Cummins Onan

Owner Manual

Hydraulic Generator Set

RBAA 20kW (Spec A–E)
RBAA 25kW (Spec A–E)

English
Original Instructions
6-2016
0943–0102 (Issue 5)

California

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

⚠ WARNING ⚠

Do not use this genset on a boat
Such use may violate U. S. Coast Guard regulations and can result in severe personal injury or death from fire, electrocution, or carbon monoxide poisoning

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Safety Precautions

Thoroughly read *Operation and Installation* before operating the genset. Safe operation and top performance can be only be attained when equipment is operated and maintained properly.

The following symbols in this manual alert you to potential hazards to the operator, service person and equipment.

⚠ DANGER ***alerts you to an immediate hazard that will result in severe personal injury or death.***

⚠WARNING ***alerts you to a hazard or unsafe practice that can result in severe personal injury or death.***

⚠ CAUTION ***alerts you to a hazard or unsafe practice that can result in personal injury or equipment damage.***

Electricity, moving parts, batteries and high-pressure hydraulic fluid present hazards which can result in severe personal injury or death.

GENERAL PRECAUTIONS

- Make sure all fasteners are secure and torqued properly.
- Do not work on the genset when mentally or physically fatigued or after consuming alcohol or drugs.
- You must be trained and experienced to make adjustments while the genset is running—hot, moving or electrically live parts can cause severe personal injury or death.
- Keep multi-class ABC fire extinguishers handy. Class A fires involve ordinary combustible materials such as wood and cloth; Class B fires, combustible and flammable liquid fuels and gaseous fuels; Class C fires, live electrical equipment. (ref. NFPA No. 10)
- Genset installation and operation must comply with all applicable local, state and federal codes and regulations.

GENERATOR VOLTAGE IS DEADLY!

- Generator electrical output connections must be made by a trained and experienced electrician in accordance with applicable codes.
- Use caution when working on live electrical equipment. Remove jewelry, make sure clothing and shoes are dry, stand on a dry wooden platform or rubber insulating mat and use tools with insulated handles.

BATTERY GAS IS EXPLOSIVE

- Wear safety glasses.
- Do not smoke.
- To reduce arcing when disconnecting or reconnecting battery cables, always disconnect the negative (–) battery cable first and reconnect it last.

MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not wear loose clothing or jewelry near moving parts such as PTO shafts, fans, belts and pulleys.
- Keep hands away from moving parts.
- Keep guards in place over fans, belts, pulleys, and other moving parts.

HYDRAULIC FLUID UNDER PRESSURE CAN CAUSE SEVERE PERSONAL INJURY

- Always shut down the engine that drives the hydraulic pump before loosening or tightening fittings.
- The high pressure spray from a leak or fitting in a hydraulic line can penetrate the skin, leading to possible blood poisoning. Wear safety glasses. Do not delay getting proper medical attention if exposed to high pressure oil spray.

hydraulic-1

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Specifications

GENERATOR: 4-Pole Revolving Field, 1-Bearing, Self-Excited, with Electronic Voltage Regulation		
Power (1.0 PF)	**20 kW**	**25 kW**
No. of Phases	1	1
Voltage	120 / 240 volts	120 / 240 volts
Frequency	60 Hertz	60 Hertz
Current per Leg (L1 and L2)	83 amps	104 amps
Speed	1800 rpm	1800 rpm
DC SYSTEM:		
Battery Voltage	12 volts	12 volts
Control Circuit Fuse (F1)	20 amp blade-type	20 amp blade-type
INSTALLATION: Hydraulic Pump		
Min–Max Pump Speed	1150–3900 rpm	1200–3900 rpm
SAE Flange	4-Bolt C Flange	4-Bolt C Flange
SAE C–C Straight Keyed Shaft	1–1/2 inch Diameter, 3/8 inch Key	1–1/2 inch Diameter, 3/8 inch Key
Flow (Heat Exchanger)	5 to 17 gpm	5 to 17 gpm
Maximum Oil Pressure	3500 psi	3500 psi
Hydraulic Fluid	Dexron III	Dexron III
Weight	124 lb (56 Kg)	124 lb (56 Kg)
Maximum Power Draw on Engine	43.2 hp	54 hp
INSTALLATION: Hydraulic Hose & Fittings		
Pump to Motor (Two)	#12, 4000 psi Hose; 37° Fittings (JIC)	#12, 4000 psi Hose; 37° Fittings (JIC)
Pump Case to Genset	#12, 200 psi Hose; 37° Fittings (JIC)	#12, 200 psi Hose; 37° Fittings (JIC)
Genset to Oil Reservoir	#12, 200 psi Hose; 37° Fittings (JIC)	#12, 200 psi Hose; 37° Fittings (JIC)
Oil Reservoir to Pump	#20, 200 psi Hose; 37° Fittings (JIC)	#20, 200 psi Hose; 37° Fittings (JIC)
INSTALLATION: Genset		
Noise	72 dB(A)*	72 dB(A)
Weight	532 lb (241 Kg)	532 lb (241 Kg)
Dimensions (L x W x H)	44.49 x 19.31 x 17.30 in (1130 x 490.4 x 439 mm)	44.49 x 19.31 x 17.30 in (1130 x 490.4 x 439 mm)
Cooling Air Flow	1330 cfm	1330 cfm
Maximum Ambient Temperature		
Continuous Full Load	120° F (49° C)	120° F (49° C)
Intermittent Load	140° F (60° C)	140° F (60° C)
Maximum Oil Temperature	200° F (93° C)	200° F (93° C)
* @ 10 ft (3 m), before installation, under full load.		

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Introduction

ABOUT THIS MANUAL

This manual covers Operation and Installation of the Model RBAA hydraulic generator set (genset) rated 20 kW. It includes Specifications, Maintenance and Troubleshooting. For more information on the genset, refer to Parts Catalog 943-0203 and Service Manual 943-0501.

HOW TO OBTAIN PARTS AND SERVICE

To obtain parts or service contact the nearest Cummins®/Onan® dealer or distributor.

- In the United States or Canada, call 1-800-888-6626 and select Option 1 (touch-tone phones only) or fax 1-763-528-7229 (Cummins Power Generation).
- Outside North America, call 1-763-574-5000 (Cummins Power Generation) between 7:30 AM and 4:00 PM Central Standard Time, Monday through Friday or fax 1-763-574-8087.
- When ordering parts or calling for service, be ready to provide the complete model number and serial number, both of which are printed on the genset nameplate.

PRODUCT DESCRIPTION

The genset consists of several components or modules that are installed at various locations on the vehicle. The components are interconnected electrically and hydraulically as shown on Sheet 3 of the Outline Drawing (Page A-4).

- **Genset –** The genset is an AC generator driven by an hydraulic motor. An automatic voltage regulator maintains nominal AC output voltage under varying generator loads. An integral oil-to-air heat exchanger cools the oil (hydraulic fluid) from the pump and motor case drains before it is returned to the reservoir.
- **Hydraulic Pump –** The hydraulic pump is driven by a power takeoff on the vehicle transmission to power the generator motor. The pump controller (located in the genset) senses AC output frequency and adjusts pump piston stroke as engine speed varies in response to other concurrent tasks, such as vehicle propulsion or pumping, to maintain constant flow and thus nominal generator frequency (60 Hz).
- **Oil Reservoir –** The oil reservoir has a three gallon oil capacity. It is equipped with a full-flow 6 micron oil filter, oil level sight glass, filter pressure gauge, breather filter and oil fill cap.
- **Generator Display Module –** The generator display module displays generator output voltage, frequency and current. It also displays the temperature of the oil returning to the oil reservoir and the number of hours run.
- **Generator ON / OFF Switch –** The vehicle builder provides the generator ON / OFF switch.
- **Hydraulic Fluid –** The genset is designed for use only with Dexron III hydraulic fluid (oil).

