

OWNER'S MANUAL

FOR

MODEL: WTCAW-5002 U4430

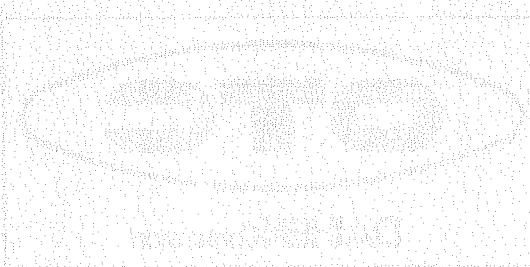
DO NOT DESTROY

IMPORTANT: Read and understand the entire contents of this manual, with special emphasis on the safety material throughout the manual, before installing, operating, or maintaining this equipment. This equipment and this manual are for use only by persons trained and experienced in the safe operation of welding equipment. Do not allow untrained personal to install, operate or maintain this equipment. Contact your distributor if you do not fully understand this manual.

DAIHEN Corporation WELDING PRODUCTS DIVISION

1: April 15, 1998

Upon contact, advise MODEL and MANUAL NO.



COMMUNITY SERVICE

1961

WOMEN'S VOLUNTEER SOCIETY

WOMEN'S VOLUNTEER SOCIETY

The Women's Volunteer Society is a non-profit organization that has been active in the community since 1910. Our members are dedicated to providing service to those in need and to promoting the welfare of our community. We have a long history of successful projects and programs, and we continue to work hard to make a difference in the lives of others. Our members are proud to be part of a team that is committed to service and to making a positive impact on the world.

WOMEN'S VOLUNTEER SOCIETY


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1. SAFETY INFORMATION


The following safety alert symbols and signal words are used throughout this manual to call attention and to identify different levels of hazard and special instructions.


 WARNING	WARNING gives information regarding possible personal injury or loss of life.
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 CAUTION	CAUTION refers to minor personal injury or possible equipment damage.
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2. ARC WELDING SAFETY PRECAUTIONS

 WARNING	
ARC WELDING can be hazardous.	
<ul style="list-style-type: none"> ◆ PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. Especially: <ul style="list-style-type: none"> • Keep children away. • Pacemaker wearers should consult a doctor before use. ◆ Read and understand <ul style="list-style-type: none"> • the summarized safety information given below and the original principal information that will be found in the table SAFETY STANDARDS. ◆ Only trained and experienced persons perform installation, operation, or maintenance of this equipment. ◆ Use only well-maintained equipment. Repair or replace damaged parts at once. 	
ARC WELDING is safe when precautions are taken.	

	<p>ELECTRIC SHOCK can kill.</p>
<p>Touching live electrical parts can cause fatal shocks or severe burns. The electrode and welding circuit is electrically live whenever the output of the welding power source is on. The power line and internal circuit of the welding power source is also live when line disconnect switch is on. In semiautomatic or automatic welding, wire reel, drive assembly, and all metal parts touching the welding wire are electrically live.</p> <ol style="list-style-type: none"> 1. Do not touch live electrical parts. 2. Wear dry, hole-free insulating gloves and body protection. 3. Insulate yourself from work and ground using dry insulating mats or covers. 4. Disconnect line disconnect switch before installing, changing torch parts or maintaining this equipment. 5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes. 6. Ground the workpiece. 7. Keep all panels and covers of this equipment securely in place. 8. Do not use worn, damaged, undersized, or poorly spliced cables. 9. Do not touch electrode and any metal object if POWER switch is ON. 10. Do not wrap weld cables around your body. 11. Turn off POWER switch when not in use. 	

	<p>ARC RAYS can burn eyes and skin: FLYING SPARKS AND HOT METAL can cause injury. NOISE can damage hearing.</p>
<p>Arc rays from the welding produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some arc welding can damage hearing.</p> <ol style="list-style-type: none"> 1. Wear a face shield with a proper shade of filter (See ANSI Z 49.1 listed in table SAFETY STANDARDS) to protect your face and eyes when welding or watching. 2. Wear approved safety goggles. 3. Use protective screens or barriers to protect others from flash and glare: warn others not to watch the arc. 4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection. 5. Use approved ear plugs or ear muffs if noise level is high. 	



WELDING can cause fire and explosion.

Sparks and spatter fly from the welding arc. The flying sparks and hot metal, spatter, hot workpiece, and hot equipment can cause fires and explosion.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35ft. (10.7m). If this is not possible, tightly, cover them with approved covers.
 - Be alert that welding sparks and hot metals from welding can easily go through small cracks and openings to adjacent areas.
4. Watch for fire, and keep a fire extinguisher nearby
 - Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on opposite side.
5. Do not weld on closed containers such as tanks or drums.

Accidental contact of electrode or welding wire to metal object can cause sparks, overheating, or fire.

