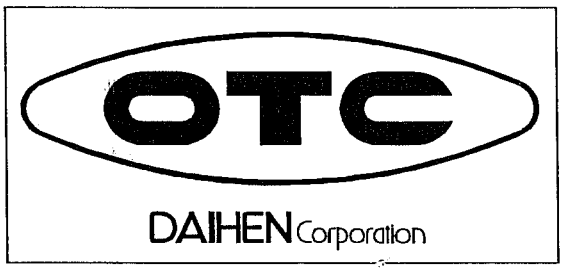
MANUAL NO:U4447



OWNER'S MANUAL

FOR

WIRE FEEDER

MODEL : CMH-231 U4447

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

DAIHEN Corporation WELDING PRODUCTS DIVISION

April 2, 1999

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.

CONTENTS

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.

⚠ CAUTION	**CAUTION** refers to minor personal injury or possible equipment damage.

2. ARC WELDING SAFETY PRECAUTIONS

⚠ WARNING
ARC WELDING can be hazardous.
◆ PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. Be sure to: ・Keep children away. ・Keep pacemaker wearers away until consulting your 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.
ARC WELDING 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. In semiautomatic or automatic wire welding, wire reel, drive assembly, and all metal parts touching the welding wire 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. Ground the base metal to a good electrical earth ground.
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 cables around your body.
11. Turn off POWER switch when not in use.

ARC RAYS can burn eyes and skin: FLYING SPARKS AND HOT METAL can cause injury. NOISE can damage hearing.

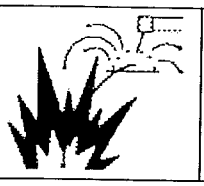
Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

Noise from some arc welding 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 welding or watching a welder 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.

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

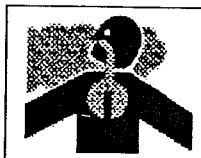
6. Wear approved face shield or safety goggles. Side shield recommended.
7. Wear proper body protection to protect skin



WELDING can cause fire and explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, spatter, hot base metal, and hot equipment can cause fire and explosion. Accidental contact of electrode or welding wire to metal object can cause sparks, overheating, or fire.

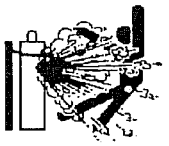
1. Protect yourself and others from flying sparks and hot metals.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35ft. (10m) of the welding arc. If this is not possible, tightly, cover them with approved covers.
4. Be alert that welding sparks and hot metals from welding can easily pass through cracks and openings into adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can ignite a hidden fire.
7. Do not weld on closed containers such as tanks or drums.
8. Connect base metal side cable as close to the welding area as possible to prevent the welding current from traveling along unknown paths and causing electric shock and fire hazards.
9. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
10. Do not use the welding power source for other use than arc welding.
11. Wear oil-free protective garments such as leather gloves, a heavy shirt, cuffless trousers, boots, and a cap.
12. A loose cable connection can cause sparks and excessive heating.
13. Tighten all cable connections.



FUMES AND GASES can be hazardous to your health.

Arc welding produce 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 welding 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, consumables, coatings, and cleaners.
5. Do not weld or 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.
6. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.



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 welding 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 welding or other electrical circuit.
5. Never touch cylinder with welding 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.

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 or wire feeder's feed roll, 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 this equipment to keep others away from it.
3. Do not put hands, fingers, hair or clothes near the rotating fans or wire feed roll.

ARC WELDING WORKSHOP is potentially hazardous.

FALLING DOWN and MOVING machine can cause serious injury.

- Use two eyebolts —not one— to lift the welding power source.
- Put the welding power source and wire feeder solidly on a flat surface.
- Do not pull the welding power source across a 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.

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.

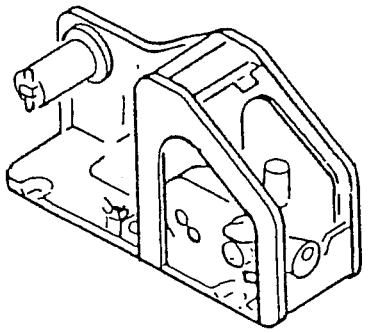
Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute.

