JASIC
INVERTER EXPERT

Service Manual

N268/N269/N270/N271

CONTENTS

Chapter 1 An Introduction to the Main Parts of the Equipment

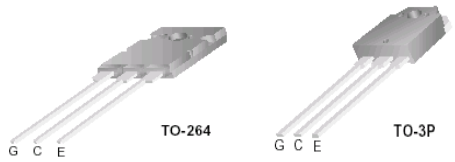
1.1 Introduction

This product series is a family of single-phase and three-phase power sources. The unit consists of power supply switch, bridge rectifier, filter board/ filter capacitor, control board, wire feeding system, auxiliary power supply, secondary rectifier, inverter, output reactor, solenoid valve, wire feeder, etc.

1.2 Functions of Main Parts

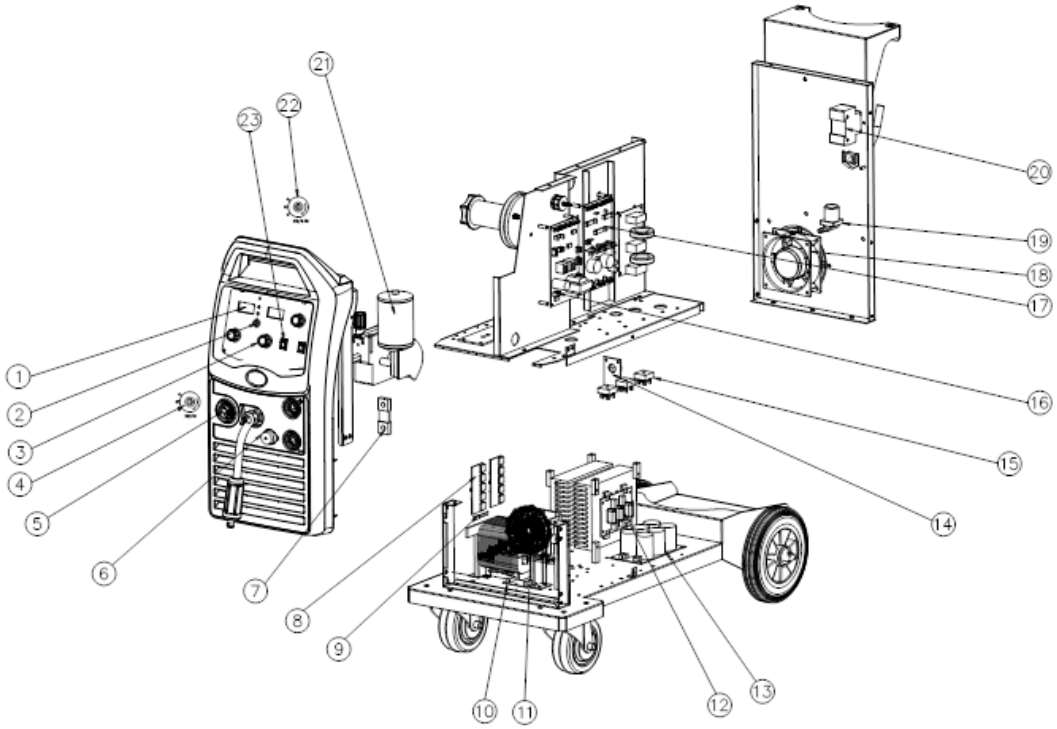
Part	Description
Power cord	To introduce external utility power to the inverter welder. Since the inverter welder has relatively high power consumption, the over-current capacity of the power cord should be relatively strong. If the core diameter is too small, the power cord will overheat, and the sheath will be hardened or even burned after long-term use.
Fan	Used for heat dissipation for the welder.
Control board	Includes the drive circuit for inverter board, current/voltage feedback, instruction signal to panel, current/voltage control, etc.
HF transformer	For inverter welders, HF transformer is an essential component to realize power conversion. For this product series, it is used to transfer electrical energy to magnetic field energy and vice versa. The actual specification to be used depends on the welding machine model.
Secondary rectifier board	Used to convert alternating current output by HF transformer to direct current for welding.
Auxiliary power supply	Used to supply power to control circuit, drive circuit, wire feeder, gas valve, etc. Model N268/N269 adopts flyback switching power supply, and model N270/N271 adopts mains-frequency transformer.
Solenoid valve	Supplied with DC 24V and used to turn the gas on/off.
Wire feeding board	Includes circuits for gas path control, wire feeding control, overheat protection, etc.

