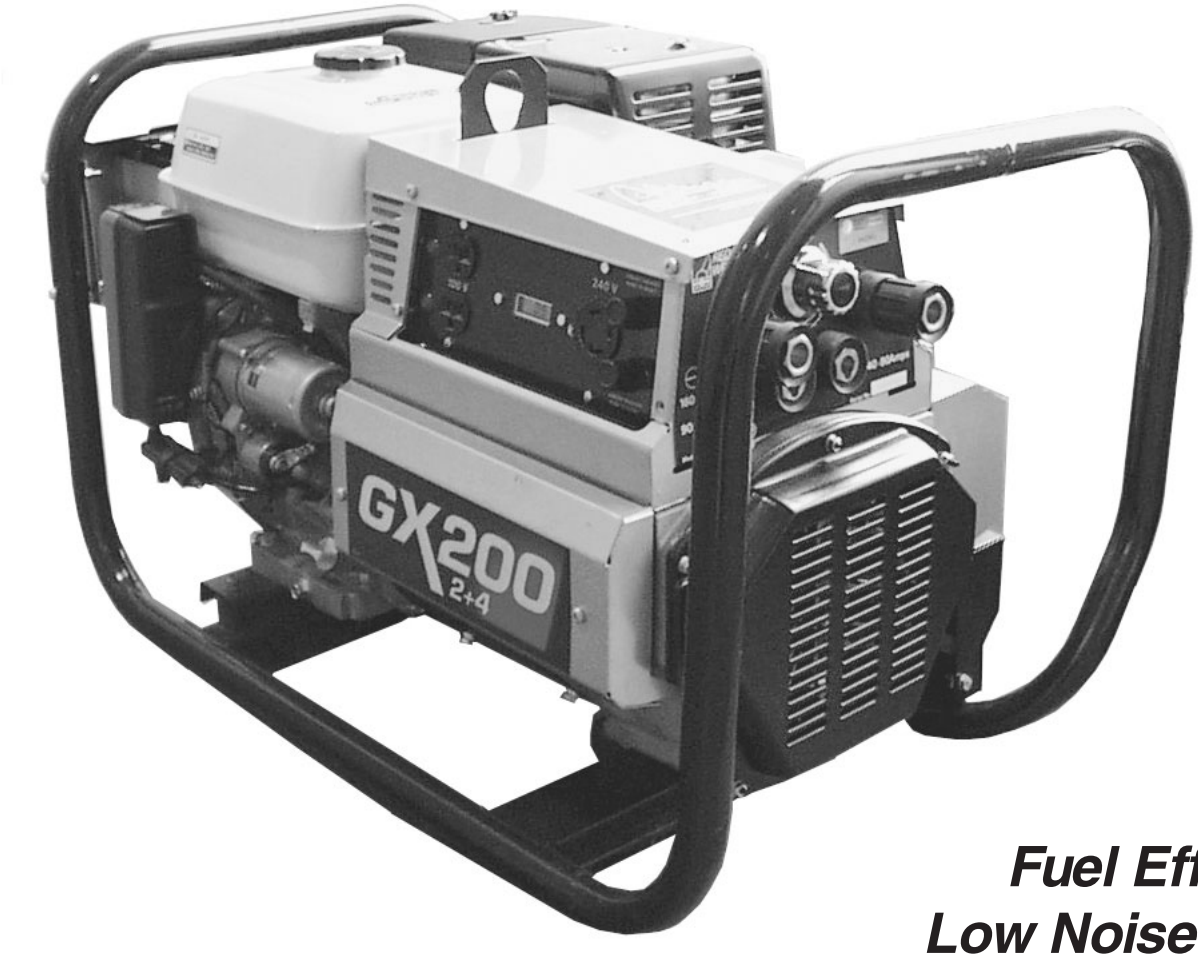
RED-D-ARC Welderentals
www.red-d-arc.com

GX200 2+4

DC Welder Generator



Fuel Efficient
Low Noise Level
Optional Electric Start
11 HP Honda Gas Engine
4000 Watt AC Generator

Service Manual

SVM_GX200 2+4 for Serial No. 2500 and up

www.red-d-arc.com

1-800-245-3660
Service Centers Across North America

North America's Largest Fleet of Welding and Positioning Equipment

Arc Welding Safety Precautions

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. READ AND UNDERSTAND BOTH THE SPECIFIC INFORMATION GIVEN IN THE OPERATING MANUAL FOR THE WELDER AND/OR OTHER EQUIPMENT TO BE USED AS WELL AS THE FOLLOWING GENERAL INFORMATION.

