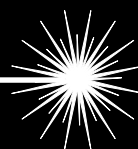




Commercial Mobile Power



Operation and Installation

RBAB Hydraulic Generator Sets (6-15 kW)

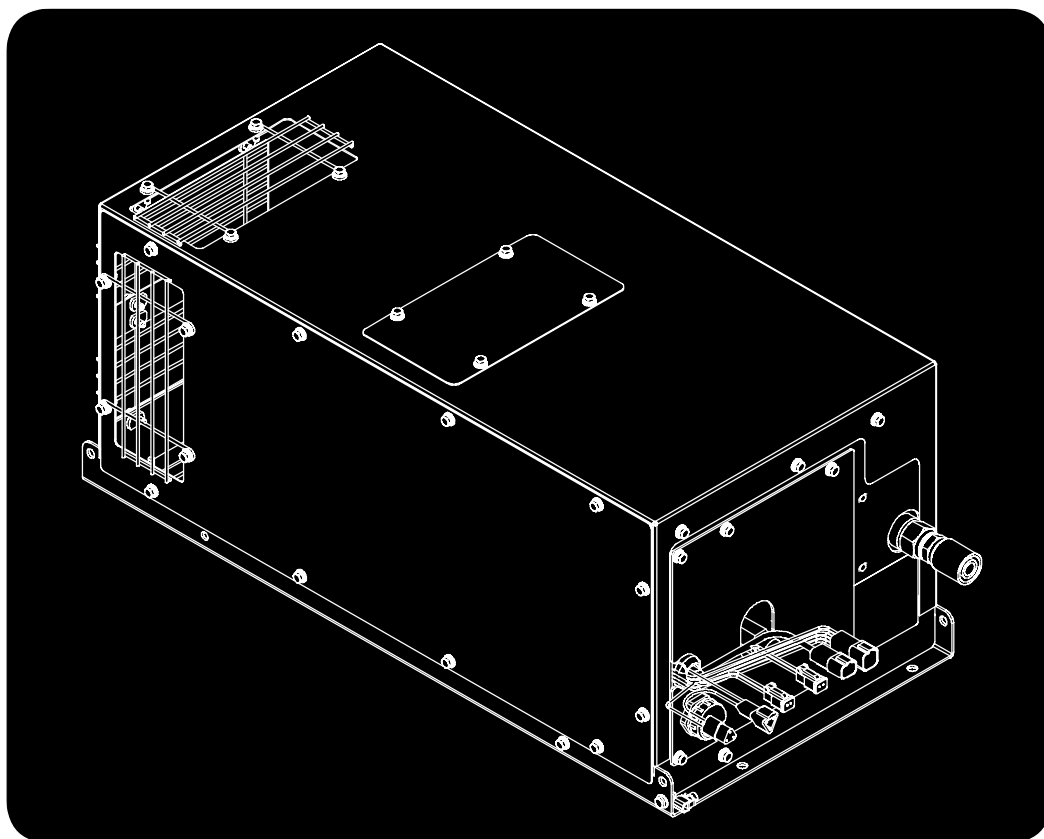


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Safety Precautions

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 that 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.

Specifications

	6 kW Models ¹	8 kW Models ¹	
GENERATOR: 2-Pole Revolving Field, 1-Bearing, Self-Excited, 1-Phase, Electronic Voltage and Frequency Regulation			
Frequency	60 Hertz	60 Hertz	50 Hertz
Voltage (3-Wire)	120 / 240 volts	120 / 240 volts	120 / 240 volts
Current	50 / 25 amps	66 / 33 amps	66 / 33 amps
Speed	3600 rpm	3600 rpm	3600 rpm
DC SYSTEM:			
Battery Voltage	12 volts	12 volts	12 volts
Control Fuse (F1)	20 amp blade-type	20 amp blade-type	20 amp blade-type
Control Fuse (F2)	0.125 amp slow-blow	0.125 amp slow-blow	0.125 amp slow-blow
INSTALLATION: Hydraulic Pump			
Min – Max Pump Speed	850 to 3000 rpm	850 to 3000 rpm	850 to 3000 rpm
SAE Flange	B	B	B
SAE Spline Shaft	B—13 Tooth or BB—15 Tooth	B—13 Tooth or BB—15 Tooth	B—13 Tooth or BB—15 Tooth
SAE Straight Key Shaft	B—1 inch	B—1 inch	B—1 inch
Flow	14 gpm	14 gpm	14 gpm
Maximum Pressure	4000 psi	4000 psi	4000 psi
Hydraulic Fluid	Dextron III or Anti-Wear Hydraulic Fluid	Dextron III or Anti-Wear Hydraulic Fluid	Dextron III or Anti-Wear Hydraulic Fluid
Weight	55 lb (25 Kg)	55 lb (25 Kg)	55 lb (25 Kg)
Max Engine Draw	23.3 hp	26.0 hp	23.0 hp
INSTALLATION: Hydraulic Hose & Fittings			
Pump to Motor	#10, 4000 psi Hose; 37° Fittings	#10, 4000 psi Hose; 37° Fittings	#10, 4000 psi Hose; 37° Fittings
Genset to Oil Reservoir	#12, 200 psi Hose; 37° Fittings	#12, 200 psi Hose; 37° Fittings	#12, 200 psi Hose; 37° Fittings
Pump Case to Oil Reservoir	#10, 200 psi Hose; 37° Fittings	#10, 200 psi Hose; 37° Fittings	#10, 200 psi Hose; 37° Fittings
Oil Reservoir to Pump	#20, 200 psi Hose; 37° Fittings	#20, 200 psi Hose; 37° Fittings	#20, 200 psi Hose; 37° Fittings
INSTALLATION: Generator Module			
Noise	72 dB(A)2	72 dB(A)2	72 dB(A)2
Weight	179 lb (81 Kg)	179 lb (81 Kg)	179 lb (81 Kg)
Dimensions (L x W x H)	31.98 x 15.79 x 13.72 in (812.4 x 401.1 x 348.4 mm)	31.98 x 15.79 x 13.72 in (812.4 x 401.1 x 348.4 mm)	31.98 x 15.79 x 13.72 in (812.4 x 401.1 x 348.4 mm)
Cooling Air Flow	1450 cfm	1450 cfm	1450 cfm
Max Ambient Temp			
Continuous Full Load	120° F (49° C)	120° F (49° C)	120° F (49° C)
Intermittent Load	140° F (60° C)	140° F (60° C)	140° F (60° C)
1 – Rated @ 1.0 PF			
2 – Rated @ 10 ft (3 m), before installation, under full load.			