Chapter 2 Examination on Key Components

Key Component	Inspection Item	Inspection Method
IGBT	Check IGBTs for breakdown with multi-meter.	With multi-meter in diode check mode, check if there is any breakdown among emitter, connector and gate. If the emitter to gate and the connector to gate are tested as open in both positive and negative directions, the IGBT is not damaged. See the below photos for the pin assignment of IGBT. 
Electrolytic capacitor	Check the capacitor for leakage or rapture of relief valve.	Visual inspection
Power switch	Check the on-off changeover performance of the power switch.	Use the resistance mode of the multi-meter to do the test.
Fan	Check if the fan is stuck by foreign matters. Measure the voltage of the input terminal of the fan. If the voltage measured is within the normal range, replace the fan.	Use the AC mode of the multi-meter to do the test.

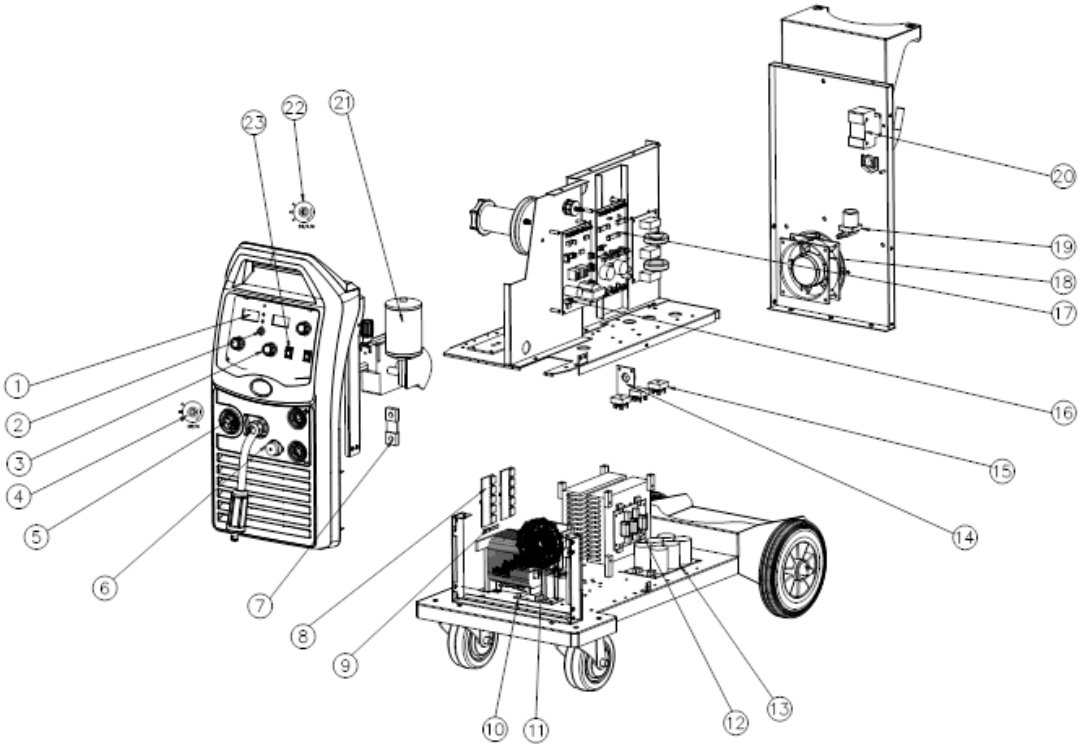
Chapter 3 N268/N269 Equipment Structure and Wear Parts