1. HAVE ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR WORK performed only by qualified people.

2. ELECTRIC SHOCK can kill.
Protect yourself from possible dangerous electrical shock:

a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Never permit contact between "hot" parts of the circuits and bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

b. Always insulate yourself from the work and ground by using dry insulation. When welding in damp locations, on metal floors, gratings or scaffolds, and when in positions such as sitting or lying, make certain the insulation is large enough to cover your full area of physical contact with work and ground.

c. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

d. Ground the work or metal to be welded to a good electrical ground.

e. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition.

f. Never dip the electrode in water for cooling.

g. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

h. If using the welder as a power source for mechanized welding, the above precautions also apply for the automatic electrode, electrode reel, welding head, nozzle or semiautomatic welding gun.

i. When working above floor level, protect yourself from a fall should you get a shock.

j. Also see Items 6c and 8.

3. FUMES AND GASES can be dangerous to your health.

a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding on galvanized, lead or cadmium plated steel and other metals which produce toxic fumes, even greater care must be taken.

b. Do not weld in locations near chlorinated hydrocarbon vapours coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapours to form phosgene, a highly toxic gas, and other irritating products.

c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices.

e. Also see item 9b.

4. ARC RAYS can injure eyes and burn skin.

a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. 1 standards.

b. Use suitable clothing made from durable, flame-resistant material to protect your skin and that of your helpers from the arc rays.

c. Protect other nearby personnel with suitable nonflammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

5. FIRE OR EXPLOSION can cause death or property damage.

a. Remove fire hazards well away from the area. If this is not possible cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Have a fire extinguisher readily available.

b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard 249.1) and the operating information for the equipment being used.

c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapours from substances inside. They can cause an explosion even though they have been "cleaned." For information purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances.",

AWS F4.1-80 from the American Welding Society.

e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

f. Also see items 6c and 9c.

6. For Welding in General.

a. Droplets of molten slag and metal are thrown or fall from the welding arc. Protect yourself with oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses when in a welding area. Use glasses with side shields when near slag chipping operations.

b. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

c. Be sure the work cable is connected to the work as close to the welding area as practical. Work cables connected to the building framework or other locations some distance from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

7. For Gas-Shielded Arc Welding.

a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

b. Always keeps cylinders in an upright position securely chained to an undercarriage or fixed support.

c. Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

d. Never allow the electrode, electrode holder, or any other electrically "hot" parts to touch a cylinder.

e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

f. Valve protection caps should always be in place and handtight except when the cylinder is in use or connected for use.

g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 "Precautions for Safe Handling of Compressed Gases in Cylinders" available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.

8. For Electrically Powered Equipment.

a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

b. Make the electrical installation in accordance with the National Electrical Code, all local codes and the manufacturer's recommendations.

c. Properly ground the equipment in accordance with the National Electrical Code and the manufacturer's recommendations.

9. For Engine Powered Equipment.

a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

b. Operate the internal combustion engines in open, well ventilated areas or vent the engine exhaust fumes outdoors.

c. Do not add the fuel near an open flame, welding arc or when the engine is running. Stop the engine and, if possible, allow it to cool when refuelling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

d. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

e. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

f. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

g. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

For more detailed information it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard 249.1" from the American Welding Society, P.O. Box 351040 Miami, Florida 33135.

PRODUCT DESCRIPTION
The GX200 is a portable engine driven arc welding power source capable of providing constant current output for stick welding or DC TIG welding.

