

OWNERS MANUAL

Hydraulically Driven Welders

General Information

The HW series welder/generators "200-4, 225-4, 250-5.5, and 300-6" are welders that produce DC current welding power. The unit consists of two major components; a DC welder and an AC generator. The amperage of the DC welder is controlled by selector switches. All HW DC welders are operating at 3600 RPM. The generator section produces 120/240Volt and 60 Hz sine wave output at 3600 RPM. The welder generator is equipped with a high volume internal fan for a maximum cooling effect.



When used with customer supplied flow regulator, use extreme caution on initial setup. Overspeed will cause physical damage and is not covered under manufacturer's warranty.

Manufacturer of high quality hydraulic generators and welders

General Operating Instructions

This hydraulically-driven welder-generator consists of 3 main components :

- a) hydraulic drive
- b) DC welder
- c) AC generator

For the welder or generator to function properly the hydraulic drive must maintain the proper speed (3600 - 3720 for 60 Hz, 3000- 3120 for 50 Hz) under all conditions. Always allow the set to run for at least 2 minutes before operating the welder or generator.

Operation

- 1) Connect welder leads (observe polarity).
- 2) Set Range Switch to the highest position for startup
- 3) Fine tune amp selector switch to desired amperge.
- 4) Start hydraulic system and turn Welder on(On Off Switch optional)

After waiting for a few minutes the welder is now ready for welding.

Increase amperage if necessary or decrease if amperage is too high.

Never operate any switches during welding.

The generator can be used during welding operation. A flicker and low Voltage in the lights will occur every time you strike an arc, this cannot be avoided.

In order to obtain rated output of your generator section, the range switch must be in the high position . The generator output is 120 VAC at 60 Hz and 230 V at 50 Hz. An optional 120/240 panel is available.

Hydra – Weld ™

General Installation

The Hydra-WeldTM is a hydraulically-driven AC welder/generator that will deliver rated amperage when the proper flow is delivered to it's hydraulic drive. Oil temperature should be between 100-140°F. A 10-micron filter is also recommended to maintain the drive at its maximum performance. Depending on the size of the reservoir, an oil cooler must be used; the smaller the reservoir; the larger the cooler.

The tank should **NEVER** be smaller than 2 times the required GPM.

When starting a new hydraulic system, we strongly recommend that you connect the pressure line to the return, bypassing the hydraulic welder drive. You should operate the system for 10 minutes that way. This will clean the system; otherwise, all kinds of problems will occur. After connecting the pressure and return line to the welder's hydraulic drive, state your system at a low speed, slowly increasing the speed until you reached the proper operating speed. While setting up a hydraulically-driven welder or generator, it is necessary to check the speed setting of the hydraulic drive, since most systems will vary in many ways (temperature – flow – viscosity / type of oil – etc.) from our test set up.

NEVER allow the welder to exceed 3900 RPM.

The return line pressure, under no circumstances, should reach 100 PSI or seal failure will occur.

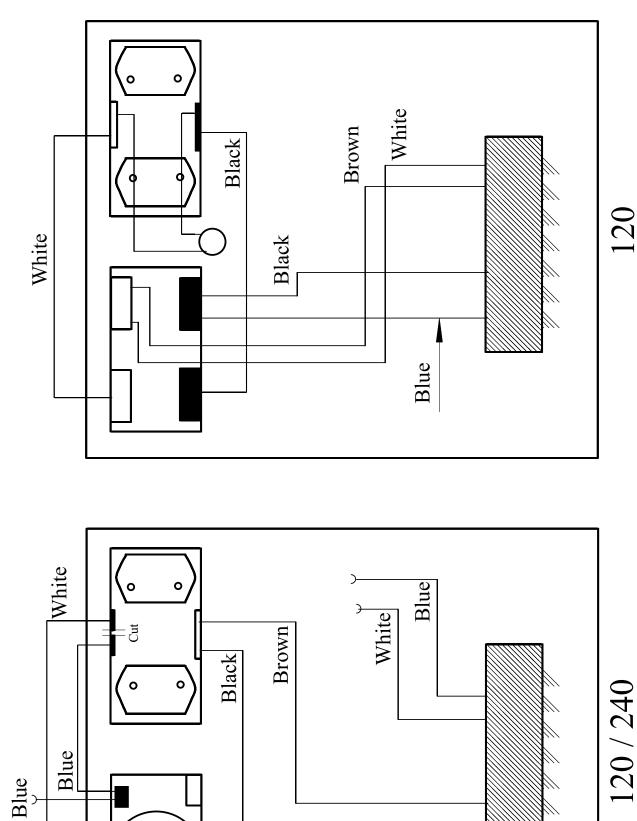
The case drain must be connected directly to the tank (do NOT connect to the return line). We strongly recommend that the case drain be connected to the upper portion of the tank. Making it easier for the case drain oil to return to the tank. Return line must be ³/₄ or larger.

