x	x	x (90%)		x	x		x	x	x		x		x	x	
Georgia	x	x		x	x	x		x	x			x	x			x	x	x	
Georgia (GEFA)	x	x		x	x	x		x	x			x	x			x	x	x	
IFC 2003/2006/2009	x	x		x	x	x		x	x			x	x			x	x	x	
Iowa	x	x		x	x				x			x	x				x	x	
King County, WA	x	x	x	x	x	x		x	x			x	x			x	x	x	
Maryland	x	x		x	x	x		x	x			x	x				x	x	
Massachusetts	x	x		x	x				x			x	x			x	x	x	
Michigan		x		x	x	x	x	x	x		x	x	x		x		x	x	
Montana		x		x	x	x		x	x			x	x		x		x	x	
Nebraska	x	x		x	x	x		x	x			x	x				x	x	
New Hampshire		x		x	x	x		x	x			x	x	x			x	x	
North Carolina	x	x		x		x		x	x			x	x				x	x	
Ohio	x	x		x	x	x		x	x			x	x			x	x	x	
Oklahoma	x	x	x	x	x	x		x	x			x	x		x	x	x	x	
Ontario	x	x		x	x	x		x	x	x	x	x	x				x	x	
Phoenix, AZ	x	x		x		x		x	x			x	x			x	x	x	
Washington	x	x		x	x	x		x	x			x	x			x	x	x	
Wisconsin	x	x		x	x	x		x	x			x	x				x	x	

* Percentage may vary due to tank construction.
** Risers meet minimum code requirements.
Note: Verify regional code requirements prior to specification.

Enclosure Data Sheet

Color Options

PRODUCT HIGHLIGHTS

Textured powder coat paint on enclosures in the 20-1,250 kW power range. On Series 4000 1,250-3,250 kW units, a smooth polyurethane liquid topcoat is applied over a TGIC polyester powder coat primer. Validation consisted of a 1,000-hour cyclic ultraviolet (UV) and salt spray degradation test which simulates several years of real-life weathering. This paint provides enhanced corrosion resistance as well as edge coverage. The super durable compound promotes stellar resistance to UV degradation such as fading or chalking. This coating is certified to meet UL 2200 corrosion protection requirements for outdoor electrical enclosures.

STANDARD COLOR*

The following paint color is the standard for generator sets:

20-3,250 kW

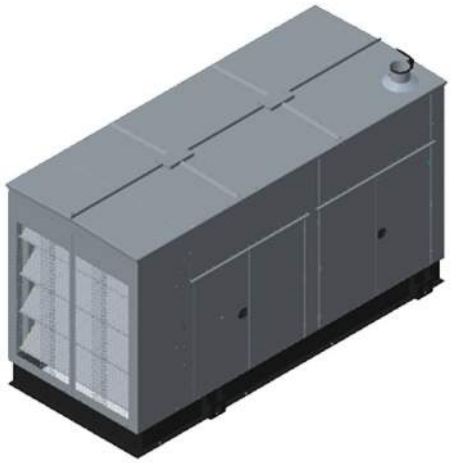
RAL 7001 Silver Grey
(P20519ASC)

Subject to change. 2021-09

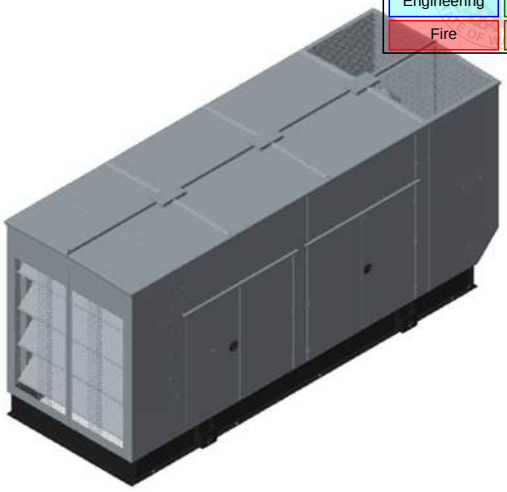
* Colors shown are produced as close as modern printing techniques permit and are only approximate representation of the actual colors.

Enclosure and Sound Data Sheet - Diesel, Open Field

60 Hz: 450-500 kW Standby



Level 1 and 2 Enclosure



Level 3 Enclosure

Enclosure Level Identification	
Level 1	Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed storm-proof panels. Enclosure consists of a bolted construction with an internally-mounted exhaust silencer. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" sound attenuating foam insulation installed inside enclosure walls.
Level 3	Level 2 enclosure with attenuating air intake baffles and exhaust plenum. Sound attenuated in exhaust plenum and roof.

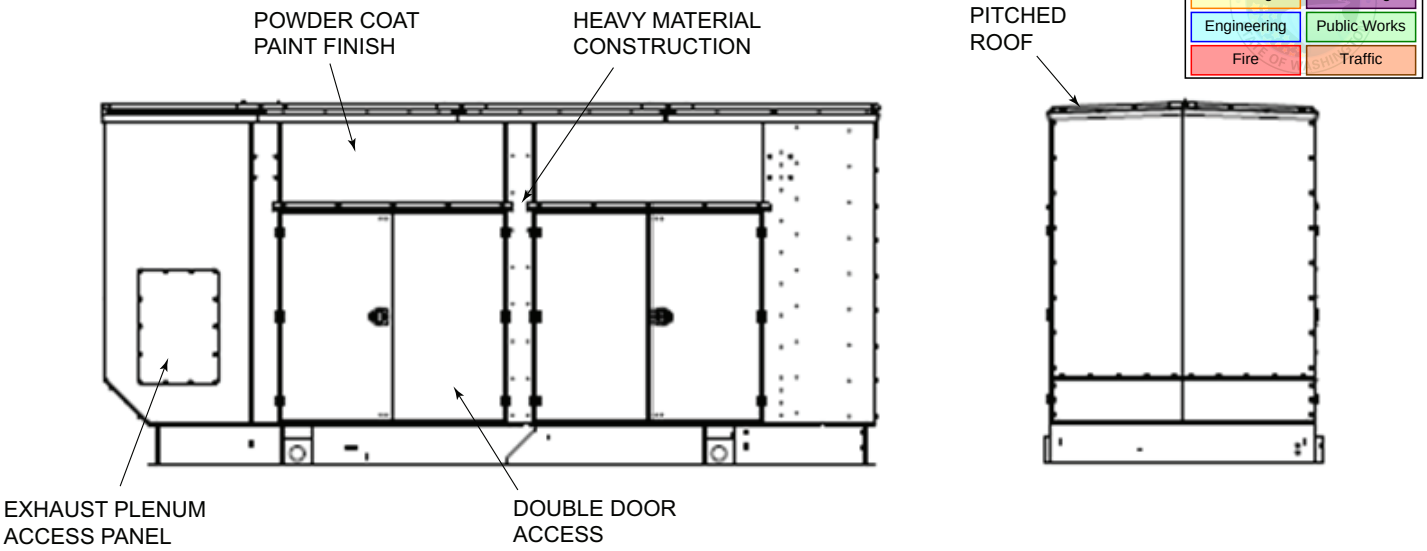
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA C22.2 No. 100 (pending)
- CSA C22.2 No. 14 (pending)

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel enclosure: 14 gauge or greater thickness
  - Aluminum enclosure: 0.09 in or greater thickness
- 130 mph wind rating
- Service access
  - Double door access gives ease of service to all components
- Pitched roof
- Exhaust rain cap
- Scoop access panels
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder coat finish paint: RAL 7001 Silver Grey standard
  - Custom colors available upon request
- Internally-mounted silencer

Enclosure and Sound Data Sheet - Diesel, Open Field
60 Hz: 450-500 kW Standby



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC LED light package
- Motorized intake louver
- Gravity exhaust louver
- Space heater
- IBC certification (pending)
- HVHZ certification (pending)
- 195 mph wind rating
- For other custom options, please consult factory.

ENGINE EXHAUST SOUND RATINGS dB(A) AT 1 METER
OPU SOUND RATINGS dB(A) AT 1 METER
ENCLOSURE SOUND RATINGS dB(A) AT 7 METERS

			1 Meter		7 Meters		
Application	Model	Power Node	Engine Exhaust[1]	OPU[2]	Level 1	Level 2	Level 3
60 Hz Standby	***mtu*** 6R0269 DS450	450 kWe	112.7	102.1	87.9	86.2	76
	mtu 6R0269 DS500	500 kWe	113.9	103	88.3	86.3	76.1

[1] Undampened engine exhaust noise

[2] Measurement with infinite exhaust connection

NOTE:

— Measurements include exhaust noise.
— Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures.
— For installations within 50 miles of the coast, aluminum enclosures are recommended to prevent accelerated corrosion.
— Sound pressure levels subject to environment, instrumentation, measurement, installation, and generator set variability.
— Generator set is tested on level ground without spring isolators installed.
— Sound power levels per ISO 8528-10 and ANSI S1.13-2005
— Sound data measured with full-rated load.

C/F = Consult Factory

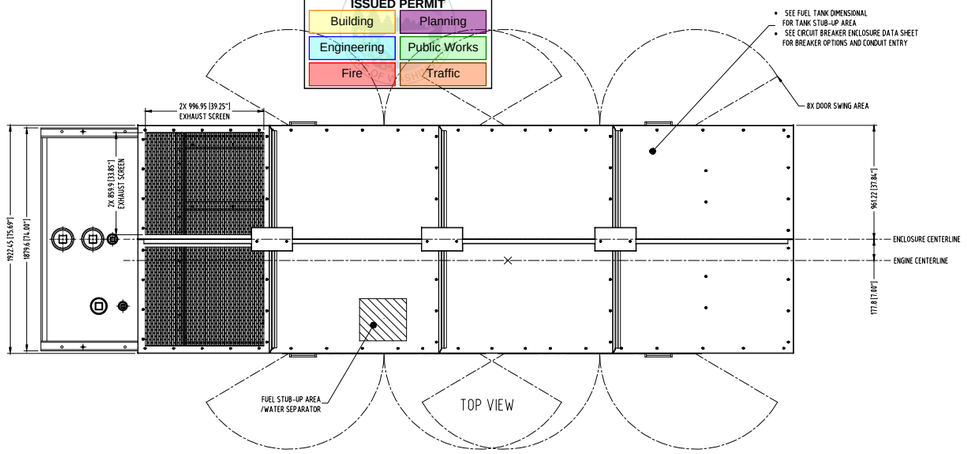
* Note: Visual appearance may differ between power nodes.

PACIFIC POWER GROUP

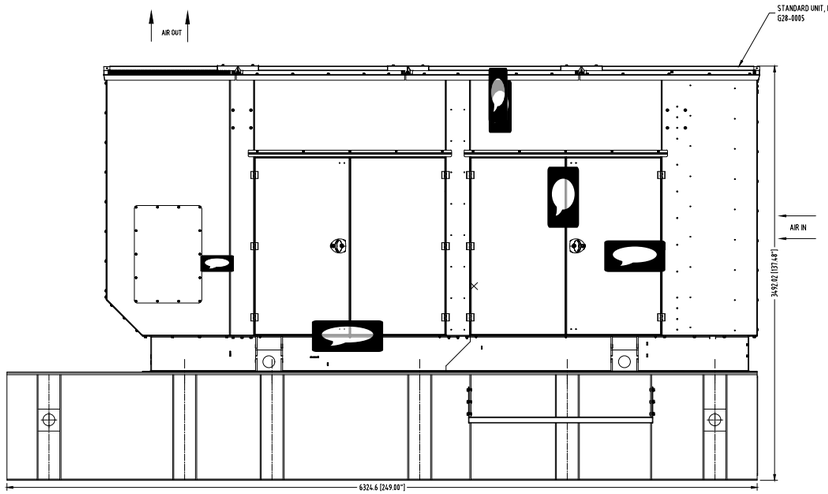
4

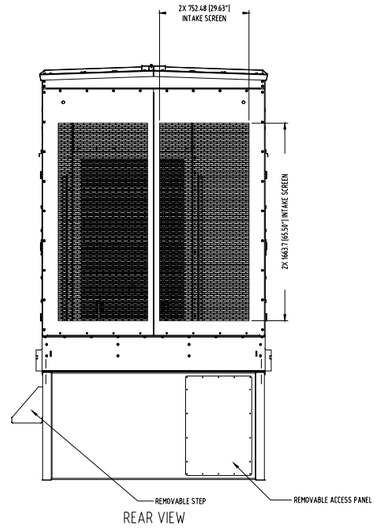
Generator Set Drawings

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic



TOP VIEW





REAR VIEW

REVISION	DATE	DESCRIPTION

A Rolls-Royce solution

APPLICABLE MODELS:

MTU 6R0269 DS450
MTU 6R0269 DS500

THIRD ANGLE PROJECTION

DIMENSIONAL LAYOUT

DESCRIPTION: 450-500 kW Genset, Housed

DRAWN TO SCALE
DIMENSIONS: MM [INCH]

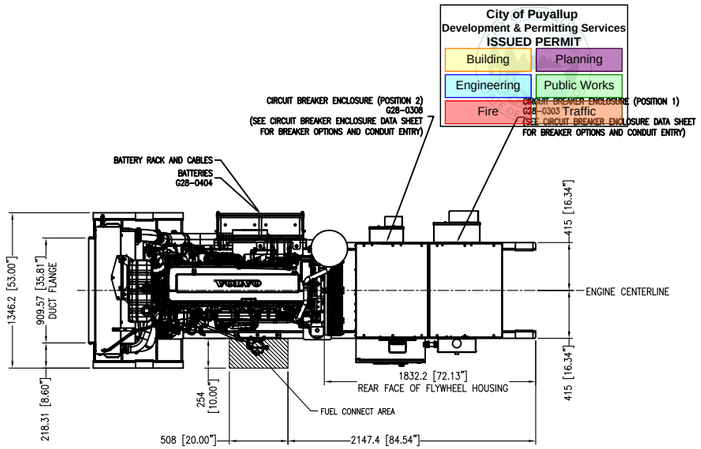
ENGINE: VOLVO TAD1641GE-B

WEIGHT (MIN-MAX): REF SPEC SHEET

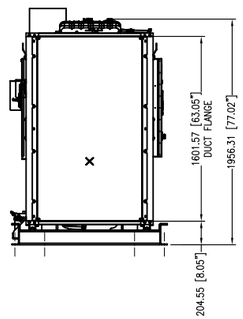
DATE CREATED: 2024-10-31

DRAWING NUMBER: XZG2800100003

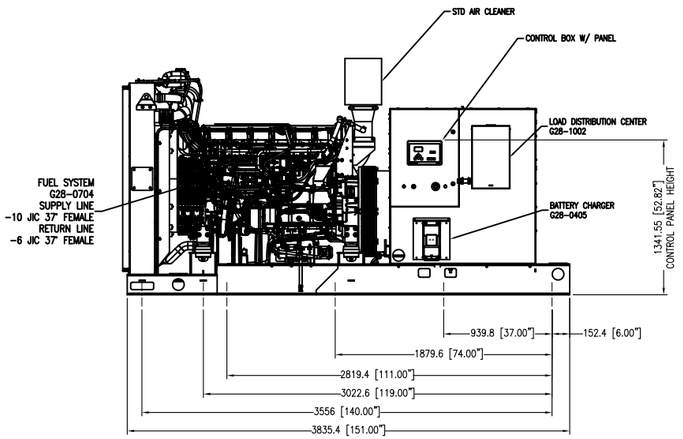
SHEET: 1 of 1



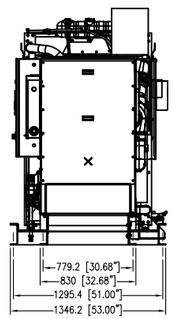
TOP VIEW



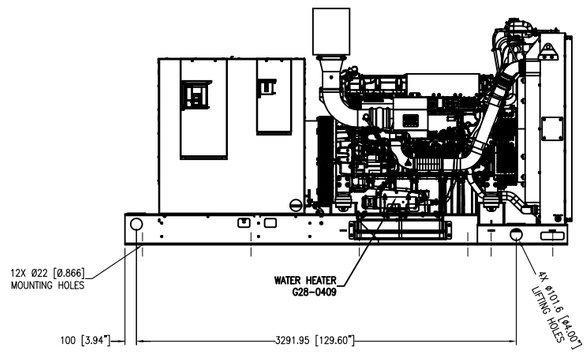
FRONT VIEW



LEFT VIEW



REAR VIEW



RIGHT VIEW

REVISION	DATE	DESCRIPTION
B	5/15/25	ADDED IBC SPRINGS
A	2/28/25	REMOVED HD AIR FILTER OPTION

A Rolls-Royce solution

APPLICABLE MODELS:
MTU 6R0269 DS450
MTU 6R0269 DS500

THIRD ANGLE PROJECTION

DRAWN TO SCALE
DIMENSIONS: MM [INCH]

DATE CREATED: 2025-01-10

DIMENSIONAL LAYOUT

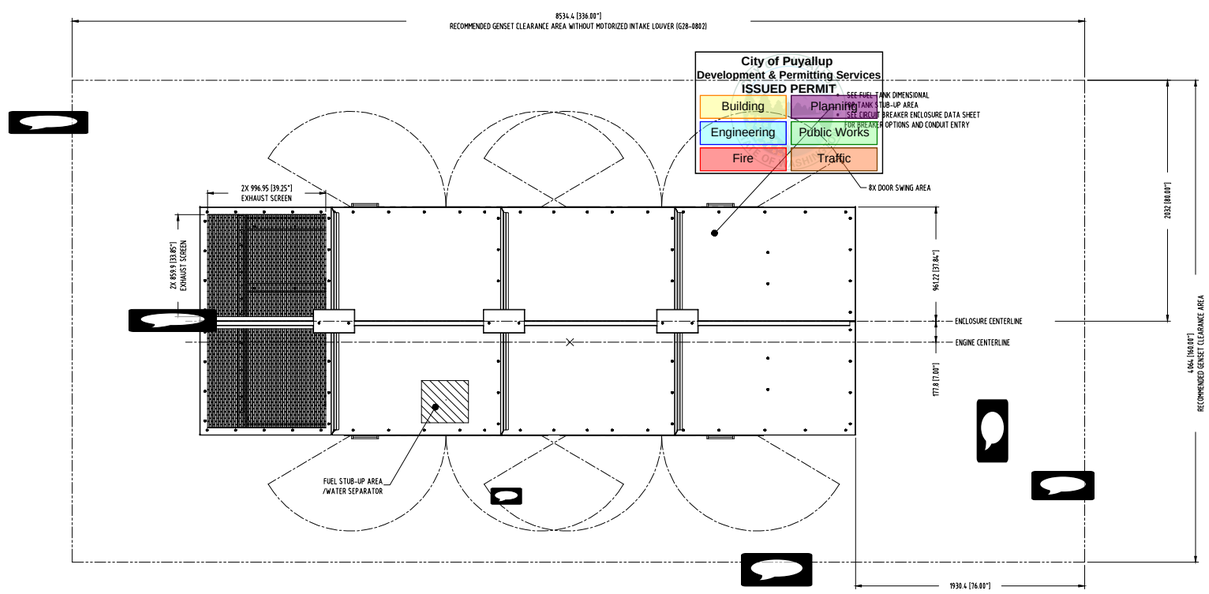
DESCRIPTION: 450-500 kW DIESEL GENSET, OPU BASE

ENGINE: VOLVO TAD1641GE-B

REF SPEC SHEET

DRAWING NUMBER: XZG2800100001

SHEET: 1 of 2

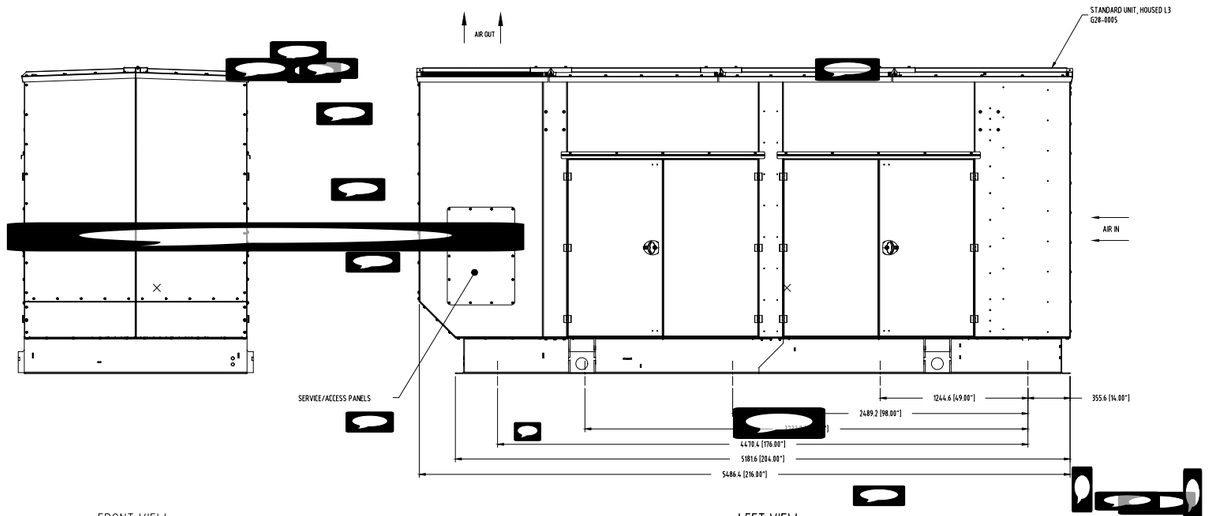


TOP VIEW

Reference the Drawing Options table and within the Layer Properties turn on/off the Drawing Codes that may or may not apply to your configuration.

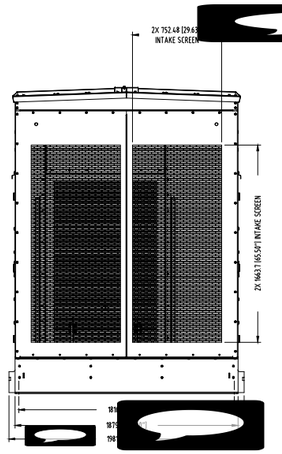
Note: Some options may not be referenced. Only options which visibly change the drawing are selectable.

DRAWING OPTIONS			SELECTED OPTION
GROUP	DRAWING CODE	DESCRIPTION	
Standard Unit	G28-0004	Standard Unit, Housed L1/ L2	
	G28-0005	Standard Unit, Housed L3	✓
Housing Options	G28-0801	Exhaust Louver, Gravity	
	G28-0802	Intake Louver, Motorized	
	G28-0803	Interior Housing Lights	
	G28-0804	Interior Space Heater	

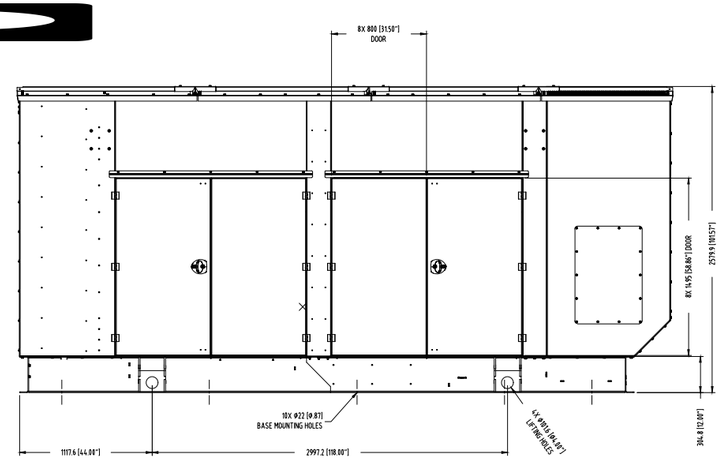


FRONT VIEW

LEFT VIEW



REAR VIEW



RIGHT VIEW

REVISION	DATE	DESCRIPTION

A Rolls-Royce solution

APPLICABLE MODELS:

MTU 6R0269 DS450
MTU 6R0269 DS500

THIRD ANGLE PROJECTION

DRAWN TO SCALE
DIMENSIONS: MM [INCH]

DIMENSIONAL LAYOUT

DESCRIPTION: 450-500 kW Genset, Housed

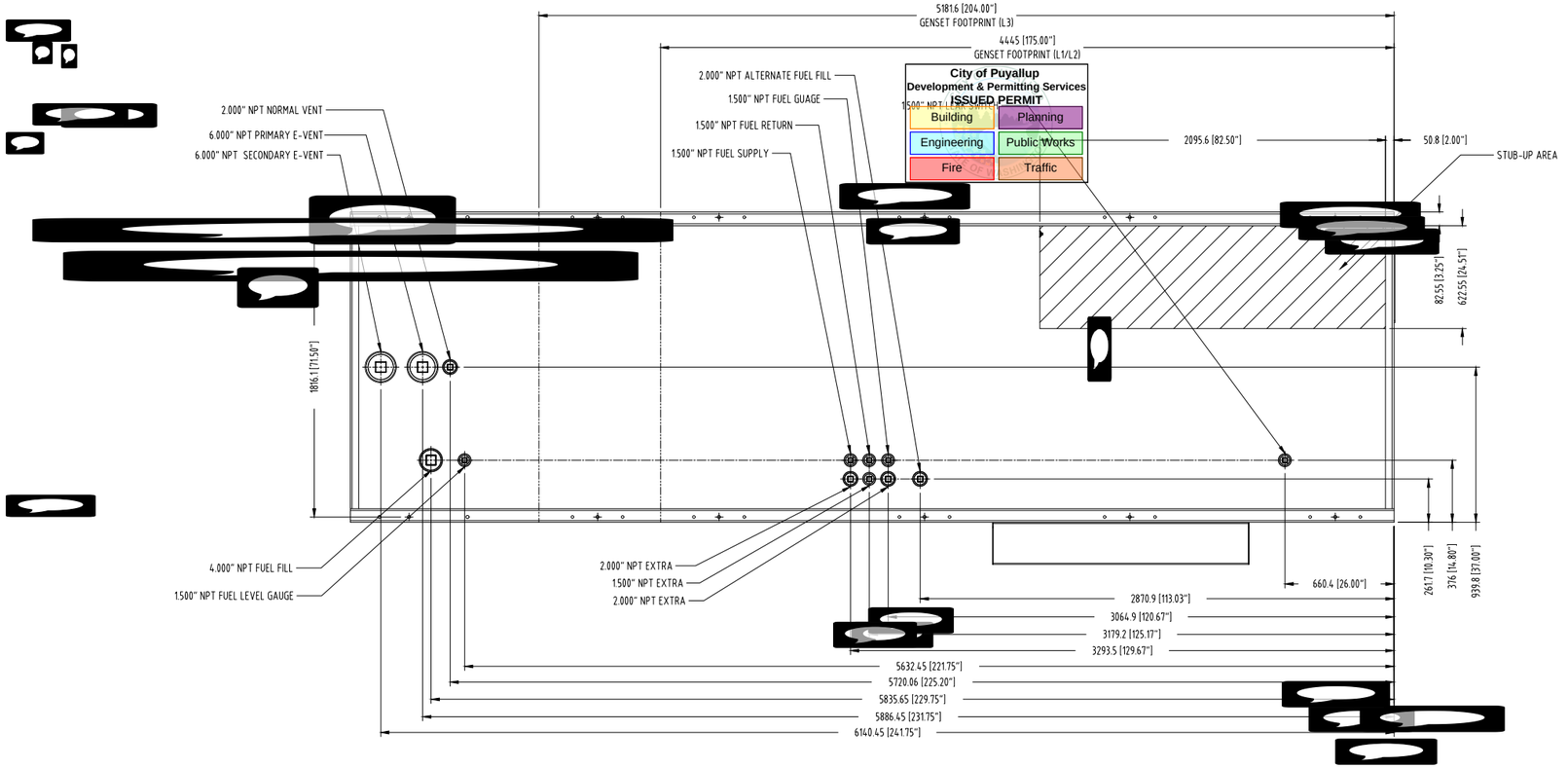
ENGINE: VOLVO TAD1641GE-B

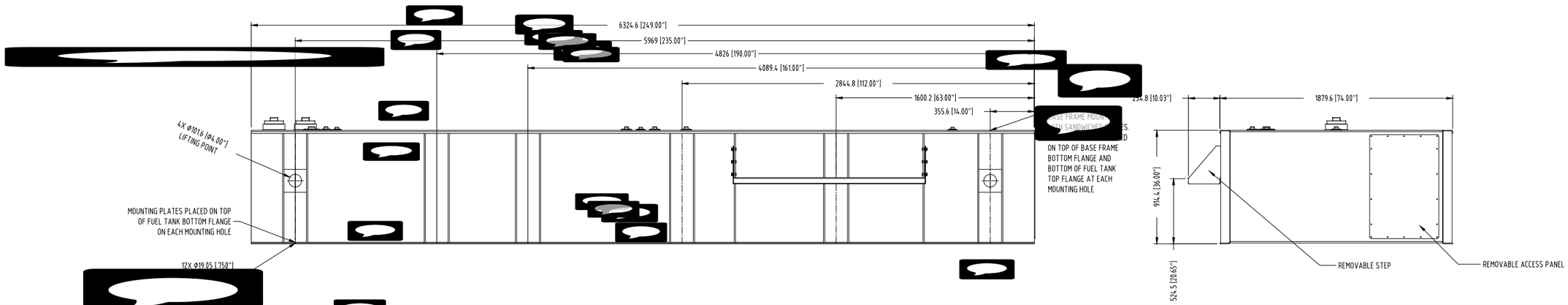
WEIGHT (MIN-MAX): REF SPEC SHEET

DATE CREATED: 2024-10-31

DRAWING NUMBER: XZG2800100003

SHEET: 1 of 1





REVISION	DATE	DESCRIPTION
B	2025-05-07	STANDARDIZED TANK OFFERINGS (12 & 24 HR STANDARD, 24 & 48 HR EXTENDED)
A	2025-04-08	Fill hole in main group 60mm FWD on all tanks, N-vent and primary E-vent 143mm FWD on STD tanks

A Rolls-Royce solution

APPLICABLE MODELS:
mtu 6R0269 DS450
mtu 6R0269 DS500

THIRD ANGLE PROJECTION

DRAWN TO SCALE
DIMENSIONS: MM [INCH]

DATE CREATED: 2024-12-20

DIMENSIONAL LAYOUT

DESCRIPTION: 450-500 kW, 48 hr, 1720 gal, Ext Length

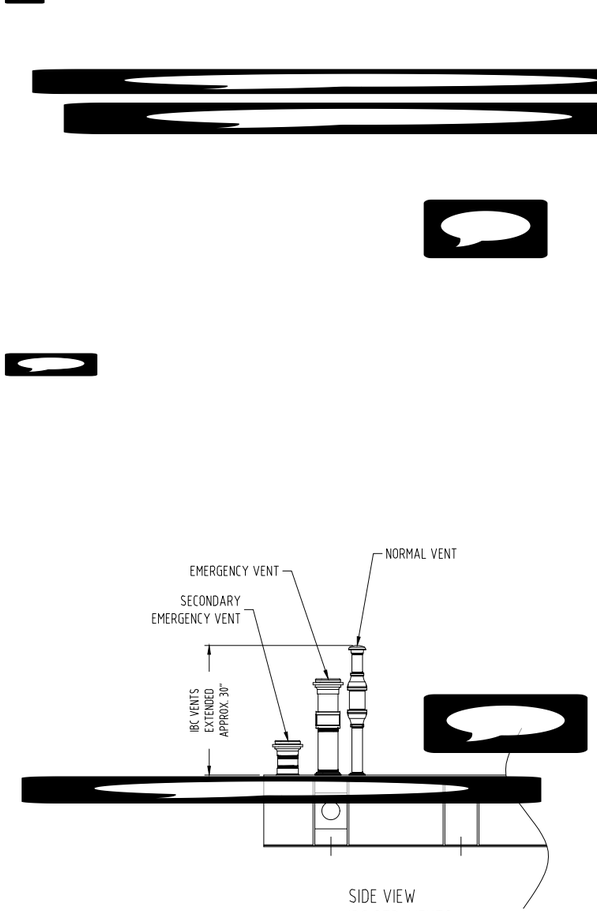
ENGINE: VOLVO TAD1641GE-B

DRAWING NUMBER: XZG2800100005

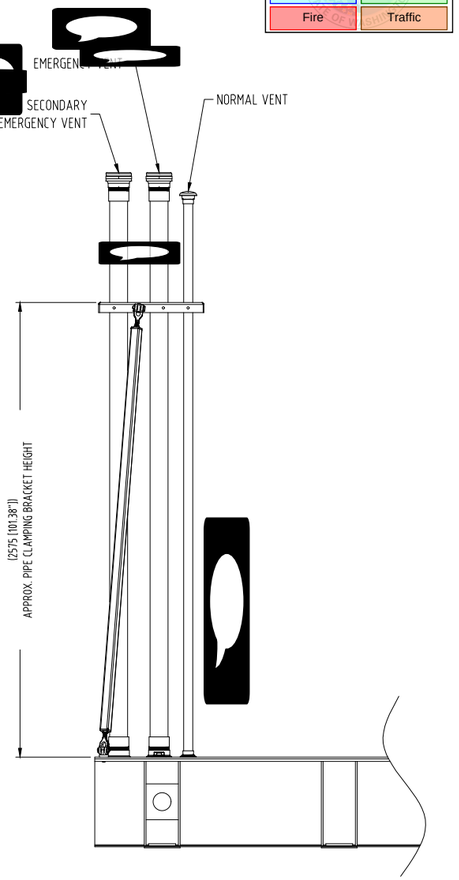
SHEET: 5 of 6

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

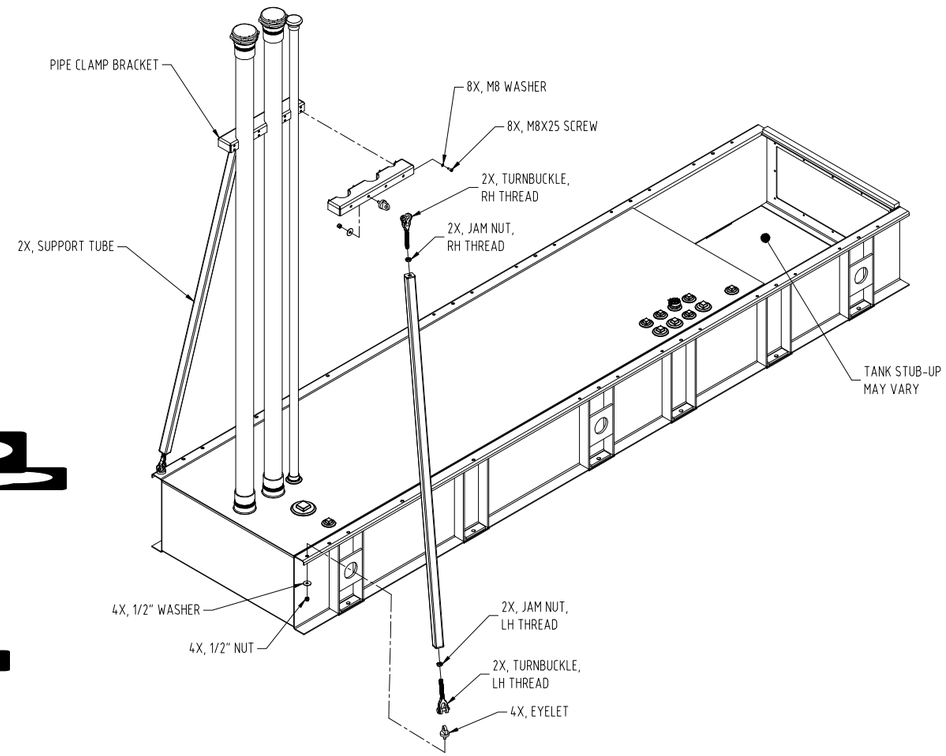
Building	Planning
Engineering	Public Works
Fire	Traffic



SIDE VIEW
IBC STD. VENTS



SIDE VIEW
IBC EXTENDED VENTS



EXPLODED VIEW
IBC EXTENDED VENTS

REVISION	DATE	DESCRIPTION
B	2025-05-07	STANDARDIZED TANK OFFERINGS (12 & 24 HR STANDARD, 24 & 48 HR EXTENDED)
A	2025-04-08	Fill hole in main group 60mm FWD on all tanks, N-vent and primary E-vent 145mm FWD on STD tanks

A Rolls-Royce solution

APPLICABLE MODELS:
mtu 6R0269 DS450
mtu 6R0269 DS500

THIRD ANGLE PROJECTION

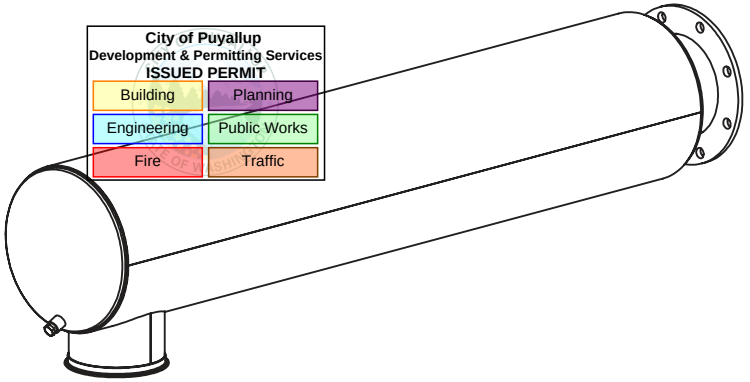
DRAWN TO SCALE
DIMENSIONS: MM [INCH]

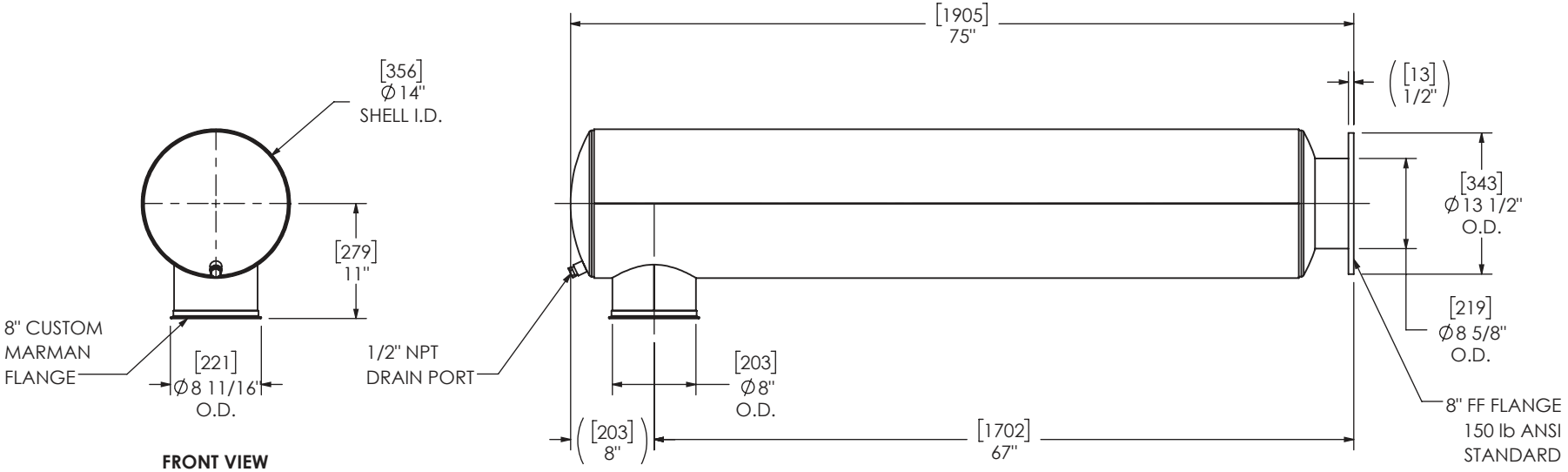
DIMENSIONAL LAYOUT

DESCRIPTION: 450-500 kW, IBC Venting
ENGINE: VOLVO TAD1641GE-B
DATE CREATED: 2024-12-20
DRAWING NUMBER: XZG2800100005
SHEET: 6 of 6

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic





FRONT VIEW

RIGHT VIEW

EXHAUST FLOW

NOTES:

- DO NOT USE EQUIPMENT TO SUPPORT OTHER PARTS OF THE EXHAUST SYSTEM WITHOUT PROPER REINFORCEMENT

MATERIAL CONSTRUCTION:

- ALUMNIZED STEEL

PAINT:

- HIGH TEMPERATURE BLACK (MIRATECH COATING SYSTEM 5)

PROJECT NAME	
PROPOSAL NUMBER	BK-24-001062
SALES ORDER NO.	
CUSTOMER P.O.	

