

OHIO MAGNETICS, INC.

A SUBSIDIARY OF PEERLESS WINSMITH, INC.

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SECTION 5

DC GENERATOR INFORMATION

OHIO
DC GENERATORS

for
Magnet Service

GENERAL:

A DC generator is an electro-mechanical device designed to convert mechanical energy into DC electrical energy. It is available as a separate rotating device to be driven by an auxiliary shaft of the main engine of portable cranes. It is also available as a package unit complete with a gasoline or diesel engine.

Belt driven power take-off generators must be operated at their rated speed in order to develop full rated voltage and power. For optimum performance the speed must be maintained within plus or minus 50 RPM.

The generators are compound field-wound units which are self regulating between zero and full load. The standard magnet generator is 230 volts DC and is available in increments from 5 to 33 KW. This standard speed is 1800 RPM for the P-T-O units except the light weight 5, 8, and 10 KW units which are rated at 2500 RPM.

These generators are designed with extra thermal capacity to be able to withstand electromagnet service with ample safety factor. They are also mechanically rugged to resist shock and vibration present on portable cranes.

INSTALLATION OF P.T.O. UNITS:

Correct installation of the generator is essential to the proper operation and normal life expectancy of the unit. The following procedures and requirements should be observed:

1. Generator Speed:

Pulley diameters between input and output must be correct to result in rated generator RPM when the engine is at normal running speed. Under no conditions should the generator run above 20% overspeed.

Proper size and number of pulleys must be correct to drive the generator without slipping. Use pulleys for "C" size V-belts. Select the quantity of belts as follows:

5.1.1

<u>KW</u>	<u>NO. OF BELTS</u>
5-7	1
8-13	2
14-32	3
33	4

Belt tension must be correct to prevent belt slippage. Excessive tension is not desirable and will result in high belt wear and possible bearing overload.

2. Alignment:

Mount the generator on a flat surface whose plane is parallel to the axis of the drive shaft.

Position the generator such that the two pulleys are in correct alignment for ideal belt tracking.

3. Direction of Rotation:

The generator is fixed to rotate in one direction only. Normally it is shipped to rotate clockwise when viewed from the shaft end. It can be modified to rotate counter-clockwise in the field. See instructions below.

4. Unobstructed Air Flow:

Air circulation throughout the generator is required for proper cooling. No obstructions should be placed on either end of the generator that would obstruct the air flow.

ADJUSTMENTS FOR DIRECTION OF ROTATION: (Excluding the 5 KW generator)

The generator is normally shipped for clockwise rotation. This is the direction the belts will rotate the generator shaft when viewed from the shaft end.

To check or change the adjustments, the two covers on the commutator end must be removed.

The following information is submitted should it be necessary to change the generator rotation.

If there is only a single position mark on the brush holder ring then the brush does not have to be shifted. If there are marks, proceed as described below: (Note: The brush holder ring may have to be rotated to see the second mark.)

TO CHANGE TO CLOCKWISE:

The red mark on the brush holder ring will be in line with the edge of aluminum housing.

Position the black mark in line with the edge of the housing, loosen the hex head screws (do not remove) holding the brush holder ring to the housing. Rotate the brush ring until the blue mark is in line with the edge of the aluminum housing. Retighten the hex head screws.

The armature and interpole connections must be reversed in the generator junction box by connecting A2 and S2 together. Reinsulate these connections. Wires A1, S1, and F1 are to be connected to wires going to the meter-rheostat box. Wires A1 and S1 are to be sized for the current rating of the generator and F1 to be AWG 12 wire. See the connection diagram page.

TO CHANGE TO COUNTER-CLOCKWISE:

The blue mark on the brush holder ring will be in line with the edge of the aluminum housing.

Position the red mark in line with the edge of the housing, loosen the hex head screws (do not remove) holding the brush holder ring to the housing. Rotate the brush ring until the red mark is in line with the edge of the aluminum housing. Retighten the hex head screws.

The armature and interpole field connections must be reversed in the generator junction box by connecting A1 and S2 together. Reinsulate these connections. Wires A2, S1, and F1 are to be connected to the wires going to the meter-rheostat box. Wires A2 and S1 are to be sized for the current rating of the generator and F1 to be AWG 12 wire. See connection diagram attached.

