

329680 (12)



OWNER'S MANUAL

FOR



CTW (M) (L)-1201
CTZW (M) (L)-1201
CTPW (M) (L)-1201

MODEL:	CTW	-	1201	H852
	CTWM	-	1201	H853
	CTZW	-	1201	H854
	CTXW	-	1201	H839
	CTZWM	-	1201	H841
	CTZWL	-	1201	H843
	CTPW	-	1201	H840
	CTPWM	-	1201	H842
	CTPWL	-	1201	H844

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 safety operation of cutting equipment. Do not allow untrained persons to install, operate or maintain this equipment. Contact your distributor if you do not fully understand this manual.

Upon contact, advise MODEL and MANUAL NO.

Notice : Machine export to Europe

This product does not meet the requirements specified in the EC Directives which are the EU safety ordinance that was enforced starting on January 1, 1995. Please make sure that this product is not allowed to bring into the EU after January 1, 1995 as it is.

The same restriction is also applied to any country which has signed the EEA accord.


Please ask us before attempting to relocate or resell this product to or in any EU member country or any other country which has signed the EEA accord.


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1. SAFETY INFORMATION

The following safety alert symbols and signal words are used throughout this manual to identify various hazards 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. PLASMA ARC CUTTING SAFETY PRECAUTIONS

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



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuits are electrically live whenever the output is on. The power line and internal circuits of this equipment are also live when the line disconnect switch is on. When plasma cutting all metal components in the torch and work circuits are electrically live.

1. Do not touch live electrical parts.
2. Wear dry insulating gloves and other body protection that are free of holes.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Be sure to turn off the 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. Keep all panels and covers of this equipment securely in place.
7. Do not use worn, damaged, undersized, or poorly spliced cables.
8. Do not touch electrode and any metal object if POWER switch is ON.
9. Do not wrap cables around your body.
10. Turn off POWER switch when not in use.
11. Keep away from torch tip and pilot arc when trigger is pressed.



ARC RAYS can burn eyes and skin. NOISE can damage hearing.

Arc rays from the cutting process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

Noise from some plasma arc cutting applications can damage hearing.

1. Wear face shield with a proper shade of filter (See ANSI Z 49.1 listed in PRINCIPAL SAFETY STANDARDS) to protect your face and eyes when cutting or watching a cutter work.
2. Wear approved safety goggles. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare: warn others not to look at the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved earplugs or earmuffs if noise level is high.



FUMES AND GASES can be hazardous to your health.

Cutting produces fumes and gases. Breathing these fumes and gases can be hazardous to your 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 cutting fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDS) and the manufacturer 's instructions on metals to be cut, 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.



PLASMA ARC can cause injury

1. Keep away from the torch tip.
2. Do not grip material near the cutting path.
3. The pilot arc can cause burns. Keep away from tip when trigger is pressed.
4. Wear proper flame-retardant clothing covering all exposed body areas.
5. Point torch away from your body and toward work when pressing the torch trigger.
6. Turn off the line disconnect switch and POWER switch on the front panel before disassembling torch or changing torch parts.
7. Use only torch('s) specified in the Owner's Manual.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding can cause flying metal.

1. Wear approved face shield or safety goggles with side shields.
2. Wear proper body protection to protect skin.
3. Wear flame-resistant earplugs or earmuffs to prevent sparks from entering ears.



CYLINDER can explode if damaged.

A shielding gas cylinder contains high-pressure gas. If damaged, a cylinder can explode. Since gas cylinders are normally part of the cutting process, be sure to treat them carefully.

1. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them in good condition.
2. Protect compressed gas cylinders from excessive heat, mechanical shock, and arcs.
3. Keep the cylinder upright and securely chained to a stationary support or a rack to prevent falling or tipping.
4. Keep cylinders away from any cutting or other electrical circuit.
5. Never touch cylinder with cutting electrode.
6. Read and follow instructions on compressed gas cylinders, associated equipment, and the CGA publication P-1 listed in PRINCIPAL SAFETY STANDARDS.
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.



This equipment uses high frequency for arc starting.

High-frequency may enter nearby units as shown below, causing electromagnetic trouble.

- * Input cables, signal cables, telephone cables
- * Radio sets, TV sets
- * Computers and other control equipment
- * Industrial detectors and safety units
- * Pacemakers, hearing-aid sets

For preventing electromagnetic trouble,

1. Make the cable as shortest as possible.
2. Install cables along the floor or the ground as close as possible.
3. Put the base metal side cable together with the torch side cable.
4. Do not use a common base metal ground with other machines.
5. Tightly close all of the doors and covers of this equipment, and secure them.
6. Do not press the torch switch other than when ready to start the arc.
7. When electromagnetic trouble occurs, take the measures shown in this instruction manual until trouble is corrected.
Please contact OTC-DAIHEN , when necessary.
8. Pacemaker wearers must not come near this equipment during operation until consulting your doctor.
Operation of the pacemakers will be affected badly by high frequency.



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

If hands, fingers, hair or clothes are put near the fan's rotating parts, injuries may occur.

1. Do not use this equipment if the case and the cover are removed.
2. When the case is removed for maintenance/inspection and repair, certified or experienced operators must perform the work. Erect a fence, etc. around the cutting machine to keep others away from it.
3. Do not put hands, fingers, hair or clothes near the rotating fans.

PLASMA ARC CUTTING work areas are potentially hazardous.

FALLING or MOVING machine can cause serious injury.

- ◆ Use both eyebolts, if installed, to lift the cutting power source.
- ◆ Put this equipment solidly on a flat surface.
- ◆ Do not pull this equipment across a floor laid with cables and hoses.

PRINCIPAL SAFETY STANDARDS

Arc welding equipment – Installation and use, Technical Specification IEC 62081, from International Electrotechnical Commission

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society.

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

Recommended Practices for Plasma Arc Cutting, American Welding Society Standard AWS C5.2, from American Welding Society.

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.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association.

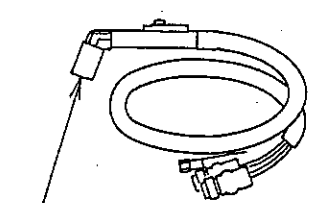



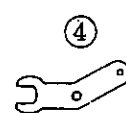


Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales.