GENERATOR
The generator of the GX200 is asynchronous with capacitor excitation and therefore with excellent mechanical features of sturdiness and simplicity; it requires no maintenance as it has no sliding parts such as slip rings and brushes.
The rotor consists of a laminar pack with die cast aluminum stand. The sizing and setting up of these active parts represent a new principle which has made the asynchronous generator suitable for welding services and which has been appropriately patented.

The GX200 has a current range of 40-200 amps with a 60% duty cycle at 170 Amps. The unit is also capable of providing 2 KVA of 120 VAC and 4KVA of 240 VAC at 60 cycle.

PRE-OPERATION MAINTENANCE

OIL
1 - Remove the oil filler cap and wipe the dipstick clean. 2 - Insert the dipstick into the oil filler neck, but do not screw it in. 3 - If the level is low, fill to the top of the oil filler neck with the recommended oil.

OIL CAPACITY: 300cc (10 US oz.)
DO NOT OVERFILL.

FUEL
Fill the fuel tank with the grade of fuel recommended.

LOCATION/VENTILATION
The welder should be located to provide an unrestricted flow of clean, cool air. Also, locate the welder so that engine exhaust fumes are properly vented to an outside area.

POLARITY CONTROL AND CABLE SIZES
With the engine off, connect the electrode and work cables of the appropriate size (see the following table) to the studs located on the front panel. For positive polarity, connect the electrode cable to the terminal marked "Positive". For Negative polarity, connect the electrode cable to the "Negative" stud. These connections should be checked periodically and tightened if necessary.

When welding at a considerable distance from the welder, be sure you use ample size welding cables.

TABLE 2
RECOMMENDED COPPER CABLE SIZES
AT 60% DUTY CYCLE

		Total Combined Length of Electrode Plus Work Cable in feet				
Amps	% Cycle Duty	0-50	50-100	100-150	150-200	200-250
225	40	3 AWG	3 AWG	2AWG	1AWG	1/0AWG
225	100	1 AWG	1 AWG	1 AWG	1 AWG	1/0AWG

SAFETY SHUTDOWN SYSTEM
All units are equipped with low oil pressure shutdown systems. Engines should never be operated with shutdown system disconnected or inoperative.

GENERAL MAINTENANCE
Check all external bolts (engine mounts, generator mounts etc.) at least once per year and tighten/replace as required.

1 - Turn the fuel valve to the on position (turn to right)
2 - Close the choke (turn to left)
3 - Turn the throttle control knob until half open
4 - Turn the engine switch to the on position
5 - Pull the start rope lightly until resistance is felt, then pull briskly.
6 - As the engine warms up, gradually move the choke lever to the open position.
7 - Let the engine run at low speed for 2-3 minutes to warm up.

ELECTRIC START
1-Turn the fuel valve to the on position (turn to right) 2-Close the choke (turn to left) 3-Turn the throttle control knob until half open. 4-Turn start key switch to start. 5-As the engine warms up, gradually move the choke lever to the open position. 6-Let the engine run at low speed for 2-3 minutes to warm up.

TO TURN OFF THE UNIT
Turn the throttle knob in an counterclockwise direction until the furthest position, after letting the engine run slowly for a few seconds, turn the stop switch to the off position ***IMPORTANT*** - Turn the fuel valve to the off position

CONTROL OF WELDING CURRENT
There is one continuous current control for each range which gives you complete adjustment of current from min. to max. within the range. There is a low tap for ranges from 40-90Amps, a medium tap for ranges from 90-170Amps and a high tap for ranges from 160-195Amps. Always use the lowest possible range with fine current adjustment closest to max. position.

AUXILIARY POWER
Your GX200 is equipped with AC auxiliary power.

The AC unit provides 1 X 120Volt Duplex receptacle 2KW, and 1 X 120/240Volt twist lock receptacle 4KW, at 60 Hertz power.

The output circuit is protected with a 15Amp circuit breaker for the 120V and a 15Amp circuit breaker for the 240V.