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
ANGLES
MACH: ±1°
BEND: ±3°
INCHES: ±0.125
MILLIMETERS: ±2

DO NOT SCALE DRAWING

DRAWN	TES	DATE	04/24/2024
REVIEWED BY	CSF	DATE	04/26/2024

MIRATECH
em PRODUCTS

TCGEPZ-08MA08PF-1-24040126
Sales Drawing

DRAWING	TCGEPZ-08MA08PF-1-24040126 SD			REV 0
SIZE A	SCALE 1:16	WEIGHT: 162 lb		SHEET 1 OF 1

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

5

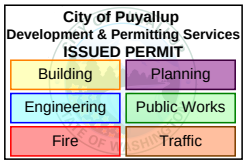
Documentation

Power Generation

PERFORMANCE ASSURANCE CERTIFICATION

A Rolls-Royce solution

TESTING PROCEDURES



Prototype

We have been producing superior generator sets for more than six decades. Understanding the importance of reliable, cost-effective products, we have developed industry-leading test procedures to ensure we exceed this criteria. Our testing program confirms that our customers will receive products of the highest quality.

Our Performance Assurance Certification (PAC) certifies that every ***mtu*** generator set undergoes rigorous prototype testing including the following:

Prototype Test Procedures

- **Rated Load (NFPA 110)**
  All generator set models will produce the nameplate-rated load within the design tolerance of the generator set.
- **Extended-run Testing**
  All generator set prototypes have been subjected to extended run-time testing.
- **Transient Response Analysis (ISO 8528-5)**
  All new generator set models have undergone transient response analysis per ISO 8528-5.
- **Torsional Analysis**
  All generator set models have undergone torsional stress analysis.
- **Engine Cooling System**
  All generator set models will cool sufficiently within the ambient design conditions per each model.
- **Anticipatory Alarms and Shutdowns**
  The pre-alarms and alarms function appropriately to protect the generator set from any foreseen unnecessary failures.
- **Vibrational Analysis (ISO 8528-9)**
  All new generator set models have undergone vibration analysis to ensure that each engine-generator coupling is balanced and that there is no destructive resonant vibration.
- **Noise Analysis (ISO 8528-10)**
  All generator sets undergo airborne noise analysis using the enveloping surface method.

Prototype Test Standards

mtu generator sets are compliant with many different codes and standards. Our validation philosophy and performance are regularly reviewed to ensure continuity with these codes and standards: *UL2200, CSA, EPA, NFPA 99—Health Care Facilities, NFPA 70—National Electrical Code, NFPA 110—Standard for Emergency and Standby Power Systems, Department of Labor and Industry, NEMA MG 1—Motors and Generators, and MIL-STD-705-c.*

Factory Acceptance

Our factory testing is performed with the same extreme diligence and attention to detail that is given to the prototype testing process. Every *mtu* generator set receives a complete factory acceptance test that certifies and ensures the system will function in accordance to every specific application.

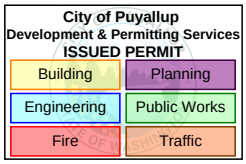
Test metering has an accuracy of 1.3% or better. This metering is calibrated a minimum of once per year and is directly traceable to the Bureau of Standards.

Factory acceptance testing procedures

- **Insulation Resistance Inspection** (301.1c)*
- **High Potential Test** (302.1b)*
- **Alternator Overspeed** (1 min.)*
- **Engine Inspection**
- **Generator Inspection**
- **Resistances Inspection** (401.1b)
  - Exciter Field Stator
  - Alternator Armatures
- **Mounting and Coupling Inspection**
- **Engine Fuel Oil System Inspection**
- **Engine Lube Oil System Inspection**
- **Engine Cooling System Inspection**
- **DC Charging System Inspection**
- **Circuit Breaker Inspection**
- **Anticipatory Alarms and Shutdowns Inspection** (505.2b, 515.1b, 515.2b)
- **Optional Equipment Inspection** (513.2a)
- **Load Test Inspection**
  - Full Nameplate-Rated Load
  - No-Load Inspection
  - MAX Load @ 1.0 P.F. (640.1d)
  - MAX Load @ 0.8 P.F.
  - Block Loads @ 0–25%, 0–50%, 0–75%, 0–100%
- **Phase Balance and Sequence Inspection** (507.1d, 508.1d, 516.1a)

** Performed by Alternator OEM*

OPTIONAL TESTING



Factory Acceptance

Extended-run factory acceptance testing

In some cases, extended-run testing may be requested. Unless specified otherwise, extended-run testing will be performed in the following manner:

- Full nameplate-rated load
- Standard readings taken every 15 or 30 minutes

Standard readings recorded during load test inspection

- Run Time
- AC Voltage
- AC Amperage
- kVA
- kWe
- Power Factor
- Frequency
- Exciter Field Voltage
- Exciter Field Current
- Lube Oil Pressure
- Engine Coolant Temperature
- Ambient Temperature

Witnessed factory acceptance testing

Witnessed factory tests must be scheduled and approved at least four weeks prior to the generator set's scheduled shipping date. Any requests for witnessed factory testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

Witnessed extended-run factory acceptance testing

Witnessed extended-run tests must be scheduled and approved at least four weeks prior to the generator set's scheduled ship date. Any requests for witnessed extended-run testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

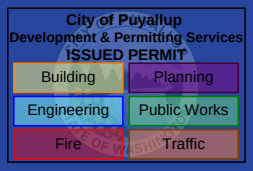
Additional factory acceptance testing

Additional testing is available upon request. The following is a list of supplementary tests which can be performed on ***mtu*** generator sets. Non-standard testing is subject to additional charges.

Additional testing procedures

- **Start and Stop Test** (MIL-STD-705c 503.1c)
- **Remote Start and Stop Test** (MIL-STD-705c 503.2c)
- **Overspeed Protective Device Test** (MIL-STD-705c 505.2b)
- **Insulation Resistance Test** (MIL-STD-705c 301.1c)*
- **Open Circuit Saturation Curve Test** (MIL-STD-705c 410.1b)
- **Temperature Rise Test** (MIL-STD-705c 680.1c)
- **Frequency Range Adjust Test** (MIL-STD-705c 511.2c)
- **Low Oil Pressure Protective Device Test** (MIL-STD-705c 515.1b)
- **Over-temperature Protective Device Test** (MIL-STD-705c 515.2b)
- **Controls, Direction, and Rotation Test** (MIL-STD-705c 516.1a)
- **Frequency and Voltage Regulation, Stability, and Transient Response** (MIL-STD-705c 608.1b)
- **Voltage and Frequency Regulation** (MIL-STD-705c 614.1b)
- **Voltage Dip and Rise for Rated Load Test** (MIL-STD-705c 619.2c)
- **Regulator Range Test** (511.1d)
- **Maximum Power Test** (MIL-STD-705c 640.1d)
- **Fuel Consumption Test**
- **Vibration and Mechanical Balance Test** (ISO 8528-9)
- **Sound Test** (ISO 8528-10)

** Testing conducted by generator OEM*



Subject to change. | Edition 02/22

Rolls-Royce Group
www.mtu-solutions.com

Prototype Test Summary (PTS)

A Rolls-Royce solution

Prototype testing is administered to validate the electrical and mechanical design integrity of the generator set. The results indicated below summarize testing performed on the prototype of the specified generator set model. This type of testing is only conducted on standard factory prototype generator sets. *Results may vary.*

GENERATOR SET MODEL(S):	MTU 6R0269 DS500, MTU 6R0269 DS450

Rep. Prototype Model:	MTU 6R0269 DS500	**Test Date:**	12/12/2024
kW:	500	**kVA:**	625
Voltage:	480	**Hz:**	60

ENGINE/GENERATOR

Engine Manufacturer:	Volvo	**Engine Model:**	TAD1641GE-B
Engine Fuel:	Diesel		
Generator Manufacturer:	Marathon	**Generator Model:**	573RSL6433
Voltage Regulator Model:	DVR2400	**PMG Equipped:**	☒ Yes ☐ No

OPTIONS

Enclosure Level:	Level 3	**Silencer:**	Unit Mounted – L3 system
Air Filtration:	Standard		

TEST SUMMARY

TEST	TEST RESULT
Transient Performance *Certifies that the engine generator-set model has undergone transient response analysis per ISO 8528-5*	**NFPA-110 One Step:** ☒ 100% ☐ Other. Specify: ____ % **Full Load Acceptance:** Voltage Dip: 21.0 % Recovery Time: 2.49 seconds Frequency Dip: 10.3 % Recovery Time: 4.87 seconds
Steady State Performance *Certifies that voltage deviation and harmonics are within acceptance tolerance range per ISO-8528-5 at full load*	**Frequency Regulation:** 0.13 +/- % Regulation Overall 60.19 Maximum Hz 60.03 Minimum Hz **Voltage Regulation:** 0.21 +/- % Regulation Overall 483.1 Maximum AC Volts 481.1 Minimum AC Volts
Torsional Analysis *Certifies that the generator set has undergone torsional stress analysis and is not subjected to torsional stresses that could be harmful to the unit*	☒ Complete
Cooling System *Certifies that all generator set models will cool sufficiently within the ambient design conditions per each model at referenced enclosure level*	50 °C (122 °F) Maximum Ambient Temperature 625.8 m^3/min (22,100 SCFM) Radiator Air Flow
Sound Data *Certifies that sound data is within the acceptable tolerance range per ISO 8528-10 at referenced enclosure level*	76.1 dBA @ 7 m (23 ft) at full rated load *The sound value is representative of the specified prototype at the time of testing and is subject to alteration due to technological advances. Please contact your MTU representative for the most recent enclosure and sound data.*
Vibrational Analysis *Certifies that new generator set models have undergone vibration analysis to ensure that each generator coupling is balanced and there is no destructive resonant vibration per ISO 8528-9*	☒ Complete

Subject to change. 2024-12

PACIFIC POWER GROUP

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

GENERATOR START-UP REQUEST

PROJECT NAME: _____ **CUSTOMER/CONTRACTOR:** _____

SITE CONTACT NAME: _____ **SITE ADDRESS:** _____

SITE PHONE: _____ _____

E-MAIL: _____ _____

The attached checklist must be fully completed, and a signed copy of this form e-mailed or faxed to our office to schedule the inspection and startup. Pacific Power Generation, upon receipt of completed form and confirmation of site readiness, will be in contact with you to confirm viable dates/times. Note: we will do our best to accommodate your preferred dates based on technician availability.

Please complete all pages and e-mail or fax to:

Amanda Nokes
anokes@pacificpowergroup.com
(253)395.9077 office
(253)395.4145 fax

Full payment to be received per Pacific terms and conditions prior to the start up being scheduled

A minimum of 4 weeks advance notice is requested

Please do not schedule occupancy inspections or other inspections that require a functioning generator until the generator has been started up. Pacific Power Generation will not guarantee service if start-up is requested sooner than this time.

Requested/Preferred Start-Up Date: _____

Alternate/Optional Date(s): _____

Number of people expected to be present at the instruction session: _____

Training will be performed the same day as start-up unless previously agreed upon with PPG Sales / PM Staff.

Note: If training is required, the owner must be present during the time of start-up.
If a separate trip is required normal time and material rates will apply.

PACIFIC POWER GROUP

PROJECT NAME: _____

Pre Start-Up Checklist

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Please complete and sign off on the following to verify that your generator is ready for start-up and testing. Be sure that all of these requirements are met before our Service Technician arrives on the job site.

If start-up and testing are scheduled but the generator and/or transfer switch are not ready and additional time or subsequent trips to the site are required, you will incur additional charges. In addition, **if improper or incomplete installation requires the technician to make another visit, or if the technician is asked to do any additional work not covered under normal start up parameters, this time will also be invoiced at standard rates.**

Initial	N/A	
		GENERATOR:
		Generator Anchored to Foundation
		AC Power to Block Heater – DO NOT ENERGIZE
		AC Power to Alternator Strip Heater – DO NOT ENERGIZE
		AC Power to Battery Charger – DO NOT ENERGIZE
		Battery Charger Wired to Generator Controls (if not factory installed)
		Batteries Installed (if not factory installed)
		Vibration Isolators Properly Installed/Adjusted (if applicable)
		Remote Estop Installed and Wired to Generator Control Panel (if applicable
		EXHAUST AND COOLING SYSTEM:
		Exhaust System Installed and Insulated (if required)
		Muffler Mounted and Rain Cap installed
		Air Inlet Supply Properly Sized and Installed (indoor installations)
		Air Outlet Properly Sized and Installed (indoor installations)
		Remote Cooling System Installed, Flushed, Filled and Tested (if applicable)
		FUEL SYSTEM:
		All Fuel Connections Installed
		Adequate Fuel Available for the Required Start-Up and Testing (**install tank vents prior to filling**)
		Diesel Units only: Day Tank / Remote Tank Installed, Plumbed, Wired (if applicable)
		Natural Gas/Propane Units only: Adequate Pressure to the Secondary Regulator has been confirmed
		Natural Gas/Propane Units only: All Required Valves and Properly Sized Inline Step-Down Regulator Installed
		Flexible Connection Installed Between Generator and Rigid Fuel Piping
		Vent Pipes and Vent Caps Installed
		AUTOMATIC TRANSFER SWITCH:
		***Electrical Interconnections completed**:*
		AC Generator Power Leads to the Transfer Switch
		Transfer Switch Auto Start Leads Connected to Generator
		Utility Power Available to Automatic Transfer Switch
		All Remote Annunciator and/or Remote Operation Wiring are Landed at the Transfer Switch
		REMOTE FUEL FILL STATION:
		Fill Station Installed, Solenoid Valve Inserted per Directional Arrows and Plumbed to the Tank Fill
		AC/DC Power Provided and Connected
		90% Full Alarm and 95% Critical Full Alarm and Shutdown Wired to the Floats
		FIRE COMMAND CONTROL (FCC) PANEL:
		Installed, Wired to Generator Control Panel
		All Automatic Transfer Switches and AC/DC Power Provided and Connected

PACIFIC POWER GROUP

All wiring is the responsibility of the installer. All interconnected wiring (include wiring for the remote start at generator and ATS's, AC Panel and Remote Annunciator). AC and DC wiring run in separate conduits per NEC and connected prior to start-up

Please provide the following information:

Parking in close proximity to the generator is required, approximate distance:_____Feet

Length of cable required to hook load bank trailer to generator breaker disconnect, if applicable:_____Feet
(100' limit per our quote and approved submittal)

Location of the generator (outdoor, basement, roof top, garage, etc.): _____

The warranty period begins when the start-up and commissioning has been completed.

By signing below, I verify that this system will be ready for startup and testing on the date I request. I also verify that I have read and understand the above statement outlining additional charges for subsequent site visits and the start of the warranty period. I am authorized to obligate the above contractor for these charges.

Print Name: _____

Signed: _____ Date _____

Company: _____ Phone # _____

THESE ITEMS MUST BE COMPLETED PRIOR TO START-UP. FAILURE TO COMPLETE ALL THESE ITEMS WILL REQUIRE THE TECHNICIAN TO RETURN AT ANOTHER SCHEDULED TIME. THIS INITIAL VISIT WILL BE INVOICED TO YOU THE CONTRACTOR. TO SCHEDULE THE 2ND VISIT OF YOUR START-UP, A PURCHASE ORDER MUST BE SUBMITTED. 24 HOUR NOTICE IS REQUIRED FOR ANY START UP CANCELLATION

Note: If this form does not appear with fillable fields, navigate to *Edit > Preferences > Documents > PDF/A View Mode*. In the **View documents in PDF/A mode** drop-down list, select **Never**. Click **OK**.

Form B - Engine Generator Set Installation and Commissioning

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Instructions

This report must be completed and signed by an MTU certified commissioning technician in order to accomplish all requirements of the MTU Limited Warranty. This report includes the physical installation checkups and commissioning procedures for all control versions, as well as open and enclosed generator sets.

After completion, a signed copy must be provided to each of the following:

1. Distributor/Dealer
2. Owner
3. MTU Regional Warranty Department

Applicant Contact Details

Distributor/Company: _____

Name: _____

Telephone: _____

Email: _____

Project Details

Project Name: _____

Project Number: _____

Site Address: _____

_____

Start-Up and Commissioning Start Date: _____

Start-Up and Commissioning Completion Date: _____

Engine Generator Set Nameplate

Model Number: _____

Serial Number: _____

Rating: _____

Hz: _____ kW: _____

kVA: _____ Volts: _____

Phase: _____ Amps: _____

Engine

Model Number: _____

Serial Number: _____

Power: _____ RPM: _____

Fuel Type:

☐ Diesel ☐ NG ☐ LP Vapor ☐ Liquid LP ☐ Other

Generator

Manufacturer: _____

Model Number: _____

Serial Number: _____

AVR Type: _____

kVA: _____ Hz: _____

Voltage: _____ Current: _____

Phase Rotation: _____

Breaker (MTU Delivery ☐ Yes ☐ No)

Manufacturer: _____

Model Number: _____

Serial Number: _____

Voltage: _____ Current: _____

Poles: _____

ATS (☐ Yes ☐ No)

Manufacturer: _____

Model Number: _____

Serial Number: _____

Voltage: _____ Current: _____

Poles: _____

Controller

Manufacturer: _____

Model Number: _____

Serial Number: _____

Firmware Version: _____

mtu A Rolls-Royce solution

Form B - Engine Generator Set Installation and Commissioning

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

General

Application: ☐ 3A Continuous ☐ 3B Prime ☐ 3D Standby ☐ 3F DCCP ☐ _____

Load test type on site: ☐ Building load ☐ Load bank ☐ Grid parallel ☐ None

Load test not possible because:

_____

_____

Engine Generator Set Application

☐ Installed in building
☐ Containerized
☐ Enclosed

Prestart Safety Checks/Environmental Check

	Yes	No	N/A
Commissioning performed by an MTU certified commissioning technician	☐	☐	☐
Personal protection equipment is available and functional	☐	☐	☐
Access only for authorized personnel	☐	☐	☐
Emergency escape routes are unobstructed (no loose materials, parts, or tools) and labeled	☐	☐	☐
Danger spots are indicated (e.g. trip hazards, beams, pipes)	☐	☐	☐
Control panel/engine area is unobstructed	☐	☐	☐
All warning plates and instruction labels are properly in place	☐	☐	☐
Genset room is free of debris, dirt, dust, loose materials, parts, and tools	☐	☐	☐
Air ducts are free and clean	☐	☐	☐
Engine generator set is leveled; mounting bolts secure	☐	☐	☐
Shipping blocks are removed	☐	☐	☐
For two-bearing generators, check for proper alignment	☐	☐	☐
Heat protection covers are installed	☐	☐	☐

Engine Generator Set Room (Equipment)

	Yes	No	N/A
Battery powered emergency light is installed	☐	☐	☐
Fire extinguishers are in place	☐	☐	☐
First aid kit is in place	☐	☐	☐
Oil resistant floor coating	☐	☐	☐
Spill containment system in place	☐	☐	☐

Fire extinguishing system

☐ Water ☐ CO_2 ☐ Chemical ☐ None

Engine Room Requirements (Open Power Units)

	Yes	No	N/A
Engine room is located as close as practical to the main consumer	☐	☐	☐
Space for maintenance is left around the engine generator set	☐	☐	☐
Battery powered back-up lights available	☐	☐	☐

Engine Generator Set Room Ventilation

	Yes	No	N/A
Intake and exhaust opening properly sized and louvers installed	☐	☐	☐
Flexible duct section installed	☐	☐	☐
Radiator duct properly sized to louver	☐	☐	☐
Proper air flow direction past alternator and then the engine	☐	☐	☐
Engine room inlet air filter in place	☐	☐	☐
Weather/animal guard is fitted to intake and outlet	☐	☐	☐

Self-Contained Engine Generator Set Ventilation

	Yes	No	N/A
Engine generator set intake positioned away from obstruction to airflow	☐	☐	☐
Radiator discharge positioned away from prevailing winds	☐	☐	☐
Sufficient clearance around self-contained engine generator set for airflow	☐	☐	☐

Air Inlet and Outlet

	Yes	No	N/A
Air ducts are clean and clear	☐	☐	☐
Ducts are installed properly	☐	☐	☐
Weather protection guards are installed	☐	☐	☐
Silencers are installed properly	☐	☐	☐
Louvers open and close automatically	☐	☐	☐
Manual operation of louvers is possible	☐	☐	☐
Structure air flows are correct (no thermal short circuit)	☐	☐	☐
Unrestricted airflow over the engine	☐	☐	☐

Cooling System

	Yes	No	N/A
Cooling system is free of leakages	☐	☐	☐
Pipelines and connections undamaged	☐	☐	☐
Radiator fan(s) are clear and clean	☐	☐	☐
Venting pipes have gradient toward expansion tank	☐	☐	☐
Overflow is free and spillage is avoided	☐	☐	☐
System is filled to proper level	☐	☐	☐
Filling cap is freely accessible	☐	☐	☐
Coolant-preheater is functional	☐	☐	☐
Coolant type and concentration as specified in MTU manual: _____	☐	☐	☐

Form B - Engine Generator Set Installation and Commissioning

Frame-Mounted Radiator

	Yes	No	N/A
Check belt tension and alignment	☐	☐	☐
Radiator clean and free from obstruction	☐	☐	☐
Radiator air outlet connected to outlet duct	☐	☐	☐
Check for possibility of hot air recirculation	☐	☐	☐
Engine generator set vent pipes routed upward toward radiator expansion tank	☐	☐	☐
Pipelines secure and undamaged	☐	☐	☐
Overflow clear and routed to avoid spillage	☐	☐	☐

Remote-Mounted Cooling System

	Yes	No	N/A
Pipelines cleaned and painted	☐	☐	☐
Device(s) aligned and fixed properly	☐	☐	☐
Pipelines fixed properly	☐	☐	☐
Expansion tank is of adequate size	☐	☐	☐
Pipelines isolated from generator set vibration	☐	☐	☐
Static head pressure is within system capability	☐	☐	☐
Auxiliary power supply is installed correctly	☐	☐	☐
Potential equalization is installed properly	☐	☐	☐
Fan rotational direction correct	☐	☐	☐
Overflow clear and routed to avoid spillage	☐	☐	☐
Engine generator set vent pipes routed upward toward radiator expansion tank	☐	☐	☐
Avoid air locks in pipelines – air bleed valves provided	☐	☐	☐
All proper electrical connections made	☐	☐	☐

Heat Exchanger and Cooling Tower

	Yes	No	N/A
Pipelines cleaned and painted	☐	☐	☐
Device(s) aligned and fixed properly	☐	☐	☐
Pipelines fixed properly	☐	☐	☐
Expansion tank is of adequate size	☐	☐	☐
Pipelines isolated from generator set vibration	☐	☐	☐
Vent valves installed	☐	☐	☐
Static head pressure is within system capability	☐	☐	☐
Secondary circuit pump direction is accurate	☐	☐	☐
Secondary circuit pump is functional	☐	☐	☐
Potential equalization is functioning properly	☐	☐	☐
Overflow lines are clear and routed to avoid spillage	☐	☐	☐
Engine generator set vent pipes routed upward toward expansion tank	☐	☐	☐
Air bleed valves installed	☐	☐	☐
Cooling tower make up supply is complete	☐	☐	☐
Auxiliary power supply to fans is correctly installed	☐	☐	☐
All proper electrical connections made	☐	☐	☐

Mounting/Foundation

	Yes	No	N/A
Engine generator set is installed on proper mounts	☐	☐	☐
Static deflection area of mounts not blocked by components	☐	☐	☐
Surface is level	☐	☐	☐
Support structure is adequate to support engine generator set weight	☐	☐	☐
Engine generator set is supported at each mounting location	☐	☐	☐

Lube Oil System

	Yes	No	N/A
Engine is filled with oil to proper level	☐	☐	☐
No oil leaks present	☐	☐	☐
Flexible lines installed in make-up lube-oil system	☐	☐	☐
Oil type as specified in MTU manual (record type):	☐	☐	☐

_____

Starting System

	Yes	No	N/A
Battery and cables are free from damage	☐	☐	☐
Battery and cables installed, mounted, and wired properly	☐	☐	☐
Batteries filled up to appropriate level	☐	☐	☐
Idle charging voltage min. 27.6 VDC for 24 V system or 13.7 VDC for 12 V system	☐	☐	☐
Battery charger properly installed and wired	☐	☐	☐
Battery is located near starter with shortest cable run as possible	☐	☐	☐

Diesel Fuel System

	Yes	No	N/A
Fuel system is free of leakages	☐	☐	☐
Flexible lines installed at engine	☐	☐	☐
Pipeline size adequate to system	☐	☐	☐
Pipelines and connections undamaged	☐	☐	☐
Flow and return lines connected correctly	☐	☐	☐
Fuel lines free of tension, scuffing, or kinks	☐	☐	☐
Potential equalization is installed properly	☐	☐	☐
Adequate room is left for fuel tank inspections	☐	☐	☐
Confirm proper rotation of auxiliary electric fuel lift pump	☐	☐	☐
Tank is not overfilled	☐	☐	☐
Tank is not in the vicinity of exhaust or other heat sources	☐	☐	☐
For electric fan driven fuel coolers: Fuel cooler plumbed and wired correctly	☐	☐	☐

Form B - Engine Generator Set Installation and Commissioning

City of Puyallup
Development & Permitting Services
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Diesel Fuel System (continued)

	Yes	No	N/A
Fuel returns to fuel tank without restriction, proper sized pipe	☐	☐	☐
Fuel prefilter installed before engine inlet	☐	☐	☐
Electronic day tank pump used from main storage to day tank	☐	☐	☐
Day tank controls/pumps installed	☐	☐	☐
Fuel transfer pump connected to emergency power	☐	☐	☐
Level indicator used for checking tank contents	☐	☐	☐
Leak sensors are in place	☐	☐	☐
All proper control and sensor connections are made	☐	☐	☐
Spill containment procedure in place per code	☐	☐	☐

Diesel Fuel System (Main Storage Tank)

	Yes	No	N/A
Isolating valves correctly positioned	☐	☐	☐
Transfer pump and controls operational	☐	☐	☐
Pipeline/tank heating system operational	☐	☐	☐
Fuel level monitoring system operational	☐	☐	☐
Check for leaks	☐	☐	☐

Day Tank

	Yes	No	N/A
Tank is fixed properly and mounted to substructure	☐	☐	☐
Tank vent line is plumbed to safe area	☐	☐	☐
Tank filling line is of adequate size	☐	☐	☐
All unused fittings are plugged	☐	☐	☐
Mechanical fuel level indicator installed	☐	☐	☐
Electrical fuel level indicator installed and tested	☐	☐	☐
Fuel level switches installed and adjusted	☐	☐	☐
System pump(s) connected to emergency power	☐	☐	☐
Potential equalization is installed properly	☐	☐	☐
System pump(s) installed correctly (flow direction)	☐	☐	☐
Refill function checked	☐	☐	☐
Leakage sensor in place	☐	☐	☐
Adequate space available for inspections	☐	☐	☐
Isolating and solenoid valves checked	☐	☐	☐
Tank filled	☐	☐	☐
Check for leaks	☐	☐	☐
Fire valves present	☐	☐	☐

Gas Fuel System (Americas Only)

	Yes	No	N/A
Dedicated gas supply line of proper size and material	☐	☐	☐
Check for gas filter/screen	☐	☐	☐
Check gas solenoid valve operation	☐	☐	☐
Check supply lines for leaks	☐	☐	☐
Check manual shut-off valve operation	☐	☐	☐
Solenoid valves correctly positioned	☐	☐	☐
Regulator set to correct pressure	☐	☐	☐
Gas leak detection equipment operational	☐	☐	☐
Shut-off devices operational	☐	☐	☐
Specified gas pressure is available at fuel inlet	☐	☐	☐

Exhaust System

	Yes	No	N/A
Piping is installed and secured properly	☐	☐	☐
Flexible connectors installed at engine exhaust outlet	☐	☐	☐
Flexible connectors installed correctly	☐	☐	☐
Exhaust line condensate trap with drain installed	☐	☐	☐
Silencer is installed and secure	☐	☐	☐
Exhaust thimble installed per local codes	☐	☐	☐
Exhaust system below back pressure limit	☐	☐	☐
Exhaust piping diameter properly sized for length of run	☐	☐	☐
No diameter reductions downstream on exhaust pipes	☐	☐	☐
All exhaust system weight is properly supported	☐	☐	☐
Proper pipe wall thickness is maintained	☐	☐	☐
Exhaust lines are properly insulated	☐	☐	☐
Exhaust installed with a downward pitch to outlet	☐	☐	☐
Exhaust line protected from natural elements (rain cap installed)	☐	☐	☐
Exhaust gas prevented from re-entry to building	☐	☐	☐
Hot parts safety decals/guards are present	☐	☐	☐

Fire Alarm/Suppression System

	Yes	No	N/A
Fire alarm/suppression system present	☐	☐	☐

Engine Management System (Engine Governor)

	Yes	No	N/A
Engine Control Unit box is free of damage	☐	☐	☐
Engine Control Unit box is securely mounted to engine	☐	☐	☐
Electrical connections securely fastened	☐	☐	☐

Grounding

	Yes	No	N/A
Engine and generator are properly grounded	☐	☐	☐

Electrical and Control System

	Yes	No	N/A
Remote wiring connected correctly	☐	☐	☐
Cables free of tension, scuffing, or kinks	☐	☐	☐
All connections clean and secure	☐	☐	☐
Bus bar phase sequence, voltage, and frequency checked	☐	☐	☐
Control cables routed in separate conduits from phase leads	☐	☐	☐
Engine generator set controls energized and functional	☐	☐	☐
Software version of engine generator set controller recorded	☐	☐	☐
All LEDs on panel illuminate when LED test is pressed	☐	☐	☐
Emergency stop control operational	☐	☐	☐
Test certificates available for all cables	☐	☐	☐
Utility service breaker capacity verified	☐	☐	☐
Small power and lighting circuits operational	☐	☐	☐

Form B - Engine Generator Set Installation and Commissioning

City of Puyallup
Development & Permitting Services
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Building | Planning
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Switchgear/Transfer Switch

	Yes	No	N/A
Cables installed to correct torque specification	☐	☐	☐
Phase cables to switchgear/transfer switch are correctly sized and clearly identified	☐	☐	☐
Switchgear protection settings checked	☐	☐	☐
All other connections are clean and secure	☐	☐	☐

Generator Circuit Breaker

	Yes	No	N/A
ON/OFF function	☐	☐	☐
Auxiliary contact	☐	☐	☐
Adjust over-current protection	☐	☐	☐
Adjust the trip unit	☐	☐	☐
Phase rotation checked	☐	☐	☐

Preparation for Running Checks

☐ Follow appropriate lockout/tagout procedure

Running Checks

	Yes	No	N/A
Engine generator set engine control switch in the RUN position. Start engine and verify whether there is sufficient oil pressure	☐	☐	☐
Allow engine to run for five minutes	☐	☐	☐
Check coolant level, add as necessary, and reinstall cap	☐	☐	☐
Allow engine to run for at least 20 minutes and check engine operating temperature	☐	☐	☐
Check the battery charger for proper operation	☐	☐	☐
If the speed is unstable, adjust to specifications	☐	☐	☐
Adjust the AC output voltage to match the utility voltage using the voltage adjusting control	☐	☐	☐
Check for oil, coolant, and exhaust leaks/recirculation	☐	☐	☐
Check temperature on city water-cooled models and adjust the thermostatic valve as necessary	☐	☐	☐
Engine generator set engine control switch in the OFF position	☐	☐	☐
Permission must be obtained from the building authority before transfer switch test is performed	☐	☐	☐
Test transfer switch	☐	☐	☐

Record the current phase for the three phase systems

A _____ B _____ C _____

Running Checks (continued)

	Yes	No	N/A
Set the engine generator set exerciser with load to the customer's required exercise period	☐	☐	☐
Verify that all options on the transfer switch are adjusted and functional to the customer's requirements	☐	☐	☐

Record transfer switch delay settings:

TDES (Time Delay to Engine Start) _____ sec.
TDNE (Time Delay Normal to Emergency) _____ sec.
TDN (Time Delay to Normal) _____ min.
TDEC (Time Delay Engine Cooldown) _____ min.