Important Hydraulic Circuit Installation Information

If the hydraulically-driven welder/generator or generator is mounted below the system tank, it is highly recommended that a check valve with a very low cracking pressure is installed in the case drain line (free flow motor to tank, blocking tank to motor). This will eliminate seal leakage during non-use time. It is also recommended that the case drain be connected directly to the top of the tank and not through a cooler or filter.



White



200-4 Operating Instructions

This welder is a hydraulically driven welder and it is extremely important that the hydraulic system can supply the proper flow and pressure to maintain a welder speed of 3,600 RPM under load. If the welder drops below 3600 RPM, it cannot perform properly.

- Start Hydraulic system
- **u** Turn welder hydraulic system on
- □ Allow welder 2-3 minutes for warm-up
- Be sure the red light between the 2 AC receptacles is lit
- This will show you that the welder is close to the roper RPM and that you have AC generator output
- Insert welding leads into welding receptacles

CAUTION – Be sure that the positive cable is in the positive receptacle and the negative cable in the negative receptive.

Set <u>Range Selector switch</u> to the position that is in the amperage range you need for your welding job. Then set the <u>Amp Selector switch</u> to the amperage that is nearest your desired amperage. Begin to weld. You may have to switch one position up or down to get the desired amperage.

NEVER MOVE ANY SWITCHES DURNING WELDING

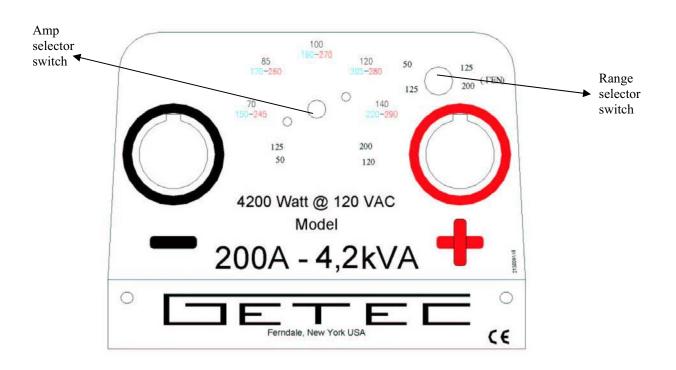
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Depending on the type rod you are using this welder is capable of welding most 1/8 rod in some cases you can weld 5/32 rods.

The AC generator is capable of producing 4200 watts @ 120Volts and 60Hz. The generator output is a sinewave output. For best performance on the generator, the <u>range selector switch</u> must be in the generator position (Right).

The duty cycle on the welder is 45% @ a minimum and 65% @ ideal conditions. The duty cycle on the generator is 100%. You can use both the welder and the generator at the same time without any damage to this machine. Depending on the amperage you are using the generator output will drop. As a rule of thumb, both items welder and generator are using half of the equipment. That means that if you are welding at full 200AMPS the generator can produce very little. If you are welding at 100AMPS (50%) you have about 2000 Watt of generator power available (50%).



250-5.5 Operating Instructions

This welder is a hydraulically driven welder and it is extremely important that the hydraulic system can supply the proper flow and pressure to maintain a welder speed of 3,600 RPM under load. If the welder drops below 3600 RPM, it cannot perform properly.

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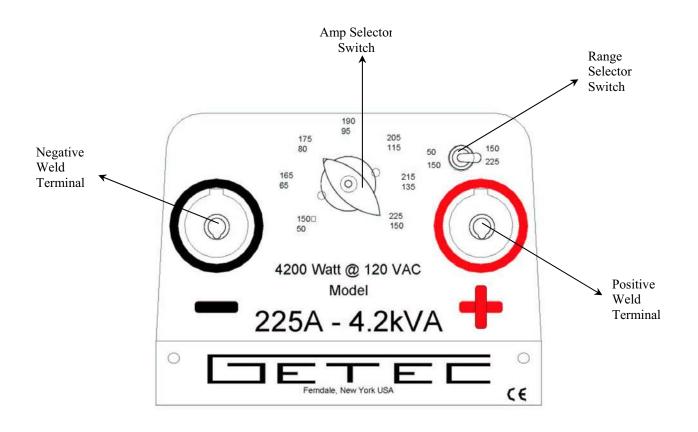
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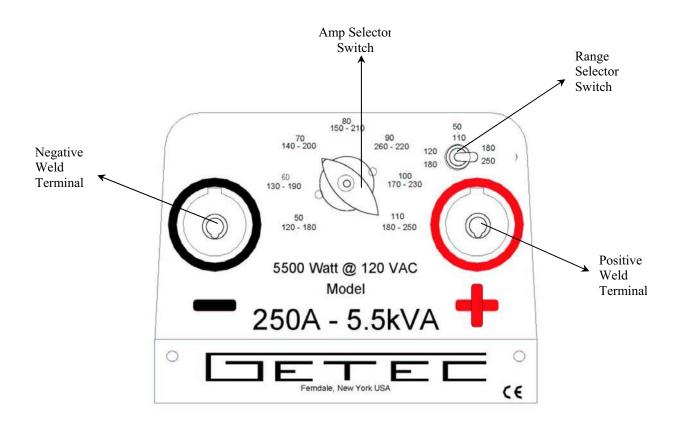
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300-6 Welder-Generator Operations

- 1. Start Hydraulic System.
- 2. Allow system to operate for about 5 minutes before engaging welder-generator.
- 3. Engage welder-generator

3a. The red light between the receptacle must be lit bright indicating that the welder rotates at the proper speed.