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

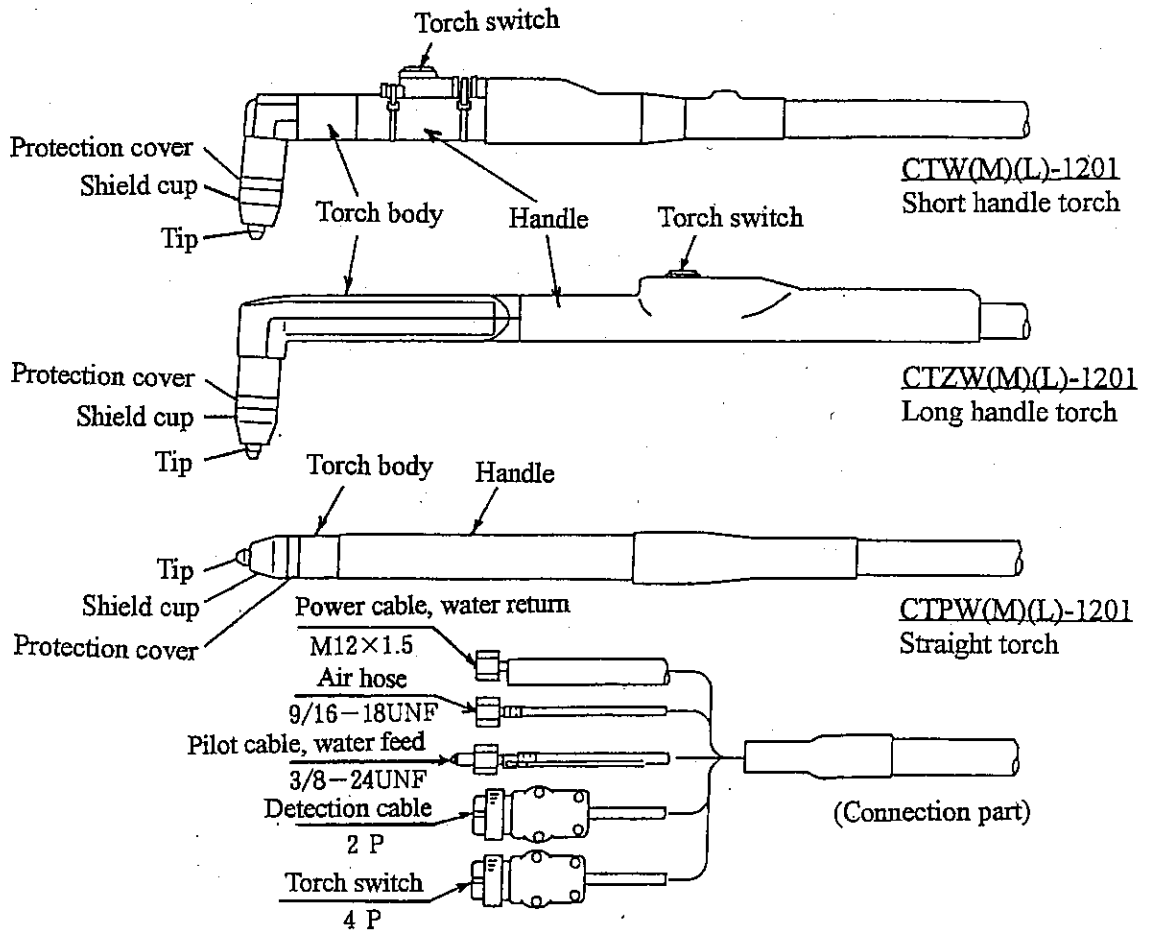
Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association.

3. ACCESSORY



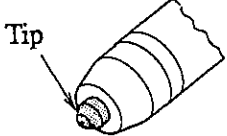
● Check the quantity at open



Plasma cutting torch	Accessories																	
 <p>Vinyl cap (Take this off when using.)</p>	 <p>①</p>	 <p>②</p>	 <p>③</p>	<table border="1"> <thead> <tr> <th>Description</th> <th>Q'ty</th> </tr> </thead> <tbody> <tr> <td>① Shield cup</td> <td>1</td> </tr> <tr> <td>② Tip</td> <td>4</td> </tr> <tr> <td>③ Electrode</td> <td>4</td> </tr> <tr> <td>④ wrench</td> <td>1</td> </tr> <tr> <td>⑤ torch guide</td> <td>1 ※1</td> </tr> <tr> <td>⑥ Torch switch</td> <td>1 ※2</td> </tr> </tbody> </table>	Description	Q'ty	① Shield cup	1	② Tip	4	③ Electrode	4	④ wrench	1	⑤ torch guide	1 ※1	⑥ Torch switch	1 ※2
	Description	Q'ty																
① Shield cup	1																	
② Tip	4																	
③ Electrode	4																	
④ wrench	1																	
⑤ torch guide	1 ※1																	
⑥ Torch switch	1 ※2																	
	 <p>④</p>	 <p>⑤</p>	 <p>⑥</p>	<p>※1: Accessory for CTZW(M)(L)-1201 ※2: Accessory for CTPW(M)(L)-1201</p>														

4. EACH PART NAME



5. NOTICE AT OPERATION


 WARNING	
	<p>Observe the followings to prevent the electrical shock.</p> <div style="float: right; text-align: center;">  </div> <ul style="list-style-type: none"> ● Never touch the live electrical parts. ● Turn off all input power by line disconnection switch when touch tip.

 CAUTION	
	<p>If you touch plasma arc or pilot arc, you will be burned.</p> <ul style="list-style-type: none"> ● Do not push torch switch direct to persons. ● If put torch down during operation, do not put torch switch downward or put torch at unstable place not to turn torch switch on carelessly.

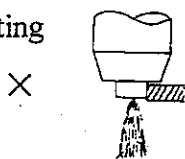
5.1 Rated duty cycle

- Rated duty cycle : 120A 100%

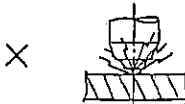
5.2 Precautions for cutting operation

 CAUTION	
Observe followings when you use torch.	

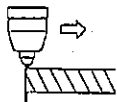
(1) Starting



Do not touch the side of tip to the edge of base metal when starting. Strong arc generates and the hole of tip might be deformed outright.

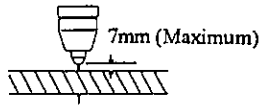


Do not start when tip touches to base metal vertically. Arc generates inside of tip, and tip might be burned.

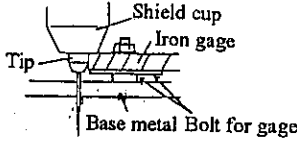


If the board thickness is more than 16mm, make sure that arc goes through the board completely, before starting.

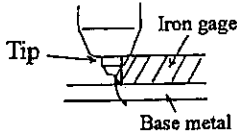
(2) During cutting



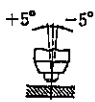
Space between tip and base metal should 4~5 mm, but it can be 7mm maximum.



When using iron gage which is used for gas cutting, insulate base metal from gage by the gage insulating set (Part No. H775L00).



Do not use iron gage by only itself. Arc adheres to iron gage, and tip deforms soon, then cause cutting failure.



The proper torch angle for base metal should be within $\pm 5^\circ$.

If angle of forward is too large, upwash occurs forward of cutting direction.



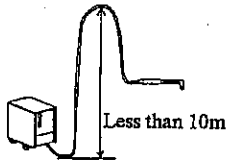
If torch leans to the right against to cutting direction, spatters to the left, and spatters to the right, if torch leans to the left against to cutting direction.



Keep the correct torch angle to prevent spatter.

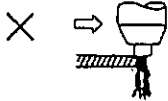


The correct speed is that plasma arc flows slightly backward. If it is too fast, upwash occurs forward of cutting direction.