Mains Failure Test

Number of start trials: _____

Duration between mains failure and generator circuit breaker (GCB) closed (until emergency power source supplies load) _____ sec.

	Yes	No	N/A
Dyn. Frequency drift within limit of ISO 8528-5	☐	☐	☐
Static voltage drift during operation within limit of ISO 8528-5	☐	☐	☐
Static frequency drift during operation within limit of ISO 8528-5	☐	☐	☐

Form B - Engine Generator Set Installation and Commissioning

Running Checks (record on chart)

Unless otherwise specified by local or state regulations, run the engine-generator set at full expected system load in excess of 30% of the nameplate rating). Record data at 15 minute intervals.

Time of Day	Generator Voltage, Volts	Generator Output A Phase, Amps	Generator Output B Phase, Amps	Generator Output C Phase, Amps	Generator Output Frequency, Hz	Ambient Room Temperature	Engine Oil Pressure	Battery Charger Volts (DC)	Coolant Temperature	Run Time, Minutes	Notes

Shutdowns

	Yes	No	N/A
Emergency stop (also external)	☐	☐	☐
Overfrequency/overspeed	☐	☐	☐
Underfrequency	☐	☐	☐
Overvoltage	☐	☐	☐
Undervoltage	☐	☐	☐
Oil pressure Lo Lo	☐	☐	☐
Engine temperature Hi Hi	☐	☐	☐

Check and verify any additional protective devices and list:

_____

_____

_____

Additional Comments/Notes:

_____

_____

_____

_____

_____

_____

Form B - Engine Generator Set Installation and Commissioning

Customer Acknowledgement (Literature and Instructions)

☐ Verify that the customer has the appropriate engine/engine-generator set and transfer switch (if provided by MTU) literature. Instruct the customer in the operation and maintenance of the power system.

I, _____ , received instructions on _____
Please print name of person receiving instructions. Date

_____
Signature

To be filled out by the commissioning technician only.

Completed by (signature): _____

Print Name: _____

Company: _____

Date: _____

Note: Completion of this checklist does not relieve the installer of contract obligations.

To be filled out by the customer/client.

This signature acknowledges acceptance of unit and that all information on the start-up is correct. The owner representative signature acknowledges review and understanding of this *Form B – Engine Generator Set Installation and Commissioning*.

Witnessed by (signature): _____

Print Name: _____

Company: _____

Location: _____

Date: _____

PACIFIC POWER GROUP

Operation and Maintenance Training Overview

Generator Set

Review Overall Scope of Supply of the Generator Sets including all Ancillary Equipment

1. Content and organization of appropriate O&M Manual materials
2. Overall equipment / system layout and configuration
3. Normal Operating Procedures and Safety precautions
4. Features, operation, and maintenance of protective devices
5. Interpretation of readings of Indicating and Alarm devices
6. Diagnostic & Troubleshooting Procedures
7. Corrective and Preventative Maintenance & Repair Procedures

Engine, review of manufacture's provided material including:

1. Basic explanation of how a diesel engine operates with overview of components
2. Fuel system, fuel lines, injectors, filters and day tank if applicable
3. Air intake system, air filter, turbo
4. Exhaust system, turbo, flex pipe, muffler and exhaust piping
5. Engine starting batteries and battery charger
6. Cooling system, radiator, cooling air intake and exhaust, radiator hoses
7. Block heater
8. Engine exhaust system (including Clean Air soot traps)

Basic Generator Component Identification and Operation, review of manufacture's material including:

1. Controller operation
2. Main breaker (if provided by genset supplier)
3. Voltage regulator and adjustments
4. Visually inspect and discuss all other attachments to generator sets as applicable

A review safety precaution, review of manufacture's provided material including:

1. Auto starting
2. Hazardous conditions such as hot areas
3. Hazardous current (voltages and amperages)
4. Batteries
5. Direct personnel to adhere to any lock out/tag out procedures for facility
6. Moving parts

Prestart and starting protocol review of manufacture's provided material including:
Auto starting

1. Verify engine fluids and that system are ready for operation.
2. Verify downstream status of distribution and utility
3. Review any specific site requirements for start up
4. Test run set and observe/record gauge readings
5. Perform site load transfer test, [with owner's permission]

Maintenance Check List, review of manufacture's provided material including:

1. Described preventive maintenance needs, oil and filter changes
2. Inspections, electrical connection inspections.
3. Describe any special tools required
4. Discuss and review using the owner's manuals, parts manuals and any other supplied Technical information.

Transfer Switch

Review Overall Scope of Supply of the Transfer Switches

1. Content and organization of appropriate O&M Manual materials
2. Overall equipment / system layout and configuration
3. Normal Operating Procedures and Safety precautions
4. Features, operation, and maintenance of protective devices
5. Interpretation of readings of Indicating and Alarm devices
6. Diagnostic & Troubleshooting Procedures
7. Corrective and Preventative Maintenance & Repair Procedures

Basic Transfer Switch component identification and operation, review of manufacture's material including:

1. Basic explanation of transfer switch operations
2. Transfer timers and delays if applicable
3. Bypass isolation operation if applicable

A review safety precaution, review of manufacture's provided material including:

1. Remote starting
2. Hazardous conditions such as hot areas
3. Hazardous current (voltages and amperages)
4. Direct personnel to adhere to any lock out/tag out procedures for facility
5. Moving parts

Maintenance Check List, review of manufacture's provided material including:

1. Inspections, electrical connection inspections.
2. Describe any special tools required
3. Discuss and review using the owner's manuals, parts manuals and any other supplied
4. Technical information.

PACIFIC POWER GROUP

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Owner Training Sign Off

Date:_____/_____/_____

Time:_____:_____ AM/PM

PPG Technician:_____

List of Attendees:

1._____

2._____

3._____

4._____

5._____

6._____

7._____

☐ By checking this box, I certify that training on basic operation and maintenance of PPG supplied generator and equipment has been provided to the Owner's Representative.

_____ _____/_____/_____
Owner's Representative Date

_____ _____/_____/_____
PPG Technician Date

ROLLS-ROYCE SOLUTIONS AMERICA INC.

Standby Power Limited Warranty

Rolls-Royce Solutions America Inc. ("RRSA") issues the following express Limited Warranty subject to the following terms, conditions, and limitations:

An original consumer ("Owner") who purchases an RRSA engine generator set ("Product") is entitled to coverage under this Limited Warranty. RRSA warrants to the Owner that the Product is free of defects in material and workmanship and will perform under normal use and service from valid start-up performed by RRSA. Any nonconformity to the foregoing is defined as a Warrantable Defect.

1. Disclaimers

LIMITATION OF WARRANTIES: THIS LIMITED WARRANTY IS GIVEN EXPRESSLY AND IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, FREEDOM FROM INFRINGEMENT OR THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS, OR ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, REPRESENTATIONS, OR WARRANTIES NOT SPECIFIED HEREIN.

THIS LIMITED WARRANTY, THE OBLIGATIONS OF RRSA AND THE RIGHTS AND REMEDIES OF THE OWNER SET FORTH IN THIS LIMITED WARRANTY ARE EXCLUSIVE AND ARE EXPRESSLY IN LIEU OF, AND THE OWNER HEREBY WAIVES AND RELEASES ALL OTHER OBLIGATIONS, WARRANTIES (INCLUDING WARRANTY AGAINST REDHIBITORY DEFECTS), REPRESENTATIONS OR LIABILITIES, EXPRESS OR IMPLIED, ARISING BY LAW IN CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, INCLUDING BUT NOT LIMITED TO ANY CLAIMS ARISING OUT OF, CONNECTED WITH OR RESULTING FROM THE PERFORMANCE OF THIS LIMITED WARRANTY OR FROM THE DESIGN, MANUFACTURE, SALE, REPAIR, LEASE OR USE OF THE PRODUCT, ANY COMPONENT THEREOF AND SERVICES DELIVERED OR RENDERED HEREUNDER OR OTHERWISE.

IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY, ALLEGED NEGLIGENCE, OR OTHERWISE, SHALL RRSA BE SUBJECT TO LIABILITY FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING WITHOUT LIMITATION, DAMAGE TO THE PRODUCT, OR OTHER PROPERTY, COMMERCIAL LOSSES, LOST PROFITS, LOSS OF USE, INCONVENIENCE, LOSS OF TIME, COST OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, DOWNTIME, OR CLAIMS OF CUSTOMERS.

RRSA'S AGGREGATE TOTAL LIABILITY RELATING TO THE SYSTEM AND/OR PRODUCT UNDER THIS LIMITED WARRANTY OR UNDER ANY OTHER CLAIM (IN CONTRACT, TORT, OR OTHERWISE) MADE IN CONNECTION WITH THE SALE OR USAGE OF THE SYSTEM AND/OR PRODUCT IS LIMITED TO THE DOLLAR AMOUNT OF THE OWNER'S ORIGINAL PAYMENT MADE FOR THE SYSTEM AND/OR PRODUCT.

2. Limited Warranty Periods

Limited Warranty Period. The Limited Warranty Period for a Warrantable Defect in the Product is twenty-four (24) months after the first commissioning of the Product. In all cases, the Limited Warranty period will expire not later than thirty-six (36) months from the date of shipment from the RRSA designated facility or after 3,000 operation hours, whichever occurs first.

Accessories Coverage Period. The Accessories Coverage Period for a Warrantable Defect in cords, receptacles, cord reels, gas flex pipes, housing lights, space heaters, and associated equipment ("Accessories") is twelve (12) months from the date of shipment from RRSA designated facility.

RRSA warranty obligations under this Limited Warranty are contingent upon distributor completing the following:

(a) The RRSA warranty and the *Start-Up Validation and Pre-Inspection Form*. Return both to RRSA within forty (40) days of the start-up date; and
(b) The engine registration form (when applicable). Return to the manufacturer as stated in the engine registration form instructions.

3. RRSA Responsibilities

If a Warrantable Defect is found during the Limited Warranty Period and/or the Accessories Coverage Period, and provided the Owner has complied with its obligations under Section 4, RRSA will, during normal working hours, through an RRSA authorized distributor, dealer, or service outlet, perform some or all of the following:

(a) Repair or replace, at the sole election of RRSA, the defective part with a new or remanufactured replacement part;
(b) Provide reasonable or customary labor needed to correct the Warrantable Defect;
(c) Provide technician reasonable travel time to and from the closest RRSA authorized distributor, dealer, or service outlet to the Product location;
(d) Part removal and re-installation, if necessary and as solely determined by RRSA.

The obligation to repair or replace defective parts by RRSA does not include responsibility for reimbursement of incidental or consequential costs. If RRSA repairs or replaces an Accessory, part, or Product under this Limited Warranty, the repaired or replaced Accessory, part, or Product assumes the unexpired portion of the warranty period remaining from the original Accessory, part, or Product. Repair or replacement of an Accessory, part, or Product will not extend the term of the original Limited Warranty Period or Accessories Coverage Period. Parts or Product replaced shall become the property of RRSA.

Failure of RRSA to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.

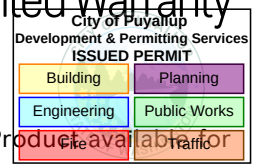
4. Owner Responsibilities

During the Limited Warranty Period and Accessories Coverage Period, the Owner is responsible for, and RRSA will not reimburse for the following:

(a) Battery;
(b) Premium or overtime labor costs;
(c) Labor and material costs for Product removal and reinstallation;
(d) Any special access fees required to gain access to RRSA equipment, without limitation, training or safety policy requirement to gain access;
(e) Transportation costs or travel expenses related to delivery of the Product to the designated distributor, dealer, or service outlet;
(f) Incidental and consequential costs, damages, or administrative expenses of whatever nature;
(g) Non-Product repairs, vehicle damage, “downtime” expenses, cargo damage, fines, lost income, any business costs of any kind, Owner’s travel expenses, and other losses resulting from a Warrantable Defect;
(h) Shipping charges for replacement parts/Products in excess of those which are usual and customary; or
(i) Local taxes, if applicable.

In addition, Owner must:

(a) Operate, use, and maintain the Product in accordance with the applicable Owner’s manual and/or any other manuals specified by RRSA, including without limitation handling, inspection, servicing, or operating instructions;



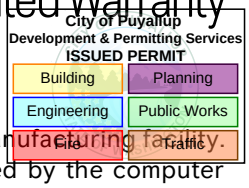
(b) Promptly notify RRSA or its authorized representative of a Warrantable Defect and make the Product available for repair;
(c) Comply with RRSA or its authorized representative's reasonable directions regarding the timing, sequence, and location of warranty repairs and make the Product available for inspection;
(d) Perform all required maintenance and maintain and provide proof that all required maintenance has been performed;
(e) Use RRSA specified parts, components, and consumables;
(f) Promptly return to RRSA all parts replaced under this Limited Warranty;
(g) Comply with RRSA long term storage guidelines, if applicable, and maintain and provide proof of compliance;
(h) Routinely exercise the Product in accordance with operating instructions;
(i) Install the Product in accordance with the installation guide provided; and
(j) Reimburse RRSA for all costs incurred in providing warranty service where, following examination, the request or claim for warranty coverage proves to be unfounded or excluded, as well as all incidental costs including those incurred investigating the claim.

5. Limitations

RRSA is not responsible, and this Limited Warranty is not available under any circumstances, for any of the following:

(a) Failure of Owner to fulfill its obligations under Section 4;
(b) Failure of Owner to follow RRSA instructions for Product stored by Owner longer than 180 days from date of shipment from the RRSA designated facility;
(c) Defects caused by adjustments made by Owner to the fuel system or governor system;
(d) Defects which were obvious or capable of being identified by reasonable inspection and were not reported to RRSA within a reasonable time;
(e) Rental equipment used during warranty work;
(f) Defects caused or potentially caused by service work performed by non-RRSA authorized service providers and/or the use of non-genuine RRSA parts;
(g) Defects resulting from natural wear and tear, external action, negligence, natural disasters, accidents, incorrect use, improper handling or storage, inadequate corrosion-proofing, incorrect assembly or installation, or modification of the Product;
(h) Defects resulting from abuse or neglect, including unauthorized modifications to the Product;
(i) Repair or any use or installation which RRSA, in its sole discretion, determines to be improper;
(j) Defects caused by incorrect maintenance;
(k) Defects resulting from Owner's delay in making the Product available after being notified of a potential problem or Owner's failure to take immediate measures to avoid or mitigate damage;
(l) Damage caused by shipping;
(m) Repair of parts sold by RRSA that are warranted directly to the Owner by the respective part's manufacturer;
(n) Misapplication of the Product;
(o) Diesel engine "wet stacking" due to lightly loaded diesel engines;
(p) Acts of nature or acts of God;
(q) Any failure, other than those resulting from a defect in material or factory workmanship of the Product;
(r) Use of the Product for purposes other than those for which it was intended, including without limitation use of the Product under extraordinary operating conditions not made known to RRSA in writing at the time of the order; or
(s) Material provided by or a design specified by the Owner.

6. Software Warranty. Where software is included in the Product, RRSA warrants to the Owner that 1) the software will be substantially free from material program errors and material defects in material and workmanship, and that 2) it shall



function substantially in accordance with RRSA specification at the time of dispatch from the RRSA manufacturing facility. RRSA does not warrant that the software is error-free or free from "bugs" as commonly categorized by the computer industry. RRSA shall, during the Limited Warranty Period, endeavor to remedy at its cost, in its sole discretion, by repair or replacement of any material program errors or material defects of which Owner has promptly notified RRSA. RRSA, at its option, may elect to provide the most current software at no cost, and in such case RRSA will not cover the cost to install the applicable updated software. RRSA shall have no obligation with respect to any nonconformities resulting from unauthorized modifications to the software or any Owner interfacing.

7. **Emissions Warranty.** The Product may be covered under an emissions warranty specified by the U.S. Environmental Protection Agency and/or the California Air Resources Board. The terms of the warranty, if applicable, may be accessed by following the link: https://www.mtu-solutions.com/eu/en/technical-information/emissions-warranty.html. Any such Emissions Warranty is incorporated herein by reference in its entirety to the extent and with the same force as if fully set forth herein. The Product, if certified, may only be certified to comply with the required country or region-specific emission regulations. Where applicable, the Product is only certified to those specific emission regulations/standards which are clearly stated in the respective RRSA defined technical specifications. IT IS THE OWNER'S SOLE RESPONSIBILITY TO ENSURE THAT THE EXPORT/IMPORT, INSTALLATION, AND USE OF THE PRODUCT(S) COMPLIES WITH THE APPLICABLE EMISSION REGULATIONS IN THE COUNTRY OR REGION WHERE THE PRODUCT(S) WILL BE USED.

8. The Owner is entitled to rectify the defect or to have it rectified by third parties only in urgent cases where operational safety is at risk or in order to prevent disproportionately extensive damage; provided that Owner has informed RRSA and obtained prior written consent from RRSA. In such cases, RRSA shall, in its sole discretion, reimburse the costs incurred by the Owner up to an amount equivalent to the costs RRSA would have incurred had it remedied the defect itself.

9. This Limited Warranty gives the Owner specific legal rights, and the Owner may also have other rights, which vary from state to state. Some states do not allow warranty duration limitations and/or certain exclusions or limitation of incidental or consequential damages. Therefore, the previously expressed exclusion(s) may not apply to Owner. If any one or more of the provisions contained in this Limited Warranty shall be invalid, illegal, or unenforceable in any respect, the validity, legality, or enforceability of the remaining provisions contained therein shall not in any way be affected or impaired thereby.

10. This Limited Warranty is governed by the laws of the State of Michigan without regard to its conflicts of law principles and excluding the United Nations Convention for the International Sale of Goods. Any and all disputes between the parties that may arise pursuant to the sale or use of the Product shall be heard and determined before an appropriate state of federal court located in Oakland County, Michigan. The Owner acknowledges that such court has the jurisdiction to interpret and enforce the provisions herein, and Owner waives any and all objections that it may have as to personal jurisdiction or venue in any of the above courts.

11. In order to obtain performance of an RRSA warranty obligation, the Owner should contact the nearest RRSA authorized distributor, dealer, or service outlet for instructions. To find the location of the nearest RRSA authorized distributor, dealer, or service outlet call +1 248-560-8000 or write to: Rolls-Royce Solutions America Inc. Warranty Department, 39525 MacKenzie Drive, Suite 100, Novi, MI 48377.

6

Transfer Switches

Puyallup Public Safety Bl

TRANSFER SWITCH SUBMITTAL

REVISION 1

July 02, 2025

www.ascopower.com | customercare@ascopower.com
800.800.ASCO | 160 Park Avenue, Florham Park NJ 07932

Puyallup Public Safety Bl

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Reference Quote: **K1-753186-01**
Sales Order: 3432868

TRANSFER SWITCH DETAILS

ATS NAME	QTY	AMPS / POLES (VOLTS)	BYPASS	TRANSITION TYPE	CATALOG NUMBER	ACCESSORIES	OUTLINE DRAWING	WIRING DIAGRAM	BOM NUMBER
	1	0800 / 4 (480V)	N/A	DELAYED	H3ADTSB30800NGXF	1UP,11BE,18RX,23GB,30AA,44G,73CC3,125A	1001394-010	1001660-003	1622350
	1	0150 / 4 (480V)	N/A	DELAYED	J3ADTSB30150NGXF	1UP,11BE,18RX,30AA,44G,73CC3,125A	1001393-008	978748-003	1622351
	1	0150 / 3 (480V)	N/A	OPEN	J03MTSA30150N0XS	44G,73CC3,125A,170B	977099-008	TO BE ENGINEERED	1622352

Transfer Switch Withstand and Closing Ratings

ATS NAME	FRAME SIZE	SWITCH RATING AMPS		300, 4000 & 7000 Series																	
				CURRENT LIMITING FUSES				SPECIFIC BREAKER			TIME BASED				Short Time Ratings[3] (sec)							
															480V Max.				600V Max.			
		Transfer Switches	Bypass Switches	480V Max.	600V Max.	MAX SIZE, A	CLASS	240V Max.	480V Max.	600V Max.	Time(Sec)	240V Max.	480V Max.	600V Max.	.13	.2	.3	.5	.1	.13	.3	.5
-	J	150, 200, 230, 260	150, 200, 230, 260	200kA	200kA	600	J	200kA	200kA	100kA	0.05	65kA	42kA[5]	35kA	7.5kA		-		-			
						800	L															
-	H	800 - 1000	800 - 1000	200kA	200kA	1600[4]	L	200kA	150kA[5]	65kA	0.05	50kA	50kA	50kA	36kA			-	36kA			-

NOTES:
1) All WCR values indicated are tested in accordance with the requirements of UL 1008, 7th Edition.
2) Application requirements may permit higher WCR for certain switch sizes.
3) Short Time ratings are provided for applications involving circuit breakers that utilize trip delay settings for system selective coordination
4) Max fuse rating is 1200A on front connected H frame switches
5) Switches utilizing overlapping neutral (code "C") have 35kA, 0.050 Sec time-based rating at 480V Max

Puyallup Public Safety Bl

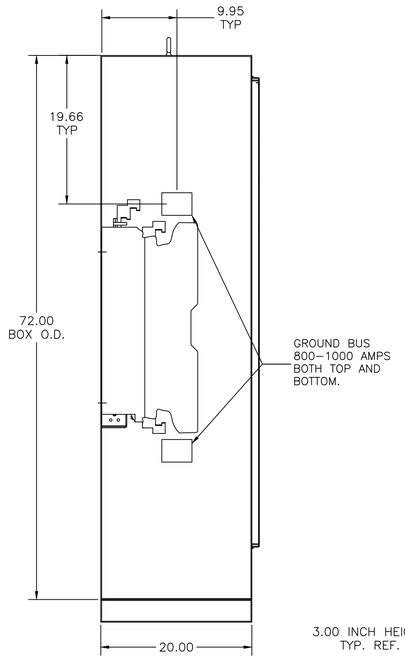
Transfer Switch Details

#1	ATS	AMPS: 0800	QTY: 1

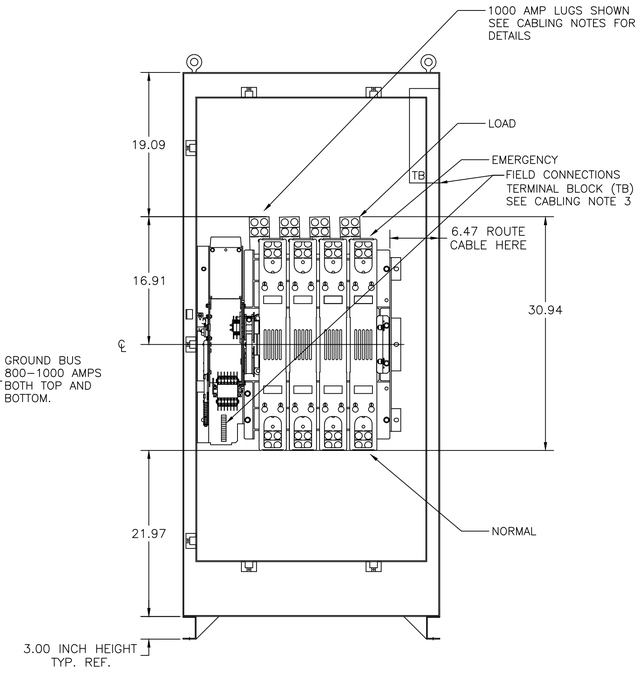
Product	:	Series 300	Catalog Number	:	H3ADTSB30800NGXF
Service Voltage / Hz	:	480V/60Hz	Optional Accessories	:	1UP,11BE,18RX,23GB,30AA,44G 73CC3,125A
Bypass Isolation	:	Not Applicable	Product Description	:	300 Series, Automatic Delayed Transition Transfer Switch
No. of Switched Poles: 4	:	4	Neutral Configuration	:	Switched [B]
Withstand Rating: Frame = H, Switch Rating = 0800, Series = 300	:	See WCR Table Below	No. of Cables & Lug Size	:	4, 1/0 AWG to 600 MCM
Enclosure	:	3R(F)-UL Type 3R Enclosure (See Disclaimer 3)	Service	:	Three Phase, 4-wire
Extended Warranty	:	Not Included	Markings	:	

#	ACCESSORY DESCRIPTIONS	
	Accessory Code	Description
1	1UP	UPS backup power for controller to run for up to approximately 3 minutes without AC power
2	11BE	Adds the following features to the Group G controller: (1) Serial RS-485 Modbus Communications (2) Multi-Schedule Engine Exerciser (3) a 300 Entry Event Log and (4) a common alarm output function. When applied on 3-phase systems it also enables: (1) 3-Phase Emergency Source VLL sensing (2) Phase Rotation Monitoring (3) Emergency Source VLL Unbalance Monitoring.
3	18RX	REX (Relay Expansion Module) with Normal and Emergency available output contacts (18B & 18G)
4	23GB	3 Phase current metering card with CT
5	30AA	Load shedding circuit initiated by opening of a customer - supplied contact
6	44G	Strip heater w/ thermostat, wired to load terminals: 208-600 volts
7	73CC3	100KA----SE XDSE Series surge suppressor, 100kA per mode. Connected to Load only 3 Phase 4 Wire Wye
8	125A	Seismic

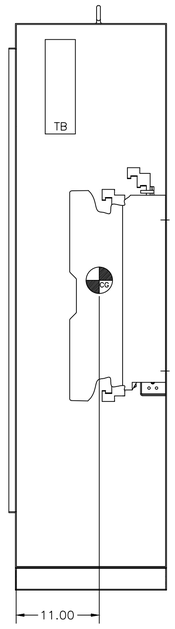
City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic



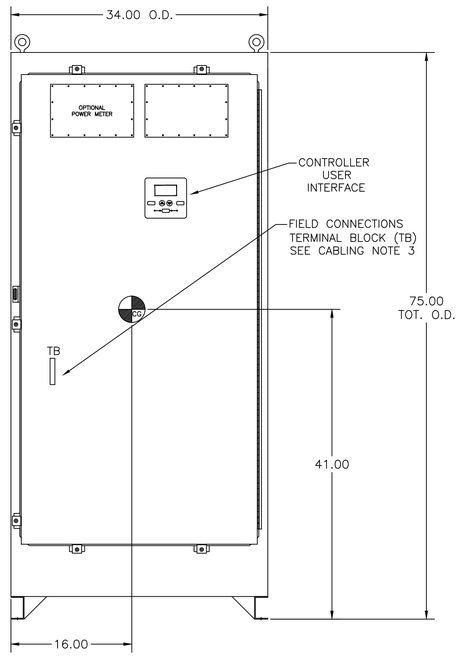
LEFT SIDE



FRONT VIEW
WITHOUT DOOR



RIGHT SIDE



FRONT VIEW
WITH DOOR

GENERAL NOTES

1. TYPE 3R/4/4X/12 ENCLOSURE. FREE STANDING. FLOOR MOUNTED. CODE GAUGE CONSTRUCTION.
2. DOOR HINGED ON RIGHT SIDE. LOCKABLE HASP ON LEFT SIDE, DOOR CLAMPS LEFT TOP AND BOTTOM.
3. FINISH TYPE 3R/4/12: ANSI 61 GRAY, POLYESTER POWDER STANDARD. OTHER ANSI COLORS AVAILABLE CONSULT FACTORY

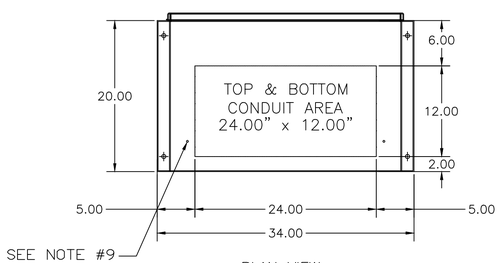
   TYPE 4X (H) CONSTRUCTED OF 12 GAUGE 304 STAINLESS STEEL.
   TYPE 4X (U) CONSTRUCTED OF 12 GAUGE 316 STAINLESS STEEL.
4. RECOMMENDED CLEARANCES:
   FRONT: 36 INCHES
5. A 20% RATED GROUND BUS IS PROVIDED.
6. UNIT IS DESIGNED FOR COMBINATION TOP AND BOTTOM CABLE ENTRY.
7. NEUTRAL CONFIGURATIONS:
   AN OPTIONAL FULL RATED NEUTRAL CONFIGURATION FOR EACH SOURCE AND THE LOAD MAY BE PROVIDED. WHEN EQUIPPED IT IS IN ONE OF THE FOLLOWING FORMATS AS SPECIFIED BY THE CATALOG NUMBER NO. NEUTRAL TYPE:
   (A) SOLID (COPPER BUS) NEUTRAL
   (B) SWITCHED NEUTRAL POLE
8. CG CENTER OF GRAVITY
9. REMOVE BOTTOM KNOCKOUTS FOR TYPE 3R.

CABLING NOTES

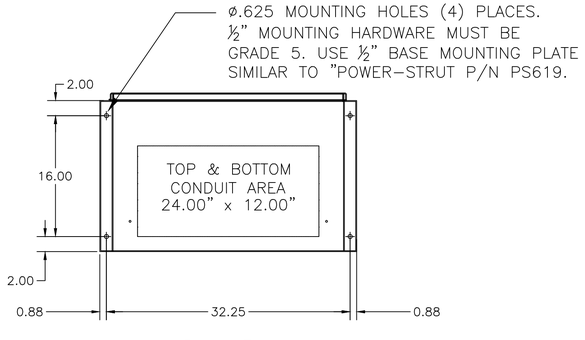
1. ALL SIZES SUPPLIED STANDARD WITH MECHANICAL (SCREW TYPE) LUGS. (SEE AMP SIZE BELOW)
   A. LUG MATERIAL: ALUMINUM ALLOY 6061–T6 WITH ELECTRO TIN PLATED FINISH.
   B. SCREW MATERIAL: ALUMINUM ALLOY 6262–T9 WITH ELECTRO TIN PLATED FINISH.
   C. UL LISTED, CSA CERTIFIED.
   D. LUG SCREW TIGHTENING TORQUE PER UL 486B: 19 FT–LBS.
   E. SUITABLE WIRE BENDING SPACE IS PROVIDED. (SEE AMP SIZE BELOW)
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS. (SEE AMP SIZE BELOW).
3. CUSTOMER TERMINAL BLOCKS:
   FOR ALL 300 SERIES 3NDTS, 3ADTS UNITS THE TB WILL BE MOUNTED ON THE UPPER RIGHT INSIDE OF ENCLOSURE.
   FOR ALL 3ATS AND 3NTS UNITS TB WILL BE MOUNTED ON THE TRANSFER SWITCH FRAME AS INDICATED.

NOTES 800–1000 AMP SWITCHES

1. SUPPLIED WITH STANDARD MECHANICAL (SCREW TYPE) LUGS ON THE NORMAL, EMERGENCY & LOAD BUS STABS. ONE (1) LUG PER PHASE AND NEUTRAL EACH SUITABLE FOR CONNECTION OF FOUR (4) 1/0 –750MCM CU/AL CABLE.
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED FOR UP TO FOUR (4) 600MCM CABLES PER TERMINAL PER NEC.
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS;
   (12) 1/0 – 750MCM CU/AL CABLE CONNECTIONS.



PLAN VIEW



PLAN VIEW

REV. TO SHEET	ECN NO.	BY	APP.	DATE
C	283222 SEE ECN	TR	BK	2/6/20
B	279763 SEE ECN	WK	BK	07/09/19
A	270542 SEE ECN	VOM	EL	1/4/18
—	251397 ISSUE	TR	BK	10/22/14

PROJECT NAME:

COMPOSITE OUTLINE
300 SERIES, 75x34x20, (SEISMIC)
"H" FRAME 800–1000 AMP, TYPE 3R/4/4X/12 SEISMIC

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	TR	10/24/14
CHECKED	BK	10/24/14
PROJECT APPROVAL	BK	10/24/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.

ASCO ASCO Power Technologies, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

DWG. NO. 1001394–010

DRAWING REV. C | ECN NO. 283222 | SHEET 1 OF 1

THREE PHASE WIRING FOR ASCO® 300 SERIES DELAYED TRANSITION TRANSFER SWITCHES (H3ADTS/H3NDTS) 800-1200 AMPERES WITH GROUP G CONTROLS

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

GENERAL INFORMATION

THIS WIRING APPLIES TO 300 SERIES TRANSFER SWITCHES THAT UTILIZE THE "H" FRAME POWER TRANSFER SWITCH RATED 800–1200 AMPERES.

THE GROUP G CONTROLLER PROVIDES EITHER AUTOMATIC (H3ADTS) OR NON–AUTOMATIC [MANUAL] (H3NDTS) OPERATION BASED ON ITS FACTORY SETTING ACCORDING TO THE CUSTOMER ORDER REQUIREMENTS.

THE TYPE OF TRANSFER SWITCH PROVIDED CAN BE DETERMINED FROM THE PRODUCT IDENTIFICATION MARKINGS LOCATED ON BOTH THE POWER TRANSFER SWITCH AND THE COVER OF THE GROUP G CONTROLLER.

ALL OPERATIONAL SETTINGS AND SEQUENCES OF THE GROUP G CONTROLLER AND ITS RELATED OPTIONAL ACCESSORIES (1UP, 18RX, 23G) ARE PROVIDED IN THE USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400.

INFORMATION FOR INSTALLATION AND TESTING OF THE TRANSFER SWITCH IS PROVIDED IN THE INSTALLATION MANUAL, ASCO 3ADTS & 3NDTS, H–DESIGN 800–1200A TRANSFER SWITCHES, PART NUMBER 381333–405.

ENGINE CONTROL CONTACTS

FEATURE 7 & FEATURE 8:
ONE SET OF FORM C CONTACTS "NR" (FEAT. 7 N/C, FEAT. 8 N/O) THAT CHANGE POSITION ON EXPIRATION OF THE FEATURE 1C, OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES TIME DELAY, AND RESET ON EXPIRATION OF THE FEATURE 2E ENGINE COOLDOWN TIME DELAY.
AN AUXILIARY CONTACT THAT IS CLOSED WHEN THE TRANSFER SWITCH IS CONNECTED TO THE EMERGENCY SOURCE, IS CONNECTED ACROSS THE N/C CONTACT (FEATURE 7).

AN ADDITIONAL SET OF ENGINE STARTING CONTACTS ARE AVAILABLE ON THE GROUP G CONTROLLER WHEN THE FEATURE SETTING OF THE CONTROLLER OUTPUT CONTACTS "OP1" IS SET TO OPERATE AS "NR2". ADDITIONAL CONTACTS "NR2" ARE ALSO AVAILABLE ON RELAY EXPANSION MODULE, "REX". OUTPUT CONTACTS "OP2" AND/OR "OP3" PROVIDE THE ENGINE STARTING FUNCTION WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "NR2".

ADDITIONAL, OPTIONAL ENGINE STARTING CONTACTS "NR2" ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2" AND/OR "OP3" PROVIDE THE ENGINE STARTING FUNCTION WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "NR2".