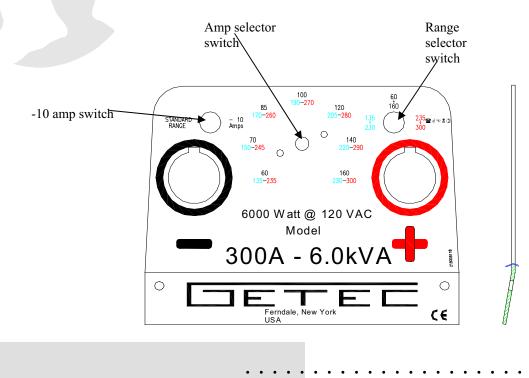
- 4. Set the range switch to the setting that covers the amperage you wish to weld at.
- 5. Set the amperage selector switch to the amperage that is closest to the amperage you want to weld at.
- 6. If the amperage is to high set the -10 amp switch to -10 amp side. This will lower the amperage by 10 amps from the amperage selector switch setting.

In order to maintain the set amperage welder must maintain its speed (3600 rpm). The max diameter rod you can use on this welder is $\frac{1}{4}$ " rod.

Do not change any switch settings during welding. The generator can be used during welding. To get the 6Kw at 120 volts from the generator the range switch must be in the 235-300 position.

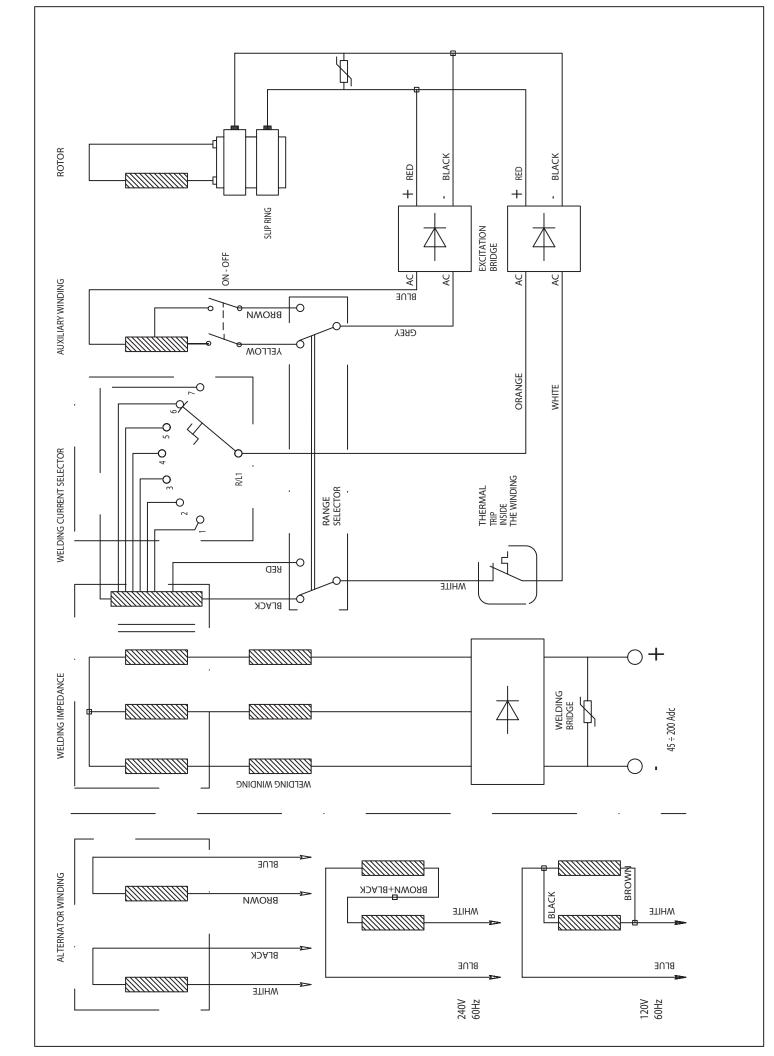
The welder and generator are working as soon as the welder reaches the proper RPM (3600).