MAINTENANCE

Have qualified personnel do the maintenance work. Turn the engine off before working inside the machine. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

Do not put your hands near the engine or generator fan. If a problem cannot be corrected by following the instructions, take the machine to the nearest ***RED-D-ARC*** location.

GENERAL INSTRUCTIONS

1. Blow out the welder and controls with an air hose at least once every two months. In particularly dirty locations, this cleaning may be necessary once a week. Use low pressure air to avoid driving dirt into the insulation.

2. Change oil after the first 20 hours of operation. Thereafter change the crankcase oil every 100 hours using the proper grade of oil as recommended in the engine operating manual.

3. Oil classification SG SF/CC CD

Use viscosities as per the engine manual.

WARNING

- **Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground.**

- **Keep flammable materials away.**
- **Wear eye, ear and body protection.**

- **Keep your head out of fumes.**
- **Use ventilation or exhaust to remove fumes from breathing zone.**

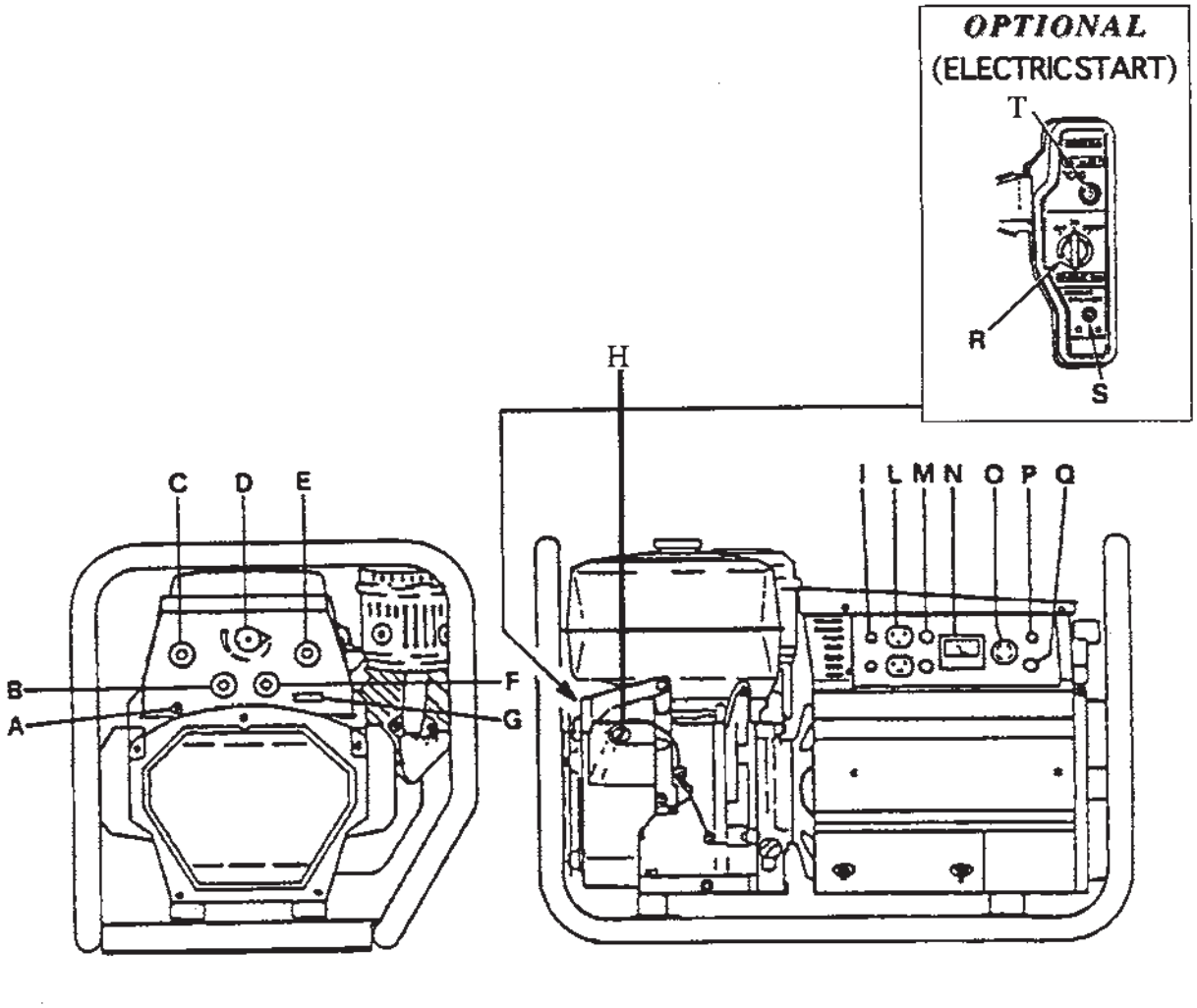
- **Turn power off before servicing.**
- **Do not operate with panel open or guards off.**