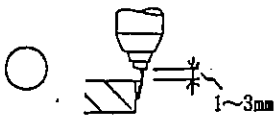


Height of torch cable must be shorter than 10m. (If the cooling water can not reach head of torch, torch might be burned.)

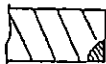
(3) Ending



Do not cut down with touching tip to base metal. Strong arc generates, and a hole of tip can be deformed.

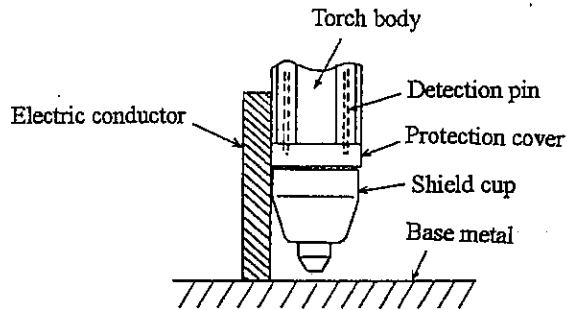


At terminal cutting, keep tip away from base metal 1~3mm, then cut down.



If the board thickness is more than 25mm, there are few cases in which ending failure.

5.3 Protection cover

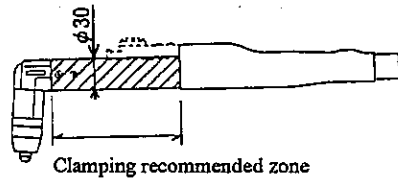


Do not use torch if protection cover is damaged or without this. High frequency might generate from detection pins.
In case of protection cover is damaged, replace to new one immediately.

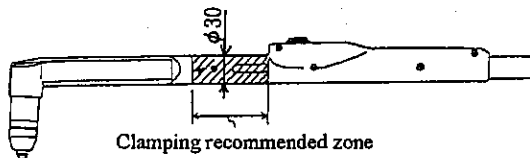
5.4 Clamp of torch at automatic cutting

● In case of automatic cutting operation with loading torch on a carriage, clamp following positions.

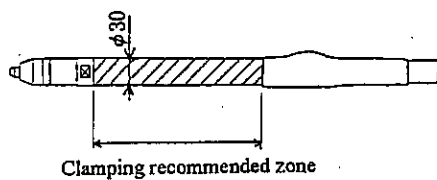
- (1) Short handle torch [CTW(M)(L)-1201]



- (2) Long handle torch [CTZW(M)(L)-1201]

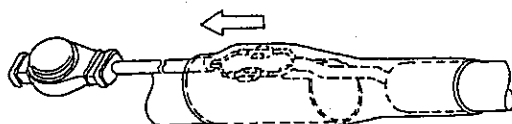
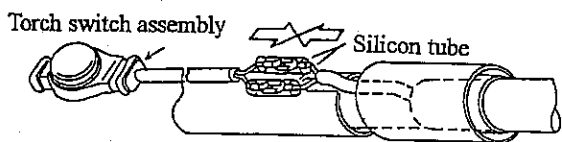
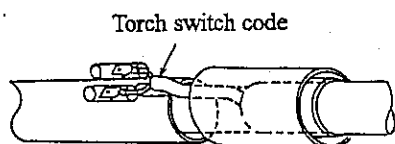
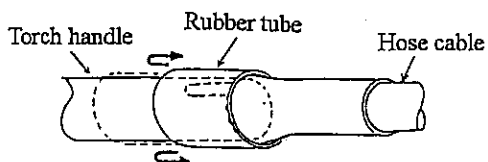


- (3) Straight torch [CTPW(M)(L)-1201]



5.5 How to install torch switch for CTPW(M)(L)-1201 (Straight type torch)

When using torch switch assembly (accessory, Part No. K2433A00), install as follows.





① Slide rubber tube which covers torch handle to cable side.


② Torch handle comes out then, pull torch switch cord out.


③ Connect torch switch terminal.
Notice: Insert silicon tube secure in terminal part.


④ Set the rubber tube in order as it was.

6. MAINTENANCE AND TROUBLESHOOTING

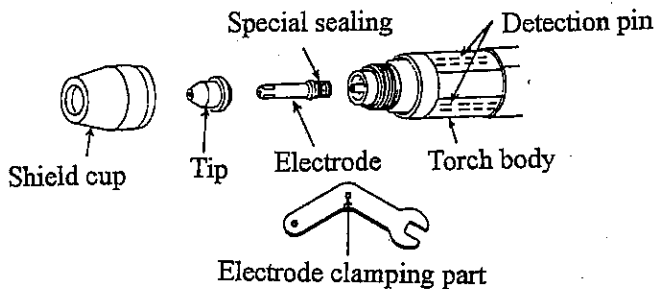
 WARNING	
	Observe followings to prevent electrical shock.
<ul style="list-style-type: none"> ● Do not touch live electrical parts. ● Do not touch tip, when power source is on. ● Be sure to turn off the line disconnection switch before checking torch and exchanging parts ● Operate the maintenance check periodically, and be sure to troubleshooting and repairing immediately. ● This cutting torch must be operate by persons who understand contents of this owner's manual and have knowledge and skills for cutting torch safety. 	

 CAUTION	
Observe followings to prevent burning.	
<ul style="list-style-type: none"> ● When operating, do not touch high temperature parts (tip, shield cup, and base metal which just finished operation). ● Use protectors (leather gloves, etc.) when operating. ● Exchanging of torch top parts must be done after cooling down. 	

 CAUTION	
<ul style="list-style-type: none"> ● If parts are damaged, replace to new ones for safety and quality assurance. ● Use OTC's genuine parts for replacing. 	

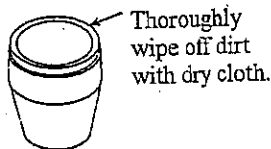
 CAUTION	
<ul style="list-style-type: none"> ● When exchanging tip, electrode and torch body, make sure to clean cooling water inside of torch body before assembling. If assembling without cleaning, torch might be burned. 	

6.1 Replacing of shield cup, tip, and electrode




For assembling and disassembling of tip and electrode, use a wrench (accessory).

(1) Installation of cup



Before install shield cup to torch body, wipe dusts out by a piece of dry cloth.
Thrust shield cup till the end.

(2) Replacement of tip and electrode

 CAUTION
● Electrode screw is processed special sealing. Handle with care not to adhere any dust. If screw this with leaving the dust, the seal will come off and cause water leak.
● Screw up electrode secure with wrench. (accessory)

● Timing for replacing

(i) The service life of the tip and electrode depends on the cutting time and numbers.

Replace tip and electrode at the same time. Refer to Fig.1.