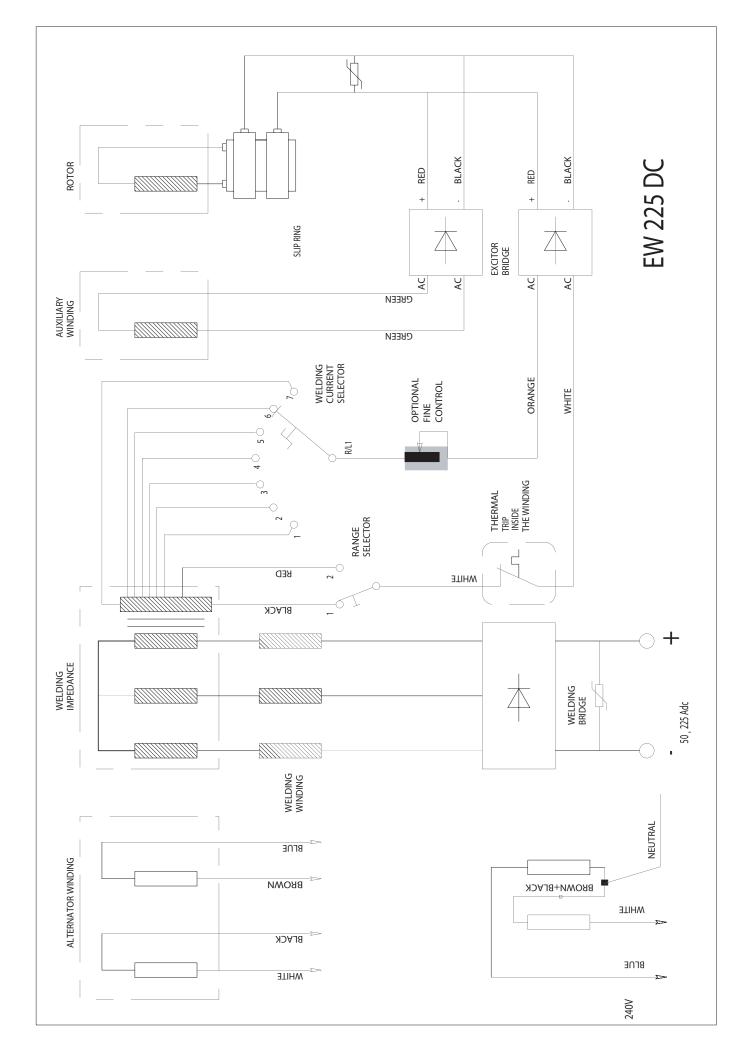
No switching is required when using the welder-generator.