3.1 Model N268



No.	Part Number	Name	No.	Part Number	Name
1	10046713	Display meter	13	10062687	Filter board
2	10021950	Tact switch	14	10062775	Current transformer board
3	10040930	Knob	15	10006625	Bridge rectifier
4	10006506	Potentiometer（4.7K）	16	10000186	Power supply board
5	10062485	Central receptacle	17	10000574	Control board
6	10041400	Aviation socket	18	10020952	Fan
7	10016424	Divider	19	10007287	Solenoid valve
8	10058866	Rectifier board	20	10021937	Air switch
9	10006435	NTC	21	10062737	Wire feeder
10	10000835	Terminal board	22	10006505	Potentiometer（1K）
11	10006148	HF transformer	23	10062441	Rocker switch
12	10001928	Inverter board	-		

3.2 Model N269



No.	Part Number	Name	No.	Part Number	Name
1	10046713	Display meter	13	10062687	Filter board
2	10021950	Tact switch	14	10000870	Current transformer board
3	10040930	Knob	15	10006625	Bridge rectifier
4	10006506	Potentiometer（4.7K）	16	10000745	Power supply board
5	10062485	Central receptacle	17	10000553	Control board
6	10041400	Aviation socket	18	10020951	Fan
7	10016424	Divider	19	10007287	Solenoid valve
8	10062672	Rectifier board	20	10021937	Air switch
9	10006432	NTC	21	10062737	Wire feeder
10	10000835	Terminal board	22	10006505	Potentiometer（1K）
11	10006064	HF transformer	23	10062441	Rocker switch
12	10001946	Inverter board	-		

Chapter 4 Troubleshooting for N268/N269

WARNING

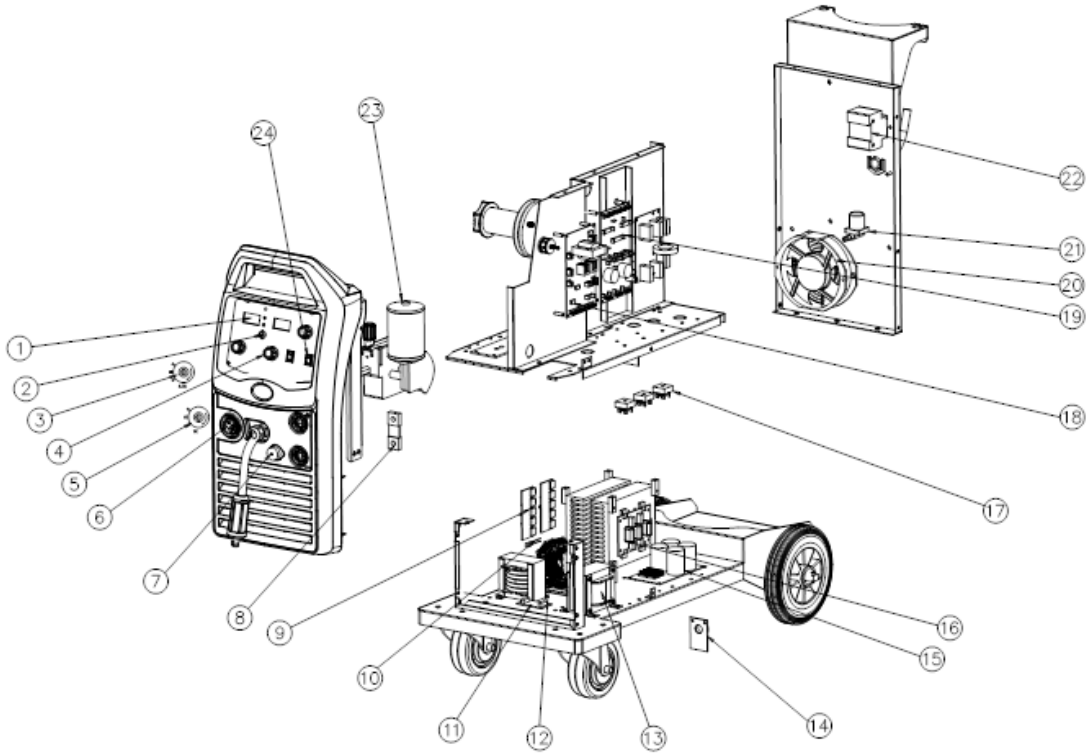
The following operations must be performed by qualified personnel who have a valid certificate of competency and is equipped with professional and comprehensive electrical knowledge and safety knowledge.
Ensure that the welding machine is disconnected from the electrical power system before opening the case for servicing.