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

LOAD DISCONNECT FEATURE

THE DELAYED TRANSITION TRANSFER SWITCH PROVIDES FOR A "LOAD DISCONNECT" PERIOD DURING TRANSFER TO EITHER SOURCE. DURING THIS PERIOD BOTH THE NORMAL AND EMERGENCY CONTACTS OF THE TRANSFER SWITCH WILL BE OPEN. THE "LOAD DISCONNECT" TIMER IS ADJUSTABLE FROM 0 TO 5 MINUTES 59 SECONDS AND FACTORY SET TO 3 SECONDS.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

ADDITIONALLY, PRE & POST TRANSFER LOAD DISCONNECT SIGNALING CONTROL IS AVAILABLE.
FEATURE 31: INCLUDES SUB–FEATURES 31F, 31G, 31M, 31N
A SET OF FORM C CONTACTS ARE PROVIDED ON THE GROUP G CONTROLLER AS "OP1". WHEN THE FEATURE SETTING OF "OP1" IS SET TO OPERATE THE CONTACTS AS "FEATURE 31", THE TIME DELAY SETTINGS OF THE SUB–FEATURES ARE AVAILABLE.

"OP1" CAN BE SET TO OPERATE TO PROVIDE THE FOLLOWING FUNCTIONS USING THE TIME DELAY SETTINGS ASSOCIATED WITH EACH SUB–FEATURE;

31F – NORMAL TO EMERGENCY PRE–TRANSFER SIGNAL
31G – EMERGENCY TO NORMAL PRE–TRANSFER SIGNAL
31M – NORMAL TO EMERGENCY POST–TRANSFER SIGNAL
31N – EMERGENCY TO NORMAL POST TRANSFER SIGNAL

THE "OP1" OUTPUT CONTACTS CHANGE POSITION FOLLOWING EACH OF THE ABOVE TIME DELAYS.

ADDITIONAL LOAD DISCONNECT CONTACTS. "FEATURE 31" ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2 AND/OR "OP3" WILL PROVIDE LOAD DISCONNECT FUNCTIONS WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "FEATURE 31".

ALL OUTPUT CONTACTS ("OP1", "OP2", "OP3") SET TO OPERATE AS "FEATURE 31", SHARE THE COMMON TIME DELAY SETTINGS OF SUB–FEATURES 31F, 31G, 31M, AND 31N.

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

SOURCE AVAILABILITY SIGNALS

SIGNALS INDICATING THE AVAILABILITY OF THE NORMAL & EMERGENCY SOURCES IS PROVIDED WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "RL5" (EMERGENCY SOURCE AVAILABLE) AND "RL6" (NORMAL SOURCE AVAILABLE) CHANGE POSITION WHEN THE SOURCE IS ACCEPTABLE.

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

COMMON ALARM & NOT IN AUTO SIGNALING FEATURES

A SET OF FORM C CONTACTS IS PROVIDED ON THE GROUP G CONTROLLER AS "OP1". THE FEATURE SETTING OF "OP1" CAN BE SET TO OPERATE THE CONTACTS AS A "NOT IN AUTO" SIGNAL.

WHEN "OP1" IS SET FOR "NOT IN AUTO", THE OUTPUT CONTACTS CHANGE POSITION WHEN THE TRANSFER IS BEING INHIBITED FROM TRANSFERRING TO THE EMERGENCY SOURCE (FEATURE 34B) OR THE TRANSFER SWITCH HAS BEEN SET FOR NON–AUTOMATIC (MANUAL) OPERATION.

WHEN OPTIONAL ACCESSORY 11BE "SOFTWARE BUNDLE" IS PART OF THE TRANSFER SWITCH ASSEMBLY, "OP1" MAY ALTERNATIVELY SET FOR A "COMMON ALARM" SIGNAL. THE OUTPUT CONTACTS CHANGE POSITION WHEN A "COMMON ALARM" IS NOT PRESENT AND RESET WHEN A "COMMON ALARM" CONDITION IS PRESENT. THE "COMMON ALARM" SIGNAL CONDITIONS ARE SELECTABLE.

ADDITIONAL "COMMON ALARM" AND "NOT IN AUTO" CONTACTS ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2 AND/OR "OP3" WILL PROVIDE SIGNAL FUNCTIONS WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "COMMON ALARM" OR "NOT IN AUTO".

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

EXTERNAL POWER SUPPLY COMPATIBILITY

USE OF AN EXTERNAL POWER SUPPLY IS USEFUL WHEN REQUIRED TO EXTEND THE FOLLOWING CONTROLLER TIME DELAYS BEYOND 6 SECONDS;

FEATURE 1C – OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES
FEATURE 1F – OVERRIDE MOMENTARY EMERGENCY SOURCE OUTAGES

AN EXTERNAL POWER SUPPLY IS ALSO USEFUL WHEN THE TRANSFER SWITCH IS USED WITH COMMUNICATIONS FEATURES BY ENABLING THE CONTROLLER TO CONTINUE COMMUNICATING.

AN EXTERNAL POWER SOURCE MAY BE PROVIDED TO THE CONTROLLER, UNTIL THE NORMAL SOURCE OR EMERGENCY SOURCE IS AVAILABLE, BY USE OF;

– AN EXTERNAL 24 VDC POWER SUPPLY WITH ACCESSORY 18RX (RELAY EXPANSION MODULE)
OR
– OPTIONAL ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY MODULE)

EXTERNAL 24 VDC POWER SUPPLY "1G":
AN EXTERNAL 24 VDC POWER SUPPLY MAY BE USED TO POWER THE CONTROLLER WHEN ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2" WILL PROVIDE EXTERNAL 24 VDC POWER SUPPLY FUNCTIONALITY WHEN ITS FEATURE SETTING IS SET TO OPERATE AS "1G". ADDITIONALLY, JUMPERS MUST BE RECONFIGURED ON ACCESSORY 18RX (RELAY EXPANSION MODULE) TO ENABLE THIS FUNCTION AS FOLLOWS;

REMOVE JUMPERS "J1" 1–2 & "J1" 3–4
CONNECT JUMPERS "J1" 5–7 & "J1" 6–8

THE OUTPUT CONTACTS CHANGE POSITION WHEN EITHER THE NORMAL SOURCE OR EMERGENCY SOURCE IS AVAILABLE AND RESET WHEN NEITHER SOURCE IS AVAILABLE. THE "OP2" N/C CONTACT SWITCHES CUSTOMER PROVIDED +24 VDC FROM THE EXTERNAL POWER SUPPLY TO THE CONTROLLER.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY):
WHEN OPTIONAL ACCESSORY 1UP IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY, THE CONTROLLER IS PROVIDED WITH LIMITED RESERVE POWER (APPROXIMATELY 3 MINUTES).

LOAD CURRENT METERING

WHEN OPTIONAL ACCESSORY 23GB IS PART OF THE TRANSFER SWITCH ASSEMBLY, THREE PHASE CURRENT MEASUREMENTS ARE AVAILABLE FOR DISPLAY ON THE GROUP G CONTROLLER.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR INFORMATION ON USE.

ADVANCED-FUNCTION SOFTWARE BUNDLE

WHEN OPTIONAL ACCESSORY 11BE IS PART OF THE TRANSFER SWITCH ASSEMBLY, AN ADVANCED–FUNCTION SOFTWARE BUNDLE IS AVAILABLE TO PERFORM THE FOLLOWING FUNCTIONS;

– SERIAL COMMUNICATIONS (RS–485)
– PROGRAMMABLE ENGINE EXERCISER
– EVENT LOG
– COMMON ALARM SIGNAL CAPABILITY ON GROUP G CONTROLLER "OP1" OUTPUT.

(3 PHASE SENSING ONLY)
– 3 PHASE EMERGENCY SOURCE SENSING.
– PHASE ROTATION SENSING.
– EMERGENCY VOLTAGE UNBALANCE SENSING.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR INFORMATION ON THESE FUNCTIONS.

NON-AUTOMATIC (MANUAL) OPERATION

TRANSFER SWITCH ASSEMBLIES FACTORY SET FOR NON–AUTOMATIC OPERATION PROVIDE USER INITIATED, ELECTRICAL OPERATION OF THE TRANSFER SWITCH TO EITHER AVAILABLE SOURCE. THE TRANSFER SWITCH ASSEMBLY IS PHYSICALLY IDENTICAL TO THAT OF THE AUTOMATIC TYPE.

WHEN THE TRANSFER SWITCH IS SET FOR NON–AUTOMATIC OPERATION, A CUSTOMER PROVIDED SELECTOR SWITCH MAY BE USED TO OPERATE IT FROM A REMOTE LOCATION.

REMOTE CONTROL FEATURES

THE FOLLOWING CONTROL PANEL INPUTS PROVIDE REMOTE CONTROL FUNCTIONS FOR THE TRANSFER SWITCH. EACH FUNCTION CAN BE IMPLEMENTED BY THE CUSTOMER PROVIDING THE FORM OF CONTROL DESCRIBED. EACH CONTROL CONTACT MUST BE SUITABLE FOR A 5 VDC LOW ENERGY CIRCUIT.

EXTERNAL FEATURE 17: REMOTE TRANSFER TO EMERGENCY FEATURE (FOR AUTOMATIC TRANSFER TYPE ONLY) – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT CAUSES ENGINE START AND TRANSFER TO THE EMERGENCY SOURCE. RE–CLOSURE OF THE CONTACT ACTIVATES THE FEATURE 3A "RETRANSFER TO NORMAL (IF JUST TEST) TIME DELAY PRIOR TO RETRANSFER. IN THE EVENT THAT THE EMERGENCY SOURCE FAILS WHILE THE TRANSFER SWITCH IS CONNECTED TO EMERGENCY AND THE CUSTOMER SUPPLIED CONTACT IS OPEN, THE TRANSFER SWITCH WILL AUTOMATICALLY RETRANSFER TO THE NORMAL SOURCE.

EXTERNAL FEATURE 6B: REMOTE BYPASS OF RETRANSFER TO NORMAL TIME DELAY – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT BYPASSES FEATURE 3A RETRANSFER TO NORMAL DELAY IF ACTIVE.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON–AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333–400 FOR SETTING INFORMATION.

LOAD SHED FROM EMERGENCY SOURCE

ACC. 30AA — LOAD SHEDDING CIRCUIT INITIATED BY OPENING OF CUSTOMER SUPPLIED CONTACT TO MATCH GENERATOR SET CAPACITY TO THE LOAD. RELAY DE–ENERGIZATION OPENS EMERGENCY CONTACTOR (CE) DISCONNECTING THE LOAD FROM THE EMERGENCY SOURCE. IF THE NORMAL SOURCE IS ACCEPTABLE, THE NORMAL SOURCE CONTACTOR (CN) IS CLOSED TO CONNECT THE LOAD TO THE NORMAL SOURCE. WHEN THE LOAD IS RECONNECTED TO NORMAL, THE CONTROL PANEL IS RESET IN READINESS FOR THE NEXT NORMAL SOURCE FAILURE.

NOTES

1. SWITCH SHOWN DE–ENERGIZED CONNECTED TO NORMAL SOURCE.
2. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUB. ICS 1, PART 1–101A.
3. ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
4. ○ INDICATES CUSTOMER CONNECTION POINTS.
5. ● INDICATES FACTORY CONNECTION POINTS.
6. CONNECTION POINTS THAT HAVE BOTH CUSTOMER CONNECTIONS AND FACTORY CONNECTIONS ARE SHOWN OPEN AS CUSTOMER CONNECTION POINTS.
7. THE TRANSFER UNIT IS MOUNTED ON THE BACK INSIDE SURFACE OF THE ENCLOSURE. THE CONTROL PANEL AND ANY OPTIONAL ACCESSORIES ARE MOUNTED ON THE INSIDE SURFACE OF THE DOOR.
8. AN OPERATOR'S MANUAL IS FURNISHED WITH EACH AUTOMATIC TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE SWITCH.
9. GROUND STRAP ON CONTROL PANEL IS AFFIXED TO CHASSIS (ENCLOSURE) AT LOWER LEFT CONTROL PANEL MOUNTING STUD.

CATALOG NUMBER SUFFIXES

TS FRAME	CATALOG TYPE	NEUTRAL TYPE	PHASE POLES	AMPS	VOLT CODE	CONTROLLER	OPTIONAL ACCESSORY	ENCLOSURE CODE
H	3ADTS 3NDTS	A B	3	800 1000 1200	C D E F G H J K L M N P Q R	G	X BLANK FOR NONE	C F G H L M N P Q BLANK FOR OPEN TYPE

EXPLANATION OF CATALOG NUMBER CODES

NEUTRAL TYPE		VOLTAGE CODES 3 PHASE (3 OR 4 WIRE) 50 OR 60 Hz		ENCLOSURE CODES		
CODE	DESCRIPTION	CODE	NOMINAL VOLTAGE	CODE	TYPE	DESCRIPTION
A	SOLID			BLANK		OPEN TYPE (NO ENCLOSURE)
B	SWITCHING			C	1	GENERAL PURPOSE, INDOOR
		C	208			
		D	220	F	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT
		E	230	G	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT
		F	240	H	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)
		G	277	L	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT
		H	380			
		J	400			(SECURE ENCLOSURES)
		K	415			
		L	440	M	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT
		M	460	N	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT
		N	480	P	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)
		P	550	Q	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT
		Q	575			
		R	600			

CATALOG NUMBER _____
ASCO® CERTIFIED TO S.O. _____
BY _____
DATE _____
FORM REV E

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	290662	VDS	HSL	08/02/21
	SEE ECN			
A	247772	SDH	SDH	4/14/14
	SEE ECN			
—	247505	VOM	EL	3/31/14
	ISSUE			

PROJECT NAME:
WIRING DIAGRAM
300 SERIES (H3ADTS/H3NDTS), 3PH 800–1200 AMPS
"H" FRAME, GROUP G CONTROLS

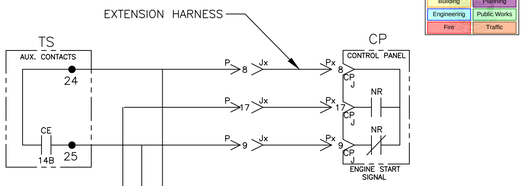
THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
CHECKED	EL	3/28/14
PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055
ASSEM. REF. NO.

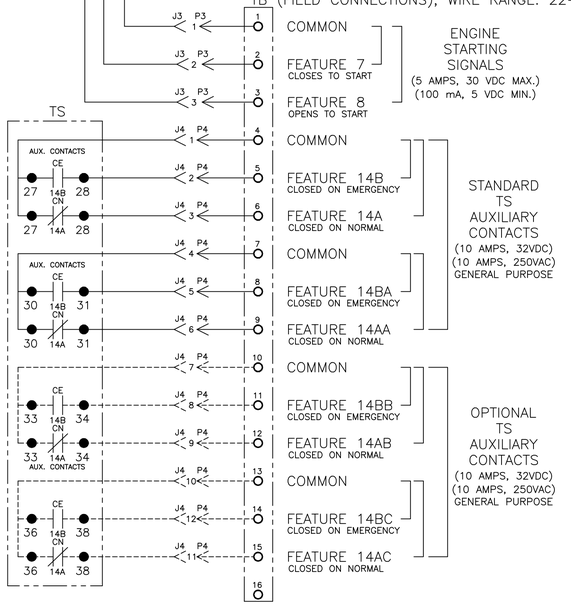
COMPUTER GENERATED DRAWING
SCALE NONE SIZE DS
DWG. NO. 1001660–003
DRAWING REV. B ECN NO. 290662 SHEET 1 OF 6

ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

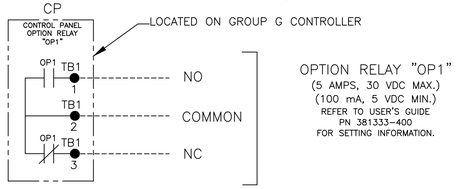


LOCATED AT UPPER RIGHT SIDE OF ENCLOSED UNIT.

TB (FIELD CONNECTIONS), WIRE RANGE: 22–12 AWG

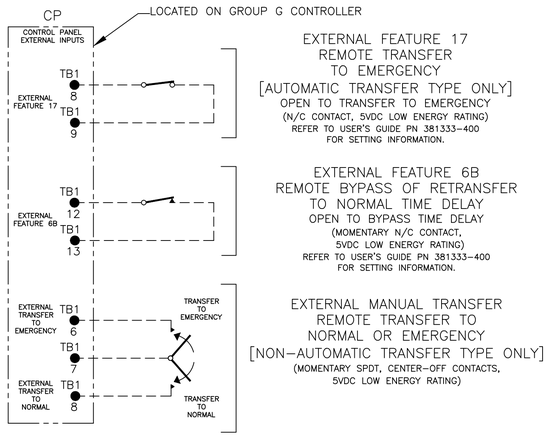


CONTROLLER OPTION RELAY "OP1" (STANDARD)



OPTION RELAY "OP1"
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

CONTROLLER REMOTE CONTROL FEATURES

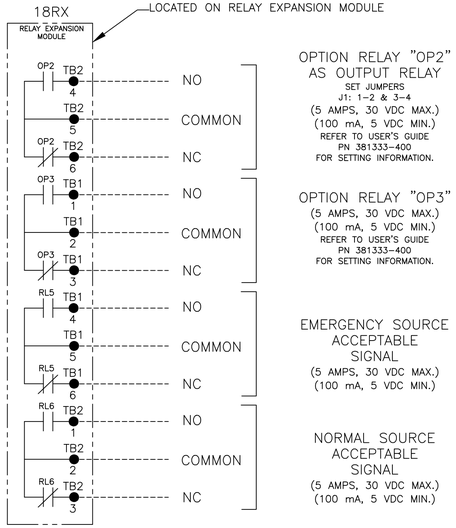


EXTERNAL FEATURE 17
REMOTE TRANSFER
TO EMERGENCY
[AUTOMATIC TRANSFER TYPE ONLY]
OPEN TO TRANSFER TO EMERGENCY
(N/C CONTACT, 5VDC LOW ENERGY RATING)
REFER TO USER'S GUIDE PN 381333–400
FOR SETTING INFORMATION.

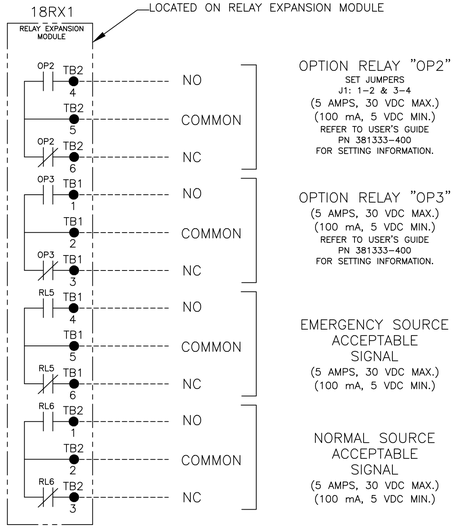
EXTERNAL FEATURE 6B
REMOTE BYPASS OF RETRANSFER
TO NORMAL TIME DELAY
OPEN TO BYPASS TIME DELAY
(MOMENTARY N/C CONTACT,
5VDC LOW ENERGY RATING)
REFER TO USER'S GUIDE PN 381333–400
FOR SETTING INFORMATION.

EXTERNAL MANUAL TRANSFER
REMOTE TRANSFER TO
NORMAL OR EMERGENCY
[NON–AUTOMATIC TRANSFER TYPE ONLY]
(MOMENTARY SPDT, CENTER–OFF CONTACTS,
5VDC LOW ENERGY RATING)

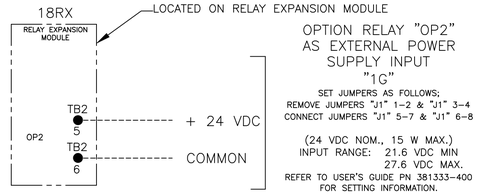
OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE)



OPTIONAL ACCESSORY 18RX1 (SECOND RELAY EXPANSION MODULE)

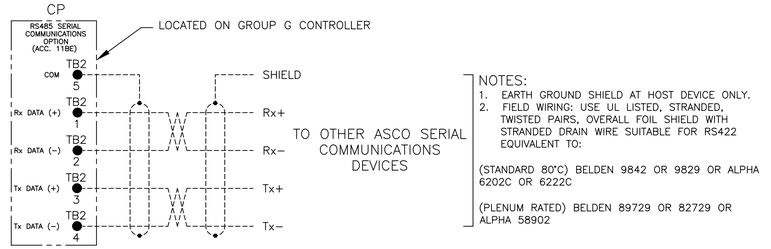


"OP2" OPTIONAL USES

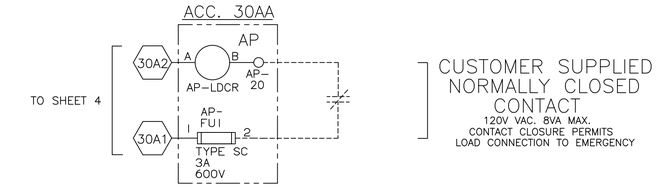


RS–485 SERIAL COMMUNICATIONS OPTION

AVAILABLE WITH OPTIONAL ACCESSORY 11BE: ADVANCED–FUNCTION SOFTWARE BUNDLE
REFER TO USER'S GUIDE PN 381333–400 FOR SETTING INFORMATION.



ACC. 30AA (LOAD SHED FROM EMERGENCY SOURCE CONTROL)



REV.	ECN NO.	BY	APP.	DATE
B	290662	VDS	HSL	08/02/21
	SEE ECN			
A	247772	SDH	SDH	4/14/14
	SEE ECN			
—	247505	VOM	EL	3/31/14
	ISSUE			

PROJECT NAME:

WIRING DIAGRAM

300 SERIES (H3ADTS/H3NDTS), 3PH 600–1200 AMPS
"H" FRAME, GROUP G CONTROLS

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
CHECKED	EL	3/28/14
PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.

ASCO® ASCO Power Technologies, L.P.
Florham Park, New Jersey 07932 U.S.A.

COMPUTER GENERATED DRAWING

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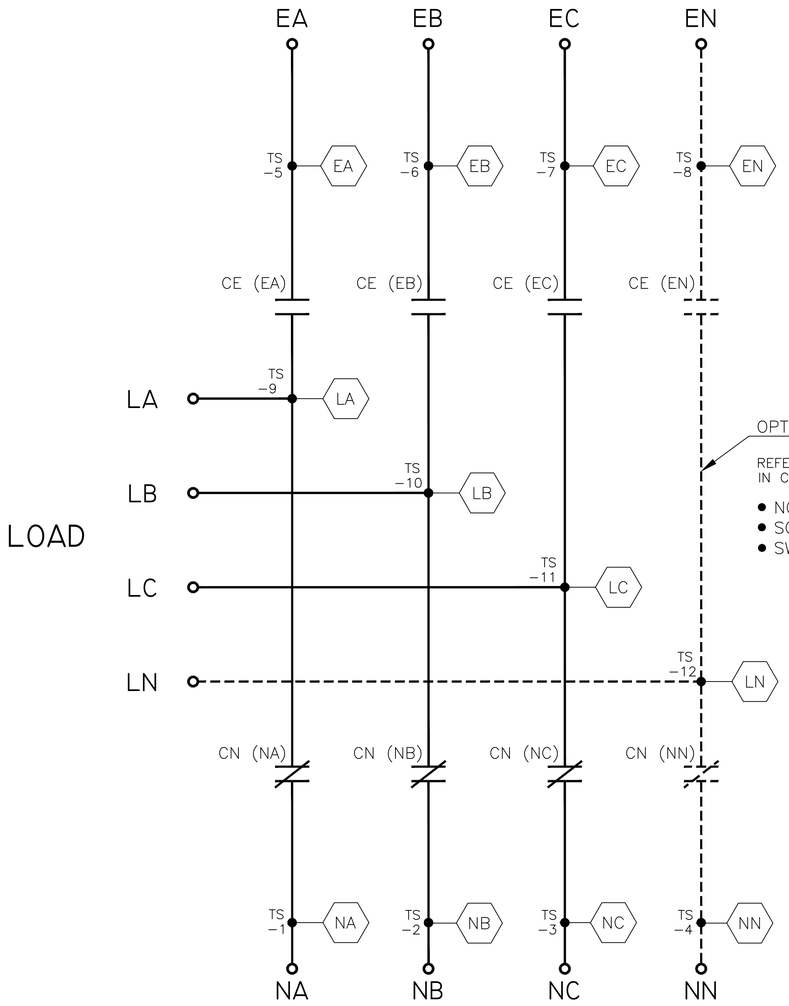
DWG. NO. 1001660–003

DRAWING REV. B ECN NO. 290662 SHEET 2 OF 6

MAIN POWER POLES

EMERGENCY



OPTIONAL NEUTRAL TYPES

REFER TO "EXPLANATION OF CATALOG NUMBER CODES" IN CATALOG NUMBER CHART ON SHEET 1.

- NONE
- SOLID BUS PLATE
- SWITCHING

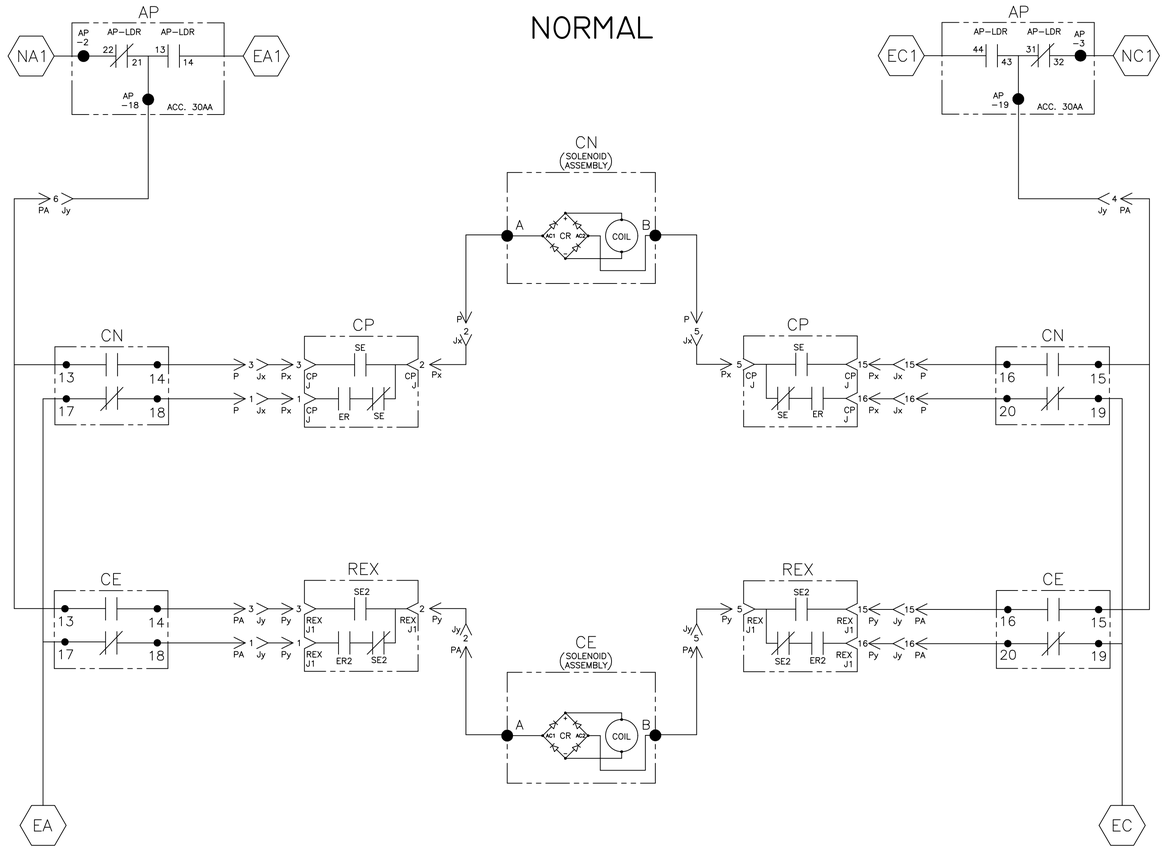
NORMAL

NOTE:

ATS SHOWN CLOSED ON NORMAL SOURCE.

TS OPERATOR CIRCUIT

NORMAL



EMERGENCY

CN CONTROL CONTACTS						
CN	SOLENOID POSITION					
	CLOSED NORMAL	BEFORE TDC*>	>	<	BEFORE <TDC	OPEN
13–14						
15–16						
17–18						
19–20						

CE CONTROL CONTACTS						
CE	SOLENOID POSITION					
	OPEN	BEFORE TDC*>	>	<	BEFORE <TDC	CLOSED EMERG.
13–14						
15–16						
17–18						
19–20						

TDC (TOP DEAD CENTER)
TRANSFER SWITCH TEST & ADJUSTMENT PROCEDURE SPECIFIES CONTROL CUT-OFF (CONTACT OPENING) SETTING.

REV.	REV. TO SHEET	ECN NO.	BY	APP.	DATE
B		290662	VDS	HSL	08/02/21
		SEE ECN			
A		247772	SDH	SDH	4/14/14
		SEE ECN			
—		247505	VOM	EL	3/31/14
		ISSUE			

PROJECT NAME:

WIRING | DIAGRAM

300 SERIES (H3ADTS/H3NDTS), 3PH 800–1200 AMPS
"H" FRAME, GROUP G CONTROLS

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
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PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

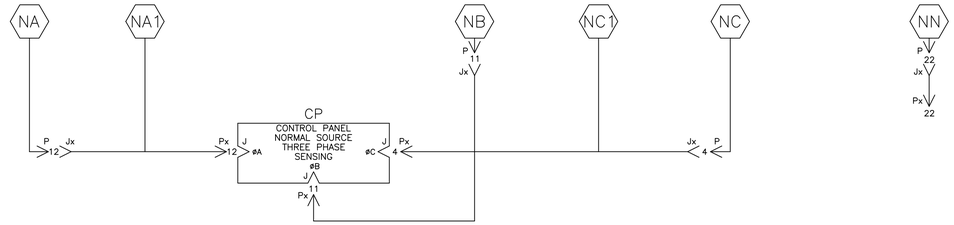
DWG. NO. 1001660–003

DRAWING REV. B | ECN NO. 290662 | SHEET 3 OF 6

NORMAL SOURCE CIRCUITS

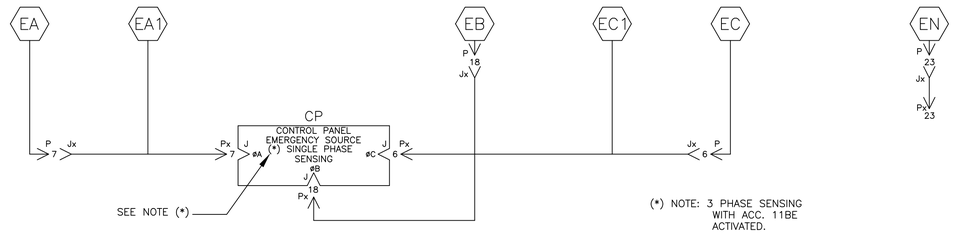
City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

NORMAL



EMERGENCY SOURCE CIRCUITS

EMERGENCY



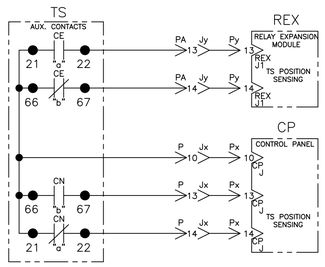
(*) NOTE: 3 PHASE SENSING WITH ACC. 11BE ACTIVATED.

LOAD TERMINAL CIRCUITS

LOAD

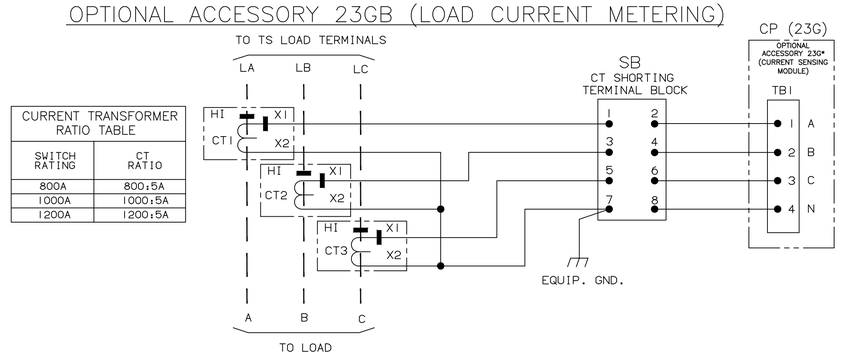
CONTROL SIGNALS & INDICATION

TS POSITION SENSING



ADDITIONAL CIRCUITS

OPTIONAL ACCESSORY 23GB (LOAD CURRENT METERING)



CURRENT TRANSFORMER RATIO TABLE	
SWITCH RATING	CT RATIO
800A	800:5A
1000A	1000:5A
1200A	1200:5A

ACC. 30AA (LOAD SHED FROM EMERGENCY SOURCE CONTROL)

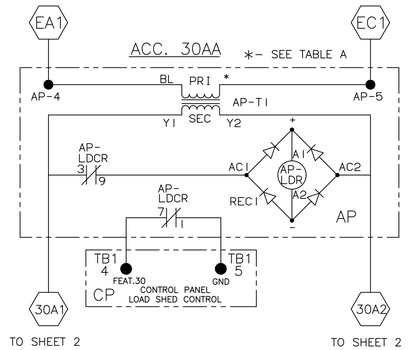


TABLE A

PRIMARY TRANS TAPS	
VOLTS	* COLOR
208	WHITE
220–240	BLACK
380–416	BROWN
440–480	RED
550–600	GREEN

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	290662	VDS	HSL	08/02/21
	SEE ECN			
A	247772	SDH	SDH	4/14/14
	SEE ECN			
—	247505	VOM	EL	3/31/14
	ISSUE			

PROJECT NAME:

WIRING | DIAGRAM

300 SERIES (H3ADTS/H3NDTS), 3PH 800–1200 AMPS
"H" FRAME, GROUP G CONTROLS

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
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PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

ASCO® ASCO Power Technologies, L.P. Florham Park, New Jersey 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

DWG. NO. 1001660-003

DRAWING REV. B | ECN NO. 290662 | SHEET 4 OF 6

PHYSICAL DIAGRAM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

ENCLOSURE

TS (TRANSFER SWITCH)
VIEW FROM INSIDE FRONT

SB

CT1 CT2 CT3

"HI"

TO CP (23G) TB1

TB

OPTIONAL ACCESSORY 23GB

STANDARD:
EMERGENCY & LOAD OUT OF THE TOP AND NORMAL OUT THE BOTTOM.

LA LB LC LN

A CR B

COIL

CE

CN

COIL

EA EB EC EN

LA LB LC LN

NA NB NC NN

OPTIONAL:
EMERGENCY OUT OF THE TOP AND NORMAL & LOAD OUT THE BOTTOM.
*NOT AVAILABLE ON 600 AMP UNITS.

SB

CT1 CT2 CT3

"HI"

TO CP (23G) TB1

OPTIONAL ACCESSORY 23GB WITH OPTIONAL BOTTOM LOAD

DOOR HINGE

BONDING STRAP PN 098323-019

DOOR TOP (INSIDE)

OPTIONAL ACC. 135L POWER METER

CP GROUP G CONTROLLER

P Jx Px J

MPA

OPTIONAL ACCESSORY 230* (CURRENT SENSING MODULE) TB1 A B C N 23G

OPTIONAL ACCESSORY 23GB TO SB

TB1 TB2 J3

USE CABLE PN 607761

ADE

REX (RELAY EXPANSION MODULE) J1 J2 J3 J12A J12B

1UP OPTIONAL ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY) J3

TO FIRST OPTIONAL ACCESSORY 18RX (J12A OR J12B) OR 1UP (J3) [1UP MUST BE LAST ACCESSORY IN CHAIN] USE CABLE PN 607761 FOR EACH CONNECTION

PA Jy Py J1

I8RX OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) J1 J2 J3 J12A J12B

BOTTOM DOOR (INSIDE)

AP
ACC. 30AA ACCESSORY ADD-ON PANEL MOUNTING
FOR INTERNAL WIRING REFER TO DWG. 387200-003

ADD

AP2
OPTIONAL ACCESSORY ADD-ON PANEL MOUNTING

AP1
OPTIONAL ACCESSORY ADD-ON PANEL MOUNTING

AP3
OPTIONAL ACCESSORY ADD-ON PANEL MOUNTING

NOTE: PHYSICAL DIAGRAM MAY VARY BASED ON THE ENCLOSURE USED.