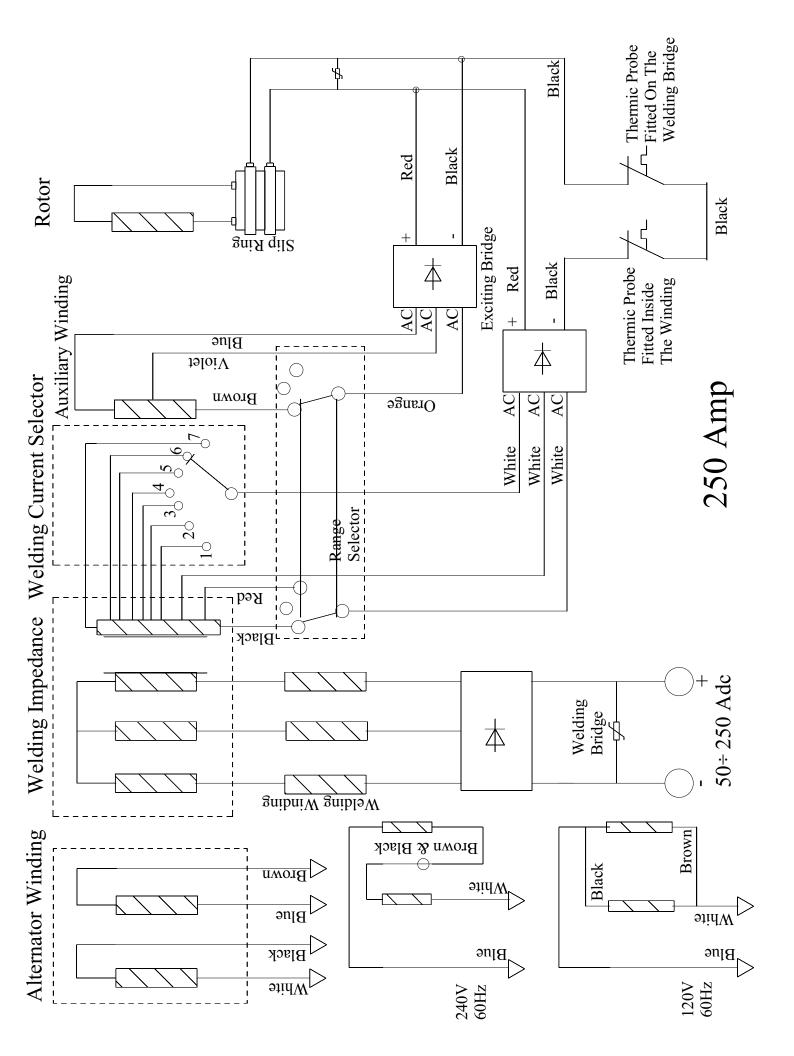


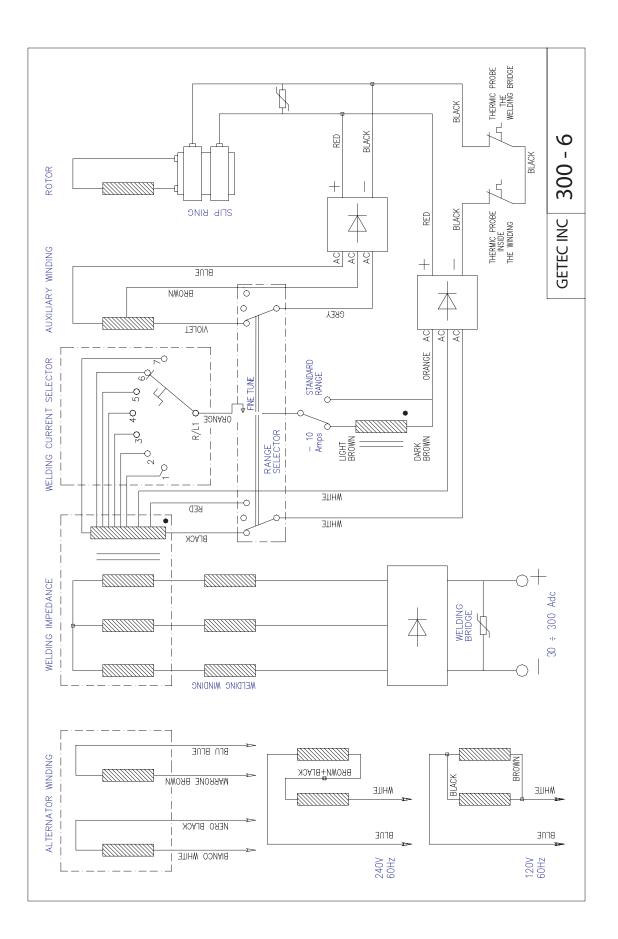
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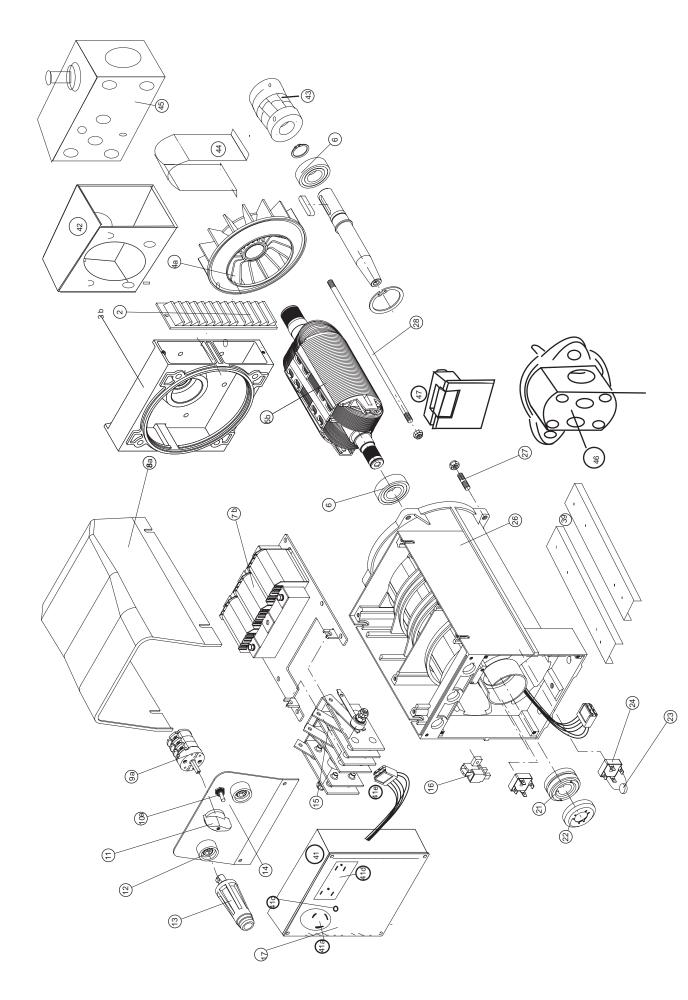
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200 - 225 - 250 - 300 DC Welder Parts Illustr





Welder 200-300 Page 1 of 2

Item #	GETEC #	Description	200	225	250	300
2	600933	Front Grid	Χ	X	X	X
3	600934	Front Shield B3/B14	Χ	X	X	X
4	600935	Fan	X	X	X	X
5a	601237	Rotor 200 Amp	X			
5b	600936	Rotor 225-250 – 300 Amp		X	X	X
6	600937	Bearing	Χ	X	X	X
7a	601238	200 DC Weld Impedance	Χ			
7b	600938	225 DC Weld Impedance		X		
7c	601239	250 DC Weld Impedance			X	
7d	601240	300 DC Weld Impedance				X
8	600939	Black top cover	Χ	X	X	X
9	600940	7 posit. Step Switch	Χ	X	X	X
10a	600941	Range Sw. (2 P) 200-225	Χ	X		
10b	601241	Range Sw. (3 P) 250-300			X	X
11	600942	Step Switch knob	Χ	X	X	X
12	600943	Female 400A weld Term	Χ	X	X	X
13	600944	Male 400A weld Term	Χ	X	X	X
14a	601242	200 DC Panel	X			
14b	600945	225 DC panel		X		
14c	601243	250 DC Panel			Х	
14d	601244	300 DC Panel				X
15	600946	Welding rectifier bridge	X	X	X	X
16	600947	DC brush-holder w brushes	X	X	X	X
17	600958	Recep.Panel only	X	X	X	X