	10 kW Models ¹	15 kW Models ¹
GENERATOR: 2-Pole Revolving Field, 1-Bearing, Self-Excited, 1-Phase, Electronic Voltage and Frequency Regulation		
Frequency	60 Hertz	60 Hertz
Voltage (3-Wire)	120 / 240 volts	120 / 240 volts
Current	83 / 42 amps	125 / 62.5 amps
Speed	3600 rpm	3600 rpm
DC SYSTEM:		
Battery Voltage	12 volts	12 volts
Control Fuse (F1)	20 amp blade-type	20 amp blade-type
Control Fuse (F2)	0.125 amp slow-blow	0.125 amp slow-blow
INSTALLATION: Hydraulic Pump		
Min – Max Pump Speed	850 to 3000 rpm	1000 to 3000 rpm
SAE Flange	B	B
SAE Spline Shaft	B—13 Tooth or BB—15 Tooth	BB—15 Tooth
SAE Straight Key Shaft	B—1 inch	B—1 inch
Flow	14 gpm	16.1 gpm
Maximum Pressure	4000 psi	4000 psi
Hydraulic Fluid	Dextron III or Anti-Wear Hydraulic Fluid	Dextron III or Anti-Wear Hydraulic Fluid
Weight	55 lb (25 Kg)	55 lb (25 Kg)
Max Engine Draw	28.7 hp	40.0 hp
INSTALLATION: Hydraulic Hose & Fittings		
Pump to Motor	#10, 4000 psi Hose; 37° Fittings	#10, 4000 psi Hose; 37° Fittings
Genset to Oil Reservoir	#12, 200 psi Hose; 37° Fittings	#12, 200 psi Hose; 37° Fittings
Pump Case to Oil Reservoir	#10, 200 psi Hose; 37° Fittings	#10, 200 psi Hose; 37° Fittings
Oil Reservoir to Pump	#20, 200 psi Hose; 37° Fittings	#20, 200 psi Hose; 37° Fittings
INSTALLATION: Generator Module		
Noise	72 dB(A) ₂	72 dB(A) ₂
Weight	179 lb (81 Kg)	225 lb (102 Kg)
Dimensions (L x W x H)	31.98 x 15.79 x 13.72 in (812.4 x 401.1 x 348.4 mm)	39.17 x 15.81 x 13.7 in (995 x 401.5 x 348 mm)
Cooling Air Flow	1450 cfm	1600 cfm
Max Ambient Temp		
Continuous Full Load	120° F (49° C)	120° F (49° C)
Intermittent Load	140° F (60° C)	140° F (60° C)
1 – Rated @ 1.0 PF		
2 – Rated @ 10 ft (3 m), before installation, under full load.		

Introduction

ABOUT THIS MANUAL

This manual covers Operation and Installation of the hydraulic generator sets (gensets) listed on the front cover. It includes Specifications, Maintenance and Troubleshooting. For more information on the genset, refer to Parts Catalog 943-0204 and Service Manual 943-0503.

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 the appropriate Outline Drawing (beginning on Page A-1).

- **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 oil-to-air heat exchanger in the generator box cools the oil (hydraulic fluid) 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 (50 or 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 with Dextron III or Anti-Wear Hydraulic Fluid (oil).

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). Switch the genset **ON** and then connect or turn on the loads.

Note: It takes 4 to 8 seconds for the genset to reach rated frequency each time it is started.

⚠ 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.*

⚠ 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 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.

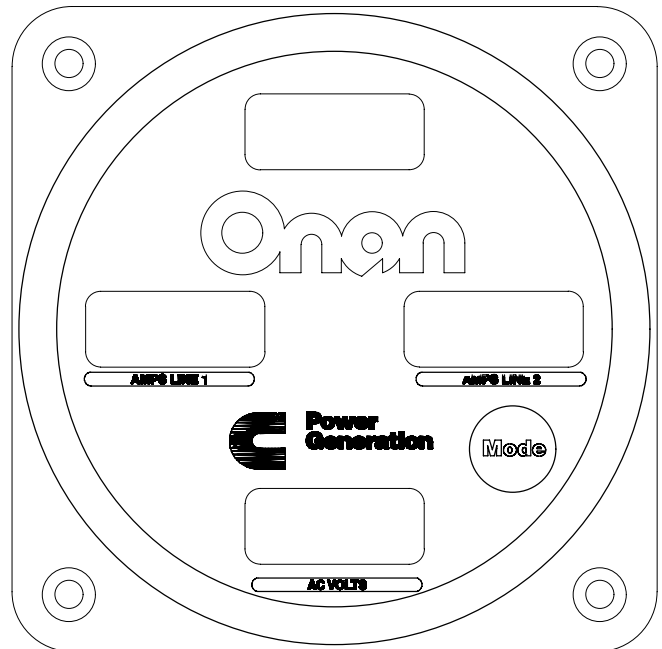


FIGURE 1. DISPLAY MODULE

Maintenance

OIL LEVEL

⚠ 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.*
- *Cap all openings in components and hoses with proper JIC caps when disassembling.*
- *Before connecting, thoroughly flush each hose and blow sponge pigs through until they come out clean.*
- *Regularly replace the oil filter.*
- *Never reuse drained hydraulic fluid.*

Check oil level often and keep it within 1/4 inch of the top of the sight glass (Figure 2). Only use Dextron III

or Anti-Wear 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 and generator brushes and slip rings 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).