Problem	Measures
Power indicator is off; fan doesn't run; no welding output	1. Ensure input voltage is within the normal range. 2. Ensure there is normal input voltage through power cable, power supply switch and bridge rectifier. 3. Check bridge rectifier, IGBT, and rectifier diode for damage. Replace damaged parts. 4. Power on the machine. Use the DC voltage mode of multi-meter to test the two ends of P1 terminal on power supply board PK-64. 1) If the multi-meter shows DC 310V, check P10 on power supply board PK-64 to see DC24V can be obtained. If yes, replace relay of filter board PZ-72. If no, examine power supply circuitry and carry out repairs when necessary. 2) If the multi-meter doesn't show DC 310V, check bridge rectifier and power supply switch for damage. Replace damaged parts.
Fan does work, but welding current isn't stable or can't be controlled by potentiometer with current being alternately small or large.	1. Check and be sure proper voltage is input. 2. Check and ensure all cable connections are secured. 3. Check potentiometer for damage. Replace it if necessary. 4. Replace control board PK-63.
Power indicator turns on and fan runs normally, but there is no no-load voltage.	1. Check and ensure all wire connections inside the machine are secured. 2. Check output terminal joint area for damage or loose connection. 3. Protection indicator turns on. Pull out the switch line of NTC and use a contact pin to form a short circuit to check if the indicator keeps turning on. If yes, replace power supply board PK-64. If no, it indicates that over-heat protection is triggered. In this case, it's not necessary to power off the machine. Wait until the machine cools down. Welding can be resumed when indicator turns off. 4. Protection indicator turns off with no output. Set the machine into MMA mode or MIG mode. Press down torch switch, pull out the switch line of the NTC of P4 on board PK-64, and check if no-load voltage can be obtained. If no-load voltage is

	obtained, it indicates NTC is damaged. If no-load voltage isn't obtained, test control board PK-63 for an 8.4 volt supply with black lead connecting to GND and red lead connecting to the metallic part of IRF9Z24 or IRFZ24. If an 8.4 volt voltage is not detected, replace the control board. If yes, check HF transformer or secondary rectifier diode.
With no-load voltage, but wires cannot be fed.	Check changeover switch on panel and ensure it's in MIG position. Press down torch switch and use multi-meter DC mode to test P9 on power supply board PK-64. Adjust wire feeding speed through panel operation and check if there is a voltage over 2.5V around potentiometer. If yes, replace wire feeder; if no, replace power supply board.
With no-load voltage, but no gas output.	Check changeover switch on panel and ensure it's in MIG position. Press down torch switch and use multi-meter DC mode to test P3 on power supply board PK-64. Check if there is DC 24V. If yes, replace solenoid valve; if no, replace wire-feeding power supply board.
Welding clamp is hot.	The rated current of the welding clamp is too small. Replace it with a welding clamp of higher rated current.
Large amount of spatter when manual welding.	It is caused by improper polarity connection. Change the polarity connections between welding clamp and earth clamp.