- **Stop engine when fuelling.**
- **Do not smoke when fuelling.**

- **Remove cap slowly to release pressure.**
- **Do not overfill tank.**

- **Wipe up spilled fuel and allow fumes to clear before starting engine.**
- **Keep sparks and flame away from tank.**

CONTROL PANEL FEATURES



A	Grounding Screw	M	120V circuit breaker - 10A
B	Welding Socket: negative 90-170A	N	Hourmeter/Tachometer
C	Welding Socket: negative 160-195A	O	120/240V Single Phase Outlet
D	Throttle Control	P	240V signal lamp
E	Welding Socket: positive connection	Q	240V circuit breaker - 145A
F	Welding Socket: negative 40-90A	R	Start/Stop engine switch
G	Serial Number	S	Electronic battery charger circuit breaker
H	Stop switch		
I	120V signal lamp	T	Low oil level signal lamp
L	120V Single Phase outlet		

Fuel Consumption

Fuel consumption has been optimized by means of careful design of the combustion chamber, fuel feed & injection systems, and cross-flow cylinder heads. In order to enhance longevity of the engine, the engine turns at a constant 3600 RPM and no engine idler is used. As a result, there is no waiting time for the welder to achieve operating speed when striking an arc.

Fuel consumption figures at average operating loads are as follows:
Tank Capacity 6.5 litres (1.6 U.S.gallons)

Operating Interval 3-4 hours per tank

Replacement Parts

Engine replacement parts are available from authorized HONDA dealers.

All other parts are available from any ***RED-D-ARC*** location.

Engine Specifications

Model	HONDA GX 340
No. of Cylinders	1
Displacement	337cc
Rotation Speed	3600 RPM
Power	11 HP
Cooling system	Forced Air
Ignition system	Transistorized magnet
Starting system	Pull start with recoil cable
Optional Electric Start	
PTO shaft rotation	Counterclockwise
Fuel	Automotive gasoline