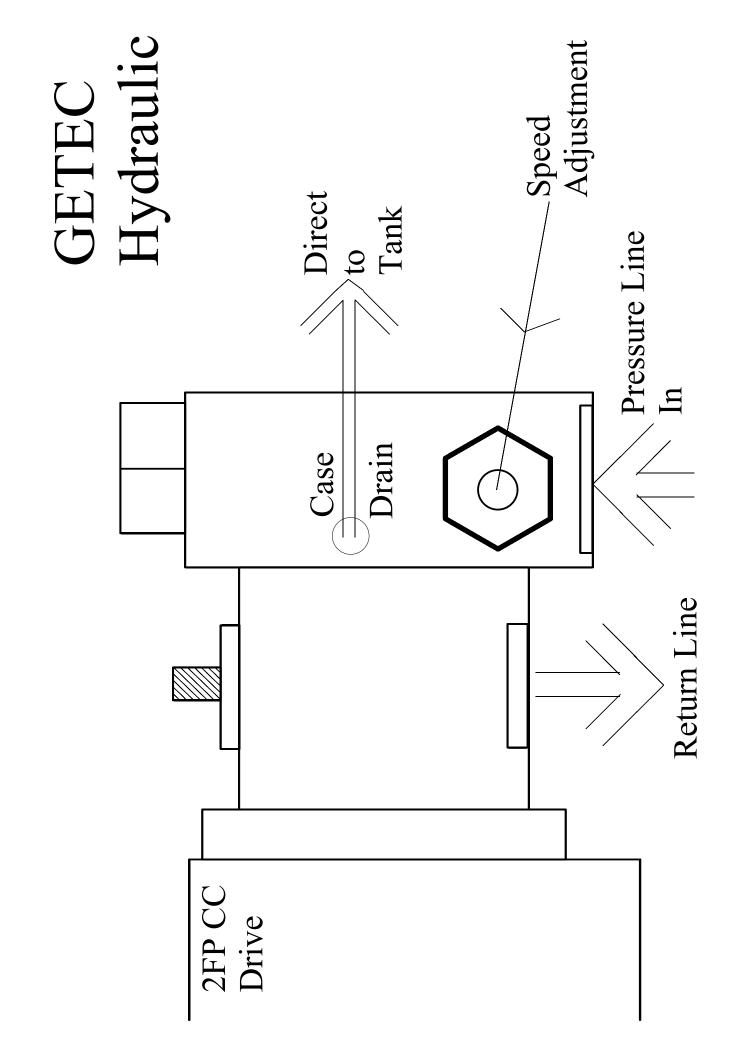




Welder 200-300 Page 2 of 2

Item #	Getec #	Description	200	225	250	300
21	600949	Slip ring (51*22*08)	X	X	X	Х
22	600950	Slip ring cover (dia 51)	X	X	X	Х
23	600951	Varistor	X	X	X	Х
24a	600952	Single-ph rectif. Bridge	X	X		
24b	601245	Thee-Phase Rectf.Bridge		X	X	Х
26a	601246	Housing S & Stator 200	X			
26b	600953	Housing L & Stator 225		X		
26c	601247	Housing L & Stator 250			X	
26d	601248	Housing L & Stator 300				Х
27	600954	Stud M8x 30	X	X	X	Х
28	601249	Stay Bolt and Nut SM	X			
28	600955	Stay Bolt and Nut LG		X	X	Х
29	600956	Kit from J 609 to B314	X	X	X	Х
61	601175	Switch –10 Amp	X	X	X	Х
63	600852	Swich On-Off	X	X	Х	Х
45	600922	Flowreg	X	X	Х	Х
43	600971	Coupling Set	X	X	X	Х
42	600970	Motornount	X	X	X	Х
46a	600975	Motor 200	X			
46b	600972	Motor 225		X		
46c	600972	Motor 250			X	
46d	600972	Motor 300				Х
47	600854	400 Amp Female Recept	X	X	X	Х
19	600887	Louvered Panel	X	X	Χ	Х

GETEC Incorporated 1107 Old Route 17 Ferndale, N.Y. 12734 Telephone : (845)-292-0800 FAX # : (845)-292-0830





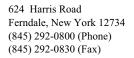
August 14, 2001

Troubleshooting of HW WELDERS

Welder Completely Dead – No AC or Weld Power

Make sure welder is at proper speed=3600RPM. Unplug all external connections. A shorted weld cable or generator accessory plugged in can cause the welder not to build up. Several components can cause the welder to stop functioning completely. This is mainly in the excitation circuit. Consisting of armature (rotor), excitations bridge (left bottom corner) and auxiliary winding. Check the resistance of the auxiliary winding by removing the two purple wires from the Excitation Bridge located at the left bottom corner. The reading should be about 1.5ohms. Check the resistance of the armature between the two slip rings – this should be 22ohms. Remove all wires for the left bottom Rectifier Bridge and test for continuity between the terminals. Again, you should get a high and low reading. If those three main components test out ok, try to flash the armature with a 24volt circuit (previously explained how).