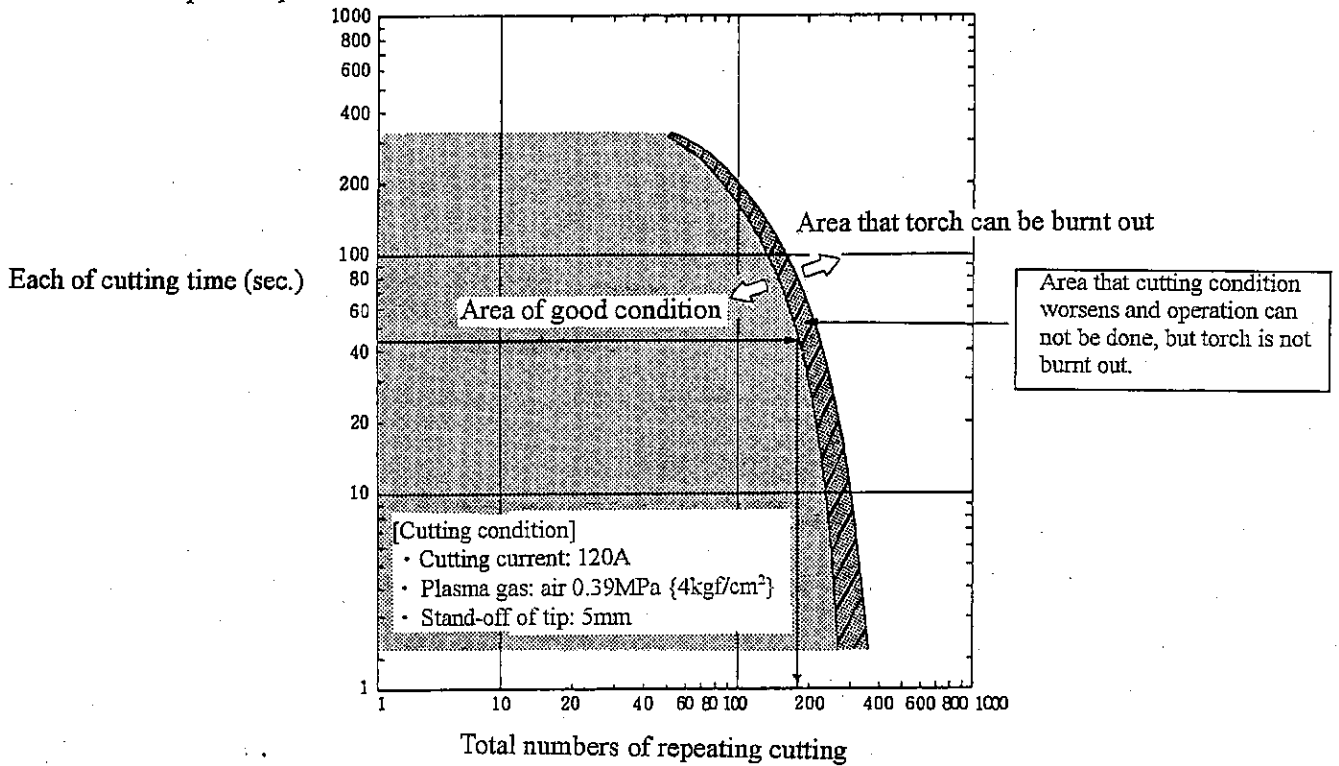






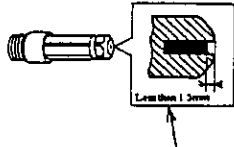
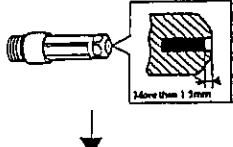
Fig.1 The service life of tip and electrode (Reference)

(ii) If following conditions occur, check tip and electrode, then replace them if necessary.

● Do not shave tip and electrode to reuse.

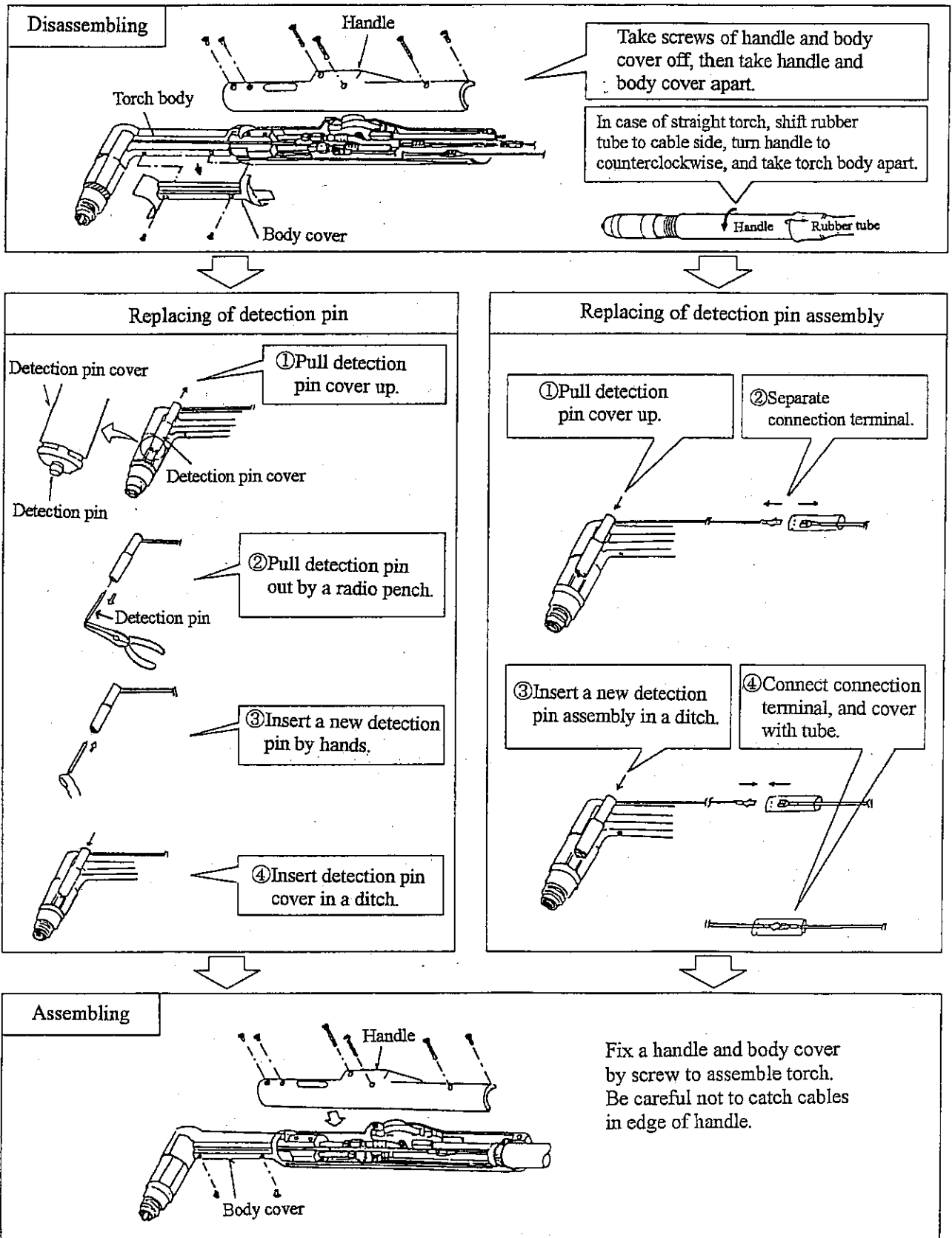
Conditions	Check part
<ul style="list-style-type: none"> • Pilot arc dose not work well, and start is not good. • Make big sound at start. • A hole of tip deforms soon, even if replace tip. • Cutting part starts bending extremely. • Tip sticks to base metal. 	Tip, Electrode Electrode Electrode Tip Tip



Check item	Normal	Timing for replacing
Tip Dose the tip hole deform? 	● The hole is round, and it dose not deform. 	● The hole became oval.  If you leave and keep using this, cutting operation will not work well.
Electrode Dose the tip of electrode consume? 	● Consumption of the electrode center is less than 1.5mm.  The sinkage of center is less than 1.5mm.	● consumption of the electrode center is more than 1.5mm.  If you leave and keep using this, it will be a cause of burn out.