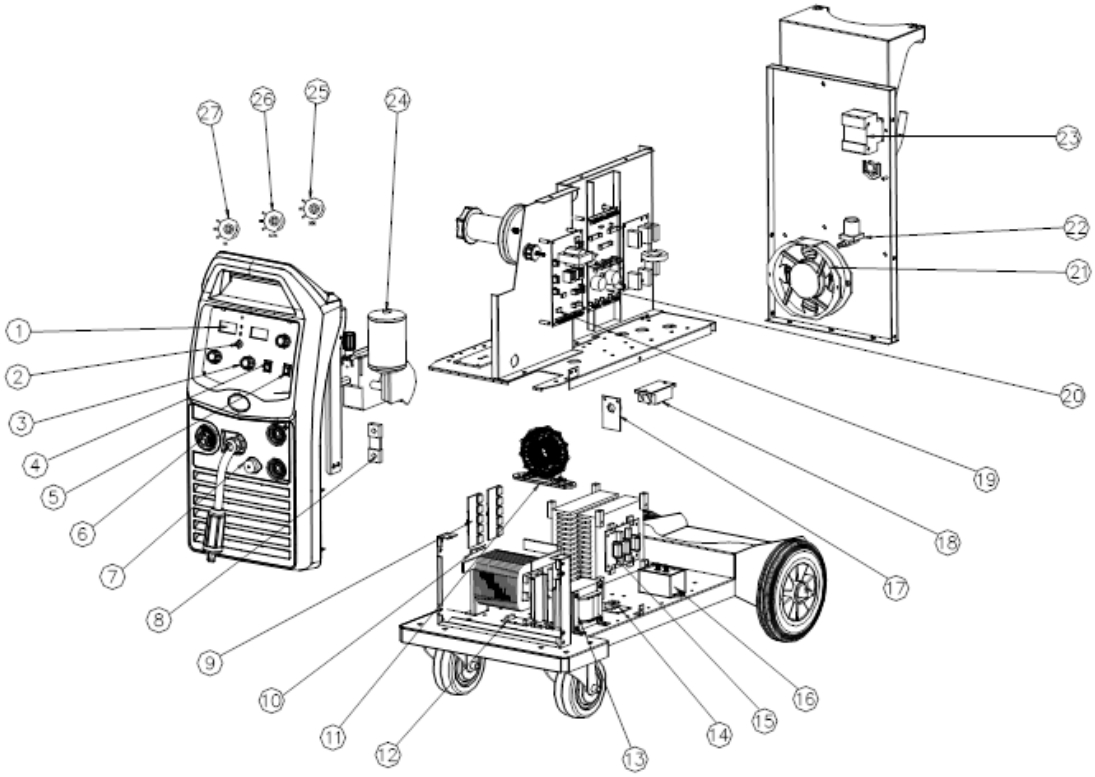
Chapter 5 N270/N271 Equipment Structure and Wear Parts

5.1 Model N270



No.	Part Number	Name	No.	Part Number	Name
1	10046713	Display meter	13	10062490	Mains frequency transformer
2	10021950	Tact switch	14	10000840	Current transformer board
3	10006506	Potentiometer（4.7K）	15	10000423	Filter board
4	10040930	Knob	16	10001931	Inverter board
5	10006505	Potentiometer（1K）	17	10006625	Bridge rectifier
6	10062485	Central receptacle	18	10000891	Wire-feeding board
7	10041400	Aviation socket	19	10000591	Control board
8	10016424	Divider	20	10020951	Fan and wires
9	10062672	Rectifier board	21	10062477	Solenoid valve
10	10006432	NTC switch	22	10021936	Air switch
11	10000835	Terminal board	23	10062525	Wire feeder
12	10054635	HF transformer	24	10062441	Rocker switch