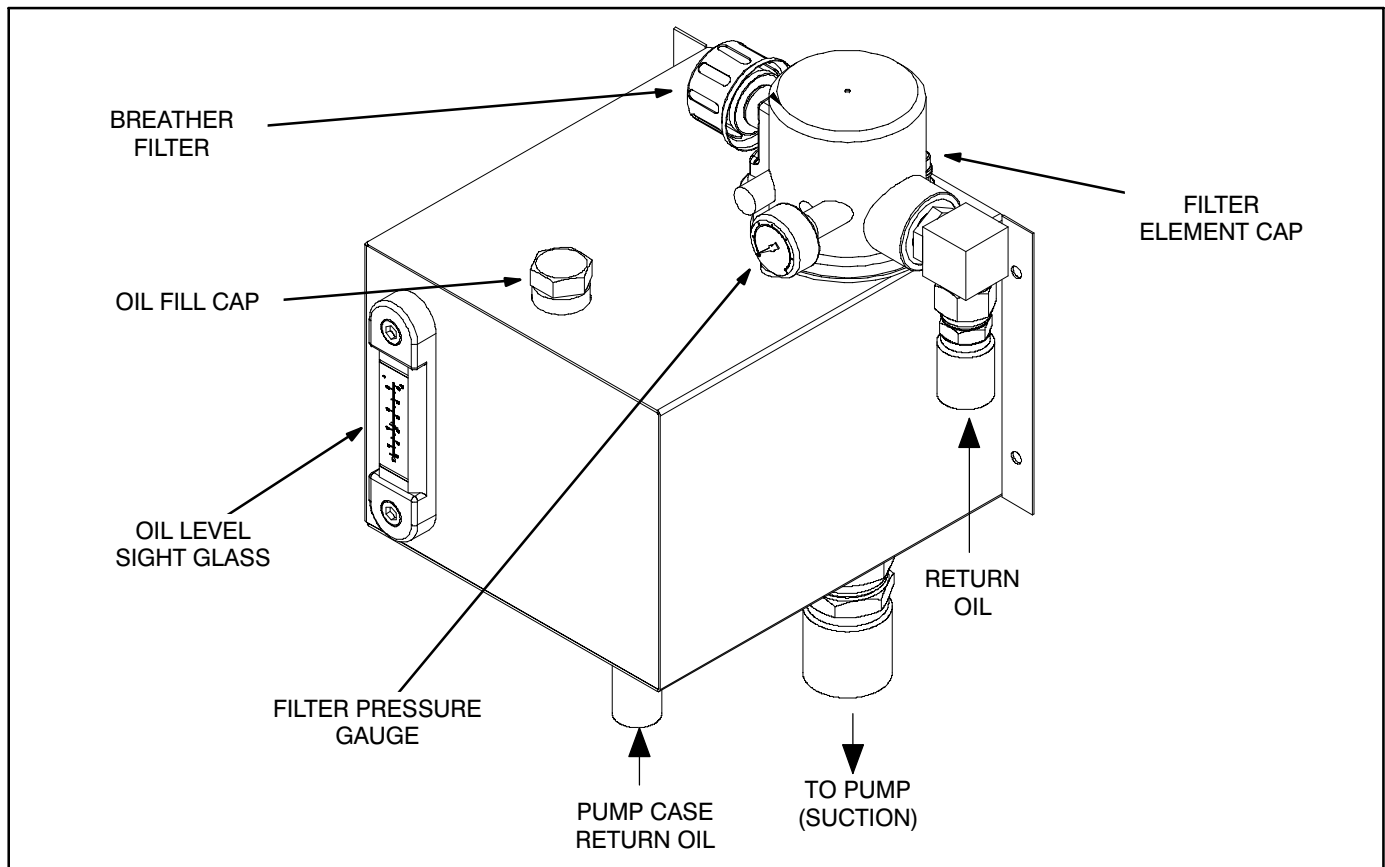


FIGURE 2. OIL RESERVOIR

Installation

GENSET

⚠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.*

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.

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.

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 3 inches (76 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) air inlets must be open. Rearrange the plates and screens, as necessary, between the four or five 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 185° F (85° C). If it does, check inlet air temperature.

- Inlet air temperature should not exceed ambient air temperature by more than 25° F (14° C). If it does, cooling air is recirculating between the 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 another source.
- If inlet air temperature exceeds ambient air temperature by less than 25° F (14° C) but oil temperature exceeds 185° F (85° C), inlet or outlet air is being blocked or restricted. The genset must be relocated or the obstructions removed.
- If inlet air temperatures exceed 120° F (49° C) the genset must be derated to prevent oil temperatures from exceeding 185° F (85° C).

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 8) and WIRING CONNECTIONS (Page 6) 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 3). *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 8) 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-6). 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.

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

See the appropriate Outline Drawing (beginning on Page A-1) for wiring connections between the components of the system. Also refer to the wiring schematic on Page A-6.

AC Output Connections

AC power output is through four Type CCXL conductors 12 ft (3.6 m) long in rain-tight flexible conduit. Conductors and conduit are sized according to Table 1. Refer to the wiring schematic on Page A-6.

TABLE 1. WIRING GAUGE AND CONDUIT SIZE

KW	Wire Gauge	Conduit Size
6 & 8	12 AWG	1/2 inch
10	10 AWG	3/4 inch
15	8 AWG	1-1/4 inch

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 2) that match the connectors on the component leads.

TABLE 2. WIRING HARNESSSES

HARNESS	CONNECTIONS
338-4084	Genset to Remote ON/OFF Switch
338-4085	Genset to Battery
338-4086	Genset to Pump Actuator
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.)
7. Bond the genset and all connected AC and DC equipment and controls to a common grounding point in accordance with applicable codes.

⚠WARNING ***EXHAUST GAS IS DEADLY! Seal all wiring openings into the vehicle interior to keep out exhaust gas.***

⚠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

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

Refer to *Specifications* regarding minimum and maximum pump speeds, SAE mounting flanges, drives and hose connections. Pumps are available for clockwise or counterclockwise rotation, as determined by looking at the drive shaft end.

Note: When selecting a PTO, make sure it will turn the pump in the right direction within the speed range specified.

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 one of the three case drain ports points up.

Mount the pump on a frame cross member and connect it to the PTO by means of a drive shaft, observing the following:

1. The drive shaft can turn at a very high 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 at a shaft angle of 5 degrees or less. Use standard practice in designing, fabricating and assembling the pump bracket and drive shaft.
2. On models that have splined drive shafts, grease the splines with the tube of grease provided.
3. Use lock wires to secure hub set screws.
4. 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.