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	290662	VDS	HSL	08/02/21
	SEE ECN			
A	247772	SDH	SDH	4/14/14
	SEE ECN			
—	247505	VOM	EL	3/31/14
	ISSUE			

PROJECT NAME:

WIRING DIAGRAM
300 SERIES (H3ADTS/H3NDTS), 3PH 800-1200 AMPS
"H" FRAME, GROUP G CONTROLS

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
CHECKED	EL	3/28/14
PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

ASCO® ASCO Power Technologies, L.P. Florham Park, New Jersey 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE SIZE DS

DWG. NO. 1001660-003

DRAWING REV. B ECN NO. 290662 SHEET 5 OF 6

WIRE RUN LISTING

◇1 ◄— HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 713081 (P,PA,J3,J4) MAIN TS	CLR	AWG
1	P-1,CN-18		16
2	P-2,CN-A		
3	P-3,CN-14		
4	P-4,TS-3		
4	CN-15,CE-15		
5	P-5,CN-B		
6	P-6,TS-7		
6	TS-7,CN-19		
6	CN-19,CE-19		
7	P-7,TS-5		
7	TS-5,CN-17		
7	CN-17,CE-17		
8	P-8,CE-24		
8	CE-24,J3-1		
9	P-9,CE-25		
9	CE-25,J3-2		
10	P-10,CN-66		
10	CN-66,CN-21		
10	CN-21,CE-21		
10	CE-21,CE-66		
11	P-11,TS-2		
12	P-12,TS-1		
12	TS-1,CN-13		
12	CN-13,CE-13		
13	P-13,CN-67		
14	P-14,CN-22		
15	P-15,CN-16		
16	P-16,CN-20		
17	P-17,J3-3		
18	P-18,TS-6		
19	P-19,TS-9		
20	P-20,TS-10		
21	P-21,TS-11		
22	P-22,TS-4		
23	P-23,TS-8		
24	P-24,TS-12		
25	J4-1,CN-27		
25	CN-27,CE-27		
26	J4-2,CE-28		
27	J4-3,CN-28		
28	J4-4,CN-30		
28	CN-30,CE-30		
29	J4-5,CE-31		
30	J4-6,CN-31		
31	J4-7,CN-33		
31	CN-33,CE-33		
32	J4-8,CE-34		
33	J4-9,CN-34		
34	J4-10,CN-36		
34	CN-36,CE-36		
35	J4-11,CN-38		
36	J4-12,CE-38		
37	J4-13,CN-39		
37	CN-39,CE-39		
38	J4-14,CN-41		
39	J4-15,CE-41		
40	J4-16,CN-42		
40	CN-42,CE-42		
41	J4-17,CN-44		
42	J4-18,CE-44		
43	J4-19,CN-45		
43	CN-45,CE-45		
44	J4-20,CN-47		
45	J4-21,CE-47		
46	J4-22,CN-48		
46	CN-48,CE-48		
47	J4-23,CN-50		
48	J4-24,CE-50		
107	PA-1,CE-18		
108	PA-2,CE-A		
109	PA-3,CE-14		
111	PA-5,CE-B		
119	PA-13,CE-22		
120	PA-14,CE-67		
121	PA-15,CE-16		
122	PA-16,CE-20		
123	PA-17,CE-52		
124	PA-18,CN-52		
131	CN-51,CE-51		
	REMOVE WIRES		
4	TS-3,CN-15		
12	TS-1,CN-13		
	ADD WIRES		
97	J3-4		
110	PA-4,CN-15		
112	PA-6,CN-13		
113	PA-7		
114	PA-8		
115	PA-9		
116	PA-10		
117	PA-11		
118	PA-12		
125	PA-19		
126	PA-20		
127	PA-21		
128	PA-22		
129	PA-23		
130	PA-24		

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

◇2 ◄— HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 309320-005 (Px,Jx) OPTIONAL 8" EXTENSION HARNESS	CLR	AWG
1	Px-1,Jx-1		16
2	Px-2,Jx-2		
3	Px-3,Jx-3		
4	Px-4,Jx-4		
5	Px-5,Jx-5		
6	Px-6,Jx-6		
7	Px-7,Jx-7		
8	Px-8,Jx-8		
9	Px-9,Jx-9		
10	Px-10,Jx-10		
11	Px-11,Jx-11		
12	Px-12,Jx-12		
13	Px-13,Jx-13		
14	Px-14,Jx-14		
15	Px-15,Jx-15		
16	Px-16,Jx-16		
24	Px-17,Jx-17		
25	Px-18,Jx-18		
26	Px-19,Jx-19		
27	Px-20,Jx-20		
28	Px-21,Jx-21		
29	Px-22,Jx-22		
30	Px-23,Jx-23		
31	Px-24,Jx-24		
	REMOVE WIRES		
4	Px-4,Jx-4		
6	Px-6,Jx-6		
7	Px-7,Jx-7		
12	Px-12,Jx-12		
	ADD WIRES		
4	Px-4,AP-3		
4	AP-3,Jx-4		
6	Px-6,AP-5		
6	AP-5,Jx-6		
7	Px-7,AP-4		
7	AP-4,Jx-7		
12	Px-12,AP-2		
12	AP-2,Jx-12		

◇3 ◄— HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 309320-005 (Py,Jy) OPTIONAL 8" ExTENSION HARNESS	CLR	AWG
107	Jy-1,Py-1		
108	Jy-2,Py-2		
109	Jy-3,Py-3		
110	Jy-4,Py-4		
111	Jy-5,Py-5		
112	Jy-6,Py-6		
113	Jy-7,Py-7		
114	Jy-8,Py-8		
115	Jy-9,Py-9		
116	Jy-10,Py-10		
117	Jy-11,Py-11		
118	Jy-12,Py-12		
119	Jy-13,Py-13		
120	Jy-14,Py-14		
121	Jy-15,Py-15		
122	Jy-16,Py-16		
123	Jy-17,Py-17		
124	Jy-18,Py-18		
125	Jy-19,Py-19		
126	Jy-20,Py-20		
127	Jy-21,Py-21		
128	Jy-22,Py-22		
129	Jy-23,Py-23		
130	Jy-24,Py-24		
	REMOVE WIRES		
110	Jy-4,Py-4		
112	Jy-6,Py-6		
	ADD WIRES		
110	Jy-4,AP-19		
112	Jy-6,AP-18		

◇4 ◄— HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☐

WIRE No.	HARNESS 781442 (P3,P4,TB) FIELD TERMINATIONS	CLR	AWG
8	P3-1,TB-1		16
9	P3-2,TB-2		
17	P3-3,TB-3		
25	P4-1,TB-4		
26	P4-2,TB-5		
27	P4-3,TB-6		
28	P4-4,TB-7		
29	P4-5,TB-8		
30	P4-6,TB-9		
	ADD WIRES		
200	P3-4		
201	P4-7		
202	P4-8		
203	P4-9		
204	P4-10		
205	P4-11		
206	P4-12		
207	P4-13		
208	P4-14		
209	P4-15		
210	P4-16		
211	P4-17		
212	P4-18		
213	P4-19		
214	P4-20		
215	P4-21		
216	P4-22		
217	P4-23		
218	P4-24		

◇5 ◄— HARNESS LOCATOR

WIRE No.	OPTIONAL ACCESSORY 23GB (CT1,CT2,CT3,SB,CP(23G)-TB1)	CLR	AWG
300	CT1-X1,SB-1		16
301	CT2-X1,SB-3		
302	CT3-X1,SB-5		
300	SB-2,CP(23G)-TB1-1		
301	SB-4,CP(23G)-TB1-2		
302	SB-6,CP(23G)-TB1-3		
303	CT1-X2,CT2-X2	GRN	
303	CT2-X2,CT3-X2	GRN	
303	CT3-X2,SB-7	GRN	
303	SB-7,EQUIP-GND	GRN	
303	SB-8,CP(23G)-TB1-4	GRN	

◇6 ◄— HARNESS LOCATOR

WIRE No.	OPTIONAL HARNESS (P4,TB) ADDITIONAL FIELD TERMINATIONS	CLR	AWG
31	P4-7,TB-10		16
32	P4-8,TB-11		
33	P4-9,TB-12		
34	P4-10,TB-13		
35	P4-11,TB-15		
36	P4-12,TB-14		

WIRE No.	ADDITIONAL WIRES	CLR	AWG
310	CP-TB1-4,AP-LDCR-7		16
311	CP-TB1-5,AP-LDCR-1		

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	290662 SEE ECN	VDS	HSL	08/02/21
A	247772 SEE ECN	SDH	SDH	4/14/14
—	247505 ISSUE	VOM	EL	3/31/14

PROJECT NAME:

WIRING DIAGRAM
300 SERIES (H3ADTS/H3NDTS), 3PH 800-1200 AMPS
"H" FRAME, GROUP G CONTROLS

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	VOM	3/28/14
CHECKED	EL	3/28/14
PROJECT APPROVAL	BK	3/28/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055

ASSEM. REF. NO.

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ASCO®
ASCO Power Technologies, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING
SCALE NONE
SIZE DS
DWG. NO. 1001660-003
DRAWING REV. B
ECN NO. 290662
SHEET 6 OF 6

Puyallup Public Safety Bl

Transfer Switch Details

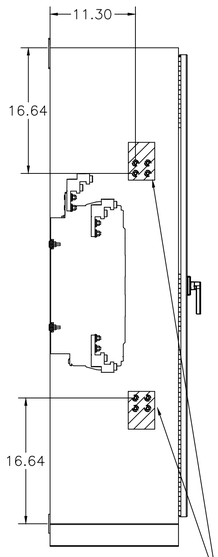
#2	ATS	AMPS: 0150	QTY: 1

Product	:	Series 300	Catalog Number	:	J3ADTSB30150NGXF
Service Voltage / Hz	:	480V/60Hz	Optional Accessories	:	1UP,11BE,18RX,30AA,44G,73CC3 125A
Bypass Isolation	:	Not Applicable	Product Description	:	300 Series, Automatic Delayed Transition Transfer Switch
No. of Switched Poles: 4	:	4	Neutral Configuration	:	Switched [B]
Withstand Rating:	:	See WCR Table Below	No. of Cables & Lug Size	:	1, #4 AWG to 600 MCM or (2) 1/0 AWG to 250 MCM
Frame = J, Switch Rating = 0150, Series = 300					
Enclosure	:	3R(F)-UL Type 3R Enclosure (See Disclaimer 3)	Service	:	Three Phase, 4-wire
Extended Warranty	:	Not Included	Markings	:	

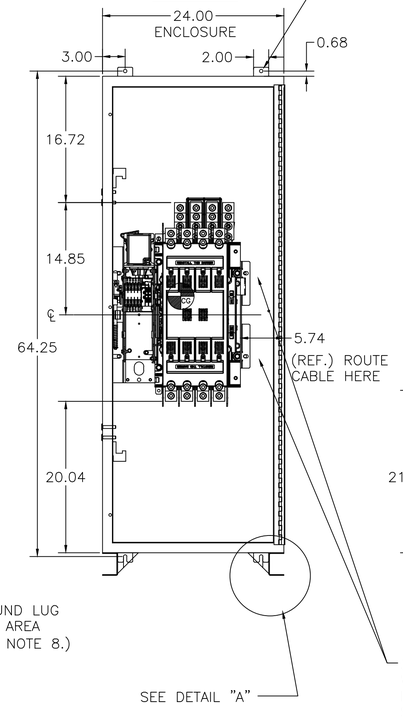
#	ACCESSORY DESCRIPTIONS	
	Accessory Code	Description
1	1UP	UPS backup power for controller to run for up to approximately 3 minutes without AC power
2	11BE	Adds the following features to the Group G controller: (1) Serial RS-485 Modbus Communications (2) Multi-Schedule Engine Exerciser (3) a 300 Entry Event Log and (4) a common alarm output function. When applied on 3-phase systems it also enables: (1) 3-Phase Emergency Source VLL sensing (2) Phase Rotation Monitoring (3) Emergency Source VLL Unbalance Monitoring.
3	18RX	REX (Relay Expansion Module) with Normal and Emergency available output contacts (18B & 18G)
4	30AA	Load shedding circuit initiated by opening of a customer - supplied contact
5	44G	Strip heater w/ thermostat, wired to load terminals: 208-600 volts
6	73CC3	100KA----SE XDSE Series surge suppressor, 100kA per mode. Connected to Load only 3 Phase 4 Wire Wye
7	125A	Seismic

OUTLINE FOR ASCO® 300 SERIES 150-600 AMPERE "J" FRAME (3ATS,3NTS,3ADTS,3NDTS) FRONT CONNECTED TRANSFER SWITCHES TYPE 3R/12 ENCLOSURE

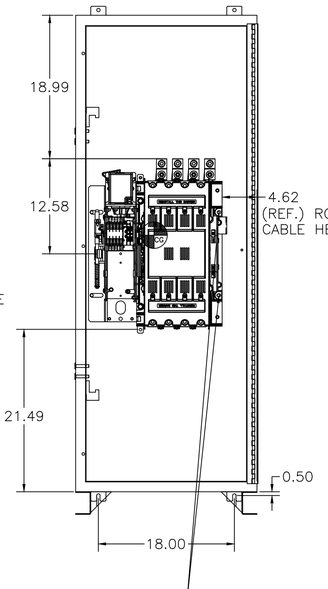
LEFT SIDE WITH DOOR



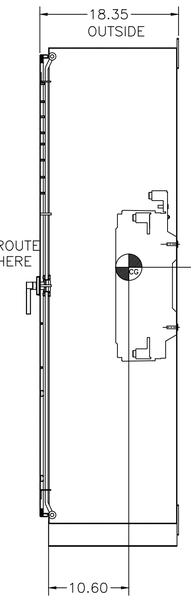
FRONT VIEW WITHOUT DOOR 600 AMPS



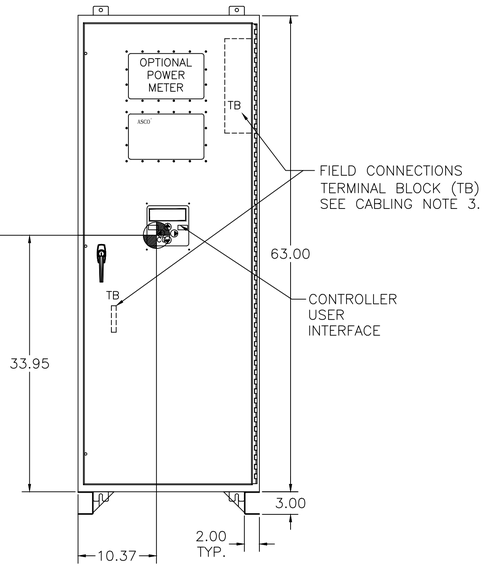
FRONT VIEW WITHOUT DOOR 150-400 AMPS



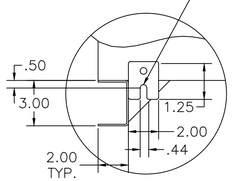
RIGHT SIDE WITH DOOR



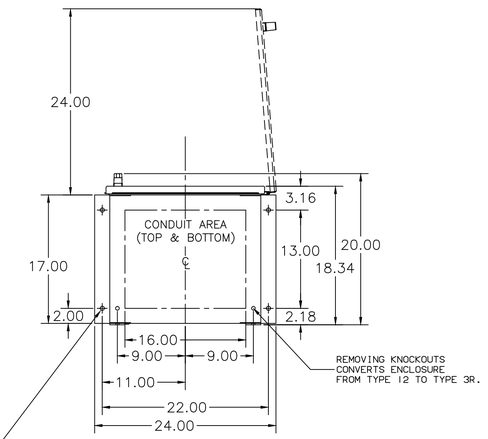
FRONT VIEW WITH DOOR



REAR GUSSETS SLOTTED TO ALIGN WITH MOUNTING TAB SLOTS



VIEW FROM THE BACK SEE DETAIL "A"



BOTTOM VIEW

GENERAL NOTES

1. TYPE 3R/12 ENCLOSURE. FREE STANDING. FLOOR OR WALL MOUNTABLE. 14 GAUGE CONSTRUCTION.
2. THREE POINT LATCHING DOOR WITH LOCKABLE HANDLE.
3. FINISH: ANSI 61 GRAY, POLYESTER POWDER STANDARD. OTHER ANSI COLORS AVAILABLE CONSULT FACTORY UL RECOGNIZED.
4. RECOMMENDED CLEARANCES:
   FRONT: 24 INCHES
5. A 20% RATED GROUND BUS IS PROVIDED.
6. UNIT IS DESIGNED FOR COMBINATION TOP AND BOTTOM CABLE ENTRY. THE STANDARD SWITCH CONFIGURATION IS FOR TOP LUGS EMERGENCY AND LOAD AND BOTTOM LUGS NORMAL. OPTIONALLY, THE SWITCH MAY BE SUPPLIED WITH REVERSE NORMAL & EMERGENCY LUGS. (REFER TO THE WIRING DIAGRAM FURNISHED WITH EACH TRANSFER SWITCH TO DETERMINE TERMINATION POSITIONS).
7. A FULL RATED NEUTRAL CONNECTION FOR EACH SOURCE AND THE LOAD IS OPTIONAL. WHEN PROVIDED IT IS IN ONE OF THE FOLLOWING FORMATS AS SPECIFIED BY THE CATALOG NO. NEUTRAL TYPE;
   A. SOLID (COPPER BUS) NEUTRAL
   B. SWITCHED NEUTRAL POLE
   C. OVERLAPPING NEUTRAL POLE (NOT AVAILABLE ON 7ACTS/ADTS UNITS)
8. CENTER OF GRAVITY.

CABLING NOTES

1. ALL SIZES SUPPLIED STANDARD WITH MECHANICAL (SCREW TYPE) LUGS. (SEE AMP SIZE BELOW)
   A. LUG MATERIAL: ALUMINUM ALLOY 6061-T6 WITH ELECTRO TIN PLATED FINISH.
   B. SCREW MATERIAL: ALUMINUM ALLOY 6262-T9 WITH ELECTRO TIN PLATED FINISH.
   C. UL LISTED, CSA CERTIFIED.
   D. LUG SCREW TIGHTENING TORQUE PER UL 486B: 19 FT-LBS.
   E. SUITABLE WIRE BENDING SPACE IS PROVIDED. (SEE AMP SIZE BELOW)
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS. (SEE AMP SIZE BELOW).
3. CUSTOMER TERMINAL BLOCKS:
   FOR ALL 300 SERIES 3ADTS, 3NDTS UNITS THE TB WILL BE MOUNTED ON THE UPPER RIGHT INSIDE OF ENCLOSURE. FOR 3ATS AND 3NTS UNITS TB WILL BE MOUNTED ON THE TRANSFER SWITCH FRAME AS INDICATED.

NOTES 150-400 AMP SWITCHES

1. SUPPLIED WITH STANDARD MECHANICAL (SCREW TYPE) LUGS ON THE NORMAL, EMERGENCY & LOAD BUS STABS. ONE (1) LUG PER PHASE AND NEUTRAL EACH SUITABLE FOR CONNECTION OF TWO (2) 1/0 -250MCM CU/AL CABLES OR ONE (1) #4 -600MCM CU/AL CABLE.
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED FOR UP TO ONE (1) 600MCM CABLE PER TERMINAL PER NEC.
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS;
   SIX (6) 1/0 -250MCM CU/AL CABLES OR THREE (3) #4 -600MCM CU/AL CABLE CONNECTIONS.

NOTES 600 AMP SWITCHES

1. SUPPLIED WITH STANDARD MECHANICAL (SCREW TYPE) LUGS ON THE NORMAL, EMERGENCY & LOAD BUS STABS. ONE (1) LUG PER PHASE AND NEUTRAL EACH SUITABLE FOR CONNECTION OF TWO (2) #2 -600MCM CU/AL CABLES.
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED FOR UP TO TWO (2) 600MCM CABLE PER TERMINAL PER NEC.
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS;
   SIX (6) #2 -600MCM CU/AL CABLE CONNECTIONS.

ATS SWITCH RATING (AMPS)	POLES	WEIGHTS LB (KG)
260-400	2	206 (93)
260-400	C2	N/A
260-400	3	212 (96)
260-400	C3	N/A
260-400	4	218 (99)
600	2	211 (96)
600	C2	N/A
600	3	215 (98)
600	C3	N/A
600	4	225 (102)

CTS/DTS SWITCH RATING (AMPS)	POLES	WEIGHTS LB (KG)
150-400	2	222 (101)
150-400	C2	N/A
150-400	3	228 (104)
150-400	C3	N/A
150-400	4	224 (102)
600	2	247 (112)
600	C2	N/A
600	3	234 (106)
600	C3	N/A
600	4	241 (109)

REV. TO SHEET	ECN NO.	BY	APP.	DATE
C	270539	RF	EL	01/04/18
	SEE ECN			
B	268191	TR	BK	7/21/17
	SEE ECN			
A	263629	BK	TR	10/12/16
	SEE ECN			
—	250220	DAJ	BK	
	ISSUED			

PROJECT NAME:

COMPOSITE | OUTLINE

300 SERIES TS "J" (66"H X 24"W X 17"D)
150-600 AMP TYPE 3R/12 SEISMIC

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DAJ	08/22/14
CHECKED	BK	08/22/14
PROJECT APPROVAL	BK	08/22/14
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

DWG. NO. 1001393-008

DRAWING REV. C | ECN NO. 270539 | SHEET 1 OF 1

THREE PHASE WIRING FOR ASCO® 300 SERIES DELAYED TRANSITION TRANSFER SWITCHES (J3ADTS/J3NDTS) 150, 260, 400, & 600 AMPERES WITH GROUP G CONTROLS

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

GENERAL INFORMATION

THIS WIRING APPLIES TO 300 SERIES TRANSFER SWITCHES THAT UTILIZE THE "J" FRAME POWER TRANSFER SWITCH RATED 150, 260, 400, & 600 AMPERES.

THE GROUP G CONTROLLER PROVIDES EITHER AUTOMATIC (J3ADTS) OR NON-AUTOMATIC [MANUAL] (J3NDTS) OPERATION BASED ON ITS FACTORY SETTING ACCORDING TO THE CUSTOMER ORDER REQUIREMENTS.

THE TYPE OF TRANSFER SWITCH PROVIDED CAN BE DETERMINED FROM THE PRODUCT IDENTIFICATION MARKINGS LOCATED ON BOTH THE POWER TRANSFER SWITCH AND THE COVER OF THE GROUP G CONTROLLER.

ALL OPERATIONAL SETTINGS AND SEQUENCES OF THE GROUP G CONTROLLER AND ITS RELATED OPTIONAL ACCESSORIES (1UP, 18RX, 23G) ARE PROVIDED IN THE USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400.

INFORMATION FOR INSTALLATION AND TESTING OF THE TRANSFER SWITCH IS PROVIDED IN THE INSTALLATION MANUAL, ASCO 3ATS, 3ADTS, 3NTS & 3NDTS, J-DESIGN 150-600 A TRANSFER SWITCHES, PART NUMBER 381333-404.

ENGINE CONTROL CONTACTS

FEATURE 7 & FEATURE 8:
ONE SET OF FORM C CONTACTS "NR" (FEAT. 7 N/C, FEAT. 8 N/O) THAT CHANGE POSITION ON EXPIRATION OF THE FEATURE 1C, OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES TIME DELAY, AND RESET ON EXPIRATION OF THE FEATURE 2E ENGINE COOLDOWN TIME DELAY.
AN AUXILIARY CONTACT THAT IS CLOSED WHEN THE TRANSFER SWITCH IS CONNECTED TO THE EMERGENCY SOURCE, IS CONNECTED ACROSS THE N/C CONTACT (FEATURE 7).

AN ADDITIONAL SET OF ENGINE STARTING CONTACTS ARE AVAILABLE ON THE GROUP G CONTROLLER WHEN THE FEATURE SETTING OF THE CONTROLLER OUTPUT CONTACTS "OP1" IS SET TO OPERATE AS "NR2". ADDITIONAL CONTACTS "NR2" ARE ALSO AVAILABLE ON RELAY EXPANSION MODULE, "REX". OUTPUT CONTACTS "OP2" AND/OR "OP3" PROVIDE THE ENGINE STARTING FUNCTION WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "NR2".

ADDITIONAL, OPTIONAL ENGINE STARTING CONTACTS "NR2" ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2" AND/OR "OP3" PROVIDE THE ENGINE STARTING FUNCTION WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "NR2".

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

LOAD DISCONNECT FEATURE

THE DELAYED TRANSITION TRANSFER SWITCH PROVIDES FOR A "LOAD DISCONNECT" PERIOD DURING TRANSFER TO EITHER SOURCE. DURING THIS PERIOD BOTH THE NORMAL AND EMERGENCY CONTACTS OF THE TRANSFER SWITCH WILL BE OPEN. THE "LOAD DISCONNECT" TIMER IS ADJUSTABLE FROM 0 TO 5 MINUTES 59 SECONDS AND FACTORY SET TO 3 SECONDS.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

ADDITIONALLY, PRE & POST TRANSFER LOAD DISCONNECT SIGNALING CONTROL IS AVAILABLE.
FEATURE 31: INCLUDES SUB-FEATURES 31F, 31G, 31M, 31N
A SET OF FORM C CONTACTS ARE PROVIDED ON THE GROUP G CONTROLLER AS "OP1". WHEN THE FEATURE SETTING OF "OP1" IS SET TO OPERATE THE CONTACTS AS "FEATURE 31", THE TIME DELAY SETTINGS OF THE SUB-FEATURES ARE AVAILABLE.

"OP1" CAN BE SET TO OPERATE TO PROVIDE THE FOLLOWING FUNCTIONS USING THE TIME DELAY SETTINGS ASSOCIATED WITH EACH SUB-FEATURE;

31F – NORMAL TO EMERGENCY PRE-TRANSFER SIGNAL
31G – EMERGENCY TO NORMAL PRE-TRANSFER SIGNAL
31M – NORMAL TO EMERGENCY POST-TRANSFER SIGNAL
31N – EMERGENCY TO NORMAL POST TRANSFER SIGNAL

THE "OP1" OUTPUT CONTACTS CHANGE POSITION FOLLOWING EACH OF THE ABOVE TIME DELAYS.

ADDITIONAL LOAD DISCONNECT CONTACTS, "FEATURE 31" ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2 AND/OR "OP3" WILL PROVIDE LOAD DISCONNECT FUNCTIONS WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "FEATURE 31".

ALL OUTPUT CONTACTS ("OP1", "OP2", "OP3") SET TO OPERATE AS "FEATURE 31", SHARE THE COMMON TIME DELAY SETTINGS OF SUB-FEATURES 31F, 31G, 31M, AND 31N.

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

SOURCE AVAILABILITY SIGNALS

SIGNALS INDICATING THE AVAILABILITY OF THE NORMAL & EMERGENCY SOURCES IS PROVIDED WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "RL5" (EMERGENCY SOURCE AVAILABLE) AND "RL6" (NORMAL SOURCE AVAILABLE) CHANGE POSITION WHEN THE SOURCE IS ACCEPTABLE.

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

COMMON ALARM & NOT IN AUTO SIGNALING FEATURES

A SET OF FORM C CONTACTS IS PROVIDED ON THE GROUP G CONTROLLER AS "OP1". THE FEATURE SETTING OF "OP1" CAN BE SET TO OPERATE THE CONTACTS AS A "NOT IN AUTO" SIGNAL.

WHEN "OP1" IS SET FOR "NOT IN AUTO", THE OUTPUT CONTACTS CHANGE POSITION WHEN THE TRANSFER IS BEING INHIBITED FROM TRANSFERRING TO THE EMERGENCY SOURCE (FEATURE 34B) OR THE TRANSFER SWITCH HAS BEEN SET FOR NON-AUTOMATIC (MANUAL) OPERATION.

WHEN OPTIONAL ACCESSORY 11BE "SOFTWARE BUNDLE" IS PART OF THE TRANSFER SWITCH ASSEMBLY, "OP1" MAY ALTERNATIVELY SET FOR A "COMMON ALARM" SIGNAL. THE OUTPUT CONTACTS CHANGE POSITION WHEN A "COMMON ALARM" IS NOT PRESENT AND RESET WHEN A "COMMON ALARM" CONDITION IS PRESENT. THE "COMMON ALARM" SIGNAL CONDITIONS ARE SELECTABLE.

ADDITIONAL "COMMON ALARM" AND "NOT IN AUTO" CONTACTS ARE AVAILABLE WHEN OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2 AND/OR "OP3" WILL PROVIDE SIGNAL FUNCTIONS WHEN THE FEATURE SETTING OF EACH IS SET TO OPERATE AS "COMMON ALARM" OR "NOT IN AUTO".

CONTACTS ARE RATED 5 AMPS RESISTIVE AT 30 VDC MAXIMUM, 100 mA AT 5 VDC MINIMUM.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

EXTERNAL POWER SUPPLY COMPATIBILITY

USE OF AN EXTERNAL POWER SUPPLY IS USEFUL WHEN REQUIRED TO EXTEND THE FOLLOWING CONTROLLER TIME DELAYS BEYOND 6 SECONDS;

FEATURE 1C – OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES
FEATURE 1F – OVERRIDE MOMENTARY EMERGENCY SOURCE OUTAGES

AN EXTERNAL POWER SUPPLY IS ALSO USEFUL WHEN THE TRANSFER SWITCH IS USED WITH COMMUNICATIONS FEATURES BY ENABLING THE CONTROLLER TO CONTINUE COMMUNICATING.

AN EXTERNAL POWER SOURCE MAY BE PROVIDED TO THE CONTROLLER, UNTIL THE NORMAL SOURCE OR EMERGENCY SOURCE IS AVAILABLE, BY USE OF;

– AN EXTERNAL 24 VDC POWER SUPPLY WITH ACCESSORY 18RX (RELAY EXPANSION MODULE)
OR
– OPTIONAL ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY MODULE)

EXTERNAL 24 VDC POWER SUPPLY "1G":
AN EXTERNAL 24 VDC POWER SUPPLY MAY BE USED TO POWER THE CONTROLLER WHEN ACCESSORY 18RX (RELAY EXPANSION MODULE) IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY. OUTPUT CONTACTS "OP2" WILL PROVIDE EXTERNAL 24 VDC POWER SUPPLY FUNCTIONALITY WHEN ITS FEATURE SETTING IS SET TO OPERATE AS "1G". ADDITIONALLY, JUMPERS MUST BE RECONFIGURED ON ACCESSORY 18RX (RELAY EXPANSION MODULE) TO ENABLE THIS FUNCTION AS FOLLOWS;

REMOVE JUMPERS "J1" 1-2 & "J1" 3-4
CONNECT JUMPERS "J1" 5-7 & "J1" 6-8

THE OUTPUT CONTACTS CHANGE POSITION WHEN EITHER THE NORMAL SOURCE OR EMERGENCY SOURCE IS AVAILABLE AND RESET WHEN NEITHER SOURCE IS AVAILABLE. THE "OP2" N/C CONTACT SWITCHES CUSTOMER PROVIDED +24 VDC FROM THE EXTERNAL POWER SUPPLY TO THE CONTROLLER.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY):
WHEN OPTIONAL ACCESSORY 1UP IS INCLUDED IN THE TRANSFER SWITCH ASSEMBLY, THE CONTROLLER IS PROVIDED WITH LIMITED RESERVE POWER (APPROXIMATELY 3 MINUTES).

LOAD CURRENT METERING

WHEN OPTIONAL ACCESSORY 23GB IS PART OF THE TRANSFER SWITCH ASSEMBLY, THREE PHASE CURRENT MEASUREMENTS ARE AVAILABLE FOR DISPLAY ON THE GROUP G CONTROLLER.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR INFORMATION ON USE.

FOUR-FUNCTION SOFTWARE BUNDLE

WHEN OPTIONAL ACCESSORY 11BE IS PART OF THE TRANSFER SWITCH ASSEMBLY, A FOUR-FUNCTION SOFTWARE BUNDLE IS AVAILABLE TO PERFORM THE FOLLOWING FUNCTIONS;

– SERIAL COMMUNICATIONS (RS-485)
– PROGRAMMABLE ENGINE EXERCISER
– EVENT LOG
– COMMON ALARM SIGNAL CAPABILITY ON GROUP G CONTROLLER "OP1" OUTPUT.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR INFORMATION ON THESE FUNCTIONS.

NON-AUTOMATIC (MANUAL) OPERATION

TRANSFER SWITCH ASSEMBLIES FACTORY SET FOR NON-AUTOMATIC OPERATION PROVIDE USER INITIATED, ELECTRICAL OPERATION OF THE TRANSFER SWITCH TO EITHER AVAILABLE SOURCE. THE TRANSFER SWITCH ASSEMBLY IS PHYSICALLY IDENTICAL TO THAT OF THE AUTOMATIC TYPE.

WHEN THE TRANSFER SWITCH IS SET FOR NON-AUTOMATIC OPERATION, A CUSTOMER PROVIDED SELECTOR SWITCH MAY BE USED TO OPERATE IT FROM A REMOTE LOCATION.

REMOTE CONTROL FEATURES

THE FOLLOWING CONTROL PANEL INPUTS PROVIDE REMOTE CONTROL FUNCTIONS FOR THE TRANSFER SWITCH. EACH FUNCTION CAN BE IMPLEMENTED BY THE CUSTOMER PROVIDING THE FORM OF CONTROL DESCRIBED. EACH CONTROL CONTACT MUST BE SUITABLE FOR A 5 VDC LOW ENERGY CIRCUIT.

EXTERNAL FEATURE 17: REMOTE TRANSFER TO EMERGENCY FEATURE (FOR AUTOMATIC TRANSFER TYPE ONLY) – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT CAUSES ENGINE START AND TRANSFER TO THE EMERGENCY SOURCE. RE-CLOSURE OF THE CONTACT ACTIVATES THE FEATURE 3A "RETRANSFER TO NORMAL (IF JUST TEST) TIME DELAY PRIOR TO RETRANSFER. IN THE EVENT THAT THE EMERGENCY SOURCE FAILS WHILE THE TRANSFER SWITCH IS CONNECTED TO EMERGENCY AND THE CUSTOMER SUPPLIED CONTACT IS OPEN, THE TRANSFER SWITCH WILL AUTOMATICALLY RETRANSFER TO THE NORMAL SOURCE.

EXTERNAL FEATURE 6B: REMOTE BYPASS OF RETRANSFER TO NORMAL TIME DELAY – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT BYPASSES FEATURE 3A RETRANSFER TO NORMAL DELAY IF ACTIVE.

REFER TO USER'S GUIDE, ASCO GROUP G CONTROLLER FOR AUTOMATIC & NON-AUTOMATIC TRANSFER SWITCHES, PART NUMBER 381333-400 FOR SETTING INFORMATION.

LOAD SHED FROM EMERGENCY SOURCE

ACC. 30AA LOAD SHEDDING CIRCUIT INITIATED BY OPENING OF CUSTOMER SUPPLIED CONTACT TO MATCH GENERATOR SET CAPACITY TO THE LOAD. RELAY DE-ENERGIZATION OPENS EMERGENCY CONTACTOR (CE) DISCONNECTING THE LOAD FROM THE EMERGENCY SOURCE. IF THE NORMAL SOURCE IS ACCEPTABLE, THE NORMAL SOURCE CONTACTOR (CN) IS CLOSED TO CONNECT THE LOAD TO THE NORMAL SOURCE. WHEN THE LOAD IS RECONNECTED TO NORMAL, THE CONTROL PANEL IS RESET IN READINESS FOR THE NEXT NORMAL SOURCE FAILURE.