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Operation

STARTING AND STOPPING

Genset operation involves switching the genset ON or OFF and monitoring the genset display module (Figure 1) and oil level sight glass (Figure 2).

Starting

Start the vehicle engine and engage the PTO clutch (if so equipped). Allow 10 seconds for the PTO to fully engage and the pump to develop charge pressure. Switch the genset ON and connect or turn on loads.

Note: When switching the truck's engine speed from low idle to high idle while the generator is running, the engine's acceleration should be at the rate in which it takes at least 3 seconds to climb to high idle.

⚠ CAUTION ***Although the genset is capable of starting up with all loads connected, generally, to save wear and tear, it is recommended that the genset be turned ON first before connecting loads.***

Stopping

First disconnect all loads and then switch the genset OFF. *The PTO need not be disengaged when switching the genset OFF because pump piston stroke goes to zero*. The charge pump will continue to circulate oil through the system but will not drive the motor.

⚠ CAUTION ***Leaving the generator switch ON while the vehicle is standing by with the engine off can run down the engine starting battery and cause damage to genset components. Always switch OFF the generator before parking the vehicle in standby.***

DISPLAY MODULE

AC Output

The display module continuously displays the AC output frequency and voltage and the current (amps) in each leg. See Figure 1.

Hour Meter

Press the MODE button once to display the number of hours run. The display will revert to AC output.

Oil Temperature

Press the MODE button twice to display the temperature of the oil returning to the oil reservoir. The display will revert to AC output.

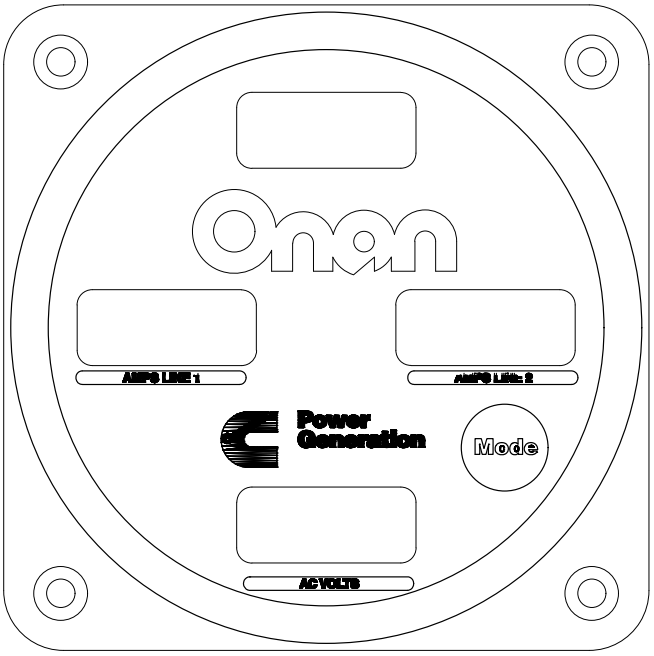

FIGURE 1. SINGLE-PHASE DISPLAY MODULE

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Maintenance

⚠ CAUTION ***The slightest amount of dirt in a hydraulic system can damage precisely machined internal components or cause the regulator spool valve to stick, resulting in erratic operation. Keep dirt out:***

- ***Thoroughly clean the outside of a fitting or cap before disconnecting or removing it.***
- ***Keep all openings in components and hoses capped with proper JIC caps until just before making connections.***
- ***Thoroughly flush hoses before connecting.***
- ***Regularly replace the oil filter.***
- ***Never reuse hydraulic fluid that has been drained. Only use Dexron III hydraulic oil.***

TABLE 1-1. PERIODIC MAINTENANCE SCHEDULE

MAINTENANCE PROCEDURE	MAINTENANCE FREQUENCY		
	Every1000 Hours	Every1500 Hours	Every2000 Hours/5 years
Replace Oil Filter	X		
Replace Breather Filter	X		
Grease Spline Joints (Spec A-C)	X		
Change Alternator Adapter Fluid (Spec D, E)		X[1]	
Check generator brushes and generator bearings			X

1 – Drain fluid from adapter. Refill with 70 mL of Dexron transmission fluid. Inspect oil seal and o-ring and replace as necessary.

OIL LEVEL

Check oil level often and keep it within 1/4 inch of the top of the sight glass (Figure 2). Only use Dexron III hydraulic fluid. Pump the oil through a 10 micron filter (SAE Class 4) when filling the reservoir.

OIL FILTER

Replace the oil filter every 1000 hours of operation or sooner if the needle on the filter pressure gauge approaches the red area (25 psi).

BREATHER FILTER

Replace the breather filter on the oil reservoir every 1000 hours of operation.

GENERATOR

Have the generator bearing checked every 2000 hours of operation, or 5 years, whichever comes first. This must be performed by a trained and experienced mechanic (authorized Onan dealer).

SPLINE JOINT

The spline joint must be relubricated every 1000 hours with lubricant containing at least 50% molybdenum disulfide (Spec A–C only).