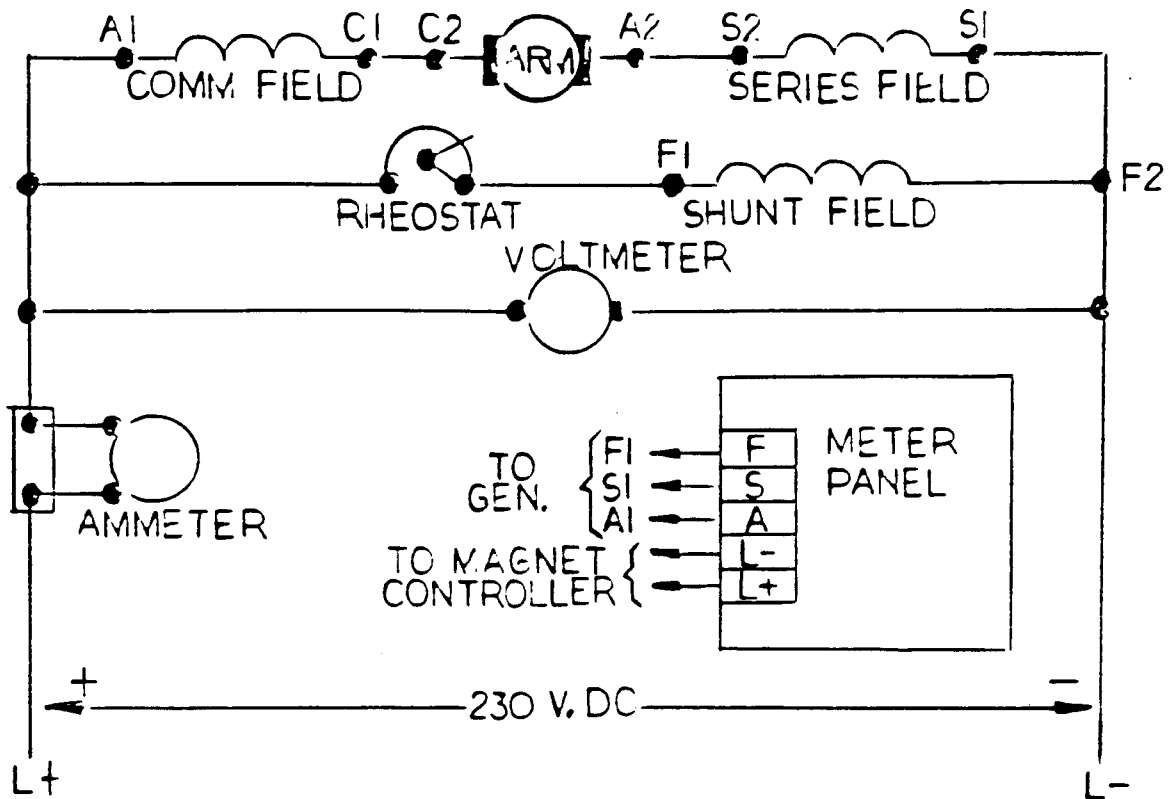
TO CHANGE TO COUNTER-CLOCKWISE ROTATION:
(5 KW Generator Only)

For the OPT 5-25 generator only the rotation can be modified to counter-clockwise in the field by adding kit 307L02A01 to the generator. Instructions I.S.-4000 provides a step-by-step procedure for attaching a shaft extension to the backside of the generator along with mounting the generator to use the newly installed shaft extension for the CCW power input. A cover must be installed over the nonused shaft extension. No brush adjustment is necessary and electrical connections are the same as the CW connections.