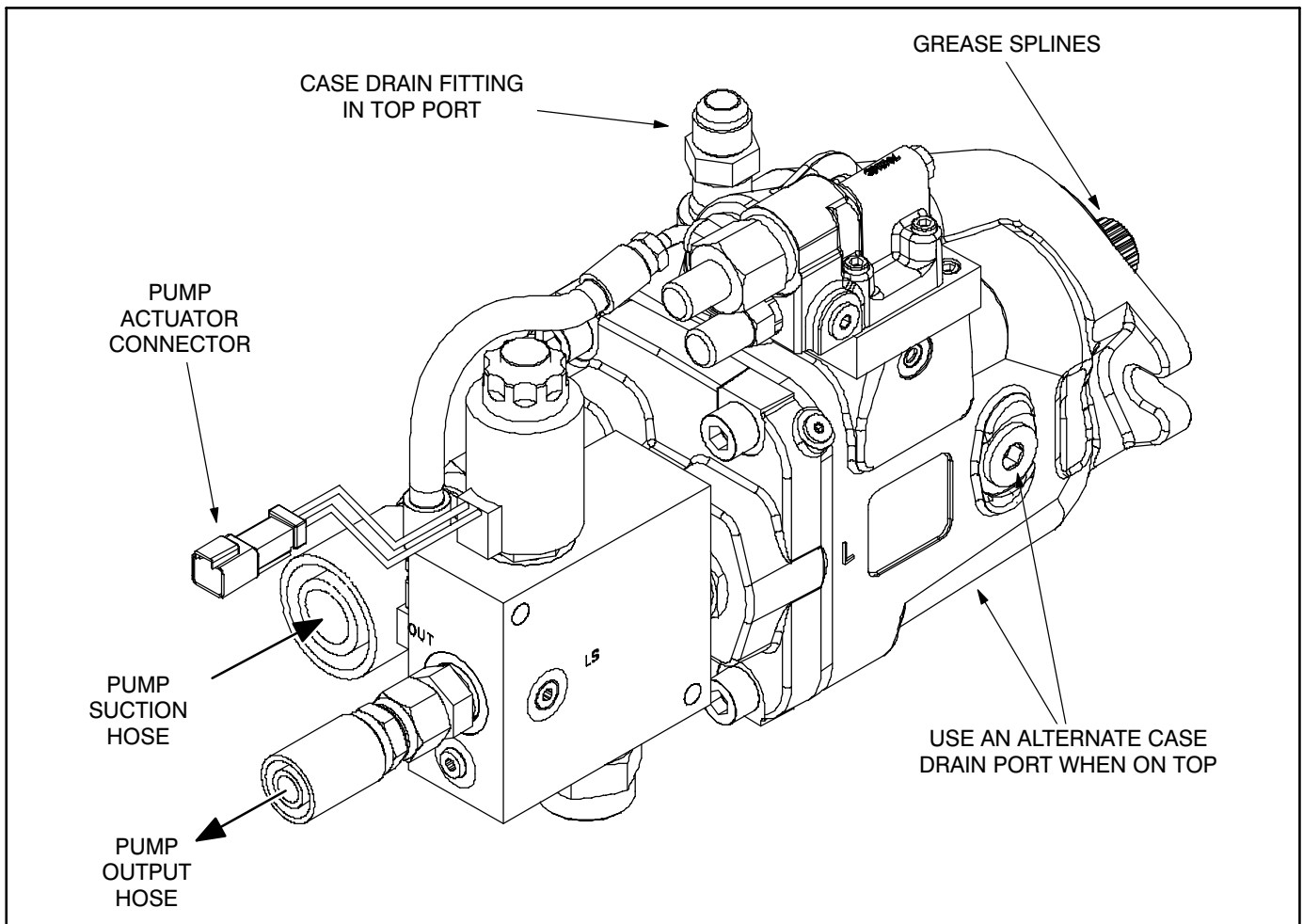


FIGURE 3. PUMP ASSEMBLY

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.*
- *Cap all openings in components and hoses with proper JIC caps when disassembling.*
- *Before connecting, thoroughly flush each hose and blow sponge pigs through until they come out clean.*
- *Regularly replace the oil filter.*
- *Never reuse drained hydraulic fluid.*

See the appropriate Outline Drawing (beginning on Page A-1) for 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, hoses should slope up from the pump. 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. Flush hoses and cap them with JIC caps after cutting and terminating their ends.
5. Use wide-sweep 90-degree fittings.
6. Always use two wrenches when tightening fittings.
7. Support, restrain and protect hydraulic hose as necessary to prevent chaffing.
8. Do not apply engine power to the pump before filling the pump and system with oil as instructed under STARTUP.

STARTUP

Filling Hydraulic System

1. Complete all hydraulic and electric connections and secure drive 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**.
3. Disconnect all electrical loads.
4. Disconnect the case drain hose and fill the pump case (top case drain port). Use a 10 micron filter (SAE Class 4) to filter the oil.
5. Fill the oil reservoir to within 1/4 inch of the top of the sight glass (Page 3). Use a 10 micron filter (SAE Class 4) to filter the oil. The level will drop as the system fills. If possible, wait 1/2 hour for air to escape from the system and then 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 oil level stops dropping in the reservoir.
9. 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 **ON** the genset switch and check voltage, frequency and current (Page 2) under various loads and engine speeds.

These gensets do not require a final speed adjustment. If the genset does not come up to rated frequency check for proper minimum pump speed. Call an authorized Onan dealer if stable voltage and frequency or rated current cannot be attained.

Troubleshooting

This section covers problems that may be encountered and suggests possible causes and corrective actions. If you are unable to resolve the problem af-

ter 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 3). ⚠CAUTION <i>Running the pump without oil will quickly destroy the pump.</i>

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.

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-6). If the new fuse blows, check for ground faults in harnesses 338-4084, 338-4085 and 338-4087 and replace as necessary.
5. Blown Fuse (F2)	Replace with a 0.125 amp slow-blow fuse.
6. Hydraulic fluid leak	Check for and repair any leaks in the system and refill as necessary (Page 3).
7. 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-6. Service or reconnect as necessary.
8. 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-6. Replace a faulty switch.
9. 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.