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

3. CHECKING OF PACKAGE CONTENTS

・Check of quantity at open the package.

□Wire feeder

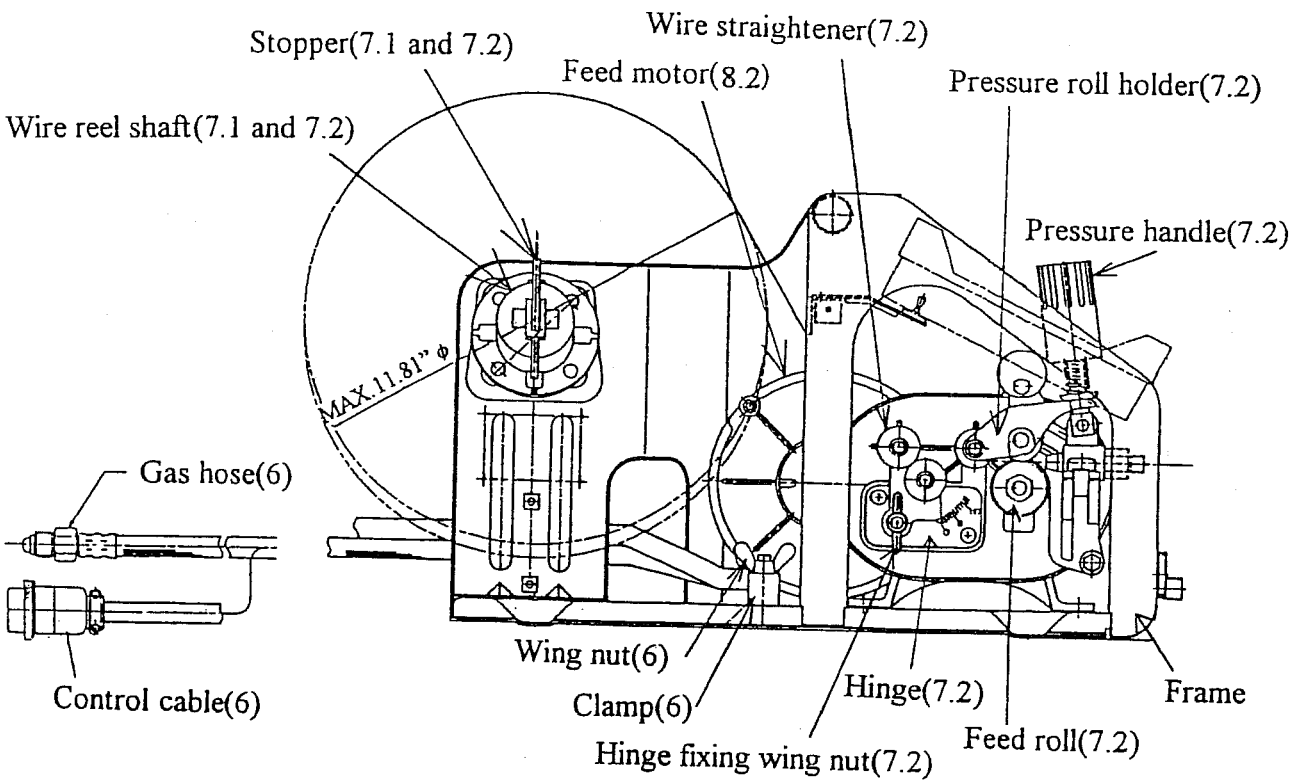


・Standard accessories

No.	Description	Specification	Q'ty
①	Welding cable(torch side)	AWG 0×5.3 ft	1
②	Welding cable(base metal side)	AWG 0×5.9 ft	1
③	Plug socket	U3396E00	1

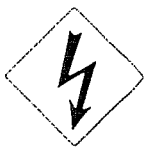
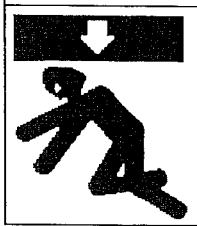
4. EACH DESIGNATION AND OPERATION

・( ) is indicated to remarks items.