6. Contact work cable to workpiece as close to the welding area as possible
 - To prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
7. Remove stick electrode from holder; cut off wire at contact tip when not in use.
8. Do not use the welding power source for other than arc welding.
9. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

Loose weld cable connection can cause undesired sparks and excessive heating.

10. Tighten all weld cable connections.

Chipping and grinding can cause flying metal. As welds cool, they can throw off slag.

11. Wear approved face shield or safety goggles. Side shields recommended.
12. Wear proper body protection to protect skin.



FUMES AND GASES can be hazardous to your health.

Arc welding may produce fumes and gases hazardous to health.

1. Keep your head out of the fumes; do not breathe the fumes.
2. Ventilate the area and / or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacture's instruction for metals, consumables, coatings, and cleaners.
5. Do not cut in locations near degreasing, cleaning, or spraying operations.
 - The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.



CYLINDER can explode if damaged.

Shielding gas cylinder contains high pressure gas. If damaged, a cylinder can explode.

1. Use only correct gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them in good condition.
2. Protect gas cylinder from excessive heat, mechanical shock, and arcs.
3. Keep cylinder in an upright position securely chained to stationary support or rack to prevent falling or tipping.
4. Keep cylinders away from any welding or other electrical circuit.
5. Never touch cylinder with welding electrode.
6. Read and follow instructions on compressed gas cylinders, associate equipment, and CGA publication listed in table SAFETY STANDARDS.
Since gas cylinders are normally part of the welding process, be sure to treat carefully.
7. Turn face away from valve outlet when opening cylinder valve.
8. Keep protective cap in place over valve except when gas cylinder is in use or connected for use.



Rotating parts may cause injuries. Be sure to observe the followings.

If hands, fingers, hair and clothes are put near the rotating parts of fans and wire feed roll of the feeder, biting may occur, causing injuries.

1. Do not use the welding machine in removing the case and the cover.
2. When the case is removed in maintenance/inspection and repair, certified operators or operators knowing the welding machine well must perform the working. By providing a fence, etc. around the welding machine, do not let other persons come near the welding machine carelessly.
3. Do not put your hands, fingers, hair and cloths near the fans and wire feed roll rotating.

ARC WELDING WORKSHOP is potentially hazardous.

FALLING, FALLING DOWN and MOVING machine can cause serious injury.

- ◆ Do not lift the welding power source with one eyebolt.
Use two eyebolts to lift it.
- ◆ Put the welding power source and wire feeder solidly on a flat surface.
- ◆ Do not pull the welding power source on floor laid with cables and hoses.
- ◆ Do not put wire feeder on the welding power source.
- ◆ Do not put the welding power source and wire feeder where they will pit or fall.

WELDING WIRE can cause puncture wounds.

- ◆ Do not press gun trigger until instructed to do so.
- ◆ Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.20402.

Recommended Practices for Plasma Arc Cutting, American Welding Society Standard AWS C5.2, from American Welding Society, 550 N.W.Lejeune Rd, Miami, FL 33126.

Recommended Safe Practices for the Preparation for Welding and cutting of containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W.Lejeune Rd, Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quickly, MA02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.


Code for Safety Welding and Cutting, CGA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY10018.

Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quickly, MA 02269.

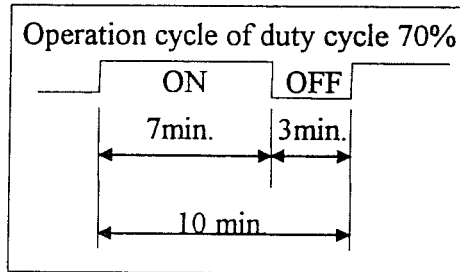
3. NOTICE AT OPERATION

3.1 Rated duty cycle

 CAUTION
● Use at the rated duty cycle or under. If exceeding the rated duty cycle, the welding torch might be deteriorated and burned.


● Rated duty cycle: 500A, 70%

● Rated duty cycle 70% means that welding torch can be operated for seven minutes out of ten minutes, but it must be paused for three minutes.



● If exceeding the rated duty cycle, temperature of welding torch rises, exceeds the allowable temperature, and it can be a cause of burning equipment.


3.2 Cooling water

 CAUTION
• Cooling water flow more than 0.7 l /min. (Water pressure at the torch entrance should be 0.15~0.3MPa.) If cooling water insufficient, it can be a cause of burning welding torch.

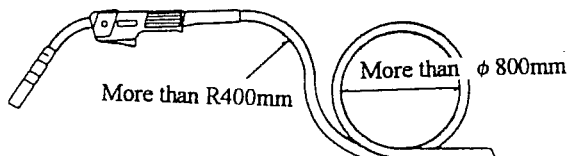
● Do not use at air cooled.

● Do not use water leaked welding torch, it can be a cause of electrical shock.

3.3 Bending of power cable

 CAUTION
• Observe the followings to acquire high welding performance.