NOTES

1. SWITCH SHOWN DE-ENERGIZED CONNECTED TO NORMAL SOURCE.
2. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUB. ICS 1, PART 1-101A.
3. ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
4. ○ INDICATES CUSTOMER CONNECTION POINTS.
5. ● INDICATES FACTORY CONNECTION POINTS.
6. CONNECTION POINTS THAT HAVE BOTH CUSTOMER CONNECTIONS AND FACTORY CONNECTIONS ARE SHOWN OPEN AS CUSTOMER CONNECTION POINTS.
7. THE TRANSFER UNIT IS MOUNTED ON THE BACK INSIDE SURFACE OF THE ENCLOSURE. THE CONTROL PANEL AND ANY OPTIONAL ACCESSORIES ARE MOUNTED ON THE INSIDE SURFACE OF THE DOOR.
8. AN OPERATOR'S MANUAL IS FURNISHED WITH EACH AUTOMATIC TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE SWITCH.
9. GROUND STRAP ON CONTROL PANEL IS AFFIXED TO CHASSIS (ENCLOSURE) AT LOWER LEFT CONTROL PANEL MOUNTING STUD.

CATALOG NUMBER SUFFIXES

TS FRAME	CATALOG TYPE	NEUTRAL TYPE	PHASE POLES	AMPS	VOLT CODE	CONTROLLER	OPTIONAL ACCESSORY	ENCLOSURE CODE
J	3ADTS 3NDTS	A B	3	150 260 400 600	C D E F G H J K L M N P Q R	G	X	C F G H L M N P Q BLANK FOR NONE	BLANK FOR OPEN TYPE

EXPLANATION OF CATALOG NUMBER CODES

NEUTRAL TYPE		VOLTAGE CODES 3 PHASE (3 OR 4 WIRE) 50 OR 60 Hz		ENCLOSURE CODES		
CODE	DESCRIPTION	CODE	NOMINAL VOLTAGE	CODE	TYPE	DESCRIPTION
A	SOLID NEUTRAL			BLANK		OPEN TYPE (NO ENCLOSURE)
B	SWITCHING			C	1	GENERAL PURPOSE, INDOOR
		C	208			
		D	220	F	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT
		E	230	G	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT
		F	240	H	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)
		G	277	L	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT
		H	380			
		J	400			(SECURE ENCLOSURES)
		K	415			
		L	440	M	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT
		M	460	N	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT
		N	480	P	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)
		P	550	Q	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT
		Q	575			
		R	600			

CATALOG NUMBER BASE CATALOG NUMBER

ASCO® CERTIFIED TO S.O. _____
BY _____
DATE _____
FORM REV B

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	247770	SDH	SDH	4/14/14
	SEE ECN			
A	246325	AE	BK	01/16/14
	SEE ECN			
—	245458	BK	BK	11/21/13
	ISSUE			

PROJECT NAME:
WIRING | DIAGRAM
300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS "J" FRAME, GROUP G CONTROLS,
THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DJB	11/21/13
CHECKED	BK	11/21/13
PROJECT APPROVAL	BK	11/21/13
FINAL APPROVAL		

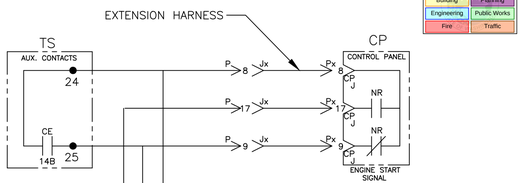
MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055
ASSEM. REF. NO.

COMPUTER GENERATED DRAWING
SCALE NONE | SIZE DS
DWG. NO. 978748-003
DRAWING REV. B | ECN NO. 247770 | SHEET 1 OF 6

ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

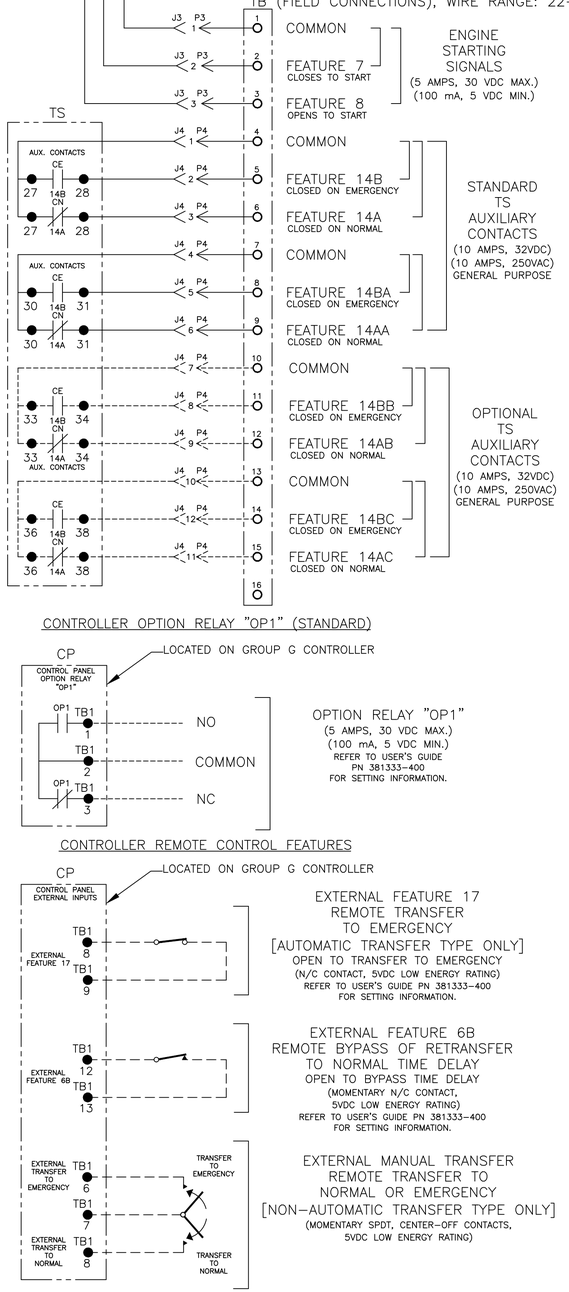
FIELD CONNECTIONS

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic



LOCATED AT UPPER RIGHT SIDE OF ENCLOSED UNIT.

TB (FIELD CONNECTIONS), WIRE RANGE: 22–12 AWG



ENGINE STARTING SIGNALS
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)

STANDARD TS AUXILIARY CONTACTS
(10 AMPS, 32VDC)
(10 AMPS, 250VAC)
GENERAL PURPOSE

OPTIONAL TS AUXILIARY CONTACTS
(10 AMPS, 32VDC)
(10 AMPS, 250VAC)
GENERAL PURPOSE

CONTROLLER OPTION RELAY "OP1" (STANDARD)

OPTION RELAY "OP1"
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

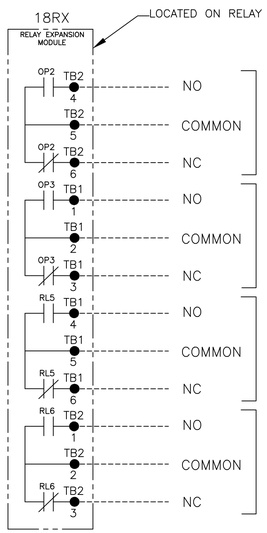
CONTROLLER REMOTE CONTROL FEATURES

EXTERNAL FEATURE 17
REMOTE TRANSFER
TO EMERGENCY
[AUTOMATIC TRANSFER TYPE ONLY]
OPEN TO TRANSFER TO EMERGENCY
(N/C CONTACT, 5VDC LOW ENERGY RATING)
REFER TO USER'S GUIDE PN 381333–400
FOR SETTING INFORMATION.

EXTERNAL FEATURE 6B
REMOTE BYPASS OF RETRANSFER
TO NORMAL TIME DELAY
OPEN TO BYPASS TIME DELAY
(MOMENTARY N/C CONTACT,
5VDC LOW ENERGY RATING)
REFER TO USER'S GUIDE PN 381333–400
FOR SETTING INFORMATION.

EXTERNAL MANUAL TRANSFER
REMOTE TRANSFER TO
NORMAL OR EMERGENCY
[NON–AUTOMATIC TRANSFER TYPE ONLY]
(MOMENTARY SPDT, CENTER–OFF CONTACTS,
5VDC LOW ENERGY RATING)

OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE)



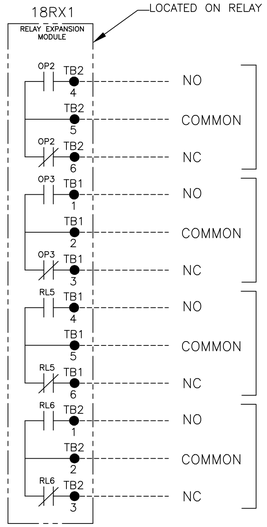
OPTION RELAY "OP2"
AS OUTPUT RELAY
SET JUMPERS
J1: 1–2 & 3–4
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

OPTION RELAY "OP3"
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

EMERGENCY SOURCE
ACCEPTABLE
SIGNAL
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)

NORMAL SOURCE
ACCEPTABLE
SIGNAL
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)

OPTIONAL ACCESSORY 18RX1 (SECOND RELAY EXPANSION MODULE)



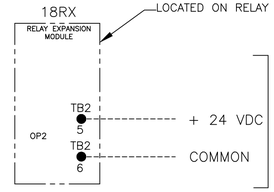
OPTION RELAY "OP2"
SET JUMPERS
J1: 1–2 & 3–4
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

OPTION RELAY "OP3"
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)
REFER TO USER'S GUIDE
PN 381333–400
FOR SETTING INFORMATION.

EMERGENCY SOURCE
ACCEPTABLE
SIGNAL
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)

NORMAL SOURCE
ACCEPTABLE
SIGNAL
(5 AMPS, 30 VDC MAX.)
(100 mA, 5 VDC MIN.)

"OP2" OPTIONAL USES

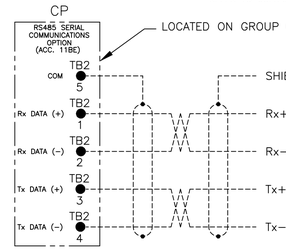


OPTION RELAY "OP2"
AS EXTERNAL POWER
SUPPLY INPUT
"1G"
SET JUMPERS AS FOLLOWS:
REMOVE JUMPERS "J1" 1–2 & "J1" 3–4
CONNECT JUMPERS "J1" 5–7 & "J1" 6–8

(24 VDC NOM., 15 W MAX.)
INPUT RANGE: 21.6 VDC MIN
27.6 VDC MAX.
REFER TO USER'S GUIDE PN 381333–400
FOR SETTING INFORMATION.

RS485 SERIAL COMMUNICATIONS OPTION

AVAILABLE WITH OPTIONAL ACCESSORY 11BE: FOUR–FUNCTION SOFTWARE BUNDLE
REFER TO USER'S GUIDE PN 381333–400 FOR SETTING INFORMATION.



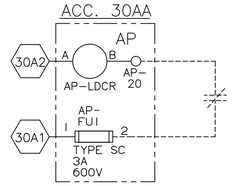
TO OTHER ASCO SERIAL COMMUNICATIONS DEVICES

NOTES:
1. EARTH GROUND SHIELD AT HOST DEVICE ONLY.
2. FIELD WIRING: USE UL LISTED, STRANDED, TWISTED PAIRS, OVERALL FOIL SHIELD WITH STRANDED DRAIN WIRE SUITABLE FOR RS422 EQUIVALENT TO:

(STANDARD 80°C) BELDEN 9842 OR 9829 OR ALPHA 6202C OR 6222C

(PLENUM RATED) BELDEN 89729 OR 82729 OR ALPHA 58902

OPTIONAL ACCESSORY 30AA (LOAD SHED FROM EMERGENCY SOURCE CONTROL)



CUSTOMER SUPPLIED
NORMALLY CLOSED
CONTACT
120V VAC. 8VA MAX.
CONTACT CLOSURE PERMITS
LOAD CONNECTION TO EMERGENCY

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	247770	SDH	SDH	4/14/14
	SEE ECN			
A	246325	AE	BK	01/16/14
	SEE ECN			
—	245458	BK	BK	11/21/13
	ISSUE			

PROJECT NAME:

WIRING | DIAGRAM

300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS
"J" FRAME, GROUP G CONTROLS,

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DJB	11/21/13
CHECKED	BK	11/21/13
PROJECT APPROVAL	BK	11/21/13
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.

COMPUTER GENERATED DRAWING

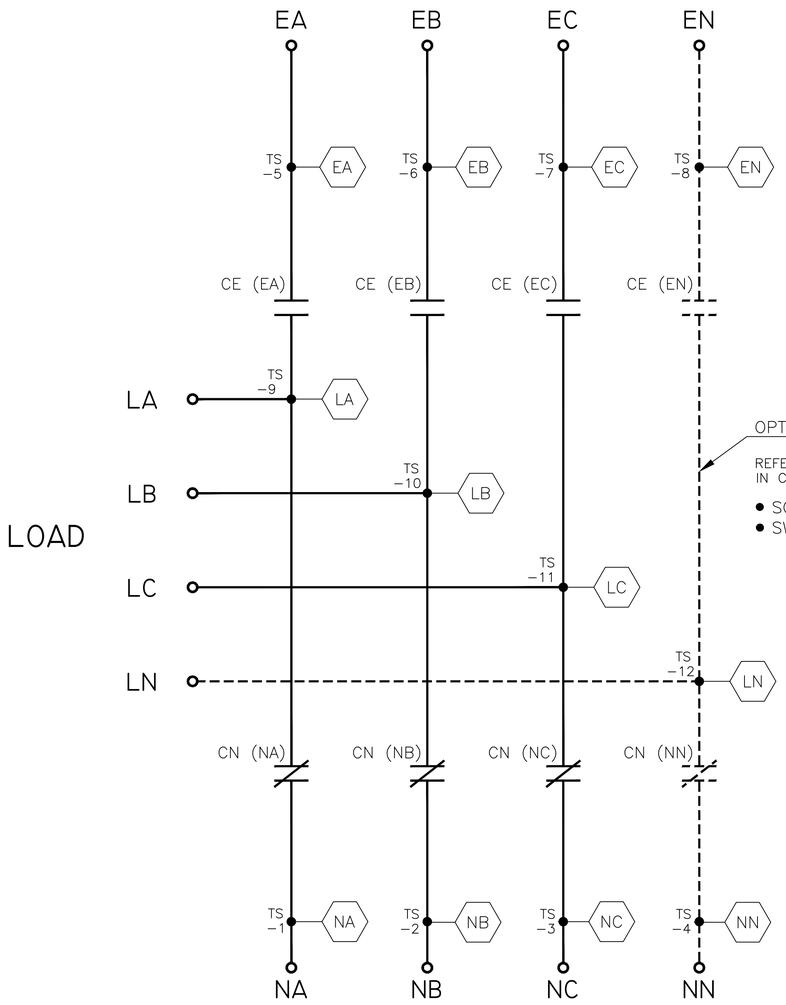
SCALE NONE | SIZE DS

DWG. NO. 978748–003

DRAWING REV. B | ECN NO. 247770 | SHEET 2 OF 6

ASCO E ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

MAIN POWER POLES



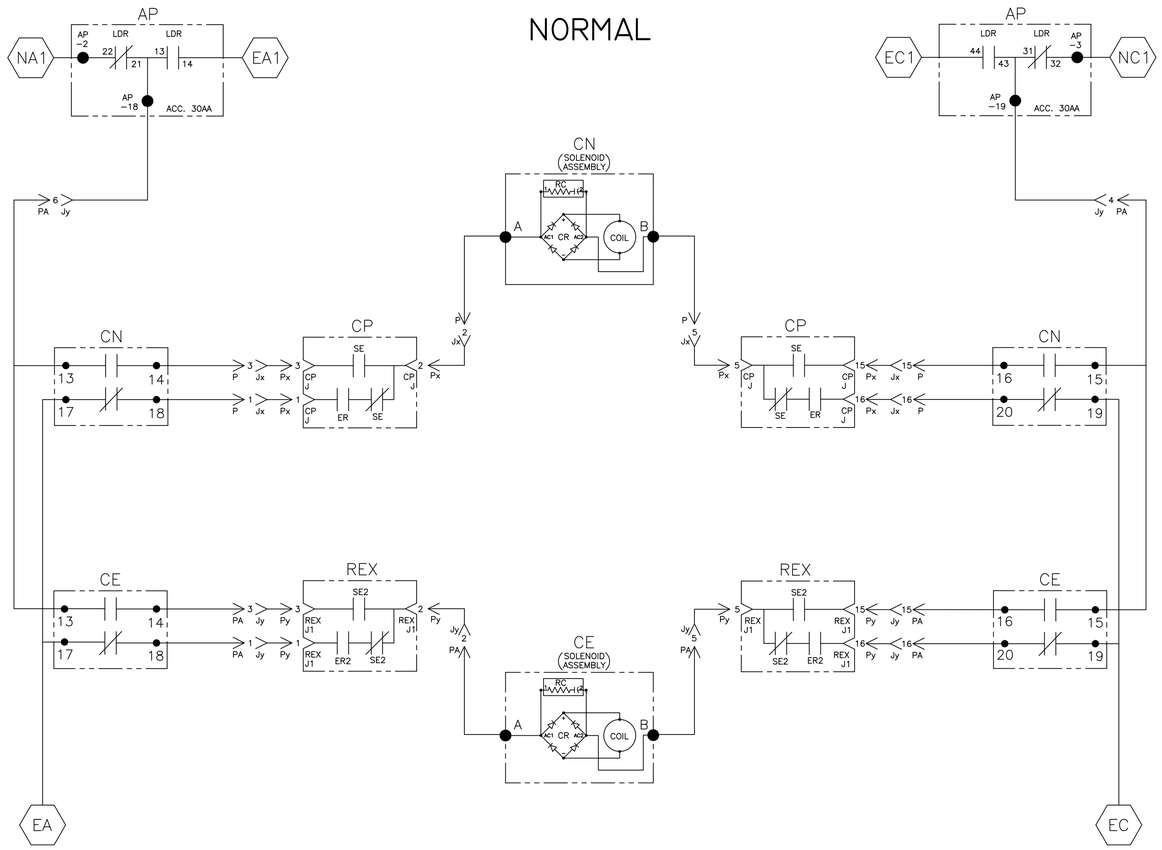
OPTIONAL NEUTRAL TYPES

REFER TO "EXPLANATION OF CATALOG NUMBER CODES" IN CATALOG NUMBER CHART ON SHEET 1.

- SOLID BUS PLATE
- SWITCHING

NOTE:
ATS SHOWN CLOSED ON NORMAL SOURCE.

TS OPERATOR CIRCUIT



CN CONTROL CONTACTS						
CN	SOLENOID POSITION					
	CLOSED NORMAL	BEFORE TDC*	>	<	BEFORE <TDC	OPEN
13–14					X	X
15–16					X	X
17–18	X	X				
19–20	X	X				

CE CONTROL CONTACTS						
CE	SOLENOID POSITION					
	OPEN	BEFORE TDC*	>	<	BEFORE <TDC	CLOSED EMERG.
13–14					X	X
15–16					X	X
17–18	X	X				
19–20	X	X				

TDC (TOP DEAD CENTER) TRANSFER SWITCH TEST & ADJUSTMENT PROCEDURE SPECIFIES CONTROL CUT–OFF (CONTACT OPENING) SETTING.

REV.	REV. TO SHEET	ECN NO.	BY	APP.	DATE
B		247770	SDH	SDH	4/14/14
		SEE ECN			
A		246325	AE	BK	01/16/14
		SEE ECN			
—		245458	BK	BK	11/21/13
		ISSUE			

PROJECT NAME:

WIRING DIAGRAM

300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS "J" FRAME, GROUP G CONTROLS,

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DJB	11/21/13
CHECKED	BK	11/21/13
PROJECT APPROVAL	BK	11/21/13
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.

ASCO E ASCO Power Technologies, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE SIZE DS

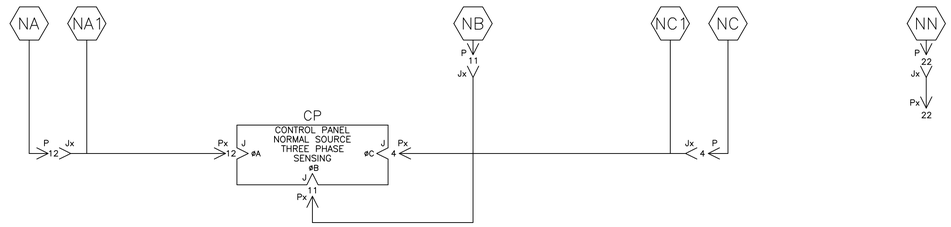
DWG. NO. 978748–003

DRAWING REV. B ECN NO. 247770 SHEET 3 OF 6

NORMAL SOURCE CIRCUITS

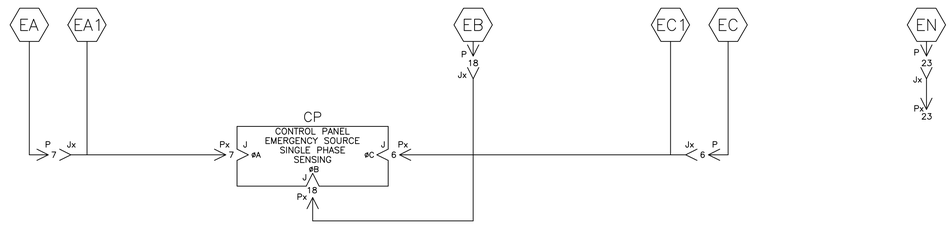
City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

NORMAL



EMERGENCY SOURCE CIRCUITS

EMERGENCY

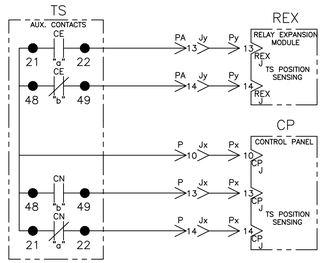


LOAD TERMINAL CIRCUITS

LOAD

CONTROL SIGNALS & INDICATION

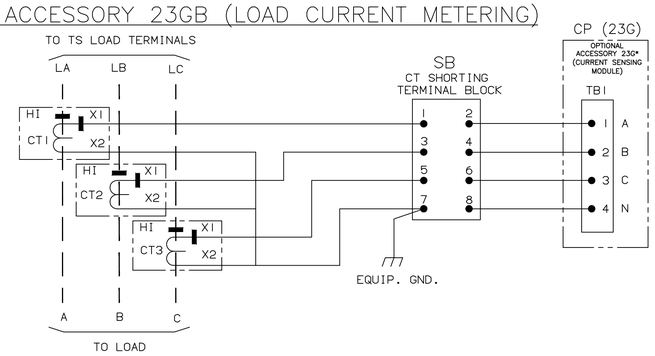
TS POSITION SENSING



ADDITIONAL CIRCUITS

OPTIONAL ACCESSORY 23GB (LOAD CURRENT METERING)

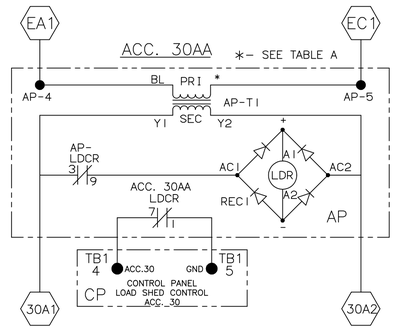
CURRENT TRANSFORMER RATIO TABLE	
SWITCH RATING	CT RATIO
150A	150:5A
260A	300:5A
400A	400:5A
600A	600:5A



OPTIONAL ACCESSORY 30AA (LOAD SHED FROM EMERGENCY SOURCE CONTROL)

TABLE A

PRIMARY TRANS TAPS	
VOLTS	* COLOR
208	WHITE
220–240	BLACK
380–416	BROWN
440–480	RED
550–600	GREEN



REV.	REV. TO SHEET	ECN NO.	BY	APP.	DATE
B		247770	SDH	SDH	4/14/14
		SEE ECN			
A		246325	AE	BK	01/16/14
		SEE ECN			
—		245458	BK	BK	11/21/13
		ISSUE			

PROJECT NAME:

WIRING DIAGRAM

300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS "J" FRAME, GROUP G CONTROLS,

THIRD ANGLE PROJECTION

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ASSEM. REF. NO.

ASCO E ASCO Power Technologies, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE SIZE DS

DWG. NO. 978748-003

DRAWING REV. B ECN NO. 247770 SHEET 4 OF 6

PHYSICAL DIAGRAM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

ENCLOSURE

TO CP (23G) TB1

CT2 CT1 CT3 "HI"

SB

TS (TRANSFER SWITCH)
VIEW FROM INSIDE FRONT

TB

OPTIONAL ACCESSORY 23GB

P3 J3 P4 J4

STANDARD:
EMERGENCY & LOAD OUT OF THE TOP AND NORMAL OUT THE BOTTOM.

LA LB LC LN

RC CR A B

EA EB EC EN

LA LB LC LN

COIL CE CN COIL

NA NB NC NN

OPTIONAL:
EMERGENCY OUT OF THE TOP AND NORMAL & LOAD OUT THE BOTTOM.
*NOT AVAILABLE ON 600 AMP UNITS.

SB

CT1 CT3 "HI" CT2

TO CP (23G) TB1

OPTIONAL ACCESSORY 23GB WITH OPTIONAL BOTTOM LOAD

DOOR HINGE

BONDING STRAP PN 098323-019

DOOR (INSIDE)

OPTIONAL ACC. 135L POWER METER

CP GROUP G CONTROLLER

P Jx Px J

OPTIONAL ACCESSORY 23G* (CURRENT SENSING MODULE) TB1 A B C N 23G

MPA

TB1 TB2 J3

OPTIONAL ACCESSORY 23GB TO SB

USE CABLE PN 607761

PA Jy Py J1

REX (RELAY EXPANSION MODULE) J2 J3 J12B J12A TB1 TB2 J1

IUP OPTIONAL ACCESSORY 1UP (UNINTERRUPTIBLE POWER SUPPLY) J3 TB1

TO FIRST OPTIONAL ACCESSORY 18RX (J12A OR J12B) OR 1UP (J3) [1UP MUST BE LAST ACCESSORY IN CHAIN] USE CABLE PN 607761 FOR EACH CONNECTION

18RX OPTIONAL ACCESSORY 18RX (RELAY EXPANSION MODULE) J2 J3 J12B J12A TB1 TB2 J1 LT

AP
ACC. 30AA
ACCESSORY ADD-ON PANEL MOUNTING
FOR INTERNAL WIRING REFER TO DWG. 387200-003

REV.	REV. TO SHEET	ECN NO.	BY	APP.	DATE
B		247770	SDH	SDH	4/14/14
		SEE ECN			
A		246325	AE	BK	01/16/14
		SEE ECN			
—		245458	BK	BK	11/21/13
		ISSUE			

PROJECT NAME:

WIRING | DIAGRAM

300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS
"J" FRAME, GROUP G CONTROLS,

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DJB	11/21/13
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PROJECT APPROVAL	BK	11/21/13
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

ASCO E ASCO Power Technologies, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

DWG. NO. 978748-003

DRAWING REV. B | ECN NO. 247770 | SHEET 5 OF 6

WIRE RUN LISTING

1 ← HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 619510-061 (P,PA,J3,J4) MAIN TS	CLR	AWG
1	P-1,CN-18		18
2	P-2,CN-A		
3	P-3,CN-14		
4	P-4,TS-3		
4	TS-3,CE-15		
4	CE-15,CN-15		
5	P-5,CN-B		
6	P-6,TS-7		
6	TS-7,CE-19		
6	CE-19,CN-19		
7	P-7,TS-5		
7	TS-5,CE-17		
7	CE-17,CN-17		
8	P-8,CE-24		
8	CE-24,J3-1		
9	P-9,CE-25		
9	CE-25,J3-2		
10	P-10,CE-21		
10	CE-21,CN-21		
10	CN-21,CN-48		
10	CE-48,CN-48		
11	P-11,TS-2		
12	P-12,TS-1		
12	TS-1,CE-13		
12	CE-13,CN-13		
13	P-13,CN-49		
14	P-14,CN-22		
15	P-15,CN-16		
16	P-16,CN-20		
17	P-17,J3-3		
18	P-18,TS-6		
19	P-19,TS-9		
20	P-20,TS-10		
21	P-21,TS-11		
22	P-22,TS-4		
23	P-23,TS-8		
24	P-24,TS-12		
25	J4-1,CE-27		
25	CE-27,CN-27		
26	J4-2,CE-28		
27	J4-3,CN-28		
28	J4-4,CE-30		
28	CE-30,CN-30		
29	J4-5,CE-31		
30	J4-6,CN-31		
31	J4-7,CE-33		
31	CE-33,CN-33		
32	J4-8,CE-34		
33	J4-9,CN-34		
34	J4-10,CE-36		
34	CE-36,CN-36		
35	J4-11,CN-38		
36	J4-12,CE-38		
37	J4-13,CE-39		
37	CE-39,CN-39		
38	J4-14,CN-41		
39	J4-15,CE-41		
40	J4-16,CE-42		
40	CE-42,CN-42		
41	J4-17,CN-44		
42	J4-18,CE-44		
43	J4-19,CE-45		
43	CE-45,CN-45		
107	PA-1,CE-18		
108	PA-2,CE-A		
109	PA-3,CE-14		
111	PA-5,CE-B		
119	PA-13,CE-22		
120	PA-14,CE-49		
121	PA-15,CE-16		
122	PA-16,CE-20		
123	PA-17,CE-47		
124	PA-18,CN-47		
	REMOVE WIRES		
4	TS-3,CE-15		
12	TS-1,CE-13		
	ADD WIRES		
97	J3-4		
44	J4-20		
45	J4-21		
46	J4-22		
47	J4-23		
48	J4-24		
110	PA-4,CE-15		
112	PA-6,CE-13		
113	PA-7		
114	PA-8		
115	PA-9		
116	PA-10		
117	PA-11		
118	PA-12		
125	PA-19		
126	PA-20		
127	PA-21		
128	PA-22		
129	PA-23		
130	PA-24		

2 ← HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 309320-005 (Px,Jx) OPTIONAL 8" EXTENSION HARNESS	CLR	AWG
1	Px-1,Jx-1		16
2	Px-2,Jx-2		
3	Px-3,Jx-3		
4	Px-4,Jx-4		
5	Px-5,Jx-5		
6	Px-6,Jx-6		
7	Px-7,Jx-7		
8	Px-8,Jx-8		
9	Px-9,Jx-9		
10	Px-10,Jx-10		
11	Px-11,Jx-11		
12	Px-12,Jx-12		
13	Px-13,Jx-13		
14	Px-14,Jx-14		
15	Px-15,Jx-15		
16	Px-16,Jx-16		
24	Px-17,Jx-17		
25	Px-18,Jx-18		
26	Px-19,Jx-19		
27	Px-20,Jx-20		
28	Px-21,Jx-21		
29	Px-22,Jx-22		
30	Px-23,Jx-23		
31	Px-24,Jx-24		
	REMOVE WIRES		
4	Px-4,Jx-4		
6	Px-6,Jx-6		
7	Px-7,Jx-7		
12	Px-12,Jx-12		
	ADD WIRES		
4	Px-4,AP-3		
4	AP-3,Jx-4		
6	Px-6,AP-5		
6	AP-5,Jx-6		
7	Px-7,AP-4		
7	AP-4,Jx-7		
12	Px-12,AP-2		
12	AP-2,Jx-12		

3 ← HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☒

WIRE No.	HARNESS 309320-005 (Py,Jy) OPTIONAL 8" EXTENSION HARNESS	CLR	AWG
107	Jy-1,Py-1		
108	Jy-2,Py-2		
109	Jy-3,Py-3		
110	Jy-4,Py-4		
111	Jy-5,Py-5		
112	Jy-6,Py-6		
113	Jy-7,Py-7		
114	Jy-8,Py-8		
115	Jy-9,Py-9		
116	Jy-10,Py-10		
117	Jy-11,Py-11		
118	Jy-12,Py-12		
119	Jy-13,Py-13		
120	Jy-14,Py-14		
121	Jy-15,Py-15		
122	Jy-16,Py-16		
123	Jy-17,Py-17		
124	Jy-18,Py-18		
125	Jy-19,Py-19		
126	Jy-20,Py-20		
127	Jy-21,Py-21		
128	Jy-22,Py-22		
129	Jy-23,Py-23		
130	Jy-24,Py-24		
	REMOVE WIRES		
110	Jy-4,Py-4		
112	Jy-6,Py-6		
	ADD WIRES		
110	Jy-4,AP-19		
112	Jy-6,AP-18		

4 ← HARNESS LOCATOR — BOX CHECKED IF HARNESS IS MODIFIED ☐

WIRE No.	HARNESS 781442 (P3,P4,TB) FIELD TERMINATIONS	CLR	AWG
8	P3-1,TB-1		16
9	P3-2,TB-2		
17	P3-3,TB-3		
25	P4-1,TB-4		
26	P4-2,TB-5		
27	P4-3,TB-6		
28	P4-4,TB-7		
29	P4-5,TB-8		
30	P4-6,TB-9		
	ADD WIRES		
200	P3-4		
201	P4-7		
202	P4-8		
203	P4-9		
204	P4-10		
205	P4-11		
206	P4-12		
207	P4-13		
208	P4-14		
209	P4-15		
210	P4-16		
211	P4-17		
212	P4-18		
213	P4-19		
214	P4-20		
215	P4-21		
216	P4-22		
217	P4-23		
218	P4-24		

5 ← HARNESS LOCATOR

WIRE No.	OPTIONAL ACCESSORY 23GB (CT1,CT2,CT3,SB,CP(23G)-TB1)	CLR	AWG
300	CT1-X1,SB-1		16
301	CT2-X1,SB-3		
302	CT3-X1,SB-5		
300	SB-2,CP(23G)-TB1-1		
301	SB-4,CP(23G)-TB1-2		
302	SB-6,CP(23G)-TB1-3		
303	CT1-X2,CT2-X2	GRN	
303	CT2-X2,CT3-X2	GRN	
303	CT3-X2,SB-7	GRN	
303	SB-7,EQUIP-GND	GRN	
303	SB-8,CP(23G)-TB1-4	GRN	

6 ← HARNESS LOCATOR

WIRE No.	OPTIONAL HARNESS (P4,TB) ADDITIONAL FIELD TERMINATIONS	CLR	AWG
31	P4-7,TB-10		16
32	P4-8,TB-11		
33	P4-9,TB-12		
34	P4-10,TB-13		
35	P4-11,TB-15		
36	P4-12,TB-14		

WIRE No.	ADDITIONAL WIRES	CLR	AWG
310	CP-TB1-4,AP-LDCR-7		16
311	CP-TB1-5,AP-LDCR-1		

REV. TO SHEET	ECN NO.	BY	APP.	DATE
B	247770 SEE ECN	SDH	SDH	4/14/14
A	246325 SEE ECN	AE	BK	01/16/14
—	245458 ISSUE	BK	BK	11/21/13

PROJECT NAME:

WIRING DIAGRAM
300 SERIES J3ADTS/J3NDTS, THREE PHASE 150, 260, 400, & 600 AMPS
"J" FRAME, GROUP G CONTROLS,

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	DJB	11/21/13
CHECKED	BK	11/21/13
PROJECT APPROVAL	BK	11/21/13
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055

ASSEM. REF. NO.

ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING
SCALE NONE SIZE DS
DWG. NO. 978748-003
DRAWING REV. B ECN NO. 247770 SHEET 6 OF 6

Puyallup Public Safety Bl

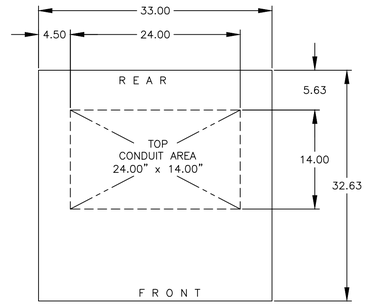
Transfer Switch Details

#3	ATS	AMPS: 0150	QTY: 1

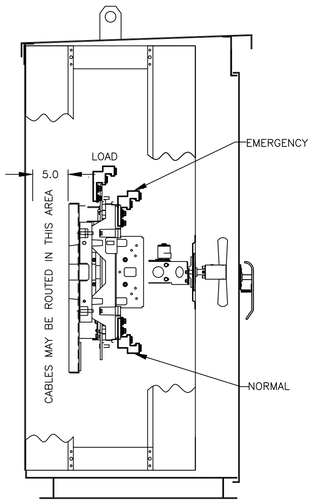
Product	:	Series 300	Catalog Number	:	J03MTSA30150N0XS
Service Voltage / Hz	:	480V/60Hz	Optional Accessories	:	44G,73CC3,125A,170B
Bypass Isolation	:	Not Applicable	Product Description	:	300 Series, Manual Transfer Switch
No. of Switched Poles: 3	:	3	Neutral Configuration	:	Solid [A]
Withstand Rating: Frame = J, Switch Rating = 0150, Series = 300	:	See WCR Table Below	No. of Cables & Lug Size	:	2, 1/0 AWG - 250 MCM or One #4 - 600 MCM
Enclosure	:	3RX(S)-UL Type 3RX - 316 Stainless Steel Secure (See Disclaimer 3)	Service	:	Three Phase, 4-wire
Extended Warranty	:	Not Included	Markings	:	

#	ACCESSORY DESCRIPTIONS	
	Accessory Code	Description
1	44G	Strip heater w/ thermostat, wired to load terminals: 208-600 volts
2	73CC3	100KA----SE XDSE Series surge suppressor, 100kA per mode. Connected to Load only 3 Phase 4 Wire Wye
3	125A	Seismic
4	170B	Auxiliary contact sets to indicate switch position & LED indication on panel : Source 1, Off, and Source 2

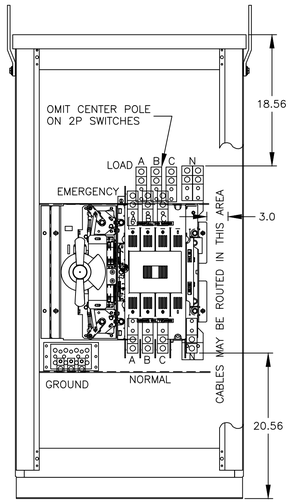
City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic



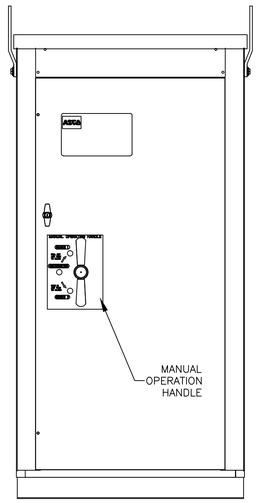
"TOP VIEW"



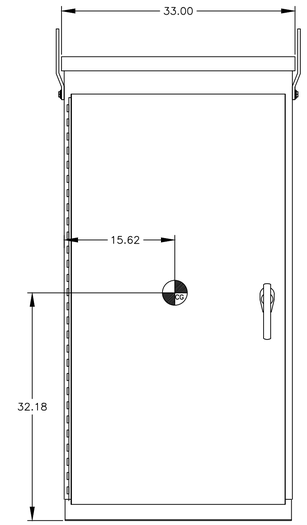
"LEFT SECTION VIEW"



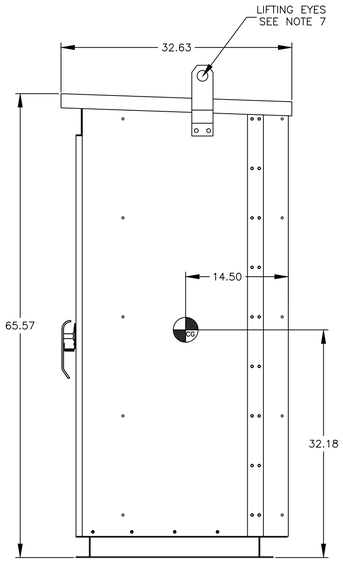
"FRONT VIEW"
"WITHOUT COVER"



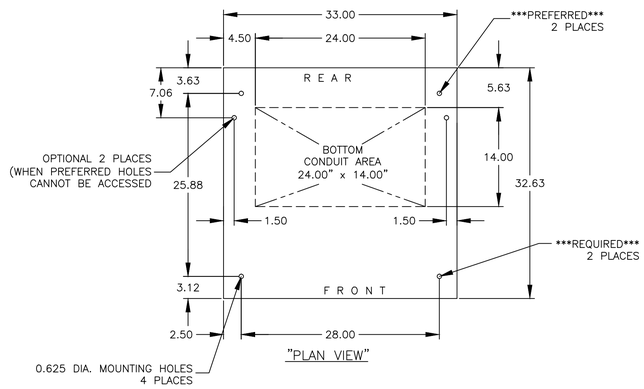
"FRONT INTERIOR VIEW"



"FRONT VIEW"



"RIGHT SIDE VIEW"



"PLAN VIEW"

CONSTRUCTION NOTES

1. FLOOR MOUNTED ENCLOSURE.
   TYPE 3R CONSTRUCTED FROM CODE GAUGE STEEL.
   FINISH: ANSI 61 GRAY POLYESTER SEMI GLOSS ELECTROSTATIC POWDER.
   TYPE 3RX EXTERIOR CONSTRUCTED FROM CODE GAUGE STAINLESS STEEL.
   (R) EXTERIOR CONSTRUCTED FROM TYPE 304 STAINLESS STEEL.
   (S) EXTERIOR CONSTRUCTED FROM TYPE 316 STAINLESS STEEL.
2. EXTERIOR DOORS HAVE PADLOCKABLE HANDLES WITH 3-POINT LATCH
3. DESIGNED FOR FRONT ACCESS
4. RECOMMENDED CLEARANCES: FRONT: 36 INCHES, REAR: NONE.
5. ⊕ CENTER OF GRAVITY
6. APPROXIMATE WEIGHT: 1075 LBS.
7. LIFTING PLATES: SECTIONS ARE SUPPLIED WITH LIFTING PLATES.
   INSPECT PLATES FOR DAMAGE AND TORQUE BOLTS TO 45 FT LBS BEFORE USE.
   REFER TO ANSI/NEMA PB 2.1 FOR PROPER HANDLING OF EQUIPMENT.
   AFTER INSTALLATION OF SECTION, REMOVE LIFTING PLATES.
   REINSTALL BOLTS INTO EXTERIOR HOLES AND TORQUE TO APROX. 20 FT LBS.

TRANSFER SWITCH

1. J FRAME MANUAL TRANSFER SWITCH 150A – 600A.
2. TRANSFER SWITCH RATING: 150 AMPS, 260 AMPS, 400 AMPS, 600 AMPS.
   SHORT CIRCUIT RATING WHEN PROTECTED BY A CIRCUIT BREAKER
   TIME RESPONSE, MAXIMUM 0.05 SECONDS:
   42,000 RMS SYM @ 480V.
3. A FULL RATED NEUTRAL CONNECTION FOR EACH SOURCE AND THE LOAD IS OPTIONAL.
   WHEN PROVIDED IT IS IN ONE OF THE FOLLOWING FORMATS.
   A. SOLID NEUTRAL
   B. SWITCHED NEUTRAL POLE
4. UL 1008

TERMINATIONS 150A – 400A

1. SUPPLIED WITH MECHANICAL (SCREW TYPE) LUGS FOR CU/AL CABLE.
   NORMAL: (1) #4 – 600MCM OR (2) 1/0 – 250MCM PER PHASE & NEUTRAL
   LOAD: (1) #4 – 600MCM OR (2) 1/0 – 250MCM PER PHASE & NEUTRAL
   EMERGENCY: (1) #4 – 600MCM OR (2) 1/0 – 250MCM PER PHASE & NEUTRAL
   GROUND: (3) #4 – 600MCM OR (6) 1/0 – 250MCM
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED AS PER NEC.
2. OPTIONAL LUGS MAY BE SUPPLIED.

TERMINATIONS 600A

1. SUPPLIED WITH MECHANICAL (SCREW TYPE) LUGS FOR CU/AL CABLE.
   NORMAL: (2) #2 – 600MCM PER PHASE & NEUTRAL
   LOAD: (2) #2– 600MCM PER PHASE & NEUTRAL
   EMERGENCY: (2) #2 – 600MCM PER PHASE & NEUTRAL
   GROUND: (6) #2 – 600MCM
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED AS PER NEC.
2. OPTIONAL LUGS MAY BE SUPPLIED.

REV. TO SHEET	ECN NO.	BY	APP.	DATE
A	284765	LAM	RN	6/1/20
	SEE ECN			
—	271047	SG	RN	02/09/18
	NEW ISSUE			

PROJECT NAME:

OUTLINE | MOUNTING

JMTS, MANUAL TRANSFER SWITCH 150A – 600A
TYPE 3R/3RX 66 X 33 X 33

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	SG	02/07/18
CHECKED	RN	
PROJECT APPROVAL		
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.

COMPUTER GENERATED DRAWING

SCALE 3/32" = 1" | SIZE DS

DWG. NO. 977099-008

ASCO E ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

DRAWING REV. A | ECN NO. 284765 | SHEET 1 OF 1

EQUIPMENT STORAGE REQUIREMENTS

Equipment provided by Schneider-Electric and/or ASCO Power Technologies that is stored for a short-term duration (i.e., days to weeks) or long-term duration (i.e., months to years), must be kept in a cool, dry, temperature-controlled environment. Storage of equipment in open warehouses, locations without proper temperature and humidity control, and/or outdoor storage is not acceptable without the utilization of heating elements, thermostats, humidistats, and protection from weather and dirt. Failure to comply may result in moisture ingress and/or condensation to form resulting in rusting and or corrosion, component and/or equipment failure and replacement, and/or nullification of any manufacturer warranty.

For **General Instructions for Proper Handling, Installation, Operation, and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less**, refer to ANSI NEMA PB 2.1-2013

Copies of the following documents should be included on the submittals, depending on the units that are on the proposal:

For ASCO Power Technology's **Switchgear and Switchboards**, refer to Instruction Bulletin **381333-393**.
For Schneider-Electric/Square D's **Power Zone 4 (PZ4) Switchgear**, refer to Instruction Bulletin **80298-002-09**.
For Schneider-Electric/Square D's **Power Zone 4 (PZ4) NEMA 3R Walk-In Switchgear**, refer to Instruction Bulletin **80298-156-02**.
For Schneider-Electric/Square D's **Quality, Efficient, Delivery" (QED2) Switchboard**, refer to Instruction Bulletin **80043-055-14**.
For Schneider-Electric/Square D's **Masterclad Metal-Clad Indoor Switchgear**, refer to Instruction Bulletin **6055-30.**

Limited Warranty

Series 150, 200, 300 and 4000 Power Transfer Switches

This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of each purchaser's business.

General

ASCO Power Technologies, LP products and systems are in our opinion the finest available. We take pride in our products and are pleased that you have chosen them. Under certain circumstances we offer with our products the following Limited Guardian Warranty Against Defects in Material and Workmanship.

Please read your Guardian Warranty carefully. This Warranty sets forth our responsibilities in the unlikely event of defect and tells you how to obtain performance under this Warranty.

Limited Warranty Against Defects in Material and Workmanship:

Product Description	Series	Catalog Code
Automatic Transfer Switch	150, 200	1ATS, 2ATS
	300	3ATS, 3ADTS
	4000	4ATS, 4ADTS, 4ACTS
Non-Automatic Transfer Switch (Electrically Operated)	300	3NTS, 3NDTS
ASCO Lighting Control Panels	4000	4NTS, 4NDTS, 4NCTS
Manual Transfer Switch	300	3MTS, 3MTQ, 3MUQ, 3MPQ, 3MGQ, 3MGDQ, 3MTDQ
Service Entrance Transfer Switch (SEATS)	300	3AUS, 3ADUS, 3APS, 3ARS, 3MUS
Power Transfer Load Center (PTLC)	300	300L
Quick Connect Panels	300	3QCN, 3QCU, 3QCD
Electrically Operated Bypass Switch	4000	4ATE, 4NTE, 4ADTE, 4NDTE

Limited Warranty

ASCO warrants that the ATS will be free from defects in material and workmanship and will conform to ASCO's standard specifications for the ATS for a period of twenty four (24) months from date of product shipment from ASCO (the "Warranty Period"). This Limited Warranty does not extend to subsequent owners of the structure during the Warranty period.

Terms of Warranty

The foregoing Limited Warranty is conditioned upon user's compliance with the following:

1. The ASCO Power Transfer Switch is installed in accordance with ASCO specifications and state and local codes and standards by an electrician licensed in the state of installation.

2. The ASCO Power Transfer Switch is maintained in accordance with ASCO instructions and used under normal conditions for the purposes intended by ASCO.

All warranty field-related repairs, replacements or adjustments must be made by ASCO Services Inc. or its duly authorized representative.

Optional Available Extended Warranty

Optional extended warranty coverage may be purchased from ASCO for a specified fee at the time of the original sale. If purchased, Warranty period shall be extended up to an additional thirty - six (36) months beyond the standard twenty - four (24) months to provide up to five (5) year coverage applicable to the above referenced products, except for 3AUS, 3APS, and 3ARS products where the warranty period for the circuit breaker shall be limited to 24 months from date of shipment from ASCO. The length of optional extended coverage shall be reflected on the ASCO invoice and/or order acknowledgement document.

ASCO Power Technologies™

Warranty Extends To First Purchaser for Use, Non-Transferable

This Warranty is extended to the first person, firm, association, or corporation for whom the ASCO product specified herein is originally installed for use (the "user") in the fifty United States or Canada. This Warranty is not transferable or assignable without the prior written permission of ASCO.

Assignment of Warranties

ASCO assigns to user any warranties which are made by manufacturers and suppliers of components of, or accessories to, the ASCO product and which are assignable, but ASCO makes no representations as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components or accessories.

Drawings, Descriptions

ASCO warrants for the period and on the terms of the Warranty set forth herein that the ASCO product will conform to the descriptions contained in the certified drawings, if any, applicable thereto, to ASCO's final invoices, and to applicable ASCO product brochures and manuals current as of the date of product shipment ("descriptions"). ASCO does not control the use of any ASCO product. Accordingly, it is understood that the descriptions are not Warranties of performance and not Warranties of fitness for a particular purpose.

Warranty Claims Procedure

Within a reasonable time, but in no case to exceed thirty (30) days, after user's discovery of a defect, user shall contact ascopowerwarranty@ascopower.com. Subject to the limitations specified herein, an ASCO Services field service representative will repair the non-conforming ASCO product warranted hereunder, without charge for parts, labor, or travel expenses. Warranty coverage will apply only after ASCO's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty . All defective products and component parts replaced under this Warranty become the property of ASCO.

Warranty Performance of Component Manufacturers

It is ASCO's practice, consistent with its desire to remedy Warranty defects in the most prompt and effective manner possible, to cooperate with and utilize the services of component manufacturers and their authorized representatives in the performance of work to correct defects in the product components. Accordingly, ASCO may utilize third parties in the performance of Warranty work, including repair or replacement hereunder, where, in ASCO's opinion, such work can be performed in less time, with less expense, or in closer proximity to the ASCO product.

Items Not Covered By Warranty

This Warranty does not cover damage or defect caused by misuse, improper application, wrong or inadequate electrical current or connection, negligence, inappropriate on site operating conditions, repair by non-ASCO designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, water, or other corrosive liquids or gases, acts of God, theft or installation contrary to ASCO's recommendations or specifications, or in any event if the ASCO serial number has been altered, defaced, or removed.

This Warranty does not cover shipping costs, installation costs, external circuit breaker resetting or maintenance or service items and further, except as may be provided herein, does not include labor costs or transportation charges arising from the replacement of the ASCO product or any part thereof or charges to remove or reinstall same at any premises of user.

Repair or replacement of a defective product or part thereof does not extend the original Warranty period.

The products listed in this Warranty are not for use in the control area or any reactor connected or safety applications or within the containment area of a nuclear facility or for integration into medical devices.

Schneider Electric™

Limitations

This Warranty is in lieu of and excludes all other Warranties, express or implied, including merchantability and fitness for a particular purpose.

User's sole and exclusive remedy is repair or replacement of the ASCO product as set forth herein.

If user's remedy is deemed to fail of its essential purpose by a court of competent jurisdiction, ASCO's responsibility for property loss or damage shall not exceed the net product purchase price.

In no event shall ASCO assume any liability for indirect, special, incidental, consequential or exemplary damages of any kind whatsoever, including without limitation lost profits, business interruption or loss of data, whether any claim is based upon theories of contract, negligence, strict liability, tort, or otherwise.

Miscellaneous

No salesperson, employee, or agent of ASCO is authorized to add to or vary the terms of this Warranty. Warranty terms may be modified, if at all, only in writing signed by an ASCO officer.

ASCO obligations under this Warranty are conditioned upon ASCO timely receipt of full payment of the product purchase price and any other amounts due. ASCO reserves the right to supplement or change the terms of this Warranty in any subsequent warranty offering to user or others.

In the event that any provision of this Warranty should be or becomes invalid and/or unenforceable during the Warranty period, the remaining terms and provisions shall continue in full force and effect.

This Warranty shall be governed by, and construed under, the laws of the State of New Jersey, without reference to the conflict of laws principles thereof.

This Warranty represents the entire agreement between ASCO and user with respect to the subject matter herein and supersedes all prior or contemporaneous oral or written communications, representations, understandings, or agreements relating to this subject.

10/08/21 Publication No. 381339-334

Flexible Power Transfer Solutions for Commercial & Industrial Applications

ASCO Power Technologies™

ASCO SERIES 300
Power Transfer Switches

se.com

Life Is On Schneider Electric

ASCO SERIES 300 Automatic Transfer Switches

Power outages impact small and large facilities alike. ASCO SERIES 300 Automatic Transfer Switches offer rugged design and reliable performance to small and mid-size commercial and industrial facilities in packaged solutions that are easy to select, procure, install, and operate.

Product Details

Transfer Switch Overview

Every SERIES 300 generator transfer switch is engineered with ASCO's reliability expertise in a package that makes backup power accessible for small and mid-size facilities. Leveraging knowledge derived from a century of critical power transfer experience, each SERIES 300 is backed by the same ASCO technical support and service that solves the most demanding critical power challenges facing facilities today.

ASCO's SERIES 300 lineup offers flexible backup power solutions for businesses of every size.

SERIES 300 Automatic Transfer Switches

Designed to Fit Anywhere

The ASCO SERIES 300 product line provides the most compact design of generator power transfer switches in the industry.

Available to mount on walls or floors, all models through 2000 amperes are designed to be completely front-accessible. This permits installation flush against walls while allowing installation of cabling and connections from the front of the switch. Cable entrance plates are standard on 1600 and 2000 amperes units; these allow use of optional side-mounted pull boxes for additional cable bending space.

Basic Automatic Transfer Switch Functions

- 30 through 3000 amperes in compact designs
- Up to 600 VAC, single or three phase
- Listed to UL 1008 - Standard for Safety - Transfer Switch Equipment
- True double-throw operation: The single solenoid design is inherently interlocked to prevent simultaneous connections of two power sources.
- Will not transfer to a dead source - single solenoid operator derives power from the destination source
- Easy-to-navigate 128x64 graphical LCD display with keypad provides LED indicators for switch position, source availability, not-in-auto mode, and alert conditions.
- Integrated, multilingual, user interface for configuration and monitoring
- Available Delayed Transition operation
- Optional Relay Expansion Module with extra relays for accessory outputs
- Soft keys for test function and time delay bypass
- Emergency source failure alert indication
- Optional Historical Event Log
- Displays statistical ATS monitoring information
- Built-in diagnostic functions
- Password protection to prevent unauthorized actions
- Adjustable delay feature prevents nuisance transfer due to momentary utility power outages and generator dips
- ASCO's patented Predictive Outage Detection feature senses voltage instability conditions or flickers and proactively starts the generator for protection of equipment and reduction of downtime
- Auxiliary contacts signal position of main contacts - two for normal and two for emergency position
- Standard solid neutral terminals
- Restriction of Hazardous Substances (RoHS) compliant controller
- Standard 2 year warranty. Optional 1, 2, and 3 year extensions

SERIES 300 Power Transfer Switch rated 200 amps

SERIES 300 Automatic Switching Solutions

Automatic and Non-Automatic Transfer Switching

ASCO Transfer Switches are available in both automatic and non-automatic types. Both are electrically operated. For automatic transfer switches, the controller initiates transfer between power sources . For non-automatic transfer switches, a user initiates transfer using local or remote controls.

SERIES 300 non-automatic transfer switches offer the following features:

- Models range from 30 through 3000 amperes, up to 600V
- Controller prevents inadvertent operation under low voltage conditions
- Source acceptability lights inform operator when sources are available to accept load
- Standard in-phase monitor for transferring motor loads betweem live sources

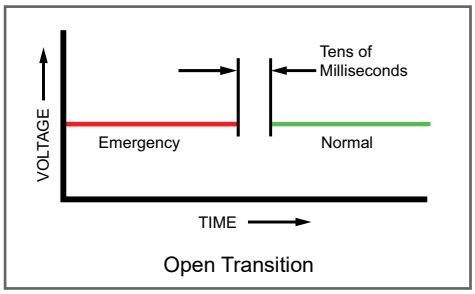
Non-Automatic and Manual Transfer Switches for Backup Power Applications

400 Amp, Type 1 Enclosure

Open Transition Transfer Switching

ASCO Transfer Switches are available with a standard, 2-position, open transition models that reliably transfer loads in less than 50 milliseconds. Open transition switches are suitable for a wide range of applications.

- 30 to 3000 amps
- Single-operator switching mechanism prevents simultaneous connection of both sources
- Available In-Phase Monitor can be activated for transferring motor loads

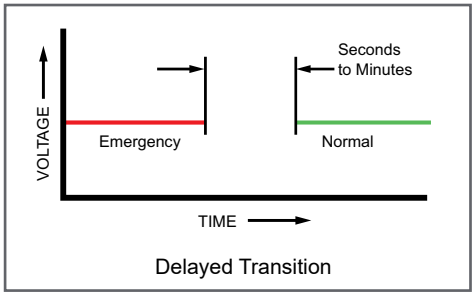


Open Transition

Delayed Transition Transfer Switching

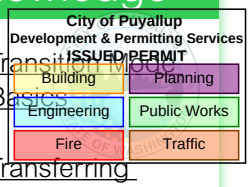
ASCO Delayed Transition Transfer Switches transfer loads between power sources using a timed load disconnect position with an adjustable delay.

- 150 through 3000 amps
- Reliable, field-proven, dual-solenoid operating mechanism
- Mechanical interlocks to prevent simultaneous connection of both power sources
- Adjustable delay for load disconnect - 0 to 5 minutes
- Non-automatic models available in manual operation configuration
- Automatic models available with load shed feature



Delayed Transition

Power Knowledge



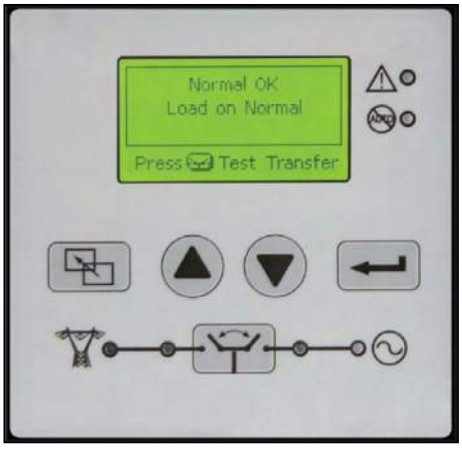
Transition Modes Basics

Transferring Motor Loads between Power Sources

Transferring Loads with Zero Power Interruption

SERIES 300 Group G Controller

The SERIES 300 Group G Controller is reliable and field-proven. It provides all of the voltage, frequency, control, timing, and diagnostic functions required for most emergency and standby power applications.



- Touch pad programming
- Displays active timers
- On-board diagnostics
- Password protection
- Voltage and frequency sensing
- Status and control functions
- Patented Predictive Outage Detection feature

Product Details

Group G Controller

Transfer Switch Communications and Metering

Options to Customize Functionality and Increase Value

Product Details

5300 SERIES Annunciators

Remote Annunciation

Monitor Power Equipment Status from Anywhere

Monitoring and control transfer switches from across the room, building, or from Internet.

5310 – LED annunciator – Single ATS

5350 – LED annunciator – up to 8 ATSs

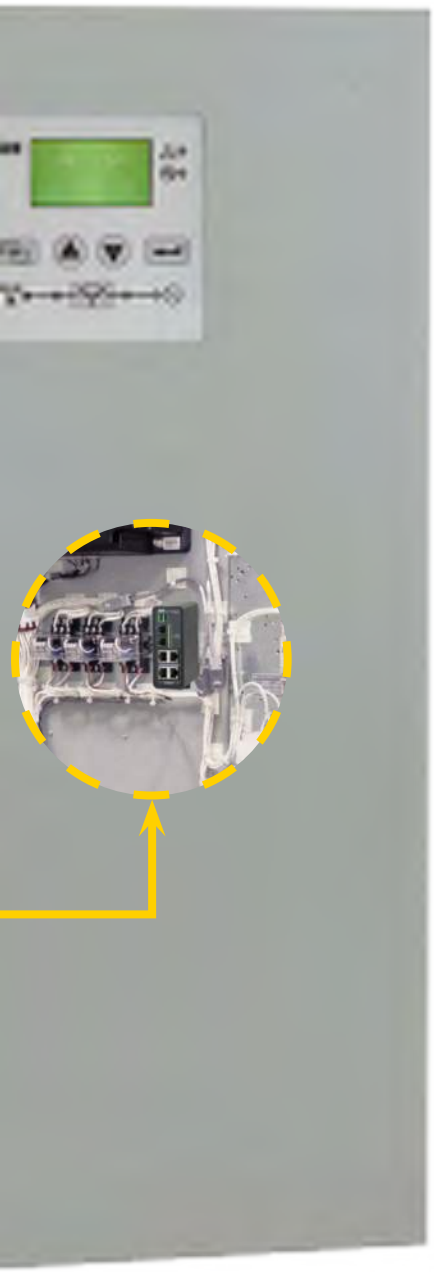
Product Details

5140 Connectivity Module

Communication

Turn Transfer Switches into Power Information Portals

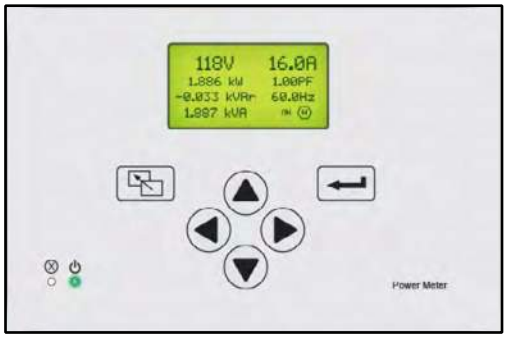
5140 Connectivity Module – Makes status and power information from a single switch available to via ModBUS, SNMP, and web pages.



Metering

Transfer Switches are the Perfect Place to Monitor Power Flow, Power Conditions, and Power Events

5210 Power Meter – Provides deeper insight into circuit status and conditions.



Product Details

5210 Power Meter

SERIES 300 Optional Accessories

Communications	
11BE	Feature Bundle. Programmable engine exerciser with seven independenct routines run the generator with or without load on a daily, weekly, bi-weekly, or monthly basis. Controlled from the user interface keypad. • Event log display shows the event number, time and date, type and reason (if applicable). • Stores up to 300 events • RS485 Communication Port enabled common alarm output contact • On three-phase systems, Accessory 11BE enables line-to-line voltage imbalance sensing and three-phase sensing capabilities for the Emergency power source as well as the Phase Rotation checking for both power sources.
18RX	Relay Expansion Module provides accessory relays and includes one Form C contact for normal source availability (18G), and one Form C contact for emergency source availability (18B) (contact rating 5 amperes @ 30 VDC or @ 125 VAC resistive) (100 ma, 4 VDC min) Additional output relay is provided the default is to indicate a common alarm.
72EE	Connectivity module provides remote monitoring and control capabilities and includes accessory 11BE feature bundle
Environment and Power	
44A	Strip heater with thermostat for cold environment to prevent internal condensation and icing. External 120-volt AC power source required.
44G	Strip heater with thermostat, wired to load terminals on 208-240, 360-380, 460-480, 550-600 volt models. Contains wiring harnesses for all transfer switch sizes.
1UP	UPS back up power runs controller and LCD display for 30 seconds without AC power
Extension Harness	
37B	Six-foot extension harness for open type units to accommodate customer mounting of controls and switch
37C	Nine-foot extension harness for open type units to accommodate customer mounting of controls and switch
Indicators	
62W	Audible alarm with silencing feature to signal transfers to emergency. (For D-frame models, may require oversize enclosure depending on accessory combination).
Customer Control Circuits	
30A	Load-shed circuit initiated by opening of a customer-supplied contact (Open Transition model only)
30B	Load-shed circuit initiated by removal of customer-supplied control voltage (Open Transition model only)
30AA	Load-shed circuit initiated by opening of a customer-supplied contact (Delayed Transition model only)
30BA	Load-shed circuit initiated by removal of customer-supplied control voltage (Delayed Transition model only)
Surge Protection	
73	Surge suppressor rated 65 kA
Metering	
23GA, 23GB	Load Current Metering card measures either single or three-phase load current. Not available with Power Meter option 135L. Use 23GA for Single-Phase, 23GB for Three-Phase.
135L	Power Meter on load side (includes shorting block and current transformers). Not available with Load Current Metering options 23GA or 23GB.

Field Conversion Kits

Kit No.	Description
935147	Advanced Function Bundle Retrofit Kit (11BE) - See above accessory 11BE description for details.
935148	REX Module with Source Availability Contacts (Acc. 18RX)
935149	UPS to allow controller to run for 30 seconds minimum without AC Power (Acc. 1UP)
935150	1/3 Phase load current sensing card only (Acc. 23GA/GB)
K613127-001	Strip Heater (125 watt) 120 volt (Acc. 44A)
K613127-002	Strip Heater (125 watt) 208-480 volt (Acc. 44G)
948551	Quad-Ethernet Module (Acc. 72EE)
K609027	Cable Pull Box (1600-2000 amperes)

Withstand and Close-on Ratings

Withstand and Close-on Ratings for all 7000 SERIES Power Transfer Switches, including 0.5 second (30-cycle) designs.

Frame	Switch Rating (Amps)		Current Limiting Fuses				Specific Breaker			Time Based				Short Time Ratings (see Note 9)							
	Transfer Switches	Bypass Switches	480V Max.	600V Max.	Max Size, A	Class	240V Max.	480V Max.	600V Max.	Time (sec)	240V Max.	480V Max.	600V Max.	480V Max.				600V Max.			
														.13	.2	.5	1	.13	.5	1	3
D	30	-	100kA	-	300	J	22kA	25kA	10kA	0.025	10kA	10kA	10kA	-				-			
			200kA	35kA	200	J															
			35kA	35kA	200	RK1															
D	70, 100	-	35kA	35kA	200	RK1	150kA	85kA	25kA	0.025	10kA	10kA	10kA	-				-			
			200kA	35kA	200	J															
D	150	-	35kA	35kA	200	RK1	150kA	85kA	25kA	0.025	10kA	10kA	10kA	-				-			
			200kA	35kA	200	J															
D	200	-	200kA	35kA	200	J	200kA	85kA	14kA	0.025	10kA	10kA	10kA	-				-			
			35kA	35kA	200	RK1															
D	230	-	100kA	-	300	J	200kA	85kA	14kA	0.025	10kA	10kA	-	-				-			
E	260, 400	-	200kA	-	600	J	65kA	42kA	22kA	0.05	35kA	35kA	22kA	-				-			
J	150, 200, 230, 260	150, 200, 230, 260	200kA	200kA	600	J	200kA	200kA	100kA	0.05	65kA	42kA[5]	35kA	7.5kA			-	-			
					800	L															
J	400	400	200kA	200kA	600	J	200kA	200kA	100kA	0.05	65kA	42kA[5]	35kA	7.5kA			-	-			
					800	L															
J	600	600	200kA	200kA	800	L	200kA	200kA	100kA	0.05	65kA	42kA[5]	35kA	7.5kA[9]			-	-			
			200kA	200kA	600	J															
H[8]	600	600	200kA	200kA	1600	L	65kA	150kA[6]	65kA	0.05	50kA	50kA	50kA	36kA			-	36kA		-	
P[8]	600	600	200kA	200kA	1600	L	65kA	150kA[6]	65kA	0.05	50kA	50kA	50kA	36kA			30kA	36kA		-	
P[8]	800	800 - 1200	200kA	200kA	1600	L	65kA	150kA[6]	65kA	0.05	50kA	50kA	50kA	36kA			30kA	36kA		-	
H	800 - 1200	800 - 1200	200kA	200kA	1600[4]	L	65kA	150kA	65kA	0.05	50kA	50kA	50kA	36kA			-	36kA		-	
Q[8]	600-1600	600-1600	200kA	200kA	2000	L	65kA	65kA	65kA	0.05	65kA	65kA	65kA	50kA				50kA			
S[8]	800 - 1200	800 - 1200	200kA	200kA	2500	L	100kA	100kA	65kA	0.05	100kA	100kA	65kA	65kA				65kA			
G[8]	1000 - 1200	1000 - 1200	200kA	200kA	2000	L	85kA	85kA	85kA	0.05	85kA	85kA	85kA	-				-			
G	1600 - 2000 (Front Connected TS Only)		200kA	200kA	2500	L	85kA	85kA	85kA	0.05	85kA	85kA	85kA	42kA			36kA	-			
G[8]	1600 - 2000	1600 - 2000	200kA	200kA	3000	L	200kA	200kA	100kA	0.05	100kA	100kA	100kA	42kA			36kA	42kA		-	
S[8]	1600 - 2000	1600 - 2000	200kA	200kA	2500	L	100kA	100kA	85kA	0.05	100kA	100kA	85kA	85kA			65kA	85kA		65kA	
G	2600 - 3000	2600 - 3000	200kA	200kA	4000	L	125kA[6]	125kA[6]	100kA	0.05	100kA	100kA	100kA	42kA			36kA	42kA		-	
G[8]	3200	-	200kA	-	4000	L	100kA	100kA	-	0.05	100kA	100kA	-	-				-			
G	4000	4000	200kA	200kA	5000	L	100kA	100kA	100kA	0.05	100kA	100kA	100kA	85KA		65kA		65kA			
U[8]	2600 - 4000	2600 - 4000	200kA	200kA	5000	L	125kA	125kA	125kA	0.05	125kA	125kA	125kA	100kA				100kA			

Notes:

1. All WCR values indicated are tested in accordance with the requirements of UL 1008, 7th Edition. See ASCO Pub. 1128 for more WCR information
2. Application requirements may permit higher WCR for certain switch sizes.
3. Short Time ratings are provided for applications involving circuit breakers that utilize trip delay settings for system selective coordination
4. Max fuse rating is 1200A on front connected H frame switches
5. Switches utilizing overlapping neutral (code "C") have 35kA, 0.050 Sec time based rating at 480V Max
6. Rating shown is for Bypass switches only, Transfer Switch rating is 100kA for the G frame and 65kA max for the H and P frames. See ASCO Pub. 1128.
7. See ASCO for Service Entrance Switch ratings
8. These frames are only available on the 7000 Series product
9. Short Time Rating applies to 600A Bypass switch only, the 600A Transfer Switch does not have a Short Time Rating

All units are RMS Symmetrical Amperes.

All Withstand and Close-on Rating (WCR) values are established by testing in accordance with UL 1008. For the latest ratings, including transfer switch ratings when used with specific circuit breakers, see **ASCO Publication 1128** for more WCR information.

Application characteristics may permit higher WCRs for certain switch sizes.
Contact ASCO Power Technologies for more information.

Power Knowledge

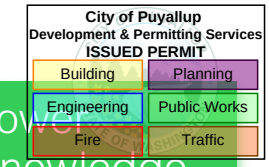
- UL 1008 Transfer Switch Withstand and Closing Ratings
- Performance Testing for Transfer Switches

Additional SERIES 300 Product Information

Transfer Switches and Panels	Controls	Technical Information
Manual Transfer Switch	Group G Controller	Withstand and Closing Ratings
Manual Transfer Switch with Quick Connects		Weights and Dimensions and Ordering Info
Quick Connect Power Panel		Drawings
Dual Purpose Quick Connect Power Panel		Wiring Diagrams

SERIES 300 Manual Transfer Switching and Quick Connection Solutions

ASCO SERIES 300 Manual Transfer Switching and Quick Connection Solutions offer reliable service and application flexibility for a wide range of facilities.