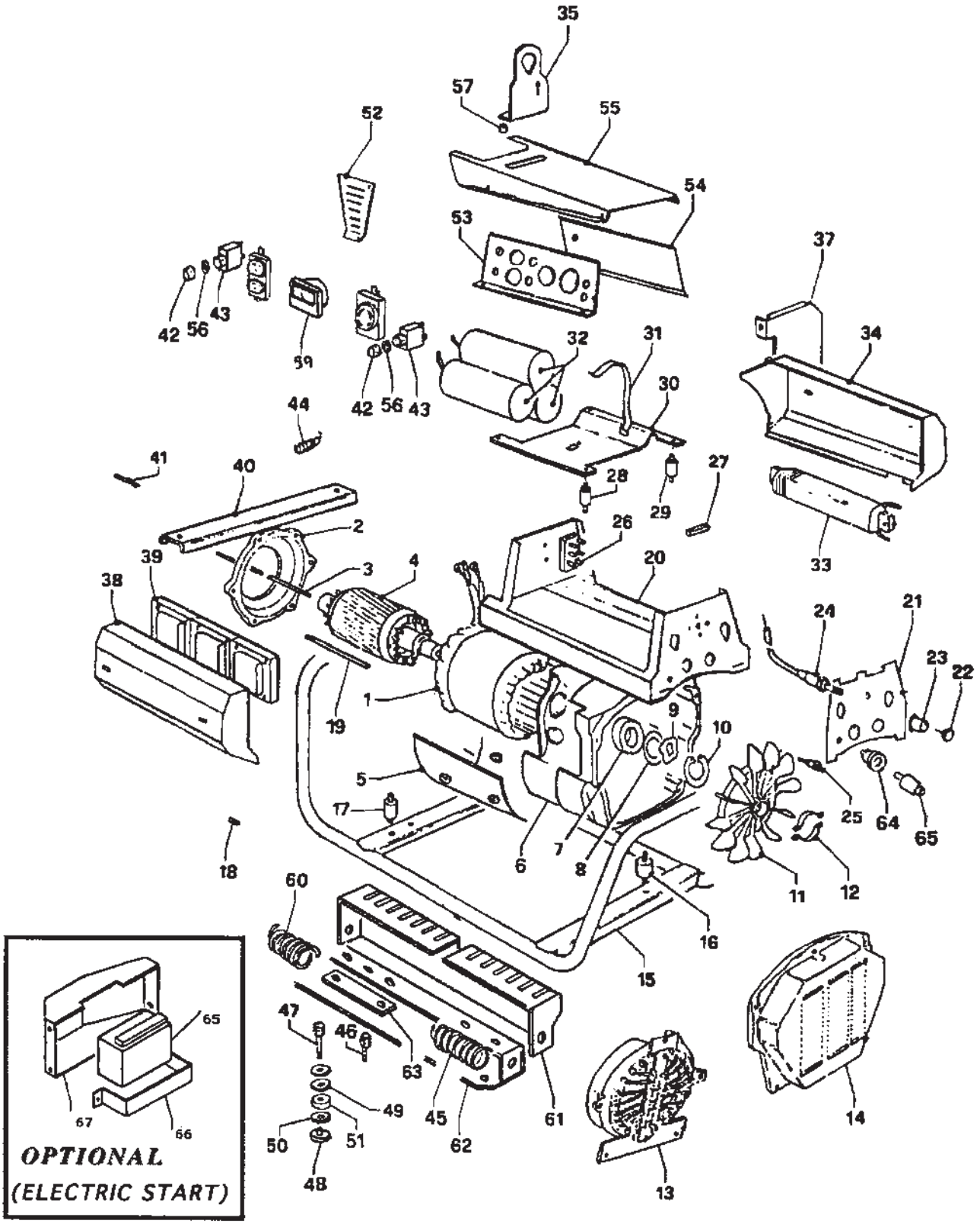
MODEL	WELDING OUTPUT	AUXILIARY OUTPUT
GX200	**40-200 amps ® 25volts 90 volts maximum O.C.V.**	**120 Vac 15 amps 1 duplex outlet 2.0 KVA 120/240 Vac 15 amps I single outlet 4.0 KVA**

WARNING:

- **Have qualified personnel do the troubleshooting work. Turn the engine off before working inside the machine. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.**
- **Do not put your hands near the engine fan. If a problem cannot be corrected by following the instructions, take the machine-to the nearest Red-D-Arc Location.**

TROUBLE	CAUSE	WHAT TO DO
1. Engine won't start.	A. Weather colder than -10C B. Engine flooded. C. Fouled spark plug. D. Dirt or water in fuel. E. Clogged fuel line or fuel strainer.	A. Use very light engine oil. B. Close fuel line, drain carburetor & bowl, try again. C. Clean or replace spark plug. D. Drain tank and refill. E. Drain fuel line, tank, and refill.
2. Engine runs but generator does not produce power at output studs and AC outlets.	A. Unit started with load plugged in. B. Loose connection or broken wire. C. Welding cables shorted together. D. Shorted diode. E. Bad condenser. F. Burned windings.	A. Unplug load, start engine and then plug load in. B. Repair, mend or retighten connection BEFORE you do any major disassembly C. Remove short. D. Replace rectifier. E. Replace condenser. F. Replace stator.
3. Engine runs well and produces AC power but no welding output.	A. Broken wire to output studs B. Opened diodes.	A. Repair. B. Replace rectifier.