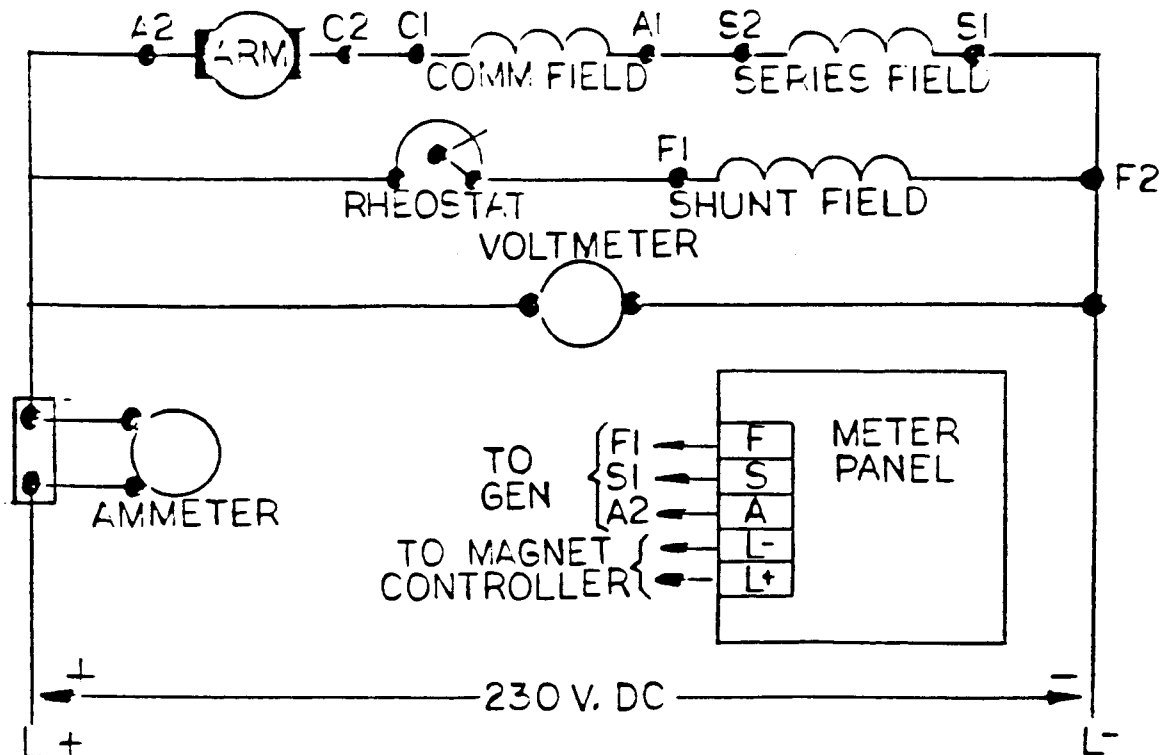
GENERATOR CONNECTION DIAGRAM

8 KW THRU 33 KW

CLOCKWISE ROTATION FACING SHAFT END

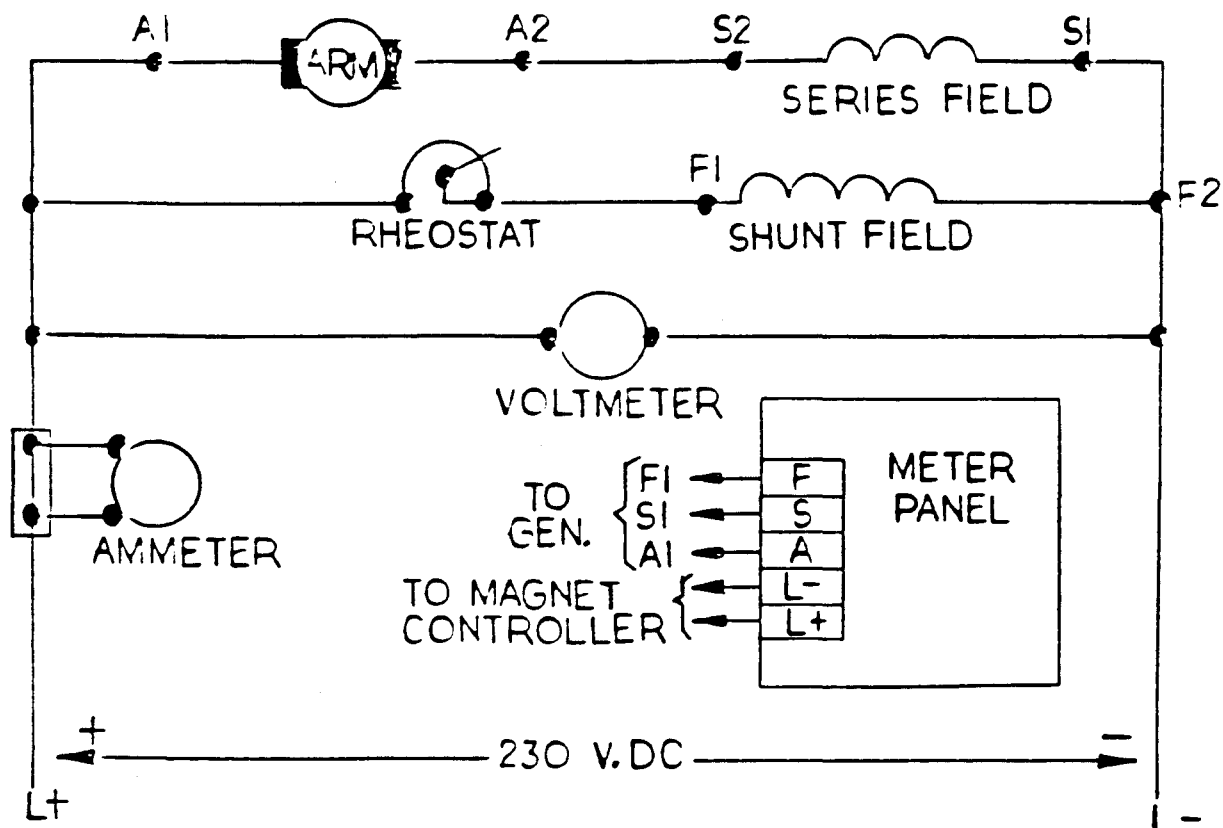


COUNTERCLOCKWISE ROTATION FACING SHAFT END



GENERATOR CONNECTION DIAGRAM 5 KW GENERATOR

CLOCKWISE OR COUNTER-CLOCKWISE ROTATION FACING SHAFT END



MAINTENANCE:

Periodic inspection and maintenance should be performed to prevent failure and down-time. The following items should be checked.

1. BELTS:
 1. Check tension and belt condition.
 2. Worn or frayed belts should be replaced.
2. BRUSHES & COMMUTATOR:
 1. Worn or dirty commutator should be cleaned and dressed with a commutator stone.
 2. Undercut the mica if it extends above the bars.
 3. Replace worn brushes.
3. BEARINGS:
 1. Noisy or loose bearings should be replaced.
 2. Greasing bearings is not required as they are sealed and lubricated for life.

TROUBLE SHOOTING:

Problem