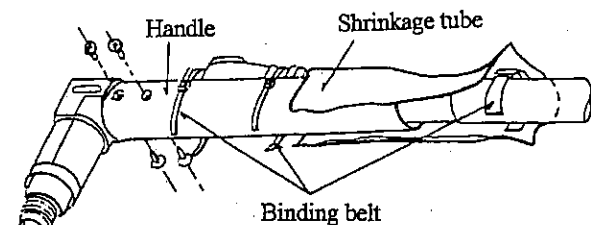
6.2 Replacement of detection pin

(1) How to replace CTZW(M)(L)-1201 (Long handle torch) and CTPW(M)(L)-1201 (Straight torch)



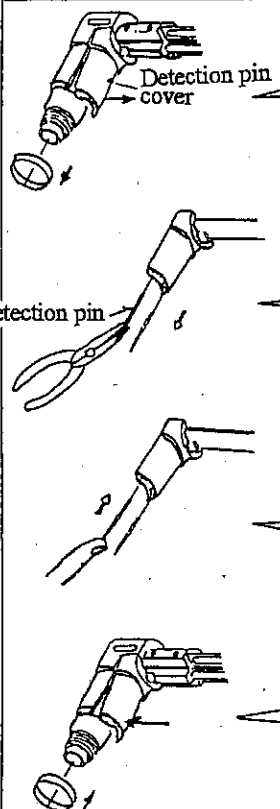
(2) how to replace CTW(M)(L)-1201 (Short handle)

Disassembling



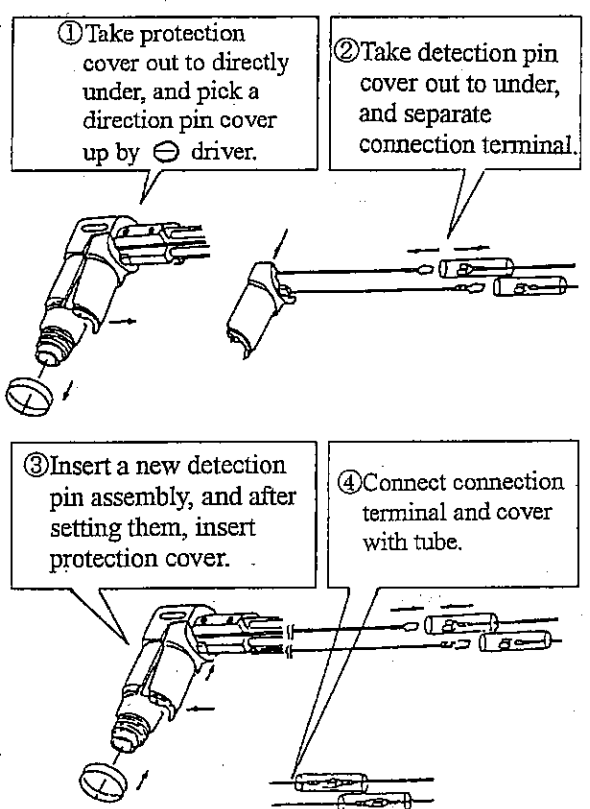
Disconnect shrinkage tube and binding belt, then take switch out. Take screws of handle out, and shift handle to cable side.

Replacing of detection pin



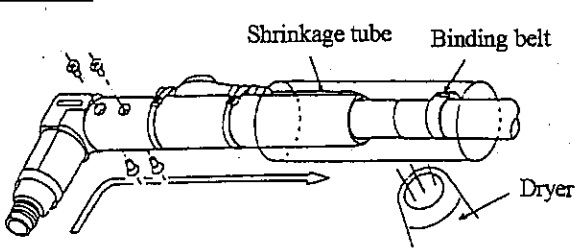
- ① Take protection cover out to directly under, and pick a direction pin cover up by ⊖ driver.
- ② Pull detection pin out by radio pench.
- ③ Insert a new detection pin in by hands.
- ④ Set detection pin cover, and cover with protection cover.

Replacing of detection pin assembly



- ① Take protection cover out to directly under, and pick a direction pin cover up by ⊖ driver.
- ② Take detection pin cover out to under, and separate connection terminal.
- ③ Insert a new detection pin assembly, and after setting them, insert protection cover.
- ④ Connect connection terminal and cover with tube.