Manual Transfer Switches

- Three-position, easy-to-use center-off switch
- Compact design - easy to install and maintain
- Designed to handle demands of motors and inrush currents

Power Knowledge

Differences Between Manual, Non-Automatic, & Automatic Transfer Switches

Product Details

SERIES 300 Manual Transfer Switch

Manual Transfer Switches with Quick Connects

- The ASCO SERIES 300 Manual Transfer Switch with Integrated Quick Connects provides a total temporary power connection and transfer solution
- Enables connection and control of a temporary or portable generator
- Provides a complete UL 1008-listed solution in a single unit

Product Details

SERIES 300 Manual Transfer Switch with Quick Connects

Quick Connect Panels

- Listed to UL 1008 Transfer Switch Accessory standard
- Utilizes standard Cam-Lok™ receptacles for quick connections
- Standard Type 3R construction is weatherproof with or without cable
- Utilizes standard Series 16 Single Pole quick connect receptacles

Power Knowledge

NEC Requirement for Permanent Manual Switching Means

Product Details

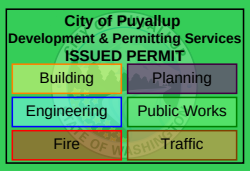
SERIES 300 Quick Connect Power Panel

Dual-Purpose Manual Transfer Switches with Quick Connects

- Provides both supplemental backup power and load testing connectivity through a single device.
- Listed by ETL to UL 891
- Utilizes standard Series 16 Single Pole quick connect receptacles

Product Details

SERIES 300 Dual Purpose Quick Connect Power Panel



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ASCO Power Technologies - Global Headquarters
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Florham Park, NJ 07932
Tel: 800 800 ASCO

www.se.com/us/en/brands/ascopower/
customercare@ascopower.com

Publication 1195 R10. Printed in the U.S.A.

Rugged Construction
Proven Performance
Simple Deployment

ASCO Power Technologies™

ASCO SERIES 300
Manual Transfer Switches

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ASCO SERIES 300 Manual Transfer Switches

Flexibility for Every Manual Backup Power Switching Application

When power fails, businesses suffer. For some organizations, a permanent generator is too costly. Instead, a permanent means for quickly connecting a portable or temporary generator that can make economic sense. The ASCO SERIES 300 Manual Transfer Switch, SERIES 300 Quick Connect Panel and SERIES 300 Manual Transfer Switch with Integrated Quick Connects provide flexible solutions for temporary backup power applications, including NEC® 700.3(F) requirements.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

Manual Transfer Switch

The ASCO SERIES 300 **Manual Transfer Switch** is the perfect load transfer solution for commercial and municipal applications.

Quick Connect Power Panel

The ASCO SERIES 300 **Quick Connect Power Panel** provides reliable, convenient, and economical connection for a standby generator.

Manual Transfer Switch with Integrated Quick Connects

The ASCO SERIES 300 **Manual Transfer Switch with Integrated Quick Connects** provides a total temporary power connection and transfer solution.

SERIES 300 Manual Transfer Switches

Features

Every ASCO SERIES 300 Manual Transfer Switch provides the following capabilities and features:

- Three-position center-off switch
- Uses ASCO's reliable field-proven technology
- Modular compact design is easy to install and maintain
- Designed to handle motor loads and large inrush currents
- UL 1008 Listing
- Service Entrance models listed to UL 891
- Capacities from 150 to 3000 Amps, up to 600 VAC single or three phase
- Three position switching with center-off position:
  - Switch design prevents simultaneous connection to two power sources
  - Pad-lockable in any position
- Available solid or switched neutral
- Available stainless steel enclosure
- When equipped with a connecting means, complies with NEC® 700.3(F)
- One contact for switch connected to Normal, one contact for switch connected to Emergency.
- Optional features:
  - LED indicators and Form C contacts indicate switch position and source availability
  - Phase rotation monitor ensures proper connections
  - Two-wire engine start switch
  - IO Module for building management system communications
    - Transfer Switch Position
    - Source Availability
    - Engine Start Signal Monitor
    - Phase rotation
- Restriction of Hazardous Substance (RoHS) compliant

Power Knowledge

Differences Between Manual, Non-Automatic, and Automatic Transfer Switches

SERIES 300 Manual Transfer Switch

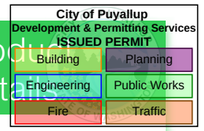
SERIES 300 Quick Connect Panel

Features

Whether stand-alone or integrated into a Manual Transfer Switch, ASCO Quick Connect Panels offer the following:

- Input Panels are UL 1008 Listed (400A-800A) and ETL Listed to UL 1008 standards as a Transfer Switch Accessory (1200A-4000A)
- Output Panels are UL 891 Listed (400A-800A) and ETL Listed to UL 891 standards for Switchboards (1200A-4000A)
- Utilizes standard 16 Series Cam-Lok™ quick connectors
- Standard Type 3R enclosure is weather-resistant with or without cables
- Available stainless steel enclosure
- Lockable doors prevent unauthorized entry
- 400 to 4000 Amp models rated up to 600 volts
- Convenient, economical, and reliable connection of alternate power
- Provisions for Trap Key interlocks

Quick-connect panels makes it easy to add a supplement power source.



Product Details

SERIES 300 Quick Connect Power Panel

SERIES 300 Dual Purpose Quick Connect Power Panel

SERIES 300 Manual Transfer Switch with Quick Connects

SERIES 300 Manual Transfer Switch with Integrated Quick Connections

Features

Every ASCO SERIES 300 Manual Transfer switch with integrated quick connections provides the following capabilities and features:

- Enables connection and control of a secondary power source
- Provides a complete UL 1008-listed solution in a single unit
- Standard Type 3R cabinet is weatherproof with or without temporary power cables connected
- Utilizes standard 16 Series Cam-Lok™ quick connectors

Quick Connect Panels use standard 16-Series Cam-Lok™ quick connectors.

Product Details

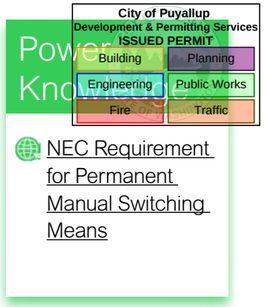
SERIES 300 Manual Transfer Switch with Integrated Quick Connect

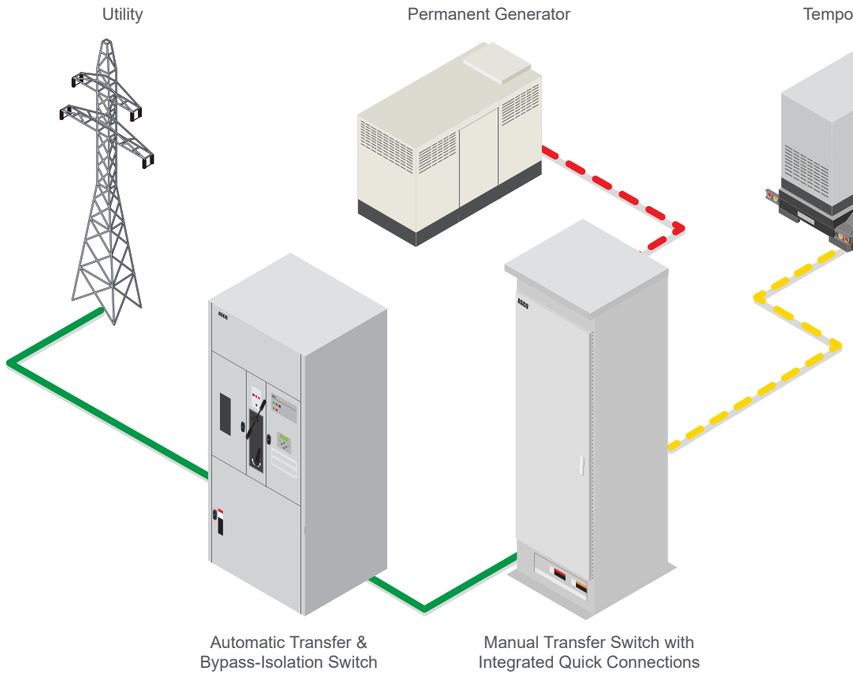
Simple and Effective 3-Position Switch

Please note the handle shown above represents 150-1200 Amp models.

The Perfect Solution for NEC® 700.3 Requirements

At facilities where backup power must be available even when servicing a facility's sole generator, National Electrical Code® Article 700.3(F) requires that a permanent switching means be provided to connect an interim source of secondary power. For facilities without a permanent backup generator, a Manual Transfer Switch and a connecting means would allow the connection of a temporary or portable generator when needed, without the cost of a permanent engine-generator.



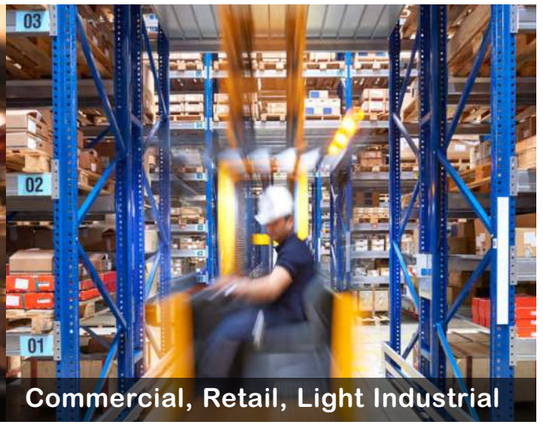


SERIES 300 Applications

When only a single permanent generator provides backup power, the NEC® now requires a means for connecting a portable generator.

Lost power disrupts critical services to customers and businesses.

A power interruption can hinder emergency response and interupt municipal utility services.



Power interruptions disrupt operations, damage equipment and ruin refrigerated inventory.

SERIES 300 Ordering Information

MTS Ordering Information

J	+ 03MTS	+ A	+ 3	+ 0600	+ N	+ 0X	+ M
Frame	Product	Neutral Code	Phase Poles	Amperes	Voltage Code	Group Code	Enclosure[3,4]
J = 150 - 600A H = 800 - 1200A G = 1600 - 3000A	03MTS[1] - Manual Transfer Switch 03MUS - Service Entrance Manual Transfer Switch 03MTQ - Manual Transfer Switch with Quick Connects 03MUQ - Service Entrance Manual Transfer Switch with Quick Connects	A - Solid Neutral B - Switched Neutral	2 3	0150 0200 0230[2] 0260[3] 0400 0600 0800 1000 1200 1600 2000 2600 3000	C - 208 D - 220 E - 230 F - 240 H - 380 J - 400 K - 415 L - 440 M - 460 N - 480 P - 550 Q - 575 R - 600	00 - No Accessory 0X - Accessory 0Z - Custom Accessory	C - Type 1 M - Type 3R Secure N - Type 4 Secure S - Type 3RX Secure (316) SS V - Type 4X Secure (316) SS

Notes:

1. Voltage code is not required for 03MTS without 170 accessory.
2. For Service Entrance switches, rating is 225 Amps.
3. MTQ with quick connects are available only in M and S enclosure
4. Type 4 Enclosures are available up to 800A

Catalog Information

3QC	+ N	+ C	+ A	+ A	+ 3	+ 0400	+ F	+ 00	+ F
SERIES	Input/ Output	Connector Type	Ground[1]	Neutral	Poles/ Phase[2]	Amps	Volts/Color Code	Accessories	Enclosure
3QC	N = Input U[3] = Output	C = Cam-Lok	A = 100% N = minimum of 25% grounding ampacity	0 = none A = 100% Rated Neutral	2 3	0400 0800 1200 1600 2000[3] 2400[3] 2800[3] 3200[3] 4000[3]	F ≤ 240V Black, Red, Blue N ≤ 480V Brown, Orange, Yellow R ≤ 600V Black, Black, Black	00 = None	F = Type 3R Secure S = 316 Stainless Steel Type 3R Secure

Notes:

1. 100% Rated ground standard on 400A-1600A units. Minimum of 25% rated ground on models 2000A and above.
2. 2-Pole only available for 240V up to 1600A.
3. Output Panels contain female connectors with flip covers.

SERIES 300 Accessories

ASCO SERIES 300 Manual Transfer Switch Accessories

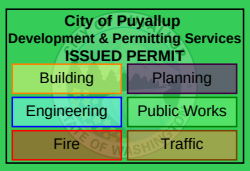
Accessories	Description
44A	Strip heater with thermostat prevent condensation and ice formation of water. External 120V power source required
44G	Strip heater with thermostat wired to load terminals
73	Surge Suppressor Rated 65kA

ASCO 300 Manual Transfer Switch User Interface/Annunciation Accessories

170	+ B	+ P	+ 1
Accessory Description	User Interface/Controls	Phase Rotation	IO Module
All 170 Accessories Include LEDs and Form C Contacts For: • Source 1 Available • Source 2 Available • Connected to Source 1 • Connected to Source 2 • Disconnected Position • External 24 VDC Connection	B – Base (Source Indication Only. No engine start switch or common alarm) E – Maintained Engine Start Switch/Output With Common Alarm Input/LED/Contact K – Keyed Maintained Engine Start Switch/Output with Common Alarm Input/LED/Contact	P = Phase Rotation Monitor (LED) Blank = none	1 = IO Module Blank = None

Quick Connect Panel Information

Rating	Standard Connection Type	Mounting	Dimensions	Shipping Weight (lbs)	Internal Connection
400A	Cam-Lok (1 row)	Wall Mount	24"w x 32"h x 11"d	85	Dual 2 AWG - 600 MCM Lugs
800A	Cam-Lok (2 rows)	Wall Mount	24"w x 32"h x 11"d	95	Dual 2 AWG - 600 MCM Lugs
1200A	Cam-Lok (3 rows)	Floor Mount	35"w x 56"h x 28"d	475	Copper Bus with ½" holes
1600A	Cam-Lok (4 rows)	Floor Mount	35"w x 56"h x 28"d	495	Copper Bus with ½" holes
2000A	Cam-Lok (5 - 9 rows)	Pad Mount	31"w x 39"h x 50"d	205	Single 2 AWG - 600 MCM Lugs
2400A - 4000A	Cam-Lok (6 - 10 rows)	Pad Mount	48"w x 39"h x 50"d	Varies based on Amperage	Single 2 AWG - 600 MCM Lugs



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160 Park Avenue
Florham Park, NJ 07932
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Publication 2036 R5. Printed in the U.S.A.

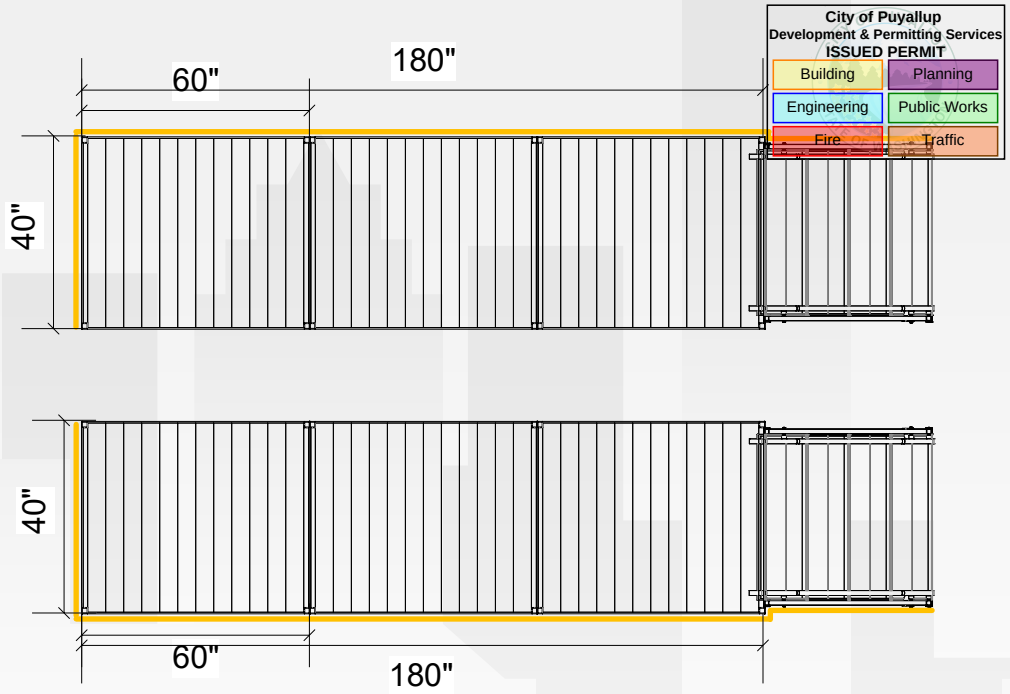
7

Stairs & Platforms

CONFIGURATION DRAWING

Custom OSHA
4 Tread Stairs

GUARDS



LAYOUT & REFERENCED QUOTE ARE BASED ON THE BUILDING DOOR THRESHOLD HEIGHT (RISE) AS SPECIFIED HEREIN. ANY VARIANCE TO THIS MEASUREMENT MAY RESULT IN A CHANGE ORDER FOR ADDITIONAL MATERIAL AND COST. EZACCESS IS NOT RESPONSIBLE FOR FOOTINGS AND FOOTING PLACEMENT, TIE DOWNS, ANCHORS TO THE GROUND AND/OR ANCHORS TO THE BUILDING.

Customer Acceptance of Layout Drawing:_____
Signature

Notes: These materials are manufactured to, when assembled correctly, meet IBC guidelines.

DATE: 06/23/2025	PROJECT ID: 143885	PREPARED BY: RGIBSON	CUSTOMER: 17808	UNWA17808.1 HD 143885
RISE:36	PROJECT NAME: Puyallup Gen Platforms		CONTACT INFORMATION: Richard Qualey	

EZ-ACCESS®

This configuration is a visual representation of the request provided by the client (listed above) to EZACCESS under ideal site conditions. EZACCESS assumes no responsibility for site evaluation and relies solely on site information provided by the customer. Should unknown considerations, e.g., federal/state/county/city regulations, end-user preference, landscaping, topography, public areas, flow of traffic, etc. require additional materials, freight, and/or labor, EZACCESS is not responsible for these charges and will result in a Change Order.

TEMPLATE REV 06-26-2013

VMC GROUP
THE POWER OF TOGETHER

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

PROJECT	JOB / DWG NUMBER		REV	PAGE
6R0269 Gensets (450-500kW)	VMA-50974-01A5		0	82
CUSTOMER	BY	DATE	CHECKED	DATE
Rolls-Royce Solutions America, Inc.	JJM	5/20/2025		

7.3 ASCE 7-22 Load Calculations for mtu 6R0269 DS450/DS500 L3 w/ 1720 Gal Ext Tank Rigid onto Concrete

Calculate the maximum loading at the most critical restraint location. **LRFD**

Mfr	Rolls-Royce		Model	DS450/DS500 L3 w/ 1720 Gal Ext Tank		Min. limit	Actual	Max. limit
Ie =	1.50	C_{AR} =	1.0	Rμ =	1.3	Fp/Wp =	1.125 g's	0.769 g's	6.00 g's
z/h =	0.00	Rpo =	1.5	Hf =	**1.00**	Ω =	2	DL	E
Risk Cat.	IV	Ip =	1.5	S_{DS} =	**2.500**	Load Combination 1		1.2	1
		Calc'd Seismic Design Category			**D**	Load Combination 2		0.9	

Input Data				Calculated Values					
Weight	Hcg	Xcg	Ycg	Horiz g's	Vertical g's		Phx	Pz Max	Pz Min
31033 #	42.5"	117.1"	-2.4"	2.250	0.400	1.700	69824 #	52756 #	12413 #

Restraint Locations		Iy1	Ix1	Ixy	J1	Overturning Loads	Rigid Weight Distribution	Seismic Vertical Distribution	
14.00"	-35.75"	13263	1278	4117	14541	8563 #	3397 #	14338	9922
63.00"	-35.75"	4378	1278	2365	5656	7297 #	3126 #	12611	8548
112.00"	-35.75"	295	1278	614	1573	6031 #	2855 #	10884	7173
161.00"	-35.75"	1013	1278	-1138	2291	4765 #	2584 #	9157	5799
190.00"	-35.75"	3701	1278	-2175	4979	4016 #	2423 #	8135	4985
235.00"	-35.75"	11201	1278	-3784	12479	2853 #	2174 #	6549	3723
14.00"	35.75"	13263	1278	-4117	14541	-2612 #	3049 #	2572	-1392
63.00"	35.75"	4378	1278	-2365	5656	-3878 #	2778 #	845	-2767
112.00"	35.75"	295	1278	-614	1573	-5144 #	2507 #	-881	-4141
161.00"	35.75"	1013	1278	1138	2291	-6410 #	2236 #	-2608	-5516
190.00"	35.75"	3701	1278	2175	4979	-7160 #	2076 #	-3630	-6329
235.00"	35.75"	11201	1278	3784	12479	-8322 #	1827 #	-5216	-7591
Theta		Iy total	Ix total	Ixy total	J total	0 #	31033 #	52756	12413
216.1 deg	0.630 rad	67702	15337	0	83038				

Max Reactions per Location

Comp (Max Vert)	**14338 #**
Tens. (Min Vert)	**7591 #**
Shear	**7066 #**

Tanθ	r max	# Vertical Restraints	# Horizontal Restraints
0.730	120.6"	12	12

Equipment is attached to concrete using:
(12) 0.625" HIT-HY 200 V3 + HAS-B-105
10 " embedment, 14 " edge distance, 12 " pad thickness at 4000 psi

Per ASCE 7, attachment to concrete requires the applied horizontal acceleration be increased by the overstrength factor, Ω.

PROJECT	JOB / DWG NUMBER		REV	PAGE
6R0269 Gensets (450-500kW)	VMA-50974-01A5		0	83
CUSTOMER	BY	DATE	CHECKED	DATE
Rolls-Royce Solutions America, Inc.	JJM	5/20/2025		

Hilti PROFIS Engineering 3.1.14

www.hilti.com

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	DS450/500 w/ 1720 Gal Ext Tank (Rigid, z/h=0.0)	Date:	5/9/2025
Fastening point:			

Specifier's comments:

1 Input data

Anchor type and diameter:	**HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) 5/8**
Item number:	not available (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Specification text:	Hilti ∅ 5/8 in HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) with 10 in nominal embedment depth per ICC-ES ESR-4868 , Hammer drill bit installation per MPII,
Effective embedment depth:	$h_{ef,act}$ = 10.000 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F1554 Grade 105
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2024 | 11/1/2026
Proof:	Design Method ACI 318-19 / Chem
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 4000, f_c' = 4,000 psi; h = 12.000 in., Temp. short/long: 32/32 °F
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.10.5.3 (d)) Shear load: yes (17.10.6.3 (c))

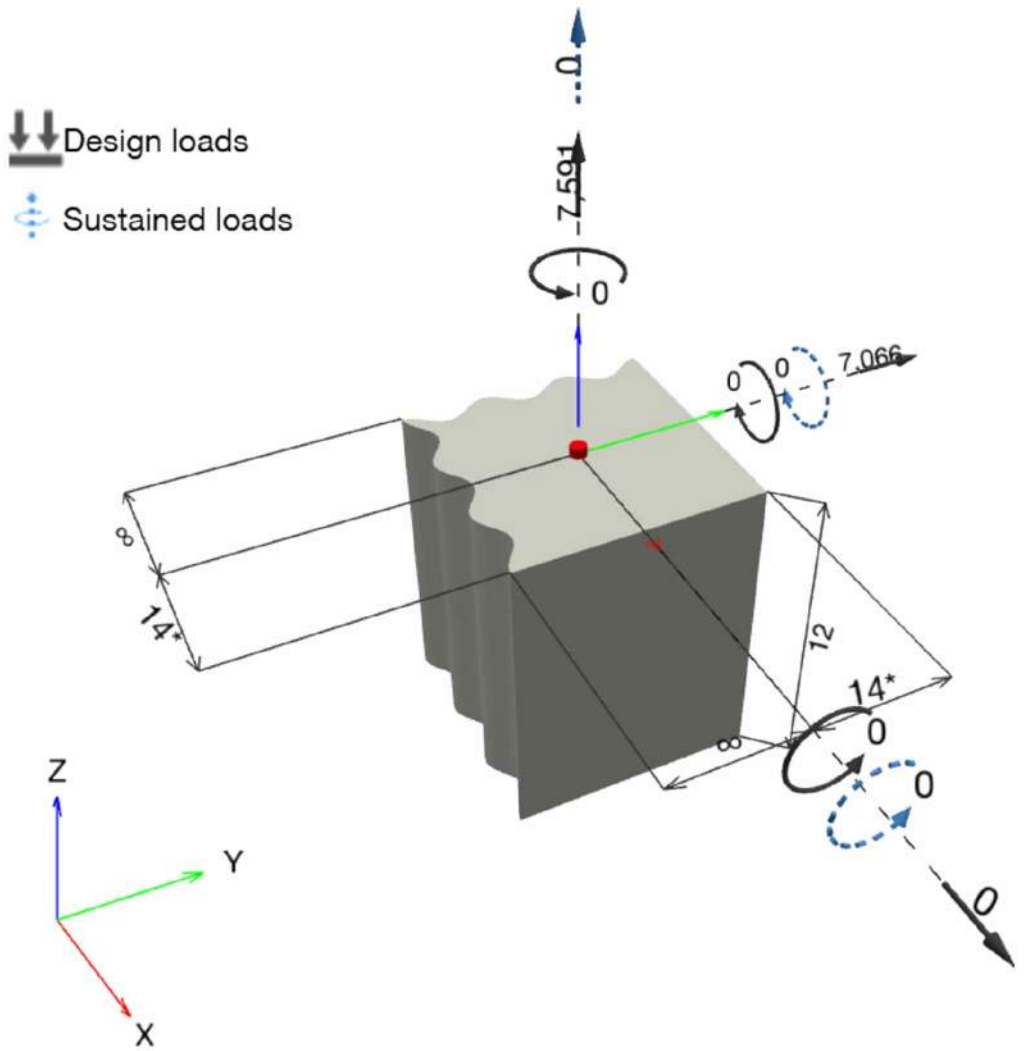
PROJECT	JOB / DWG NUMBER		REV	PAGE
6R0269 Gensets (450-500kW)	VMA-50974-01A5		0	84
CUSTOMER	BY	DATE	CHECKED	DATE
Rolls-Royce Solutions America, Inc.	JJM	5/20/2025		

Hilti PROFIS Engineering 3.1.14

www.hilti.com

Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	DS450/500 w/ 1720 Gal Ext Tank (Rigid, z/h=0.0)	Date:	5/9/2025
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]



PROJECT	JOB / DWG NUMBER		REV	PAGE
6R0269 Gensets (450-500kW)	VMA-50974-01A5		0	85
CUSTOMER	BY	DATE	CHECKED	DATE
Rolls-Royce Solutions America, Inc.	JJM	5/20/2025		

Hilti PROFIS Engineering 3.1.14

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Company:		Page:	4
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	DS450/500 w/ 1720 Gal Ext Tank (Rigid, z/h=0.0)	Date:	5/9/2025
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	Proof	Load	Capacity	β_N / β_V [%]	Status
Tension	Bond Strength	7,591	11,621	66 / -	OK
Shear	Concrete edge failure in direction y+	7,066	11,029	- / 65	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.653	0.641	5/3	97	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

444-LA

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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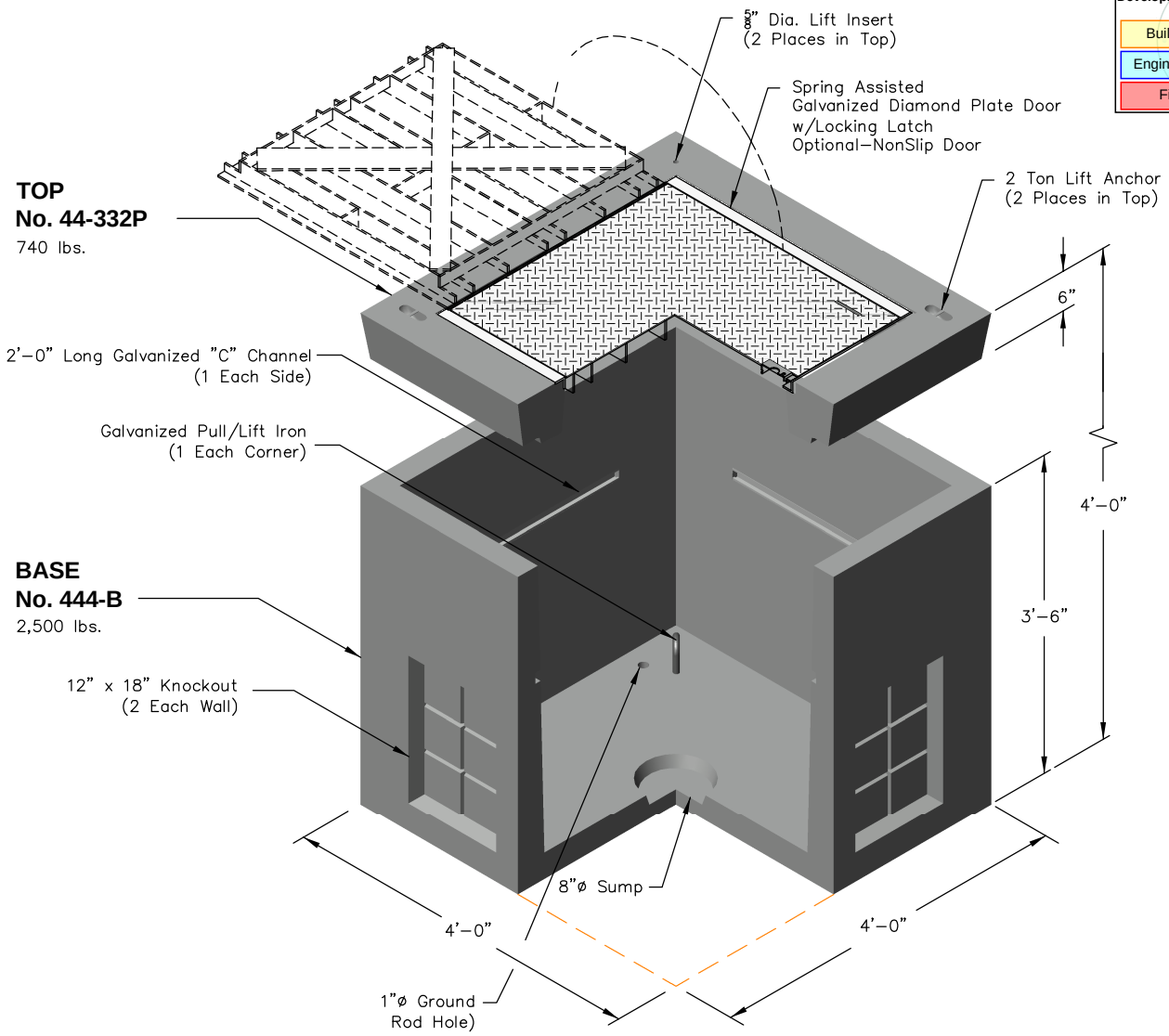
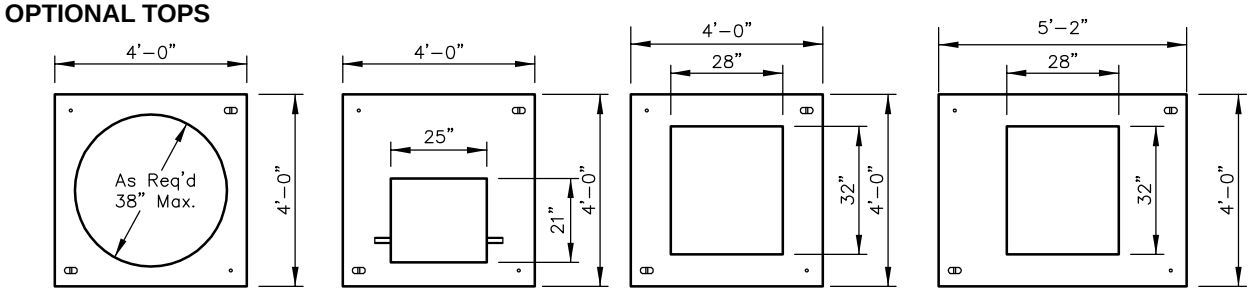
Fire | Traffic



OPTIONAL TOPS



Note: Designed for 0 to 5'–0" of Cover

Oldcastle Precast®
PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

444-LA	444-LA 3 x 3 x 3 POWER / WATER / GAS
File Name: 020-444LA	
Issue Date: 2018	
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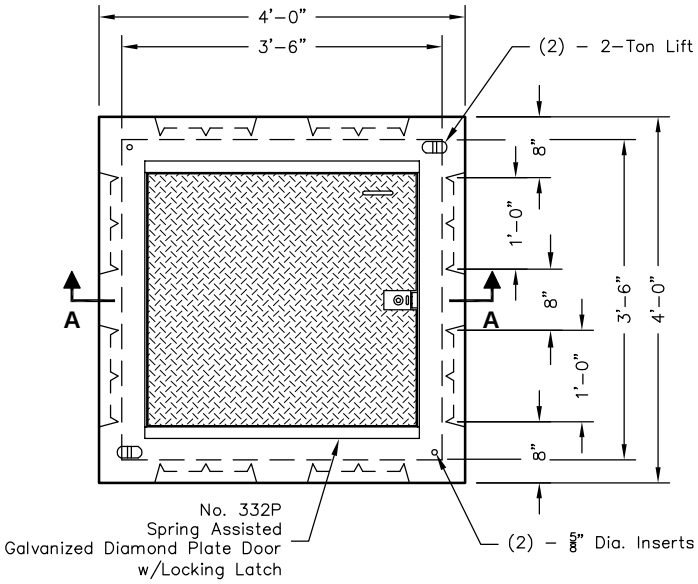
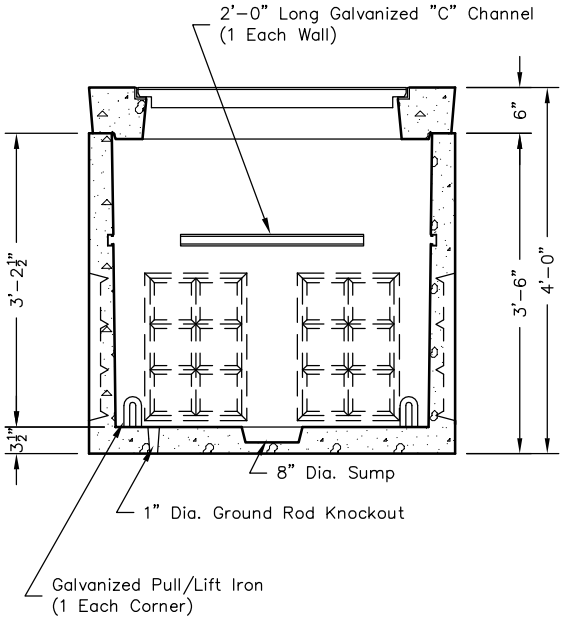
444-LA

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

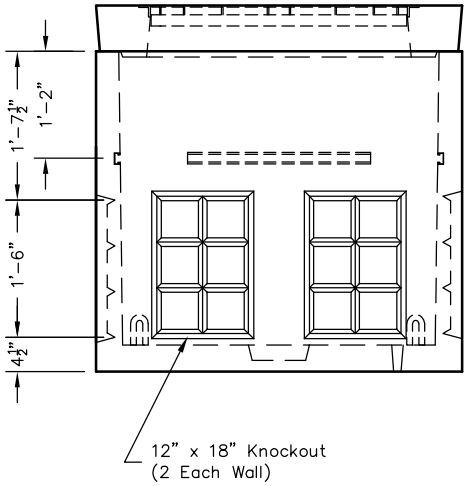
Building	Planning
Engineering	Public Works
Fire	Traffic



PLAN VIEW



SECTION AA



SIDE VIEW

Oldcastle Precast®
PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

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File Name: 020-444LA	
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oldcastleprecast.com/wilsonville	