Solution

Overheating:

- a. Overload-magnet too large for generator.
- b. Shorted magnet or system.
- c. Obstruction at the cooling vents.
- d. Overspeed or underspeed

No Voltage:

- a. Open armature or field
- b. Worn brushes and/or brush spring broken.
- c. Open rheostat
- d. Defective Voltmeter.
- e. Loss of residual magnetism. Flash generator with 12 volt battery and observe correct polarity.
- f. Clean and dress commutator.

Low Voltage:

- a. Adjust rheostat.
- b. Low speed - improper pulley ratio or belts slipping.
- c. Excessive line loss - wiring too small.

High Voltage:

- a. Adjust rheostat.
- b. High speed - improper pulley ratio.

Fluctuating
Voltage:

- a. Loose terminal connections.
- b. Speed changing.
 - 1. Slipping belts.
 - 2. Defective engine governor.

Sparking Brushes:

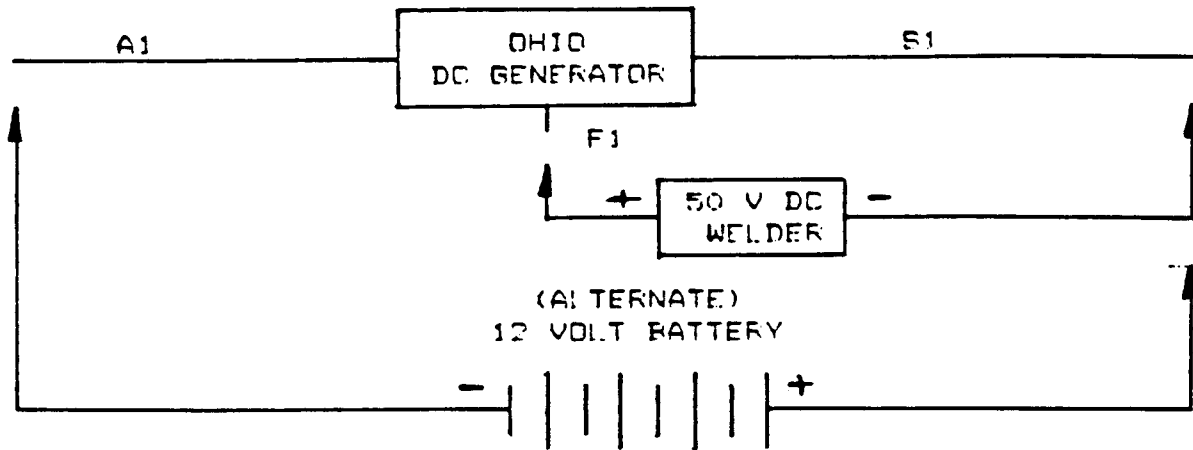
- a. Worn brushes.
- b. Worn commutator.
- c. Brushes out-of-position.