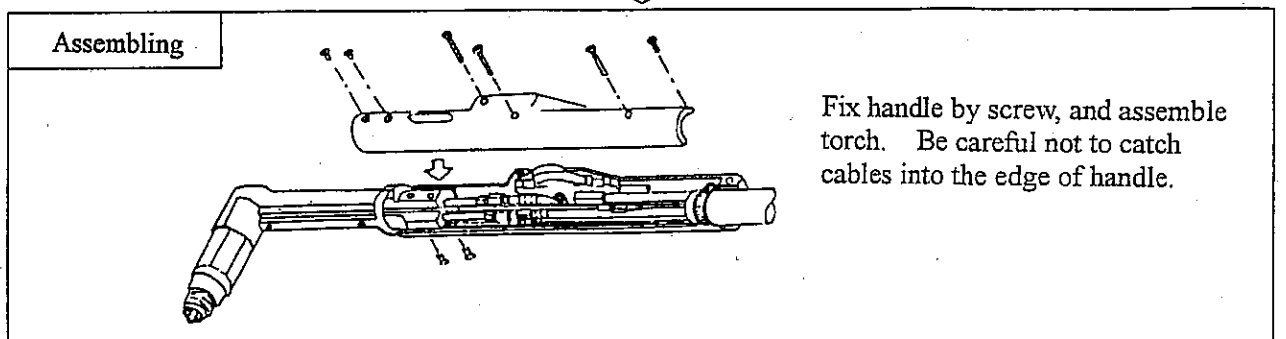
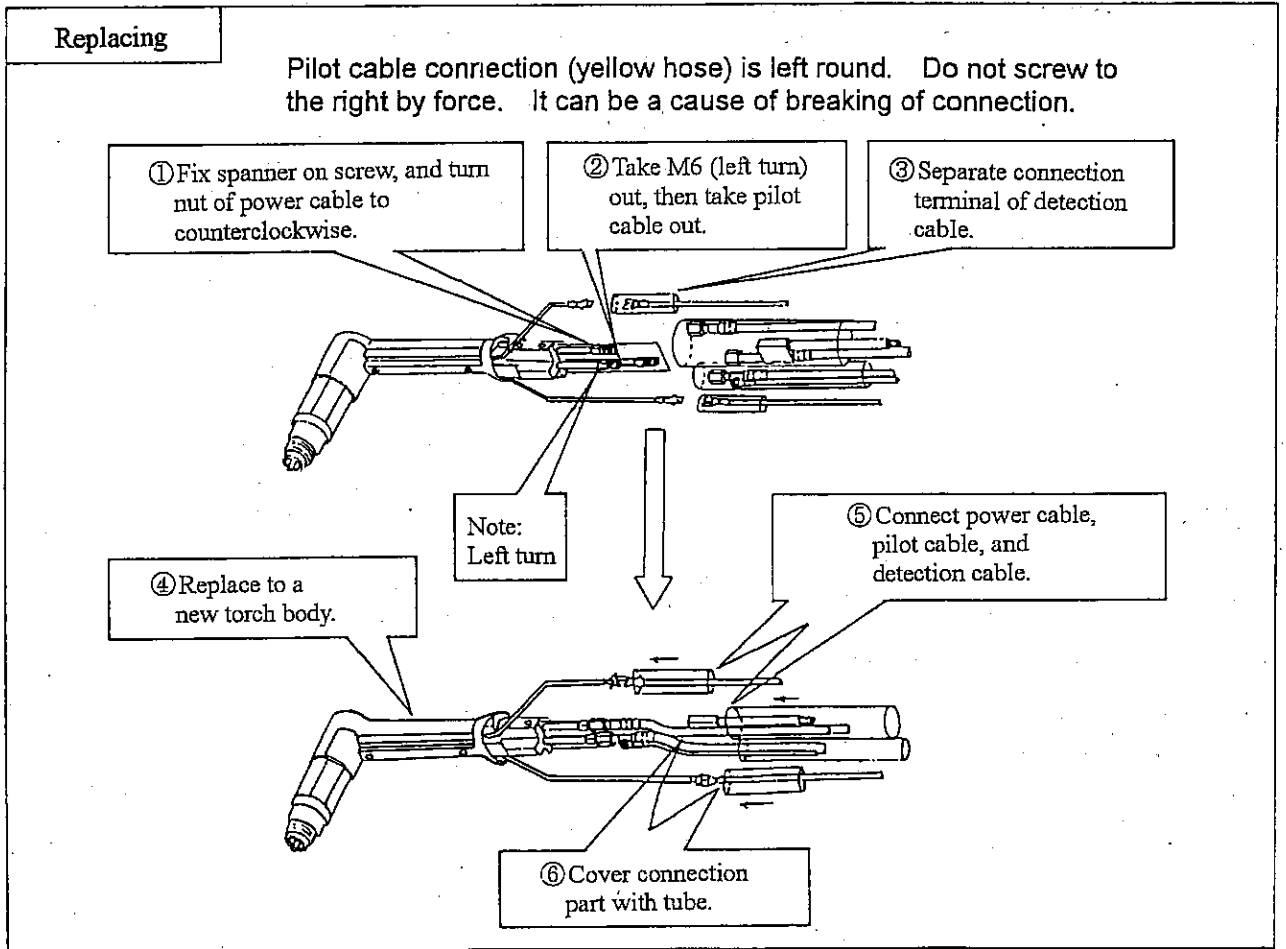
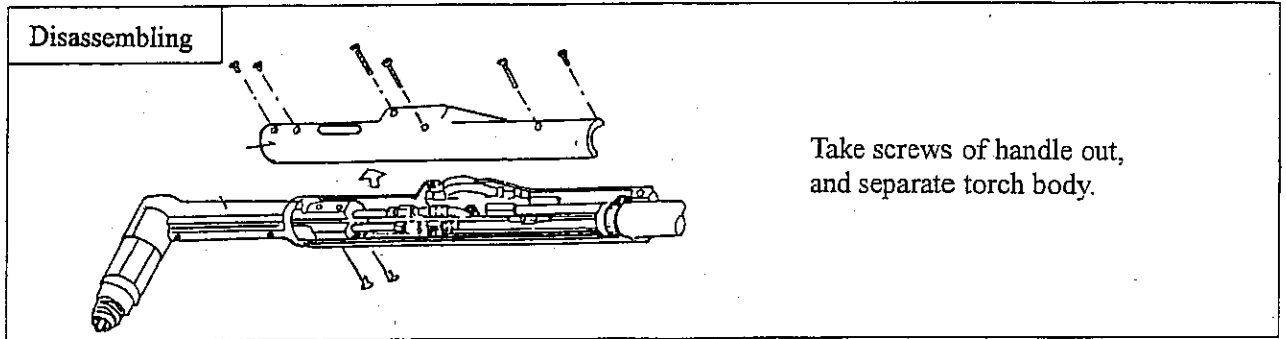
Assembling



Insert handle in torch body. After screw them up, install binding belt. Insert shrinkage tube, and shrink by a hot air dryer, etc.

6.3 Replacement of torch body

- Refer to 6.2 (2) for assembling and disassembling of CTW(M)(L)-1201 short handle and CTPW(M)(L)-1201 straight torch.