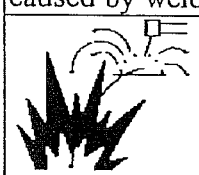
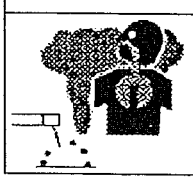


5. TRANSPORTATION AND INSTALLATION

5.1 Transportation

⚠ WARNING	
Observe the following to prevent damage while transporting the welding machine.	
	● When moving the wire feeder, be sure to turn OFF input power supply by the line disconnection switch.
	● When carrying the wire feeder to height, remove the wire from wire feeder.

5.2 Installation

⚠ CAUTION	
When installing the welding machine, observe the following to prevent possibility of fires caused by welding and physical damage caused by fumes and gases.	
	●Do not install the welding machine near combustible materials and flammable gas. ●Remove combustible materials to prevent the possibilities of being struck by the spatter. If can not be removed, cover them with a noncombustible cover.
	●To prevent gas-poisoning or choking, use exhaust equipment or protective respirators that are prescribed by safety regulations. ●To welding in a narrow space, ventilate the space sufficiently or wear protective respirators, and work only under proper supervision.

INSTALLATION PLACE

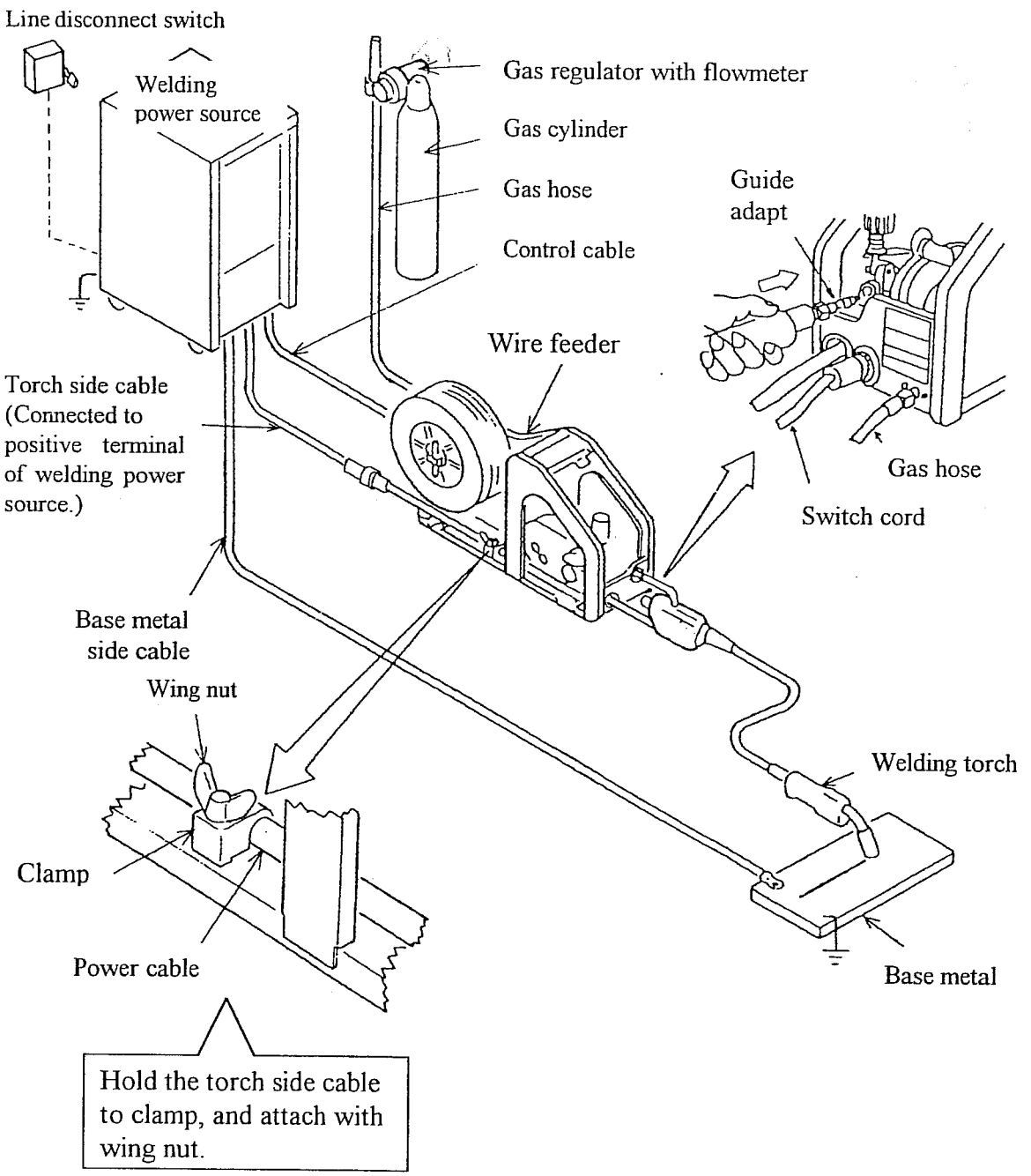
● Observe the following when selecting an installation place.