FIELD FLASHING

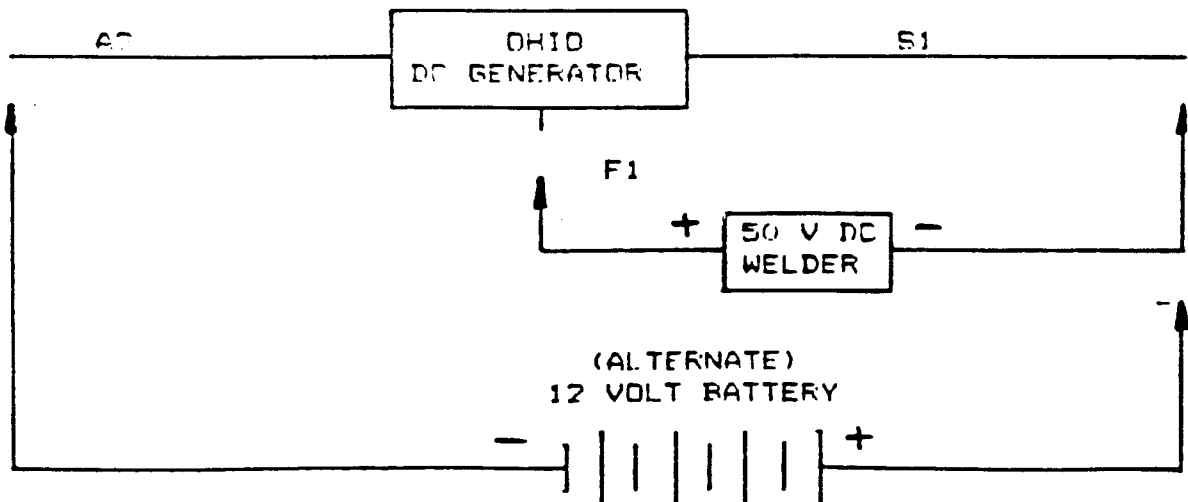
CONNECTIONS

Restoring residual magnetism to the correct polarity, field flashing may be necessary. Either a 12 volt battery or a DC welder can be used for this purpose. Follow the connection diagram given below.

CLOCKWISE ROTATION



COUNTER CLOCKWISE ROTATION (Excluding 5 KW Generator)



INSTRUCTIONS FOR ENGINE - GENERATOR SETS

Ohio Engine-Generator Sets, both diesel and gasoline, use reliable engines which will give long service if the instructions for starting and operation and maintenance are followed. All engines are shipped with oil already in the crankcase and in the air cleaner unless the unit was shipped by air. The oil level should be checked to make sure it is proper.

The engine-generator sets are run-in at the Ohio factory. It can be used directly on the job. The unit should, however, be checked for nameplate speed to prevent any overspeed or underspeed problems. Most engines use a variable speed governor. Do not touch this control. It has been preset at the factory. In no case should the generator speed exceed 2200 RPM for a rated 1800 RPM generator or 3000 RPM for a rated 2500 RPM generator.

Install the engine-generator on a flat surface using the bolt holes provided for mounting. Do not twist the base when tightening down the unit. Use lock washers.

Run the engine-generator set and make sure it does not vibrate excessively. If there is a vibration problem, reinforce the bolt-down points if they are not rigid. If the vibration is being produced by other parts of the machine, isolate the engine-generator from this vibration with isolation mounts.

Engine speed should be checked when other maintenance is done.

INSTRUCTION FOR
REWORK OF 5 KW "CW" TO "CCW" GENERATOR

- 1.) REMOVE THE KEY FROM THE EXISTING SHAFT EXTENSION.
- 2.) REMOVE THE HOLE PLUG FROM THE END COVER OPPOSITE THE EXISTING SHAFT EXTENSION.
- 3.) THREAD THE NEW SHAFT EXTENSION IN TAPPED HOLE PROVIDED IN THE ARMATURE SHAFT, USING "LOCK-TITE" ON THE THREADS (PROVIDED IN YOUR CONVERSION KIT) TO MAKE SURE THE SHAFT ADAPTOR IS SECURELY ATTACHED.
- 4.) THE KEY THAT WAS REMOVED FROM THE OTHER SHAFT EXTENSION IS TO BE USED ON THE NEW EXTENSION.
- 5.) REMOVE THE SCREWS AND LOCKWASHERS (ON THE 3.00" DIA B.C.) ON THE PULLEY COVER AND ASSEMBLE BOTH SHAFT COVERS OVER THE SHAFT. (THE LOWER ONE (LOWER BY 1/16") IS TO BE ASSEMBLED FIRST)

*****THE CONVERSION KIT CONSISTS OF: 307L02A01 KIT

- (1) TUBE "LOCK-TITE" - 6 MILLILITERS - A-950049-01
- (2) SHAFT COVERS - (1)307A02BA1 & (1)307A02BA2
- (1) SHAFT ADAPTOR - 307B021A2

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