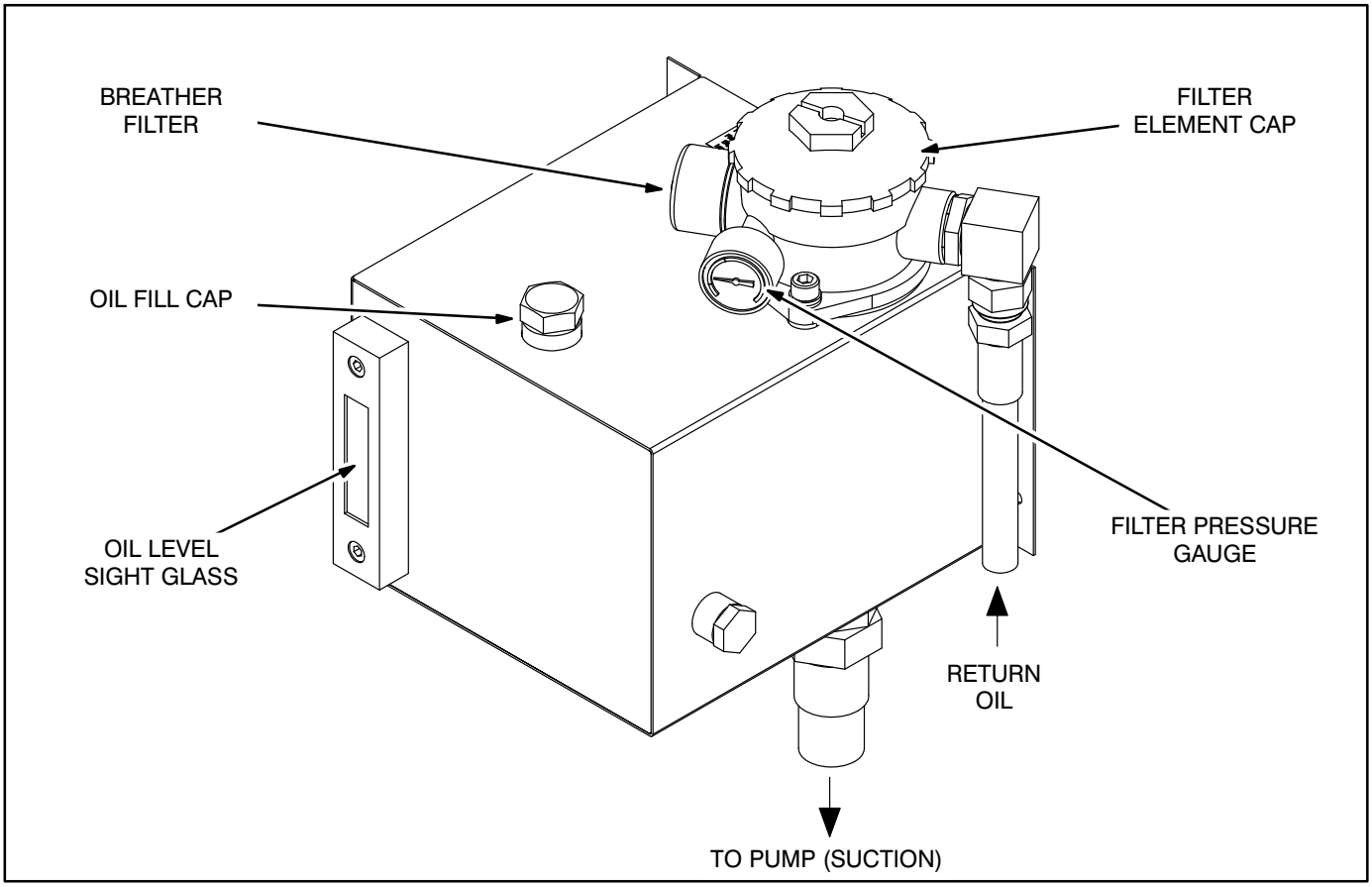

FIGURE 2. OIL RESERVOIR

Installation

Note: Manuals are updated from time-to-time to reflect changes in the equipment and its specifications. For this reason, only the copy of the installation manual supplied with the genset should be used as a guide for the installation.

⚠WARNING ***Improper installation can result in severe personnel injury or death. The installer must be trained and experienced in the installation of electrical, mechanical and hydraulic equipment.***

The builder of the vehicle bears sole responsibility for the selection of the appropriate genset, for its proper installation and for obtaining approvals from the authorities (if any) having jurisdiction over the installation. The genset is suitable for Installation in accordance with the National Electrical Code (NFPA No. 70) or the Canadian Electrical Code (C22.1). When properly installed it will meet the certification requirements of NFPA 1903.

Before mounting the genset, pump or oil reservoir, carefully consider the routing of all hydraulic hoses and wiring.

GENSET

Refer to the Outline Drawings beginning on Page A-1 regarding outside dimensions, weight, mounting bolt holes, cooling air inlet and outlet openings and hydraulic and wiring connections.

Cooling Air Flow

For sufficient air flow to cool the genset, provide at least 4 inches (102 mm) of clearance in front of and across the entire face of the finned heat exchanger (air outlet) and in front of both air inlets. Two (2) of the four (4) air inlets must be open. Rearrange the plates and screens, as necessary, between the four air inlet openings. *The location with respect to bulkheads and other equipment must be such that the warm air does not recirculate back into the genset air inlets.*

Cooling Air Test

To determine whether the installation allows for sufficient genset cooling, monitor oil temperature with the display module (Figure 1) while running the genset under full load for at least two hours. Oil temperature must not exceed 200° F (93° C)**.**

If oil temperature does exceed 200° F (93° C), check inlet air temperature while continuing to run the genset under full load.

- If inlet air temperature exceeds 120° F (49° C), cooling air is recirculating between outlet and inlets or is being heated some other way, such as by passing through the hot engine compartment. The genset must be relocated or the air inlets and outlets baffled to prevent recirculation or the entrance of hot air from some other source.
- If inlet air temperature does not exceed 120° F (49° C), but oil temperature exceeds 200° F (93° C), inlet or outlet air is being blocked or restricted. The genset must be relocated or the obstructions removed.

NFPA Certification Test

As oil temperature rises, hydraulic efficiency falls off slightly. Therefore, load the genset to 103-104 percent of rated load at the start of the 2-hour NFPA Certification Test. If the inlet air temperature does not exceed 120° F (49° C), the genset will finish the test carrying at least 100 percent of rated load, meeting the certification requirements. See Cooling Air Test if air temperature exceeds specifications.

Hydraulic and Electric Interconnections

See HYDRAULIC CONNECTIONS (Page 12) and WIRING CONNECTIONS (Page 8) for important considerations with respect to interconnections between components in the system.

OIL RESERVOIR

When locating and mounting the oil reservoir, consider the following:

1. The bottom of the oil reservoir must be at least 2 feet (610 mm) higher than the top of the pump. It is recommended that the oil reservoir be the highest point in the hydraulic system.
2. The fill cap and filter must be readily accessible for filling oil and changing filters (Page 6). *There must be at least 8 inches (204 mm) of clearance for withdrawing the filter element.*
3. The oil level sight glass and filter pressure gauge must be readily visible. The genset display module and ON/OFF switch should be in view from the location of the oil reservoir.
4. See HYDRAULIC CONNECTIONS (Page 12) regarding hose connections.

GENSET DISPLAY MODULE

Locate the genset display module at a convenient location. The ON/OFF switch and oil reservoir gauges should be in view from the location of the display module. Mount the display module with four (4) 1/8 inch screws. Interconnect it with the other system components with lead harness Nos. 338-4087, 338-4088 and 338-4089.

GENSET ON / OFF SWITCH

Provide an ON/OFF switch rated at least 20 amps at 12 VDC to switch the genset ON and OFF (see schematic, Page A-5). Locate the switch at a convenient location. The genset display module and oil reservoir gauges should be in view from the location of the switch. Interconnect the ON/OFF switch and genset with lead harness No. 338-4084.

PTO ON / OFF SWITCH

If the PTO has a clutch, it is recommended that the genset ON/OFF switch also be connected to turn off the PTO clutch. That would prevent the operator from inadvertently turning off the PTO but not the genset. Otherwise, if the genset is left ON, the hour meter would record running hours when the genset is not running. Further, the vehicle battery could be run down and internal genset components could be damaged.

BATTERY

Genset control and monitoring requires connection to a 12 volt battery. Use lead harness No. 338-4085 to connect the genset to a terminal block in a vehicle equipment cabinet that provides battery positive (+) and negative (–) terminals.

Lead harness No. 338-4085 has a 20 amp blade-type fuse holder and fuse (yellow) to protect the genset control circuits from shorts to ground.

WIRING CONNECTIONS

Sheet 3 of the Outline Drawing (Page A-4) illustrate the wiring connections between the components of the system. Also refer also to the wiring schematic on Page A-5.

AC Output Connections

AC power output is through four (4) 4 AWG, Type CCXL conductors 12 ft (3.6 m) long. The conductors are in rain-tight 1-1/4 inch trade size flexible conduit. Refer to the wiring schematic on Page A-5.

Control and Monitoring Connections

All wiring interconnections between components of the system are done with 15 foot (4.3 m) long harnesses with sealed connectors (Table 1) that match the connectors on the component leads.