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 re-connect 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-6).

FREQUENCY TOO HIGH OR TOO LOW OR UNSTABLE

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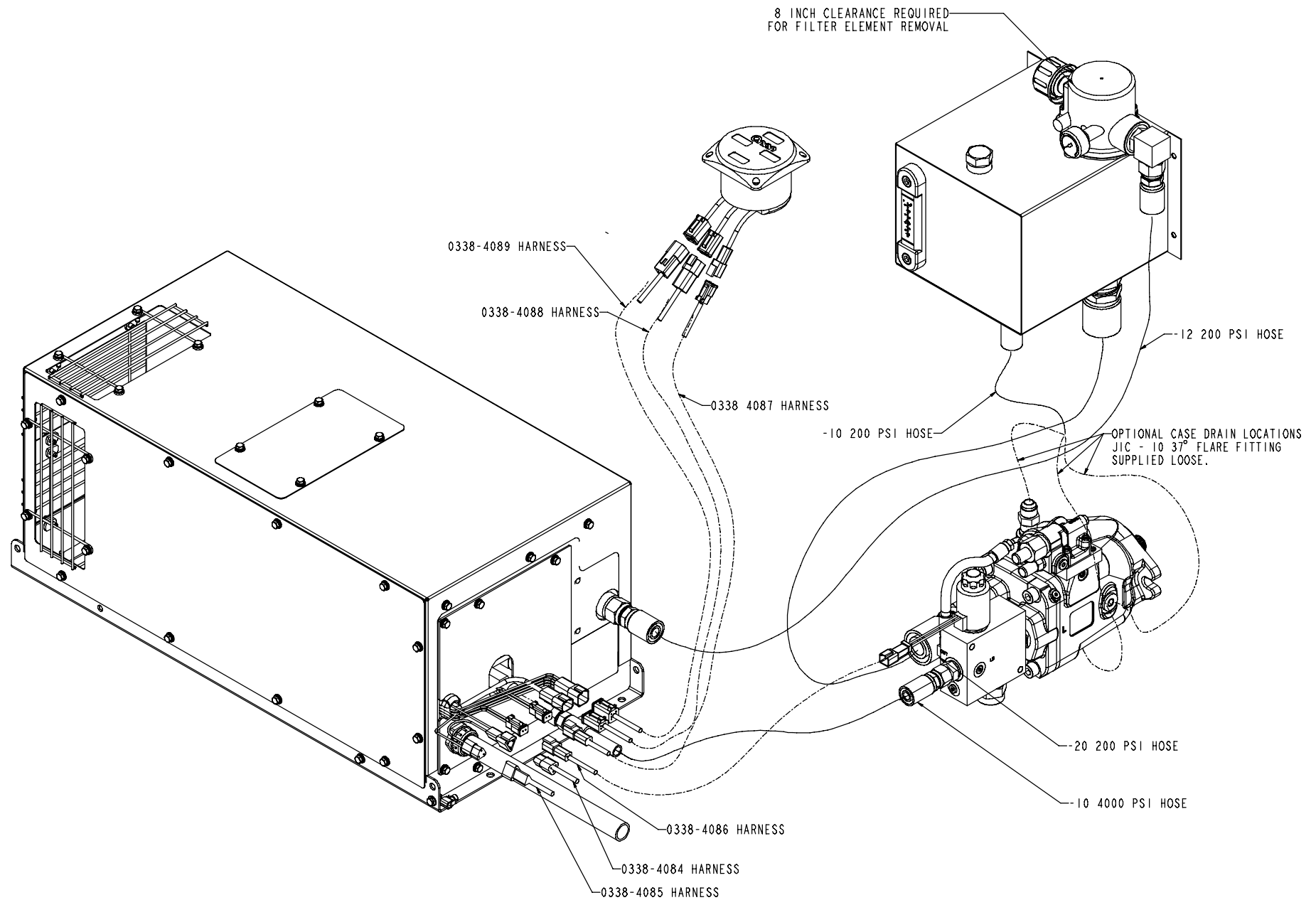
Possible Cause	Corrective Action
3. Wrong PTO speed ratio or faulty hydraulic motor or controller	a. Verify that the combination of PTO speed ratio and engine speed range results in pump speeds that fall within the specified range. See <i>Specifications</i> . If pump speed falls outside the range, reinstall 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.*