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Troubleshooting of HW WELDER

No Output on Weld Receptacles or AC Receptacles

This problem can be caused by many different factors. At rare occasions a welder/generator could lose it's residual magnetism, which will cause the welder to be completely dead. To Re-energize the magnetism remove the receptacle panel. Locate the 2 exciter bridges on bottom left and bottom right, pull off the red and black wire coming from the brushes on the left bridge and red wire which is jumped over to the right bottom bridge. With an OHM meter check the resistance between the red and black wire which will check the resistance of the rotor, this should be about 25 ohms, try to rotate the rotor while you take the reading to be sure the brushes are receded – if the reading is intermitted check the resistance right on the slip rings. If necessary, remove the brush holder. (See brushholder replacement). Apply 12Volts to the terminals on the red and black wire coming from the brush holder. Apply 12 Volts for about 5 seconds. Re-install wires – reinstall receptacle panel and louvered end cover and start welding.

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Troubleshooting of HW WELDERS

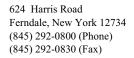
No Output on Weld Receptacles but AC Receptacle Output OK

If you have no welding power at all but the AC (120volts) is fully operational, this could be caused by three components

The welding impedance (transformer) The stator windings The main welding rectifier bridge

Using the electrical diagram check for continuity of the welding impedance. By disconnecting the three heavy lead wires from the main welding bridge rectifier, you can check continuity between those three wires. In any combination, the resistance should be between one and 2 ohms. All three readings should be the same. If you have readings that determines that the stator winding and impedance winding are in good condition. With the three wires removed, you can now check the resistance of the main Rectifier Bridge. By measuring resistance between the three terminals forward and reverse you always should get a high and a low reading, for example; if you measure between one and two, if the first reading is very high the reverse reading should be very low. You also can check the bridge by taking a resistance reading on the main welding terminals. Again, you should have a high and low reading by reversing the leads.

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Troubleshooting of HW WELDERS

No AC Output but Weld Output

If the welder section functions properly but you have no AC output remove the receptacle panel and make sure the white plugs are plugged solid. If there are connected all the way, disconnect and make a resistance reading as follows Blue to Brown (1.20hm)

Black to White (1.20hms)

If either one of those two readings is open the AC windings are defective. If they both check out ok, check the receptacle and the wires going to the receptacles. To be certain that is in the receptacle panel wiring, very carefully startup the welder and check for 120 volts between Blue and Brown and again 120 Volts between Black and White. If you have 120 Volts pressing at those two readings, you must have a defective receptacle or receptacle wiring.

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Troubleshooting of HW WELDERS

Low Welding Amps

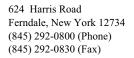
Low welding amps can be caused by three components

A defective Excitation Bridge located on the bottom right hand corner

B an open fine control (Optional). Resistance should be 6 ohms.

C Thermal trip in the windings. Disconnect the two AC wires off the bottom right hand Excitation Bridge (white&orange) and make a resistance reading. With the seven-step selector switch in the lowest position and the range switch and in the high position you should get about 2 ohms. Move the seven-step switch while observing the ohmmeter all the way to its highest position. The resistance should increase slightly with every step. You should end up with about 3 ohms. If you do not start off with 2 ohms and the circuit shows open move your ohm meter 1 lead to the center terminal on the range switch, the other ohm meter lead onto the terminal RL1 on the seven position switch. If you have a reading, there about 20hms the transformer is ok. To test for the terimal trip in a windings take a reading between the center post of the range switch and the white wire you remove from the Excitation Bridge. You should get 0ohms. Any other readings on the trip is defective. To check the fine control put one-ohm meter lead on the seven-step switch terminal RL1, the other lead on the orange wire you removed from the Excitation Bridge. You should be able by moving the fine control up and down adjust the ohmmeter reading between 0 and 6 ohms. To check the Excitation Bridge, remove all wires from it and measure forward and backward going around clockwise. In any position and in any combination between terminals you should get a high and low reading. If any of the readings come out the same, the bridge is defective.

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Troubleshooting of HW WELDERS

Intermitting Welder Operation

Welder works properly for a few minutes and then stop operating but returns to full welding power after several minutes of cooling off.