7. PARTS LIST

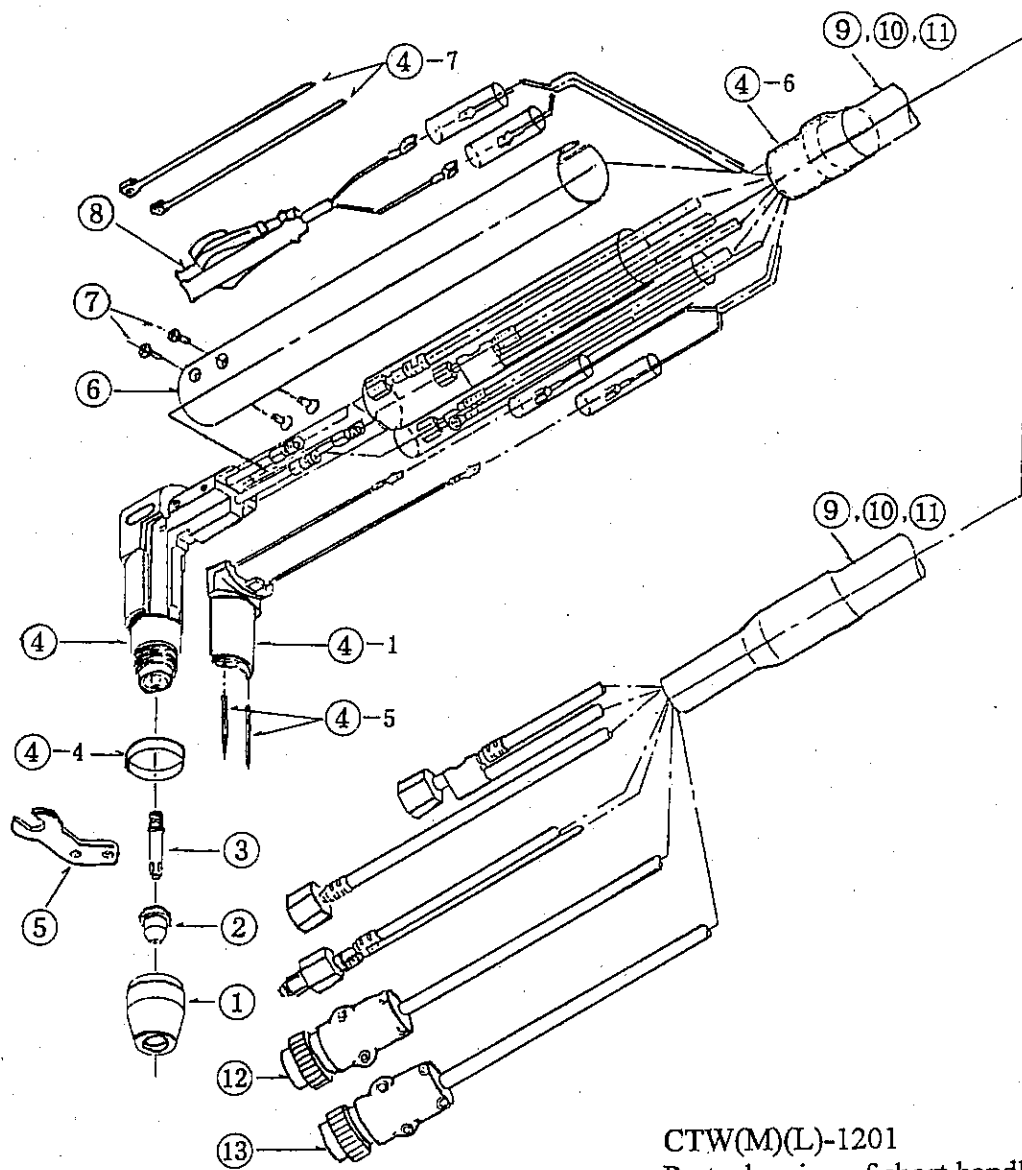
(1) Standard parts

No.	Parts No.			Description	Q'ty	Spare	Remarks
	Short handle	Long handle	Straight handle				
1		H839G02		Shield cup	1	1	
2		H839G03		Tip	1	4	
3		H839M00		Electrode	1	4	
4	H852G00	H839B00	H840B00	Torch body	1		Include 4-1~4-9
4-1	H813H00	—	—	Detection pin assembly	(1)		Include 4-4~4-9
4-2	—	H758R00	H760F00	Detection pin assembly (1)	(1)		Include 4-5
4-3	—	H758S00	H760G00	Detection pin assembly (2)	(1)		Include 4-5
4-4		H758B03		Protection cover	(1)		
4-5		H758R03		Detection pin (contact plug)	(2)		
4-6	4739-200	—	—	Shrinkage tube	(1)		
4-7	4739-189	—	—	Binding belt (Black)	(2)		
4-8	—	H758B01	—	Body cover	(1)		
4-9	—	4739-172	—	M3 × 5 plastic screw	(2)		Black
5		H758H01		Wrench		1	
6	H813F01	H839N00	H840N00	Handle	1		For 10m Include 6-1~6-4
		H841N00	H842N00				For 20m Include 6-1~6-4
		H843N00	H844N00				For 30m Include 6-1~6-4
6-1	—	4739-176	—	M4 black chromate hexagon nut	(4)		
6-2	—	4739-174	—	M4 × 25 black chromate screw	(3)		
6-3	—	4739-175	—	M4 × 10 black chromate screw	(1)		
6-4	4739-173		—	M4 × 6 black chromate screw	(4)		
7	K2530A00	K2432A00	K2433A00	Torch switch assembly	1	(1)	
8	H839F00			Hose cable assembly	1		For 10m Include 9,10
	H841F00			Hose cable assembly	1		For 20m Include 9,10
	H843F00			Hose cable assembly	1		For 30m Include 9,10
9	4730-001			Plug (2P)	(1)		
10	4730-052			Plug (4P)	(1)		W-W00294
	—	H775G00	—	Torch guide	—	1	