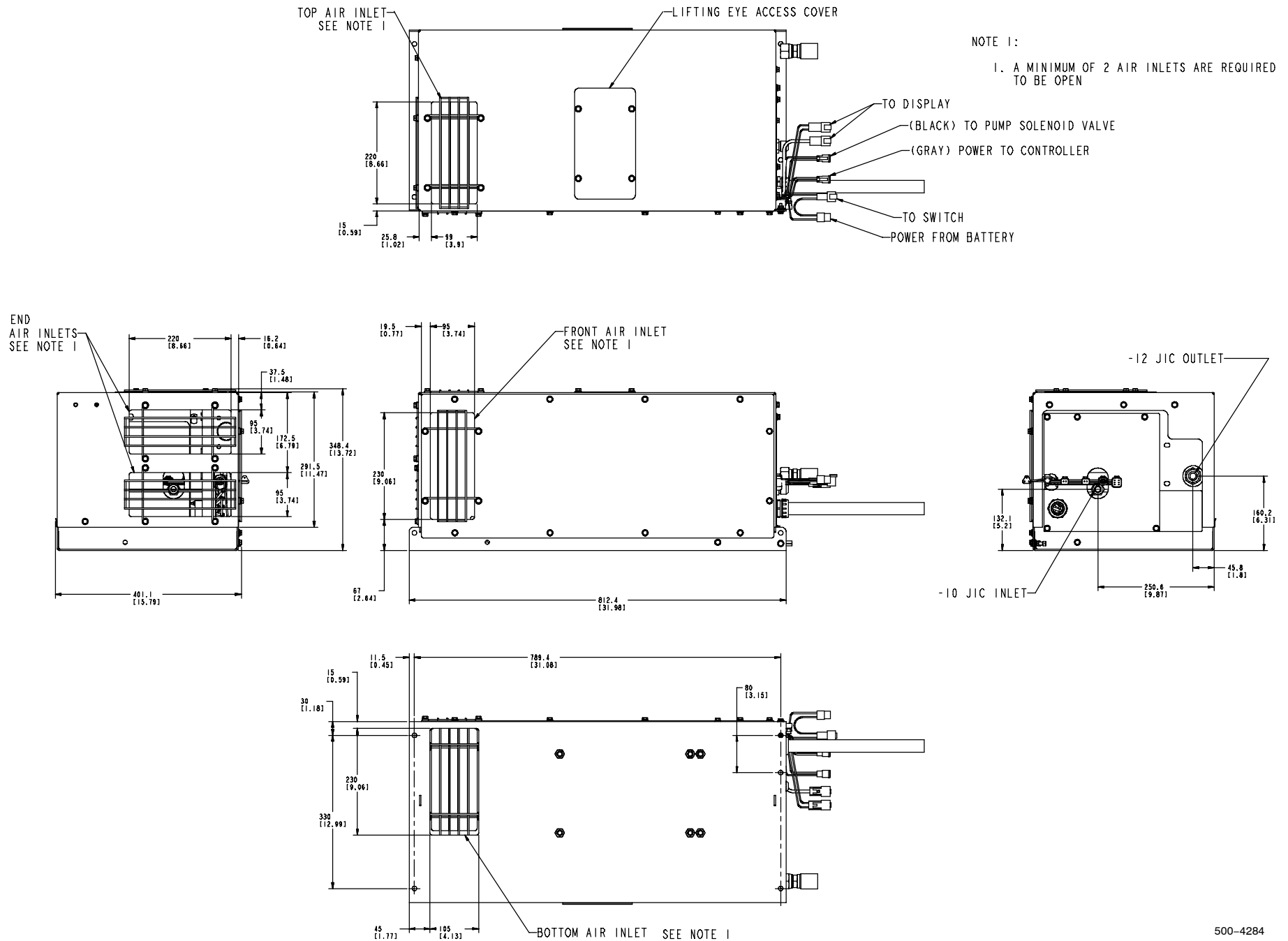
Possible Cause	Corrective Action
1. Wrong PTO speed ratio or faulty hydraulic motor or controller	<ul style="list-style-type: none">a. Voltage is frequency dependent. Verify that the combination of PTO speed ratio and engine speed range results in pump speeds that fall within the specified range. see <i>Specifications</i>. 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.

A-1



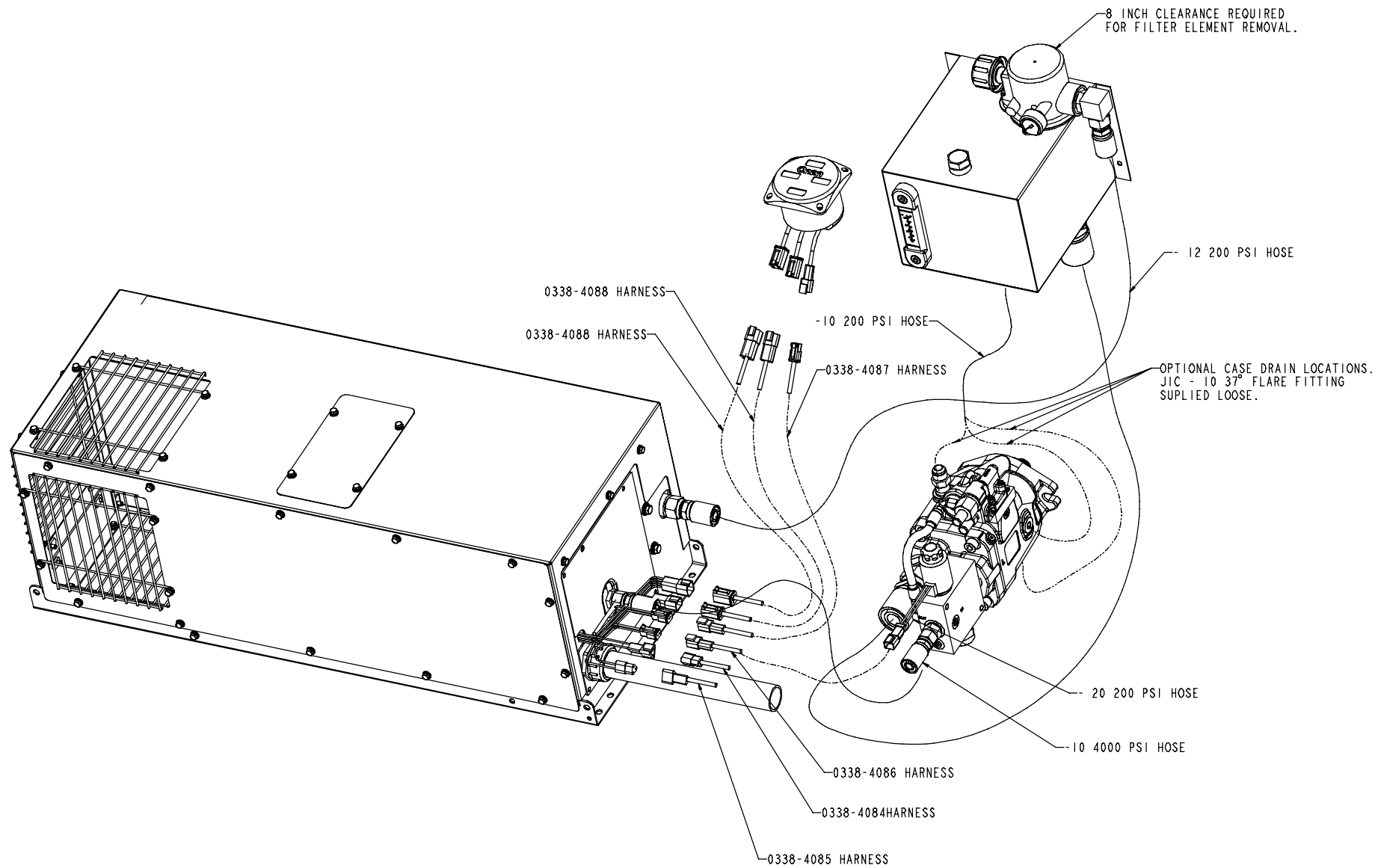
OUTLINE DRAWING (6KW, 8KW, 10KW)—SHEET 1