• If power cable of torch is bent excessively, smooth wire feeding will be hampered. Therefore, take care not to bend it too much.



3.4 Inching operation

⚠ WARNING	
	<ul style="list-style-type: none"> • Do not look into the tip hole to check on sending of the wire in inching. Wire may fly out and stick your face and eyes, and it can be cause of injury. • Do not bring the head of welding torch near your face, eyes and body in inching. Wire may fly out and stick your face, eyes and body, and it can be cause of injury.

- Straighten the welding torch, and wire feeds with pushing the inching switch, then leave it when wire comes out about 10mm from the head of welding torch.

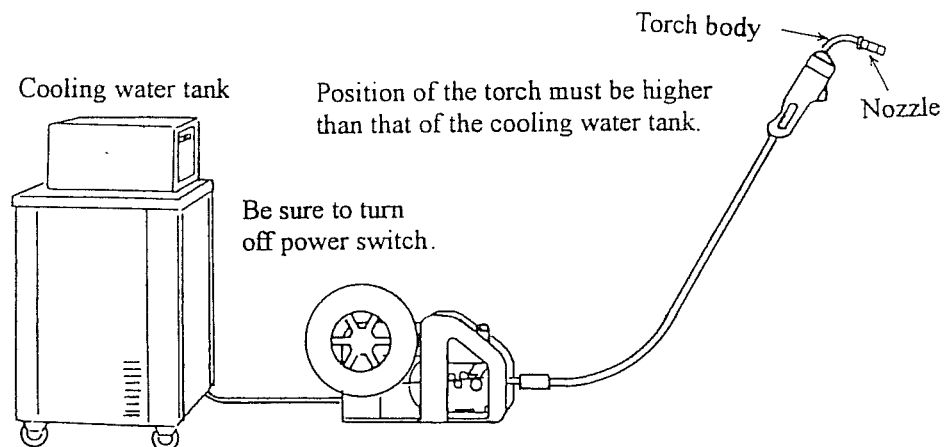
3.5 Disassembling of nozzle and torch body

⚠ CAUTION	
● Be sure to observe the followings for preventing imperfection welding (blow hole).	

- If the tip or the torch body inside wall are wetted with water when removing the nozzle and the torch body, carefully wipe away water with cloth and paper, and weld on unused test piece, to fully dry the bus passage inside.
- Close the main valve of water source, and operate by raising the torch higher than the cooling water tank.

If the nozzle and the torch body are removed without closing the main valve of water source, cooling water flushes out.

(as for removing and fitting procedures, refer to 3.11, and 3.12.)



3.6 Replacing of parts


⚠ CAUTION	
● Be sure to observe the followings for preventing burning.	

- At welding, never touch the high temperature parts of nozzle and tip directly.
- At welding, use the protection goods
- The replacing of head of welding torch should be after cooling down.

⚠ CAUTION	
● In case of parts are damaged, replace them to new parts for safety and quality.	

- Be sure to use the OTC's genuine parts.

3.7 Cleaning of liner

 CAUTION

- If chips of wire or dust accumulate inside of liner, it can be a cause of poor welding and poor wire feed. Therefore, clean periodically by blowing dry air or argon gas.

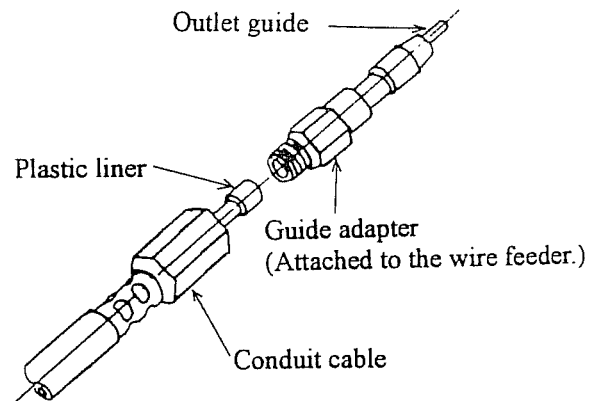
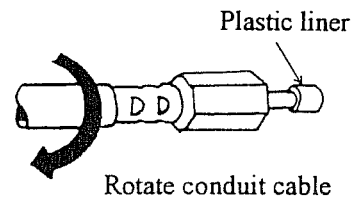
3.8 Poor wire feed

 CAUTION

- In case of wire stops feeding by depositing tip and wire, throw away the wire between wire feed roll part and head of tip (about 3m), and replace to a new one.
If wire is constraint at the head of tip, wire will be buckled or cut so that the damage part should be rejected to prevent poor wire feeding.