- Select a place with low humidity, and little dust or dirt. Do not expose welding machine to direct sun light, wind and rain.
- Ambient temperature of the installation place should be from −10 to 40℃.
- Use a wind shield to protect arc from wind, otherwise pin holing may be caused.

6. CONNECTION

⚠ WARNING
●Be sure to turn OFF the line disconnect switch before connection.

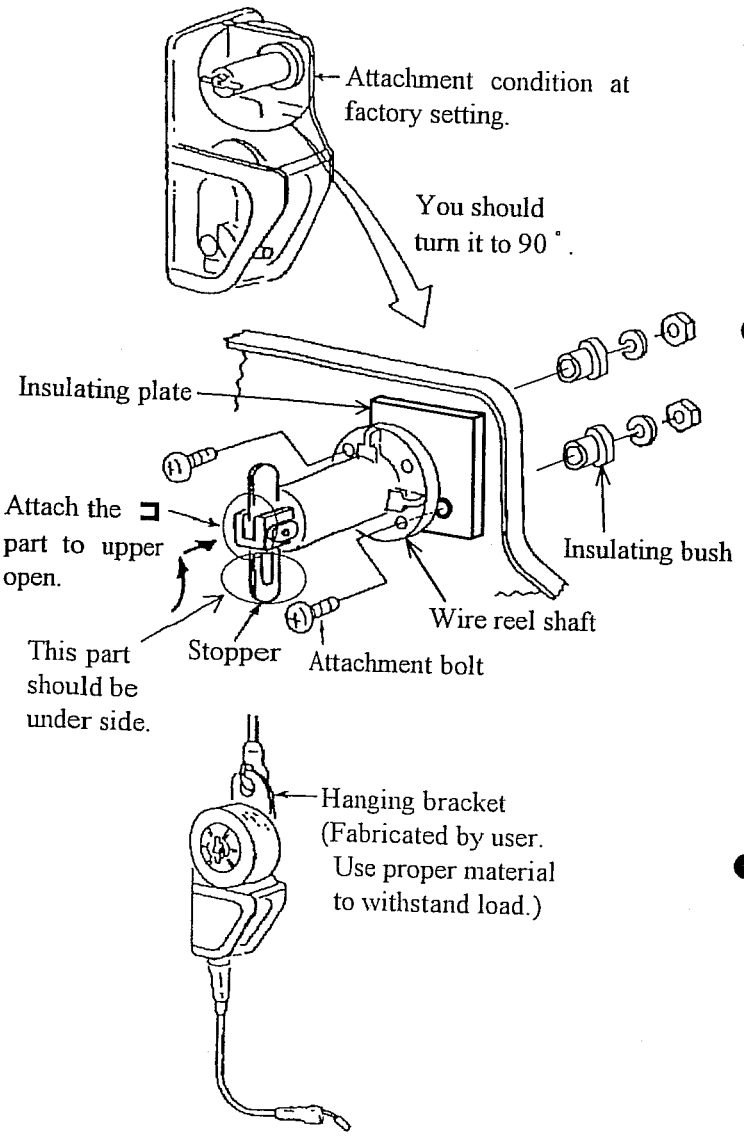
⚠ CAUTION
●Securely tighten connection parts of cables.