A-2



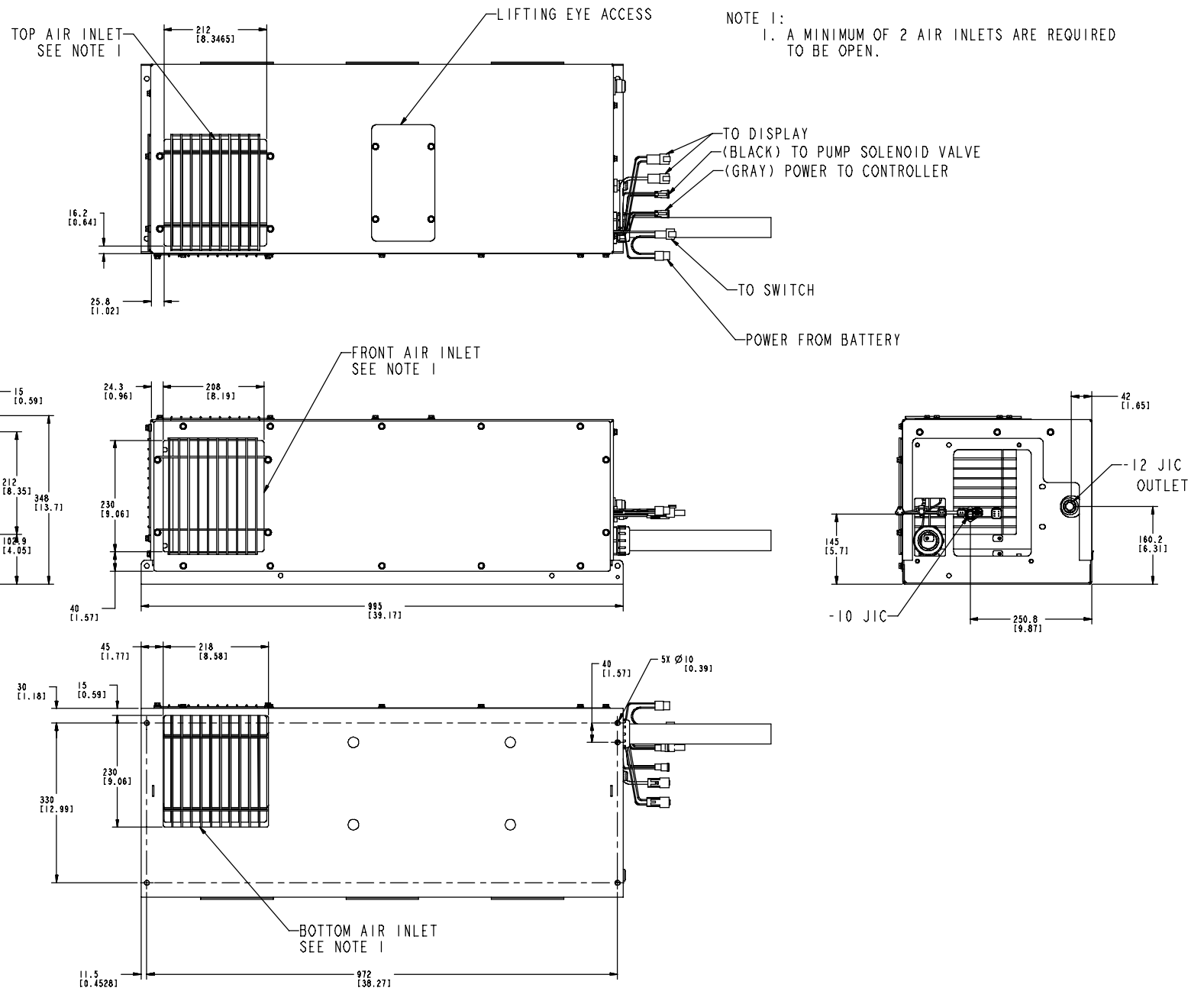
OUTLINE DRAWING (6KW, 8KW, 10KW)—SHEET 2