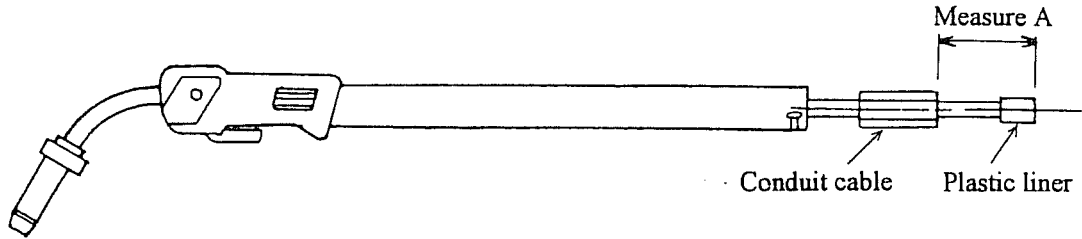
3.9 Replacing of plastic liner

- In pulling out the plastic liner the conduit cable, rotate the conduit cable right or left until the metal fitting at rear end of plastic liner comes out from the conduit cable.
- Since the plastic liner incorporated in the main unit is already adjusted to the appropriate length, do not cut out if the plastic liner is projected from the conduit cable.
 1. Stretch the conduit cable straight.
 2. Press in the liner while rotating the conduit cable right or left.
 3. Inset the outlet guide into the guide adapter, and screw the guide adapter into the conduit cable.

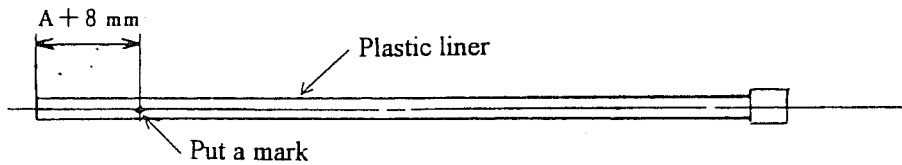


- Since the plastic liner purchased as repair parts is made in fairly size, cut out according to the below procedure.

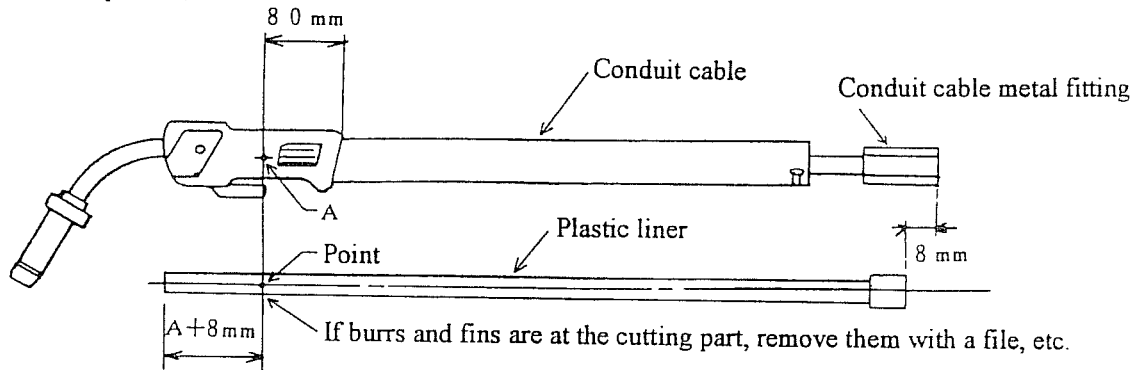
1. Stretch the conduit cable straight, insert the plastic liner and measure A dimension.



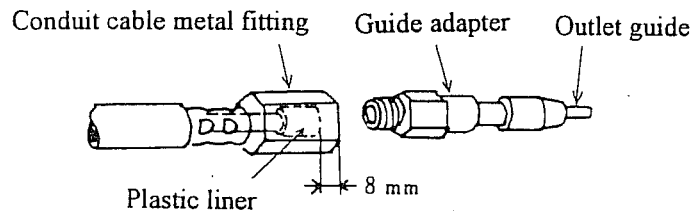
2. Pull out the plastic liner and put a mark (measure) at the (A+8)mm point.



3. After checking at the outside of the conduit cable that the mark put on the plastic liner is at the A point (80mm from the handle rear end), cut out the liner.

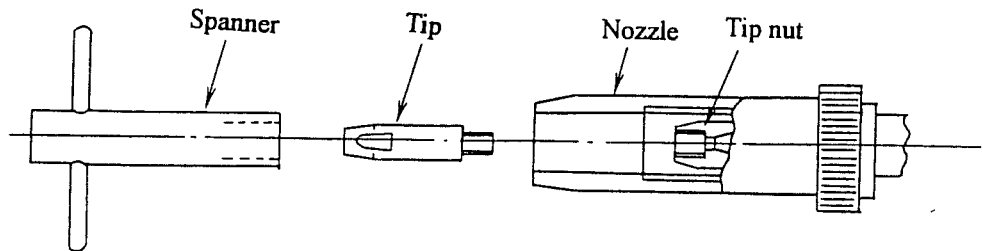


4. Insert the liner into the conduit cable again, and check that the liner head end is insert 8mm deeper than the conduit cable metal fitting.