MISCELLANEOUS ASSEMBLY

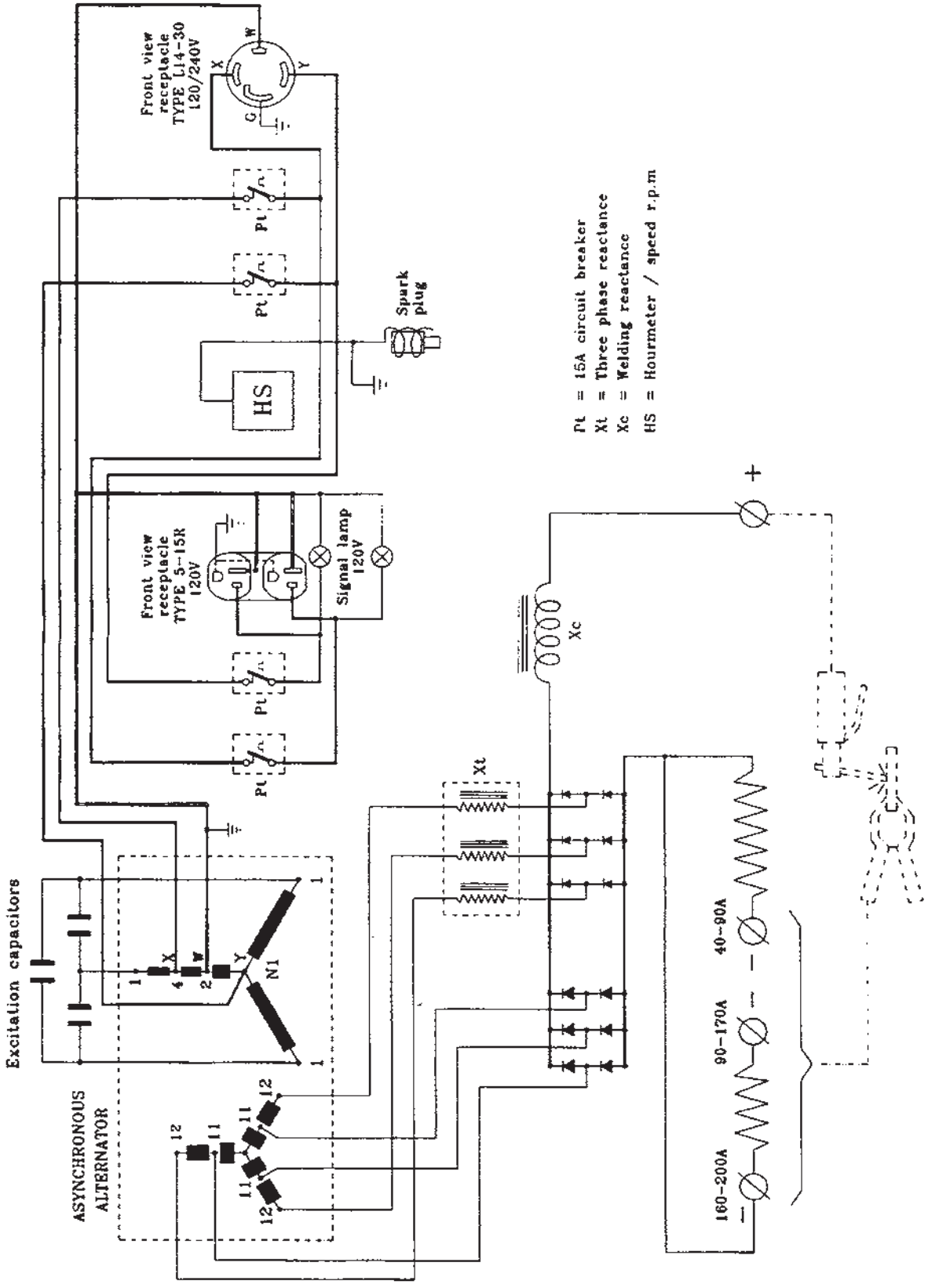


MISC. ASSEMBLY PARTS LIST

ITEM	PART NAME & DESCRIPTION	NO. REQ'D	PART NO.
1	Stator	1	18.335
2	Engine flange	1	18.281
3	Tie Rod	1	18.279
4	Rotor	1	18.280
5	Lower Stator Cover	1	18.278
6	Bearing Flange	1	18.642
7	Ball Bearing	1	304
8	Internal Ring	1	305
9	Spring Washer	1	305
10	Clip Ring	1	307
11	Fan	1	310
12	Fan Ring	1	311
13	Power Rectifier Assy.	1	18.377
14	Rectifier Cover	1	606
15	Tubular Frame Assy.	1	RGX200FRAME
16	Shock Absorber (40x40 mms)	2	13.961
17	Shock Absorber (30x30 mms)	2	313
18	Spacer (H 20 mms)	2	622
19	Flange Tie Rod	4	18.078
20	Instrument Case	1	17.114
21	Aluminum Front Plate	1	18.378
22	Knob Cap	1	11.209
23	Throttle Knob	1	16.900
24	Throttle Cable Assembly	1	14.436
25	Ground Screw	1	15.721
26	Connection Block 6 Poles	1	10.364
27	Spacer (H70 mms)	2	16.548
28	Shock Absorber (15x30 mms)	2	320
29	Shock Absorber (15x30 mms)	2	13.802
30	Capacitor Support Plate	1	13.799
31	Capacitor Bracket	1	17.119
32	Capacitor 60 uF	3	11.333
33	Reactance Assembly	1	13.925
34	Right Side Cover	1	18.376
35	Lifting Hook	1	18.379
37	Air Deflector	1	18.284
38	Left Side Cover	1	17.450
39	Three Phase Reactance	1	13.927