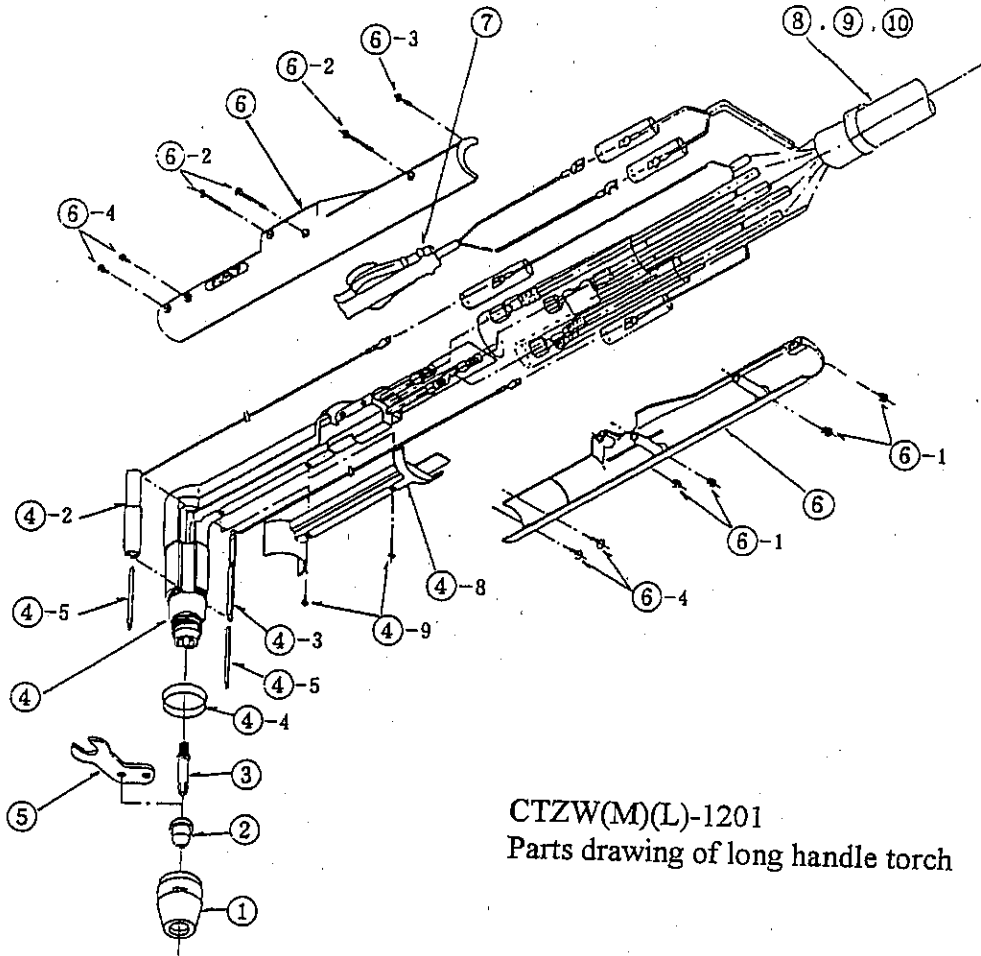
No. H839
P. 20 / 23

(2) Optional accessory

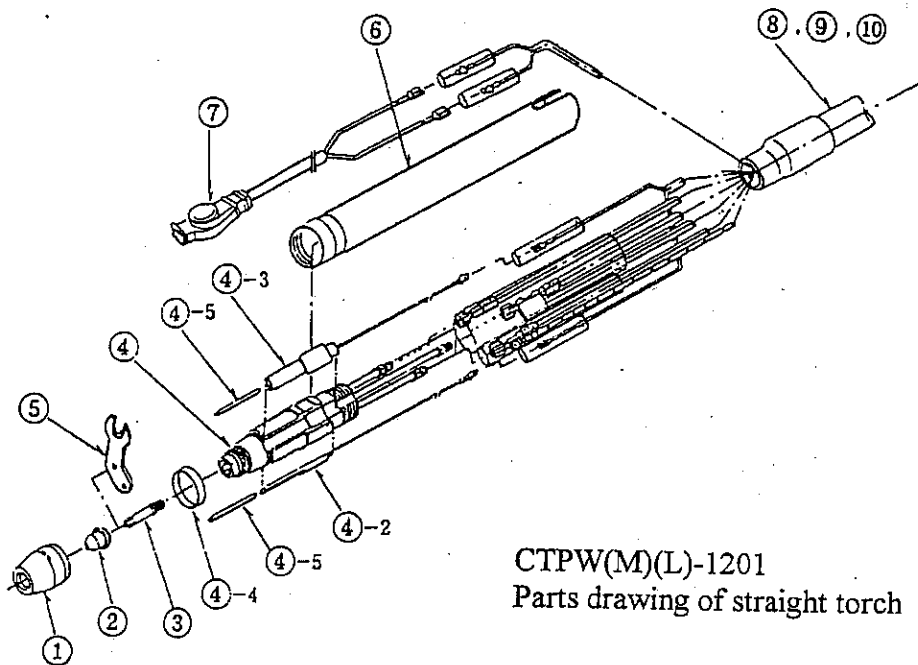
No.	Parts No.	Description	Q'ty	Remarks
	H839K01	Tip (80A)	(1)	Tip for cutting less than 12mm. (Current must be less than 80A.)
	H839K02	Tip (50A)	(1)	Tip for cutting less than 4.5mm. (Current must be less than 50A.)
	H839K03	Tip (30A)	(1)	Tip for cutting less than 2.3mm. (Current must be less than 30A.)



CTW(M)(L)-1201
Parts drawing of short handle torch



CTZW(M)(L)-1201
Parts drawing of long handle torch



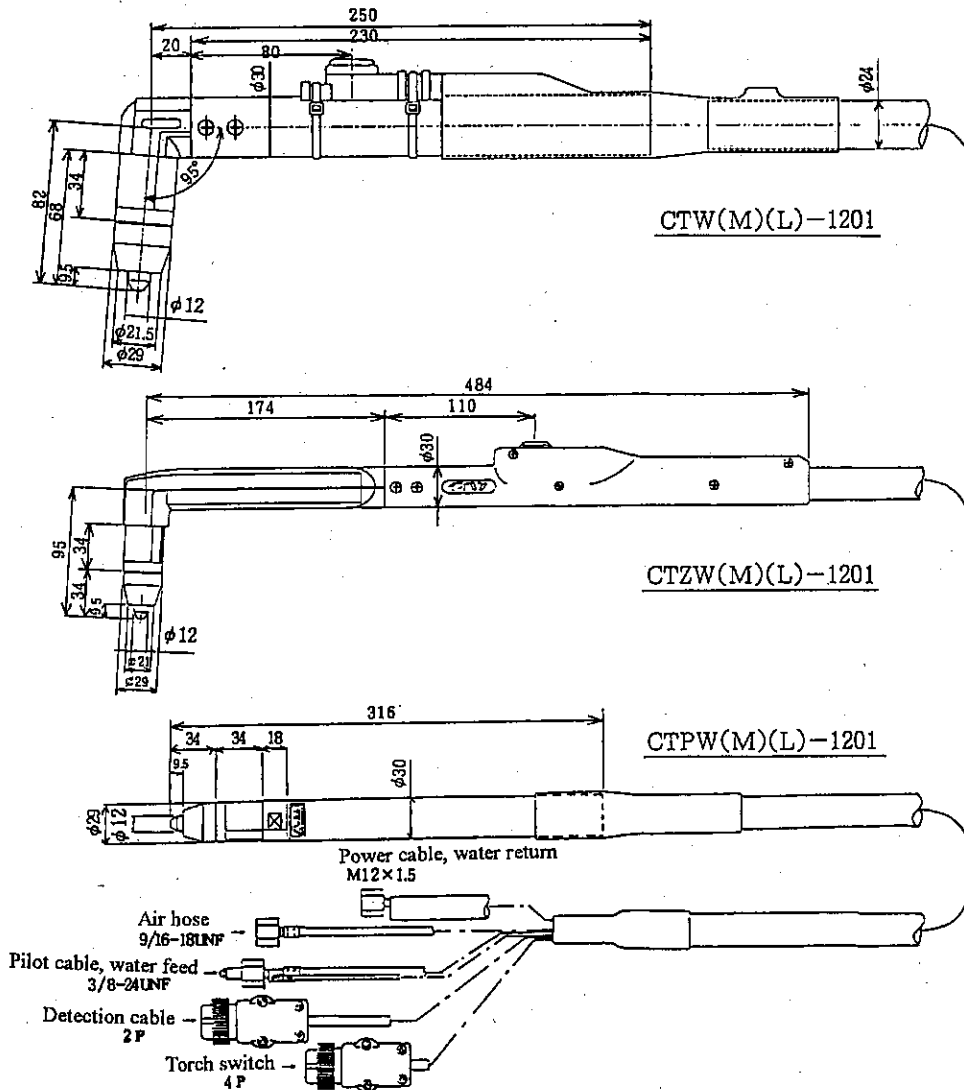
CTPW(M)(L)-1201
Parts drawing of straight torch

8. SPECIFICATION

8.1 Specification

Torch	Model	CTW -1201 (10m)	CTZW -1201 (10m)	CTPW -1201 (10m)	
		CTWM-1201 (20m)	CTZWM-1201 (20m)	CTPWM-1201 (20m)	
		CTWL -1201 (30m)	CTZWL -1201 (30m)	CTPWL -1201 (30m)	
Rated current	A	120			
Rated duty cycle	%	100			
Cooling method		Forced cooling (water-cooled)			
Use of gas		Air			
Mass	Without cable	g	200	350	250
	With cable	kg	5 (Only for 10m model torches)		

8.2 External view





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