3.10 Replacing of tip

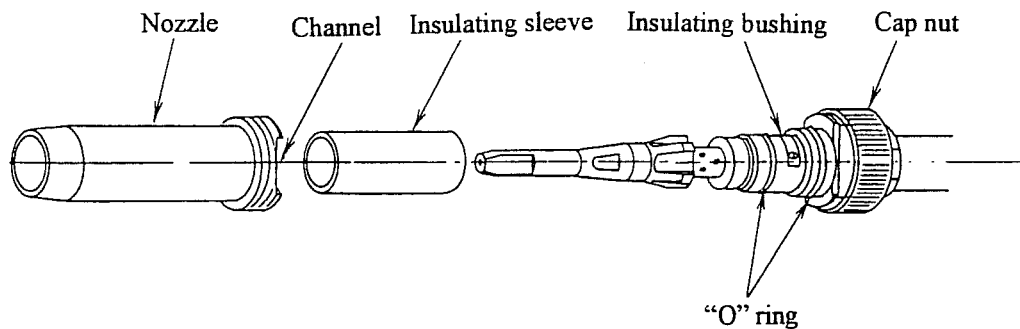
- Insert the spanner (accessory) into the tip in the nozzle.
- After inserting the spanner surely, rotate the spanner to the left to remove the tip.
- Insert a new tip into the spanner, rotate the spanner to the right to screw the tip into the tip body.



Notice: When the wire is fit, push the inching button to take tip out.

3.11 replacing of nozzle and insulating sleeve

- When fitting and removing the nozzle and insulating sleeve, make the state of the figure on item 3.5, and follow the procedure below.
 1. Loosen manually the cap nut completely, and remove the nozzle carefully.
 2. Remove the insulating sleeve inserted into the nozzle from the nozzle, and replace to a new insulating sleeve.
 3. In installing the nozzle, be sure to apply grease thinly to the two “O” rings at the insulator part, and carefully insert the nozzle into the “O” rings not to cause flaws while matching the nozzle channel to the insulator detent. If “O” rings are damaged, water leak may occur.
 4. Screw cap nut into nozzle.



3.12 Replacement of torch body

- When removing torch body, make the state of the figure on item 3.5 and follow the procedure below.

Loosen a fitting bolt with a hexagon wrench, and draw the torch body.



To replace to a new torch body, insert with little rotating. (Insert the end of torch body up to reaching the metal fitting inside of the handle. Check insert the inner liner.)



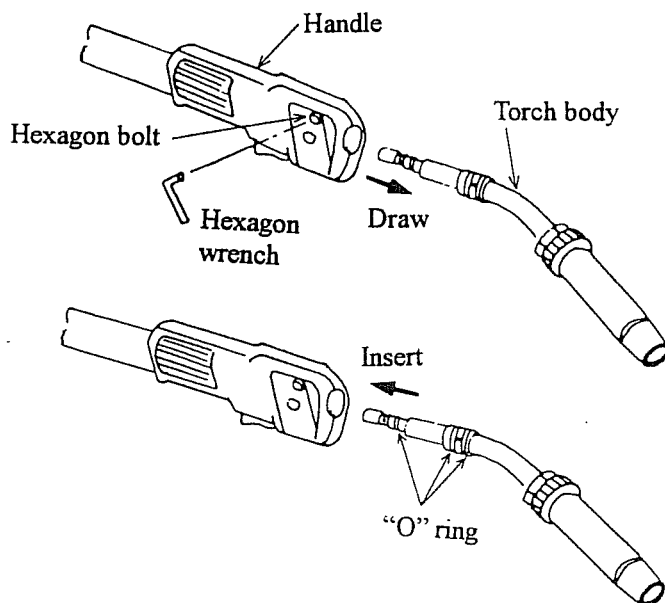
Check that channel of torch body is at the same position as handle. (Insert torch body certainly, otherwise gas or water will leak.)



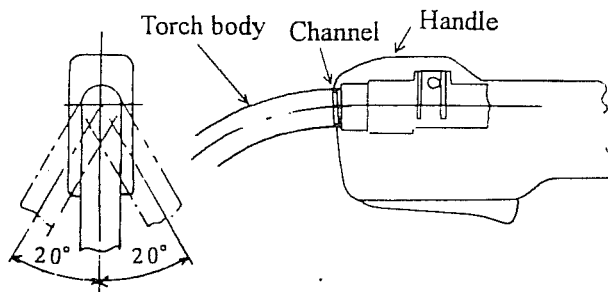
Tighten a fixing bolt with hexagon wrench.

※ Do not loosen a fitting bolt when welding.

Be sure to check that a fitting bolt is not loosening before welding.