5.2 Model N271



No.	Part Number	Name	No.	Part Number	Name
1	10046713	Display meter	15	10001960	Inverter board
2	10021950	Tact switch	16	10005913	Capacitor
3	10040930	Knob	17	10000953	Current transformer board
4	10062440	Rocker switch	18	10006635	Three-phase bridge rectifier
5	10062441	Rocker switch	19	10000891	Wire-feeding board
6	10062485	Central receptacle	20	10000648	Control board
7	10041400	Aviation socket	21	10001864	Fan
8	10016424	Divider	22	10062477	Solenoid valve
9	10000332	Rectifier board	23	10021936	Air switch
10	10006433	NTC switch	24	10062489	Wire feeder
11	10006182	HF transformer	25	10006514	Potentiometer（33K）
12	10000835	Terminal board	26	10006506	Potentiometer（4.7K）
13	10020675	Mains-frequency transformer	27	10006505	Potentiometer（1K）
14	10066625	Power conversion board	-		

Chapter 6 Troubleshooting for N270/N271

WARNING

The following operations must be performed by qualified personnel who have a valid certificate of competency and is equipped with professional and comprehensive electrical knowledge and safety knowledge.
Ensure that the welding machine is disconnected from the electrical power system before opening the case for servicing.

Problem	Measures
Power indicator is off; fan doesn't run; no welding output	1. Ensure input voltage is within the normal range. 2. Ensure that there is normal input voltage through power cable, power supply switch and bridge rectifier. 3. Check bridge rectifier, IGBT, and rectifier diode for damage. Replace damaged parts. 4. Power on the machine. Use the DC voltage mode of multi-meter to test the two ends of filter capacitor. 1) If the multi-meter shows DC 540V, use the multi-meter AC mode to check the input and output voltage of mains-frequency transformer against the value silk screen printed onto it. If the input and output voltages of mains-frequency transformer are right, replace wire-feeding board PH-119 or control board PK-128 (N270)/ PK-131(N271). 2) If the multi-meter doesn't show DC 540V, check bridge rectifier and power supply switch for damage. Replace damaged parts.
Fan does work, but welding current isn't stable or can't be controlled by potentiometer with current being alternately small or large.	1. Check and be sure proper voltage is input, and no phase loss. 2. Check and ensure all cable connections are secured. 3. Check potentiometer for damage. Replace it if damaged. 4. Replace control board PK-128(N270)/PK-131(N271).
Power indicator turns on and fan runs normally, but there is no no-load voltage.	1. Check and ensure all wire connections inside the machine are secured. 2. Check output terminal joint area for damage or loose connection. 3. Protection indicator turns on. Pull out the switch line of NTC and use a contact pin to form a short circuit to check if the indicator keeps turning on. If yes, replace control board PK-128(N270)/PK-131(N271). If no, it indicates that over-heat protection is triggered. In this case, it's not necessary to power off the machine. Wait until the machine cools down. Welding can be resumed when indicator turns off. 4. Protection indicator turns off with no output.

	Set the machine into MMA mode or MIG mode. Press down torch switch, pull out the switch line of the NTC of P5 on board PH-119, and check if no-load voltage can be obtained. If no-load voltage is obtained, it indicates NTC is damaged. If no-load voltage isn't obtained, test control board PK-128(N270)/PK-131(N271) for an 8.4 volt voltage with black lead connecting to GND and red lead connecting to the metallic part of IRF9Z24 or IRFZ24. If an 8.4 volt voltage is not detected, replace the control board. If yes, check HF transformer or secondary rectifier diode.
With no-load voltage, but wires cannot be fed.	Check changeover switch on panel and ensure it's in MIG position. Press down torch switch and use multi-meter DC mode to test P10 on wire-feeding board PH-119. Adjust wire feeding speed through panel operation and check if there is a voltage over 2.5V around potentiometer. If yes, replace wire feeder; if no, replace wire-feeding power supply board.
With no-load voltage, but no gas output.	Check changeover switch on panel and ensure it's in MIG position. Press down torch switch and use multi-meter DC mode to test P6 on wire-feeding board PH-119. Check if there is DC 24 V. If yes, replace solenoid valve; if no, replace wire-feeding power supply board.
Welding clamp is hot.	The rated current of the welding clamp is too small. Replace it with a welding clamp of higher rated current.
Large amount of spatter when manual welding.	It is caused by improper polarity connections. Change the polarity connections between welding clamp and earth clamp.