TABLE 1. WIRING HARNESSES

HARNESS	CONNECTIONS
338-4084	Genset to Remote ON/OFF Switch
338-4085	Genset to Battery
338-4086	Genset to Pump ON/OFF Solenoid
338-4087	For Display Power (from Genset)
338-4088	For Oil Temperature Display from Sensor
338-4089	For AC Display from Genset

Wiring Methods

Follow the National Electrical Code (USA) or Canadian Electrical Code, as required. Especially note the following:

1. Have a trained and experienced electrician supervise and inspect the installation of all AC wiring.
2. Provide overcurrent protection as required at the vehicle AC distribution panel. See Article 445, NFPA No. 70 (USA) or Part 1, Section 14 of C22.1 (Canada).
3. Install vibration-proof switches and controls that won't open and close circuits when the vehicle is in motion.
4. Provide ground fault circuit interrupters (GFCIs) for all convenience power receptacles.
5. Route AC power wiring and remote control wiring separately.
6. Seal all conduit openings into the vehicle interior to keep out vehicle engine exhaust. Apply silicone rubber or equivalent sealant inside and outside each conduit connector. (Flexible conduit is not vapor-tight and will allow exhaust gas to enter along the wires if not sealed.)

   ⚠WARNING ***EXHAUST GAS IS DEADLY! Seal all wiring openings into the vehicle interior to keep out exhaust gas.***
7. Bond the genset and all connected AC and DC equipment and controls to a common grounding point in accordance with applicable codes.

   ⚠WARNING ***Faulty grounding can lead to fire or electrocution, resulting in severe personal injury or death. Grounding must be in accordance with applicable codes.***

HYDRAULIC PUMP

⚠ CAUTION ***Do not use the pump actuator as a handle to lift or maneuver the pump. Doing so can damage the actuator.***

Refer to *Specifications* (Page v) regarding minimum and maximum pump speeds, SAE mounting flanges and SAE hose connections.

When locating and mounting the pump (Figure 3) consider possible interference with frame rails, cab floor, exhaust pipes and other vehicle components.

The pump must be mounted such that case drain port L1 or L2 is on top to vent air from the pump (Figure 3).

Note: The pump must be rotated clockwise, as viewed from the shaft end. Some PTOs turn counterclockwise. Make sure to check for clockwise rotation when selecting a PTO.

Interconnect the pump actuator and genset with lead harness No. 338-4086.

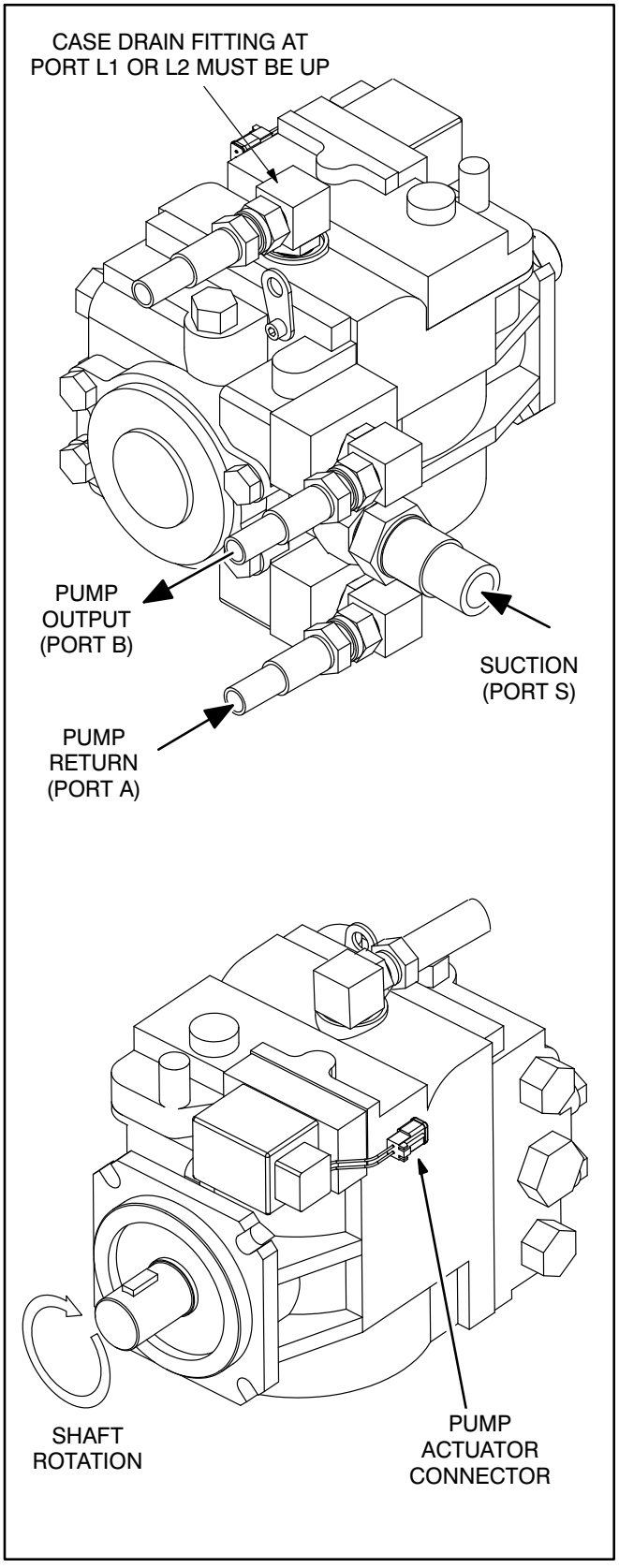

FIGURE 3. PUMP ASSEMBLY

Mount the pump on a frame cross member and connect it to the PTO (Figure 4) by means of a drive shaft. Consider the following:

1. The drive shaft can turn as high as 3800 rpm. To minimize vibration and wear, locate the pump such that the drive shaft U-joint angles will be as small as possible. The PTO and pump must be parallel within 1 degree and offset not more than would cause a 5 degree shaft angle. Use standard practice in designing, fabricating and assembling the pump bracket and drive shaft.
2. Use lock wires to secure hub set screws.
3. Provide guards around drive shafts at locations where they could accidentally be touched.

   ⚠WARNING ***Rotating drive shafts can cause severe personal injury or death. Guards must be provided to prevent accidental contact.***

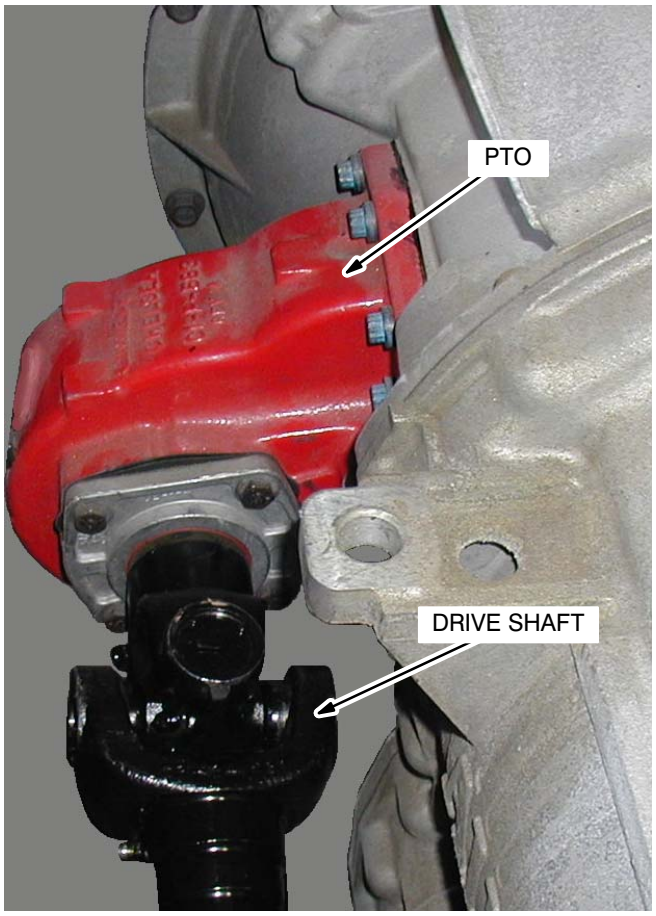

FIGURE 4. TYPICAL PTO AND DRIVE SHAFT

HYDRAULIC CONNECTIONS

⚠CAUTION ***The slightest amount of dirt in an hydraulic system can damage precisely machined internal components or cause the regulator spool valve to stick, resulting in erratic operation. Keep dirt out:***