Notice) When fitting the torch body, apply grease thinly to the "O" rings, and insert the torch body gradually into the "O" rings not to cause flaws.



Notice) When the tightening bolt is loosened, swinging of the torch body is made possible. After visually checking on inclination state of the torch body to the right / left to the handle, tighten the tightening bolt. (If inclined more than $\pm 20^\circ$, cooling water becomes insufficient, causing burn of the torch.)

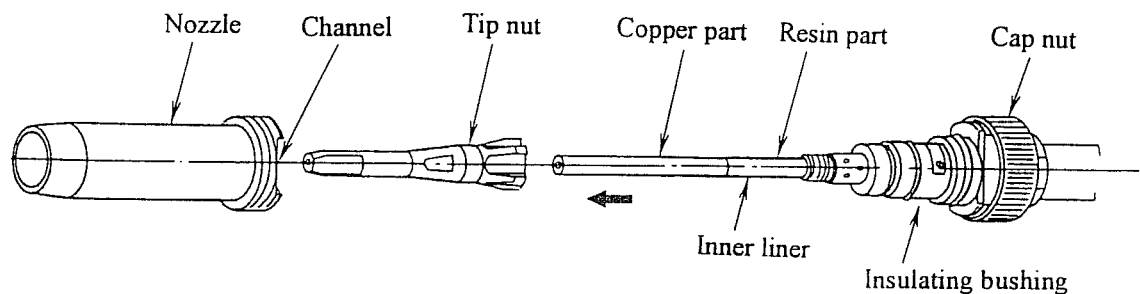
3.13 Replacement of inner liner

● When replacing inner liner, make the state of the figure on item 3.5 and follow the procedure below.

1. Loosen manually the cap nut completely, and remove the nozzle carefully.
2. Loosen the screw of tip nut and remove it from torch body.
3. Remove inner liner from torch body and replace to a new insulating sleeve if it is rubbing.

(Notice: When inserting inner liner, copper pipe side should be set to tip nut side.)

4. Install tip nut completely.
5. When installing nozzle, be sure to apply grease thinly to the two "O" rings at the insulator part, and carefully insert the nozzle into the "O" rings not to cause flaws while matching the nozzle channel to the insulator detent. If "O" rings are damaged, water leak may occur.
6. Screw cap nut into nozzle.



4. CHECK OF PACKAGE CONTENT

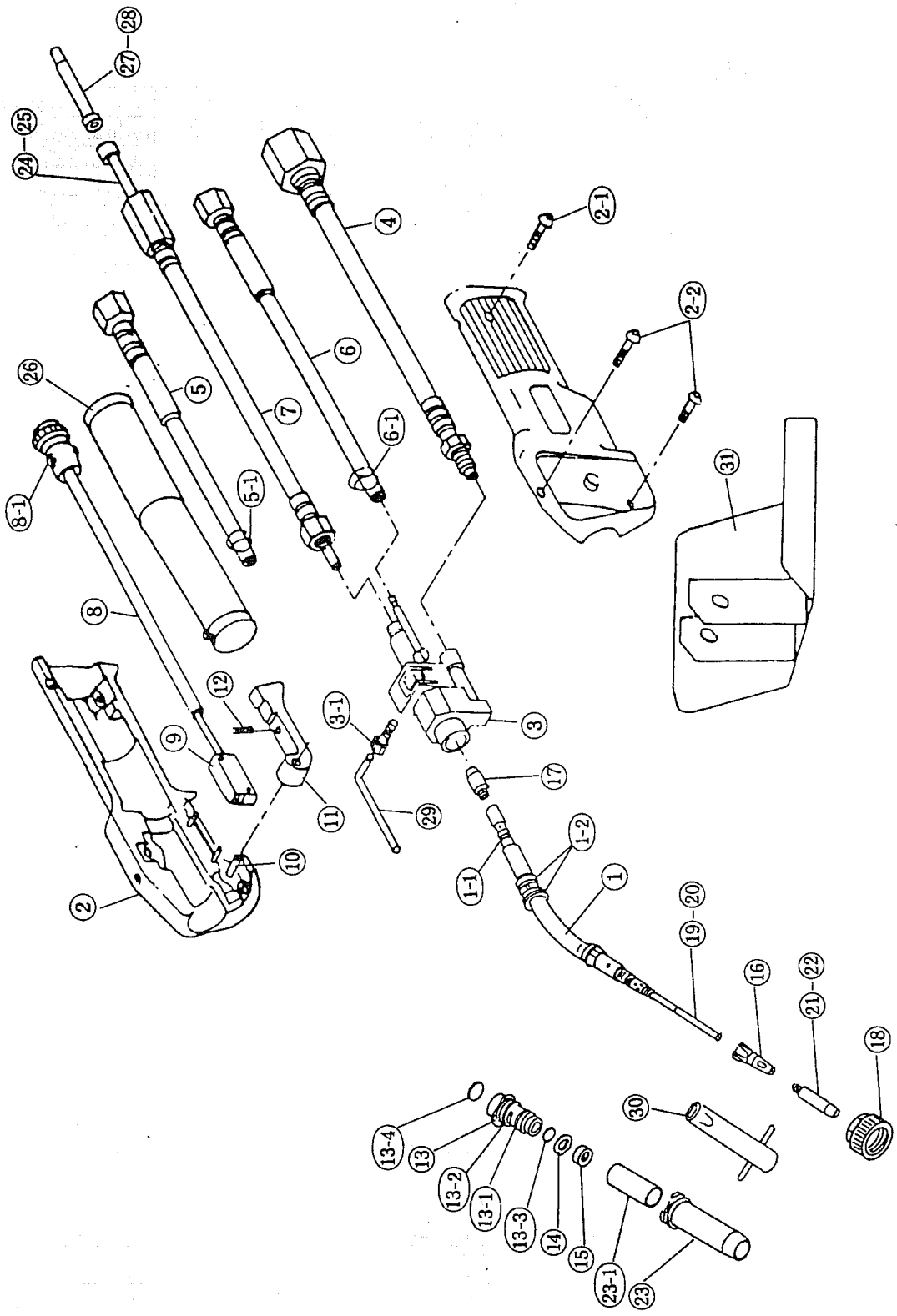
Description	Part No.	Q'ty	Remarks
Tip	K980B20	1	For ϕ 1.2
Hexagon spanner		1	For M5
Spanner	U2559P05	1	(For removing tip)
Outlet guide	U2962M03	1	For ϕ 1.2 (White)
Outlet guide	U2962M04	1	For ϕ 1.6 (Black)
Inner liner	U4430R00	1	For ϕ 1.2
Plastic liner	K980B84	1	For ϕ 1.2
Heat shield	U2075J01	1	