40	Engine Support Bracket	1	14.854
41	Screw (M 5x27 mms)	5	13.929
42	Rubber Protective Cover	4	14.658
43	Circuit Breaker 15A	4	13.640
44	Spring	1	14.139
45	Resistance Coil	1	14.432
46	Resistance Support	1	12.830
47	Resistance Terminal	4	11.439
48	Male Insulator (22 mms dia.)	5	17.603
49	Insulating Washer (7 mms dia.)	10	17.491
50	Insulating Washer (12 mms dia.)	10	17.490

MISC. ASSEMBLY PARTS LIST

ITEM	PART NAME & DESCRIPTION	NO. REQ'D	PART NO.
51	Female Insulator (22 mms dia.)	5	17.602
52	Left Protection Grate	1	13.922
53	Side Plate - Left	1	17.321
54	Side Plate - Right	1	15.720
55	Top Cover	1	17.571
56	Washer	4	14.270
57	Spacer	2	18.380
59	Digital Tachometer/Hourmeter	1	TT226NR-2C
60	Resistance Coil	1	17.117
61	Resistance Cover	1	17.322
62	Resistance Support	1	17.323
63	Plate	1	17.324
64	Cable Connector	4	18.285
65	12V 12Ah Battery	1	MOB-CB12B-B2
66	Battery Bracket	1	RGX200BOX
67	Battery Cover Panel	1	RGX200BOX


Front view receptacle TYPE L14-30 120/240V
Front view receptacle TYPE 5-15R 120V
Signal lamp 120V
Spark plug
HS
Pt
Xt
Xc
N1
Excitation capacitors
ASYNCHRONOUS ALTERNATOR
40-90A
90-170A
160-200A
Pt = 15A circuit breaker
Xt = Three phase reactance
Xc = Welding reactance
HS = Hourmeter / speed r.p.m