- ***Thoroughly clean the outside of a fitting or cap before disconnecting or removing it.***
- ***Keep all openings in components and hoses capped with proper JIC caps until just before making connections.***
- ***Thoroughly flush hoses before connecting.***
- ***Regularly replace the oil filter.***
- ***Never reuse hydraulic fluid that has been drained. Only use Dexron III hydraulic oil.***

Sheet 3 of the Outline Drawing (Page A-4) illustrates the hydraulic interconnections between the components of the system. Specially note the following:

1. Consider that hoses shrink slightly in length and expand slightly in diameter under pressure.
2. To avoid trapping air, the hoses connected to the pump should slope up from the pump and the hose between the genset and oil reservoir should slope up to the reservoir.
3. Do not bend hoses tighter than the hose manufacturer recommends.
4. Make sure that the closed-loop lines are not reversed. It is recommended that they be color coded to match the fittings on the genset to aid service reconnections. Reversing the lines will cause the motor, alternator and fan to run backwards. Running the fan (blower) backwards will result in a substantial loss of cooling air flow.
5. Flush hoses and cap them with JIC caps after cutting and terminating their ends.
6. Use wide-sweep 90-degree fittings.
7. Always use two wrenches when tightening fittings.
8. Support, restrain and protect hydraulic hose as necessary to prevent chaffing.
9. Do not apply engine power to the pump before filling the pump and system with oil as instructed under STARTUP.

   ⚠CAUTION ***Running the pump without oil will quickly destroy it.***

STARTUP

Filling Hydraulic System With Oil

Referring to Figure 5, fill the system as follows:

1. Complete all hydraulic and electric connections and secure any shaft guards.

   ⚠WARNING ***Rotating drive shafts can cause severe personal injury or death. Guards must be provided to prevent accidental contact.***

2. Turn the genset switch **OFF** and make sure all loads are disconnected by turning the line circuit breaker in the vehicle AC distribution panel **OFF**.
3. Connect a 1000 psi gauge (with snubber) to system pressure port M2 or charge pressure gauge port M3.
4. Remove the fitting at the top pump case drain (Port L1 or L2), fill the pump with oil and reconnect the fitting and hose.
5. Fill the oil reservoir to within 1/4 inch of the top of the sight glass (Page 6). The level will drop as the system fills. If possible, wait 1/2 hour for air to escape from the system and refill the reservoir.

   ⚠WARNING ***The high pressure spray from a leak or fitting in a hydraulic line can penetrate the skin, leading to possible blood poisoning — Wear safety glasses — Shut down the engine that drives the hydraulic pump before loosening or tightening fittings — Do not delay getting proper medical attention if exposed to high pressure oil spray.***

6. If possible, disable engine starting and crank the engine to fill the system with oil. Otherwise, start and run the engine for not more than 3 to 5 seconds at a time. If a PTO clutch is provided, leave the engine running and engage the clutch for not more than 3 to 5 seconds at a time.

   ⚠CAUTION ***Running the pump without oil will quickly destroy the pump.***

7. Refill the reservoir if the level drops (Step 5).
8. Repeat Steps 6 and 7 until the system is full. The system probably is full when the oil level stops dropping in the reservoir and the pressure gauge indicates at least 200 psi. *Stop the engine when the pressure gauge indicates at least 200 psi so as not to damage the gauge.*
9. With the engine stopped, remove the pressure gauge and install the port plug. (Be prepared to do this quickly because all of the oil from the reservoir will drain out if this port is left open.)
10. When the system is full, turn the genset switch **ON**, let the engine run and listen for pump noise (metallic sound). Stop the engine or disengage the PTO clutch immediately if the pump is noisy. Repeat Steps Steps 6 and 7.

Testing Operation

After the system has been filled, run the engine, turn the genset switch **ON** and check voltage, frequency and current (Page 3) under various loads and engine speeds. Call an authorized Onan dealer if stable voltage and frequency or rated current cannot be attained.

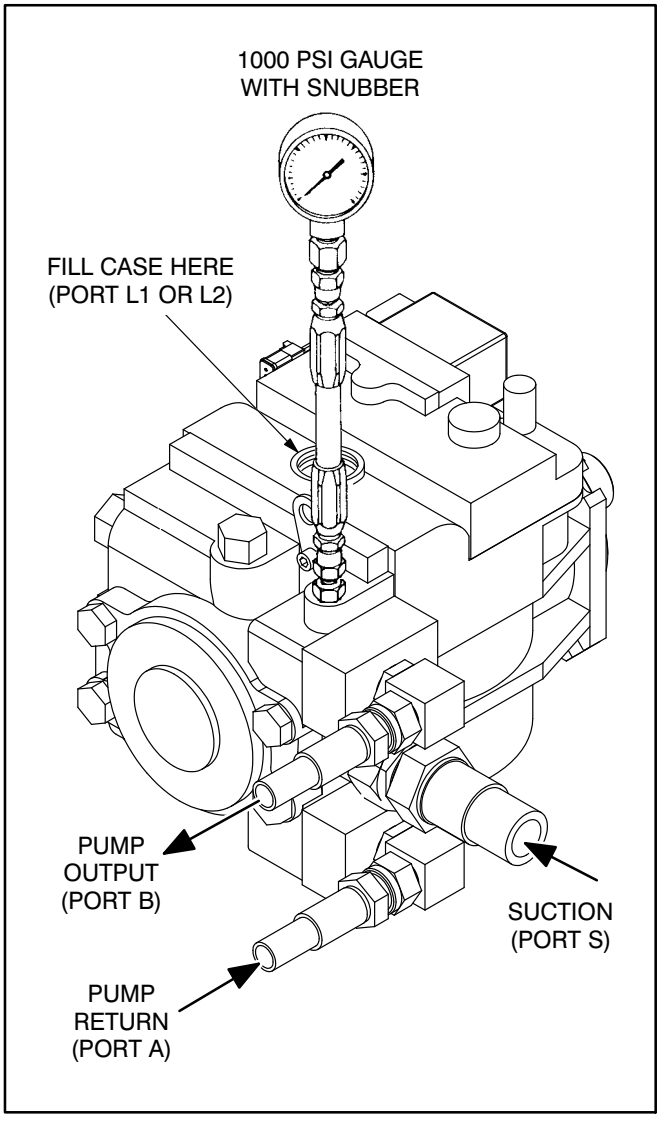

FIGURE 5. STARTUP

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Troubleshooting

This section covers problems that may be encountered and suggests possible causes and corrective actions. If you are unable to resolve the problem after taking the corrective actions suggested, call an authorized Onan dealer. See HOW TO OBTAIN PARTS AND SERVICE.