5. PARTS LIST

If parts are required for replacement, direct order involving Description and Part No. to our sales agent or OTC's office directly.

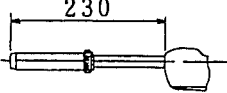
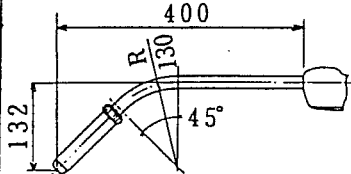
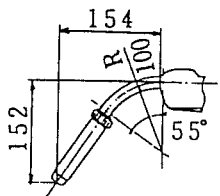
5.1 Standard parts

No.	Part No.	Description	Q'ty	Remarks
1	U4430B00	Torch body	1 set	Include 1-1, 1-2
1-1	3574-001	"O" ring	(1)	S9 (Fluoro rubber)
1-2	3574-005	"O" ring	(2)	P14 (Fluoro rubber)
2	U4430C00	Handle	1 set	Include 2-1, 2-2
2-1		Screw	(1)	M4-25
2-2		Screw	(2)	M4-20
3	U4430D00	Metal fixture	1	Include 3-1
3-1		Bolt	(1)	M5-14
4	U4430E00	Power cable	1	
5	U4430F00	Supply water hose	1 set	Include 5-1
5-1	U4430F01	Steel cable	(1)	
6	U4430G00	Gas hose	1 set	Include 6-1
6-1	U4430F01	Steel cable	(1)	
7	U4430K00	Conduit cable	1	
8	U2969J00	Switch code	1 set	
8-1	4730-001	Plug	(1)	
9	4254-015	Micro switch	1	
10		Straight pin	1	φ 4-16
11	U2853C03	Trigger	1	
12	U2853C04	Spring	1	
13	U4430N00	Insulator	1 set	Include 13-1~13-4
13-1	3574-006	"O" ring	(1)	P16 (Fluoro rubber)
13-2	3574-003	"O" ring	(1)	S22.4 (Fluoro rubber)
13-3	3570-240	"O" ring	(1)	P12.5 (Fluoro rubber)
13-4	3574-005	"O" ring	(1)	P14 (Fluoro rubber)
14	3361-716	Wave washer	1	
15	U4430P01	Nut	1	
16	U4430P02	Tip nut	1	
17	U4430P03	Center guide	1	
18	U4430P04	Cap nut	1	
19	U4430Q00	Inner liner	1	For φ 1.6
20	U4430R00	Inner liner	1	For φ 1.2
21	K980B21	Tip	1	For φ 1.6
22	K980B20	Tip	1	For φ 1.2
23	U4430X00	Nozzle assembly	1 set	Include 23-1
23-1	U4430H06	Insulating sleeve	(1)	
24	K970B83	Plastic liner	1	For φ 1.6
25	K970B84	Plastic liner	1	For φ 1.2
26	U2969K04	Hose sheath	1	
27	U2962M04	Outlet guide	1	For φ 1.6 (Black)
28	U2962M03	Outlet guide	1	For φ 1.2 (White)
29		Spanner	1	For M5
30	U2559P05	Spanner	1	
31	U2075J01	Heat shield	1	