This will occur when the welder is operated past its duty cycle or in extreme high ambient temperatures or if welder-cooling circuit is blocked. Be sure air intake is free welder cooling might be affected by engine heat. Allow fresh air to enter louvered end cover on welder. A cooling off period is 4-5 times longer if welder is turned off and sitting still. Running it at its RPM will speed up the cooling and reset the internal thermal trip.

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Disassembly of HW WELDER Rotor Replacement

Remove two each fan grids. Remove receptacle panel Remove brush holder held with one screw. Remove four plastic stop nuts holding front shield (fan housing)

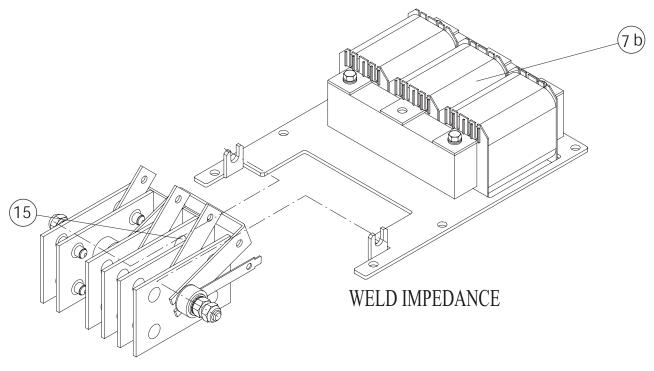
With gear puller push out rotor from slip ring side. Remove rotor assembly from stator. Remove snap ring from shaft end which had the Pulley on it. Push rotor out of front shield. Examine bearing and front shield to be sure it does not need to be replaced. Push new rotor into front shield. Re-install small snap ring. Be sure snap ring is in grove. Carefully re-install rotor into stator. Use rubber mallet to tap into place. Re-install four elastic stop nuts. Tighten elastic stop nuts in a cris/cross manner. Turn rotor by hand to make sure it turns freely. If rotor seems not to run freely, tap the casting with a small metal hammer on the slip ring end casting. This will seat the bearing. Apply 12Volts to the slip ring for about 20 seconds. This will make sure that the residual magnetism is energized. Re-install the brush holder. Be sure to have the insulator behind the brush holder. Check for brush alignment to slipring. Reinstall the two fan grids. re -install receptacle panel or louvered panel on slip ring end.

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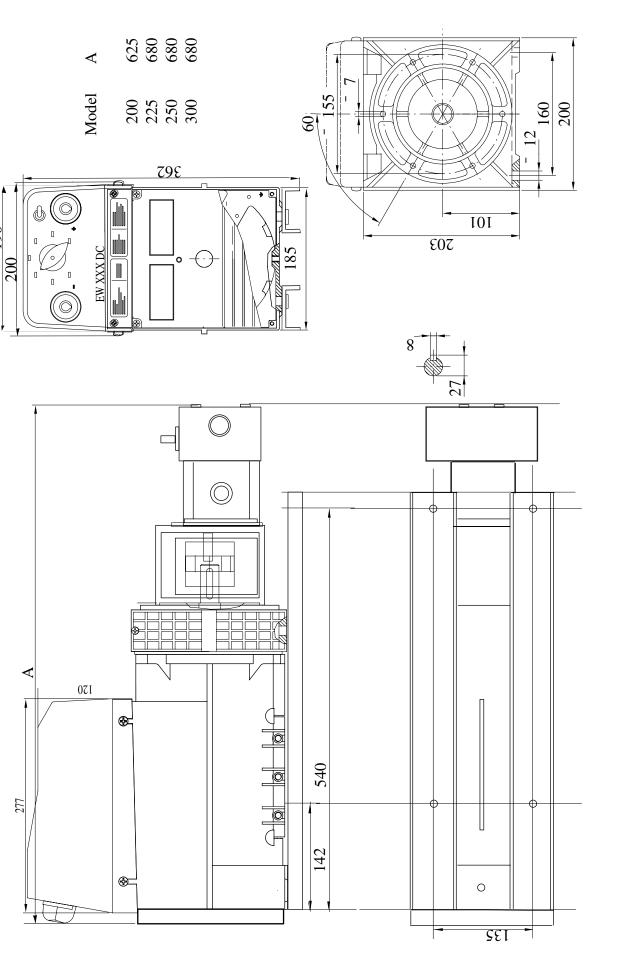


Disassembly of HW WELDER Replace Brushes

Remove receptacle panel Cut tie raps holding brush holder wires, red & black Unplug red & black from rectifier bridges. Install wires in same way with new brush holder – red to red and black to black Remove old brush holder by removing one screw holding brush holder Do not lose plastic insulator located behind the brush holder **Check sliprings** Clean and polish with very fine sandpaper Check resistance of rotor (armature) on sliprings Reading should be a 25 ohms ± 3 ohm Install new brush holder with brushes. Make sure brush holder is seated (dimple in casting) Check brush to be on sliprings. Install tie rap's to hold wires Check resistance of rotor (armature) on sliprings Reading should be a 25 ohms ± 3 ohm



MAIN WELD RECTIFIER BRIDGE



HYDRAWELD DIMENSIONS O Models