NOISY PUMP OR MOTOR	
⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***	
Possible Cause	**Corrective Action**
1. Air trapped in hydraulic fluid	Purge the air and refill the oil reservoir as necessary (Page 12). ⚠CAUTION ***Running the pump without oil will quickly destroy the pump.***

NO OUTPUT OR AIR DISCHARGE—ENGINE RUNNING	
⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***	
Possible Cause	**Corrective Action**
1. ON/OFF Switch **OFF**	Turn the switch **ON**.
2. ON/OFF Switch was **ON** when the engine was started or the PTO was engaged	Turn the switch **OFF** and then **ON**.
3. Disengaged PTO	Engage the PTO.
4. Blown Fuse (F1)	Replace with a 20 amp (yellow) blade-type fuse (Page A-5). If the new fuse blows, check for ground faults in harnesses 338-4084, 338-4085 and 338-4087 and replace as necessary (Page A-4).
5. Hydraulic fluid leak	Check for and repair any leaks in the system and refill as necessary (Page 6).
6. 12 VDC not available or polarity reversed.	Disconnect connector J1 at the genset and check for 12 VDC across pins A and B and Positive (**+**) 12 VDC at pin A. See Page A-5. Service or reconnect as necessary.

NO OUTPUT OR AIR DISCHARGE—ENGINE RUNNING

⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***

Possible Cause	Corrective Action
7. Faulty ON/OFF Switch	Disconnect connector P2 at the genset and check for electrical continuity across pins A and B when the switch is turned on. See Page A-5. Replace a faulty switch.
8. Faulty Lead Harness	Check for bent, corroded or missing connector pins and damaged leads in harnesses 338-4084, 338-4085 and 338-4086 and replace as necessary (Page A-4).

NO OUTPUT—GENSET RUNNING AND AIR DISCHARGING

⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***

Possible Cause	Corrective Action
1. Line circuit breaker (vehicle AC distribution panel) OFF, TRIPPED or faulty	a. If the circuit breaker is **OFF**, find out why, make sure it is safe to reconnect power, and then switch it **ON**. b. If the circuit breaker **TRIPPED**, shut down the genset and repair the shorted or grounded equipment that caused tripping. c. Replace a faulty circuit breaker.
2. Misconnected Genset Power Supply Conductors	Reconnect the genset power supply conductors correctly at the vehicle AC distribution panel (Page A-5).

FREQUENCY TOO HIGH OR TOO LOW OR UNSTABLE

⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***

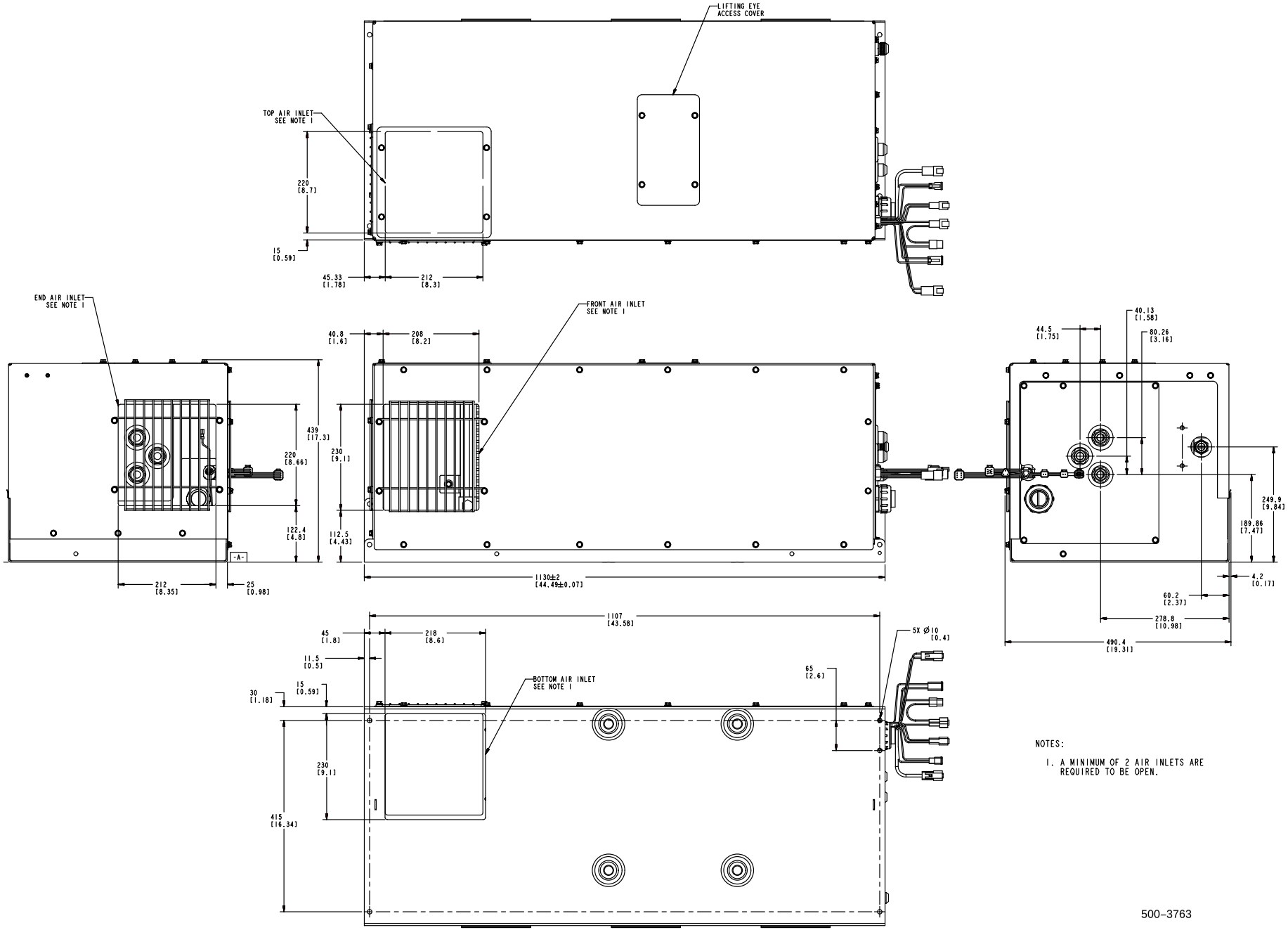
Possible Cause	Corrective Action
3. Wrong PTO speed ratio or faulty hydraulic motor or controller	a. Verify that the combination of PTO speed ratio and engine speed range results in pump speeds that fall within the specified range (Page v). If pump speed falls outside the range, reinstall the PTO with a gear ratio that will keep pump speed within the specified range at all engine speeds. b. See an authorized Onan dealer.

VOLTAGE TOO HIGH OR TOO LOW OR UNSTABLE

⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***

Possible Cause	Corrective Action
1. Wrong PTO speed ratio or faulty hydraulic motor or controller	a. Voltage is frequency dependent. Verify that the combination of PTO speed ratio and engine speed range results in pump speeds that fall within the specified range (Page v). If pump speed falls outside the range, reinstall the PTO with a gear ratio that will keep pump speed within the specified range at all engine speeds. b. See an authorized Onan dealer.
2. Faulty generator or AVR	See an authorized Onan dealer.