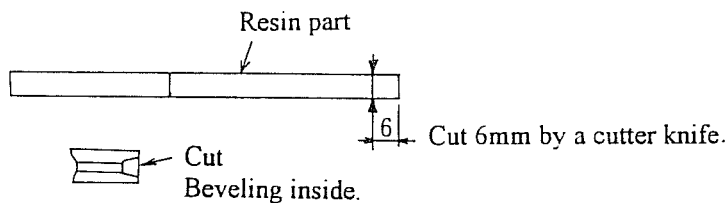


5.2 Optional accessories

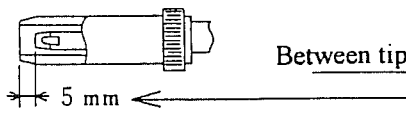
● Torch body

Part No.	Description	Outside dimension	Applicable inner liner part No.	
U4430U00	Straight torch body		For ϕ 1.6	U4430Q00
			For ϕ 1.2	U4430R00
U4430V00	Long torch body		For ϕ 1.6	U4430Y00
			For ϕ 1.2	U4430Z00
U4430W00	R100, 55° torch body		For ϕ 1.6	U4430Q00
			For ϕ 1.2	U4430R00

- Notes) 1. R100, 55° torch body (U4430W00) is for hard aluminum.
2. Use inner liner (U4430Q00, R00) for R100, 55° torch body by cutting as the figure below.



● Nozzle assembly

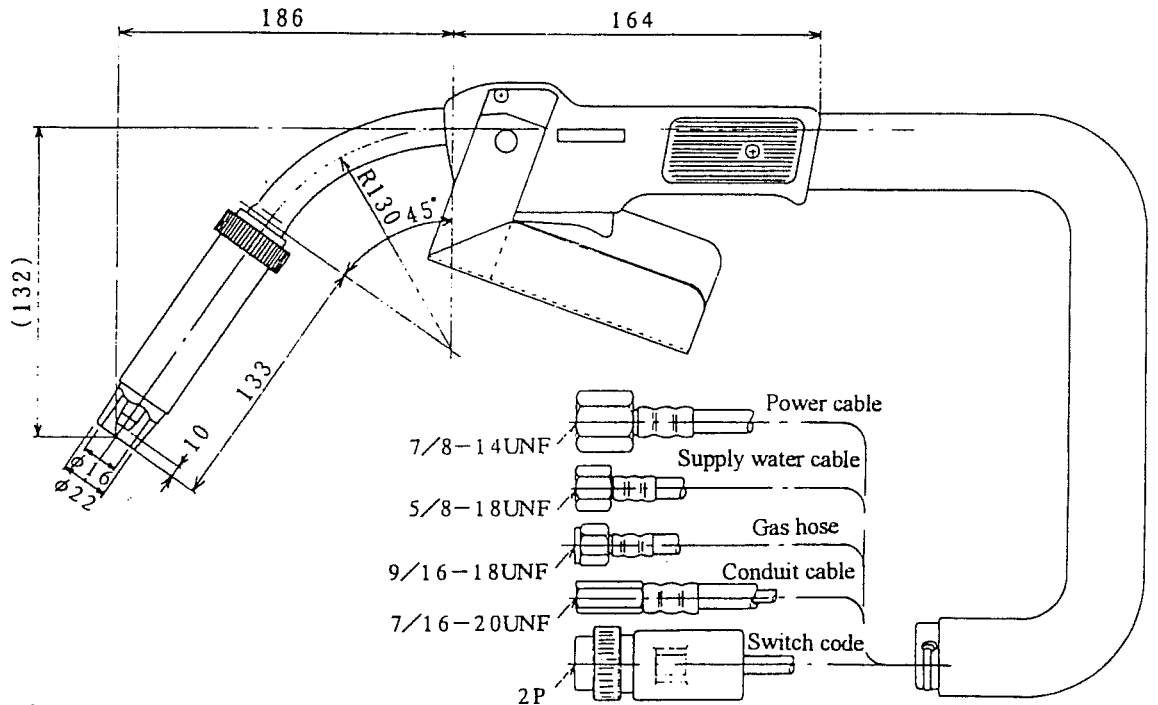
Part No.	Description	Remarks
U4430H00	Nozzle assembly	 Between tip and nozzle

6. SPECIFICATION

6.1 Specification

Model	WTCAW-5002
Usable wire	Aluminum
Usable wire size	φ 1.2, φ 1.6
Max. applicable current	500A (DC)
Duty cycle	70%
Cable length	3m
Mass. (With cable)	3.5kg

6.2 External view



7.3 Wire feeder (Be able to combination type)

Standard combinable wire feeder: CMW-145, 146, 147