A-3

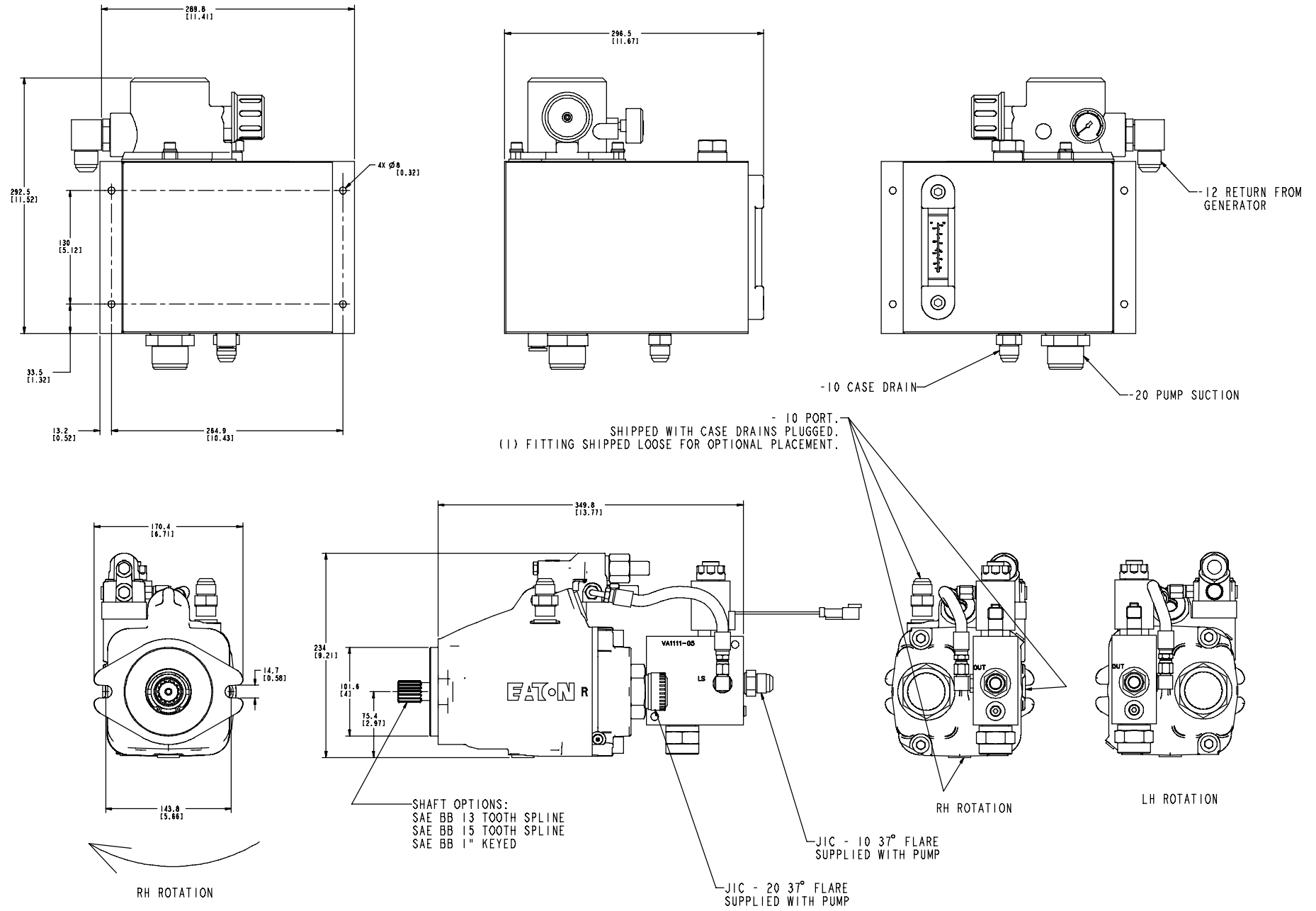


OUTLINE DRAWING (15 KW)—SHEET 1

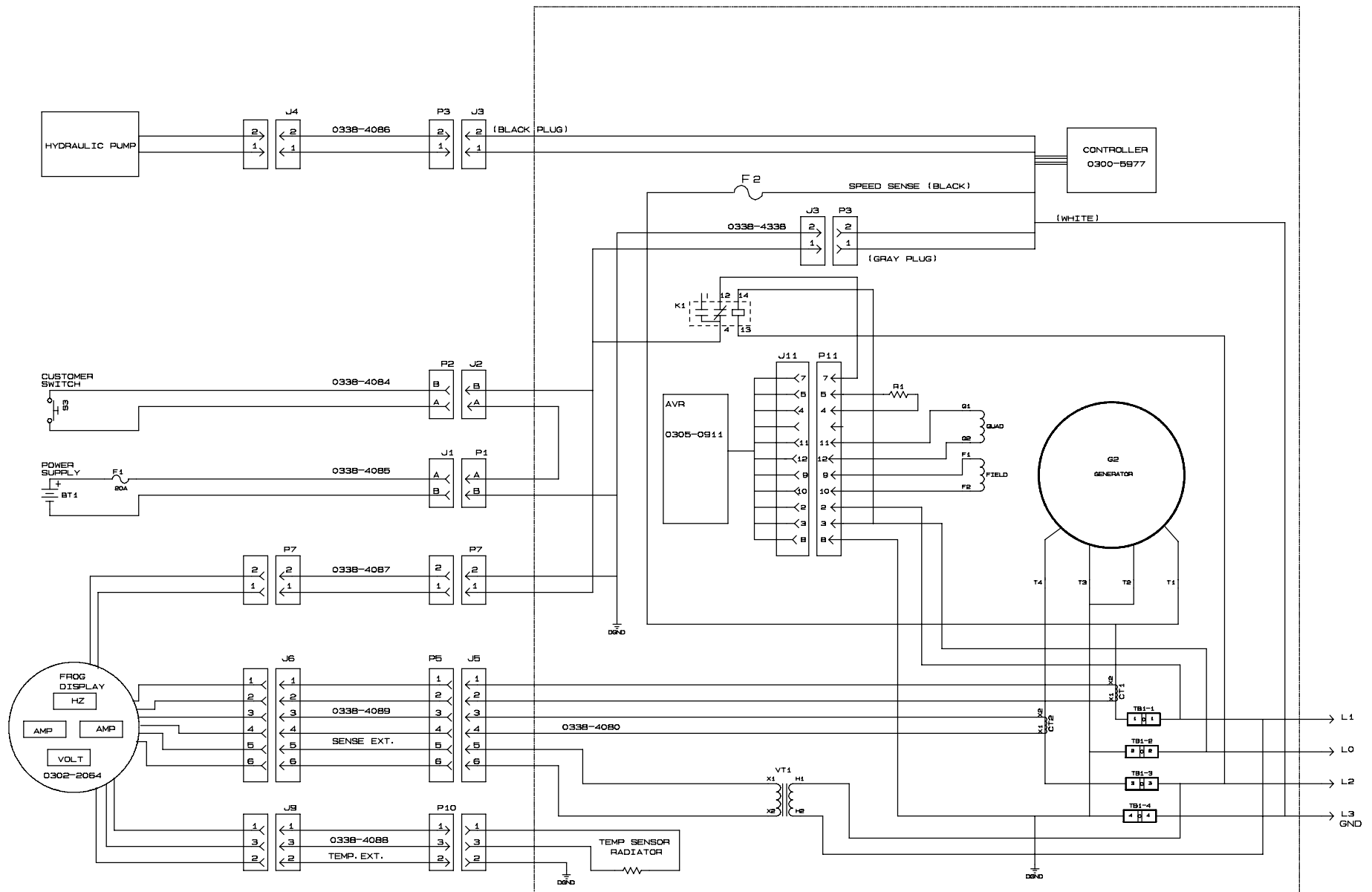
A-4



OUTLINE DRAWING (15 KW)—SHEET 2



OUTLINE DRAWING (ALL MODELS)



WIRING SCHEMATIC



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