NOISY GENERATOR	
⚠WARNING ***There are hazards present in troubleshooting that can cause equipment damage, severe personal injury or death. Troubleshooting must be performed by trained and experienced persons who know about the hazards of electricity, hydraulic systems and machinery. Read Safety Precautions inside the front cover and observe all instructions and precautions in this manual.***	
Possible Cause	**Corrective Action**
1. Loose fan, worn bearing or misaligned rotor and motor	See an authorized Onan dealer.

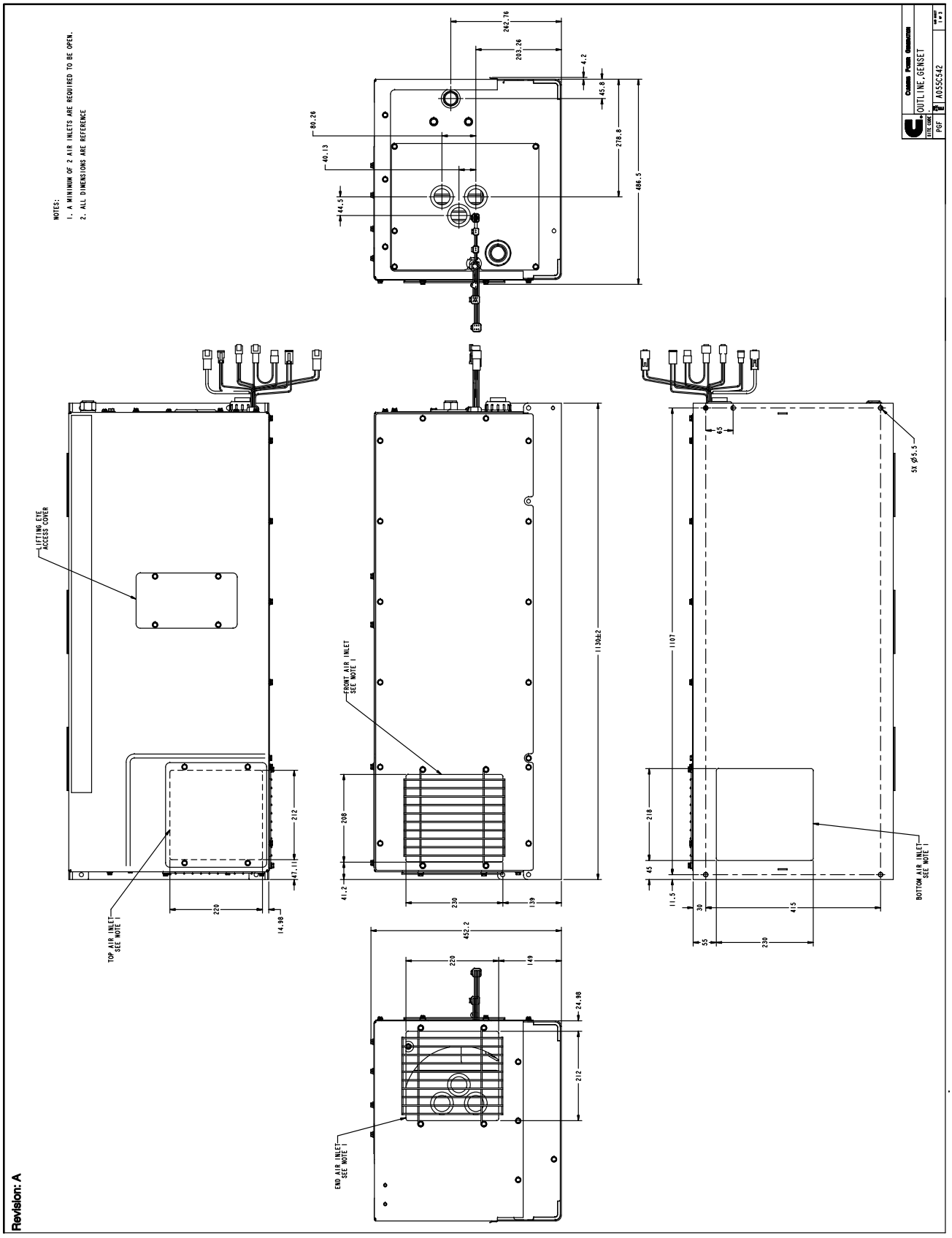


NOTES:

1. A MINIMUM OF 2 AIR INLETS ARE REQUIRED TO BE OPEN.

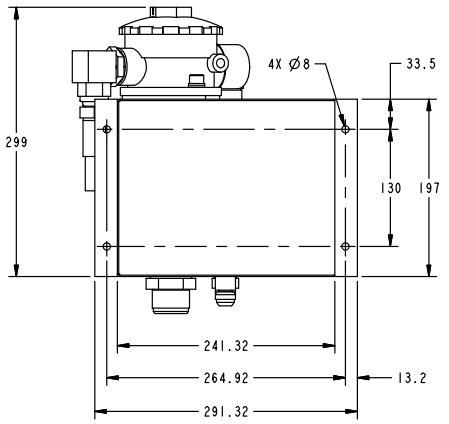
500-3763

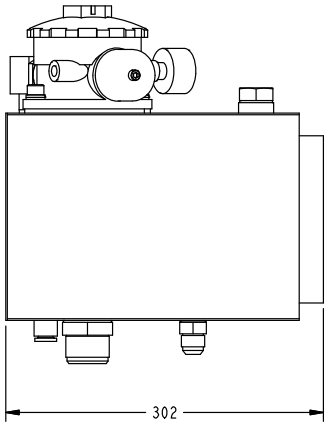
SPEC A & B: OUTLINE DRAWING—SHEET 1

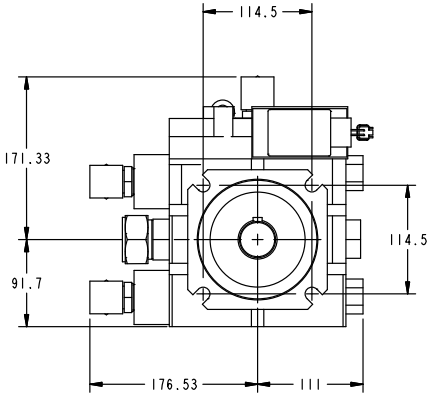


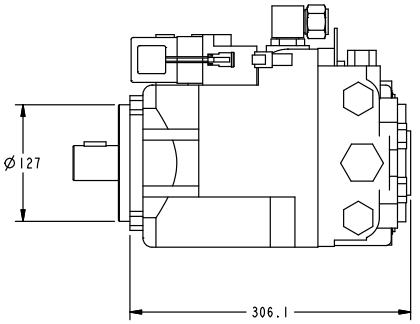
SPEC C–E: OUTLINE DRAWING—SHEET 1

Revision: A



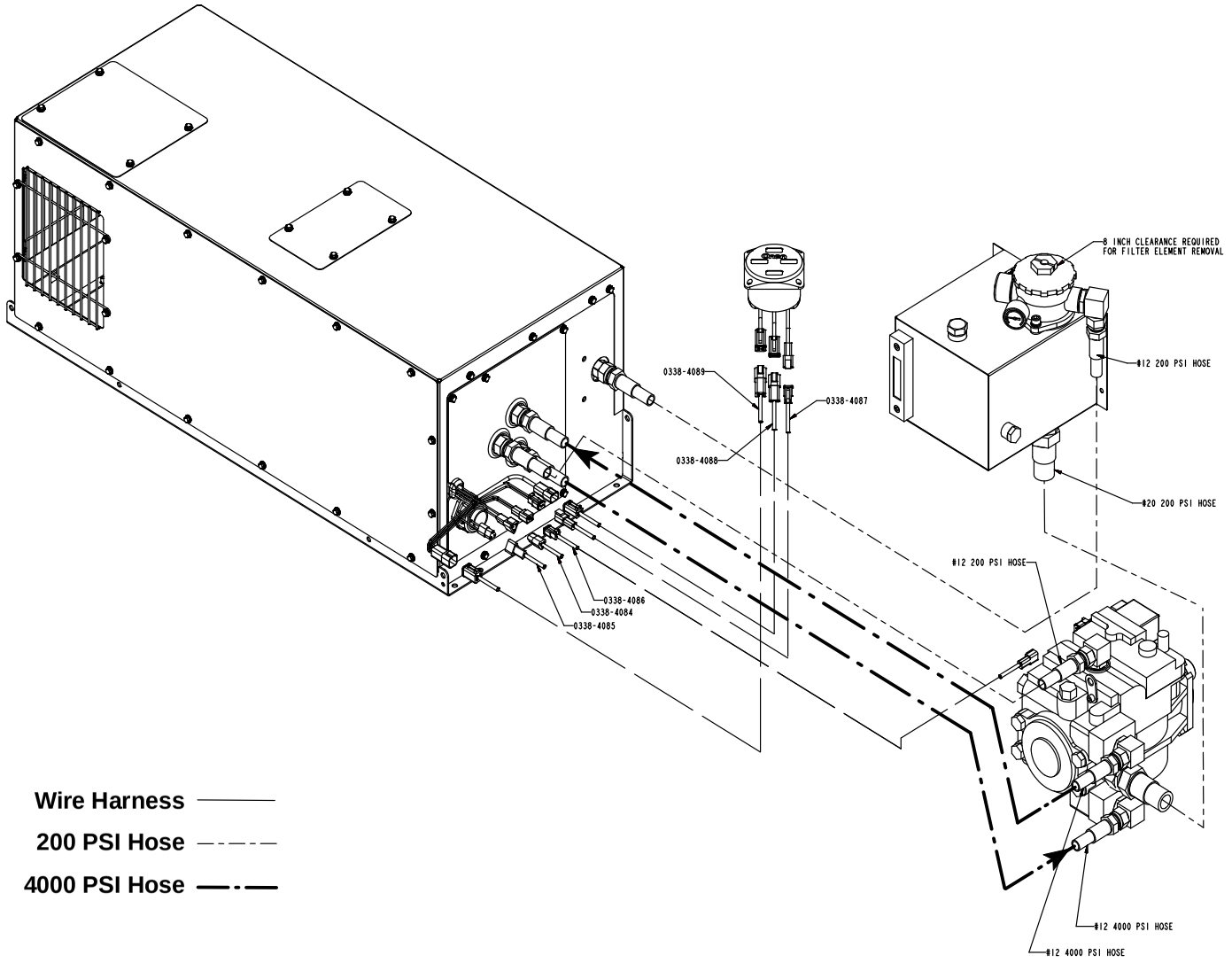




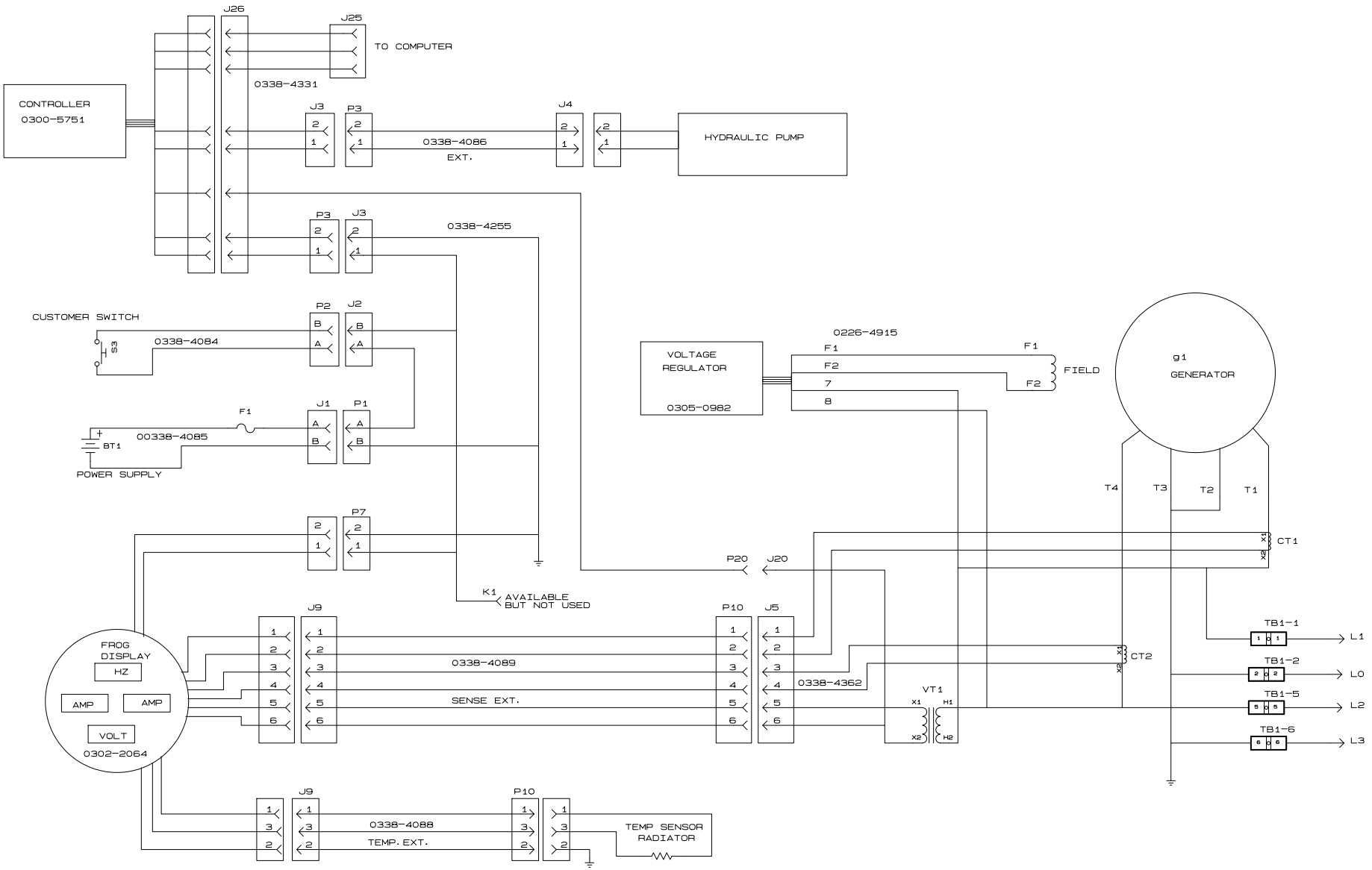


	Cummins Power Generation
	OUTLINE,GENSET
SIZE CODE	
PGF	A055C542

OUTLINE DRAWING—SHEET 2



OUTLINE DRAWING—SHEET 3



WIRING SCHEMATIC

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