7. WELDING PREPARATION

7.1 Replace the wire reel shaft if feeder will be hang
(If feeder will no longer be hang, this operation is not necessary)

⚠ CAUTION
●To prevent the wire from dropping, be sure to observe the following when welding with the wire feeder hanging.

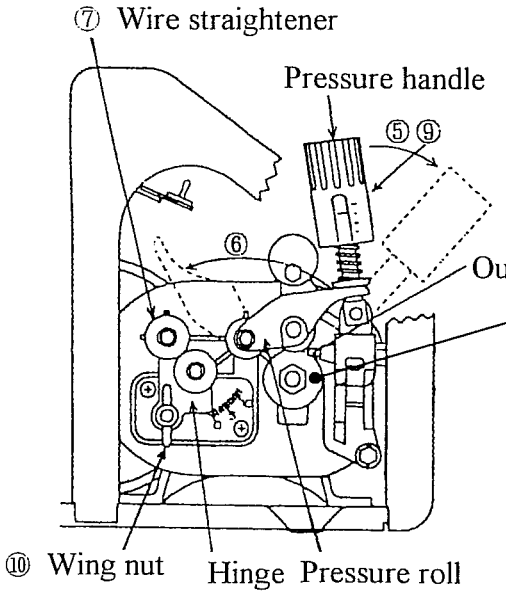


●Set the ⊐ part side of the wire reel shaft to upper open, and tighten bolts securely.

Commended tightening torque:
12N·m {122kgf·cm}

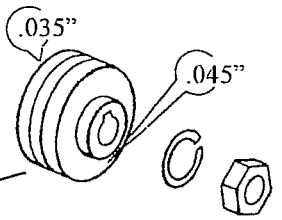
●Securely set the stopper as standing vertically to prevent the wire dropping after the wire is attached.

7.2 Fitting of wire



Check of wire size of the feed roll and pressure roll

① Check that fitting of the feed roll and pressure roll match with the welding wire size.

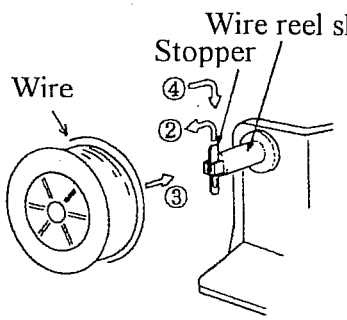


Attach the feed roll to the wire feeder, with proper groove facing out.

Fitting of wire

② Raise the stopper and bring it down.
③ Fit the wire to the wire reel shaft.
④ Return the stopper to original position.

⚠ CAUTION
• Be sure to return the stopper vertically as it was to prevent dropping of the wire.



⑤ Bring down the pressure handle.
⑥ Raise the pressure roll holder.
⑦ Pull out the wire to let it through the wire straightener, and insert it into the outlet guide.
⑧ Return the pressure roll holder and the pressure handle, in this holder.

Adjusting of pressure and straightener

⑨ Adjust the pressure handle to set pressure force matching the wire size.
⑩ Loosen the wing nut, adjust the straight hinge and fix it at an appropriate position.

Wire size	Wire pressure adjusting		Wire straightener adjusting
	Pressure handle scale		Straight hinge adjusting scale
	Solid wire	Flux cored wire	
1/16	5～6	4～5	0～2
.045	5～6	3～4	1～3
.035	3～4	—	2～4
.030	2～3	—	3～5

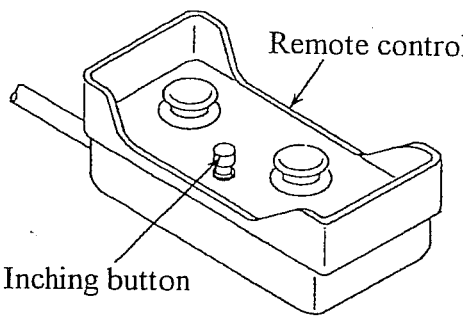
7.3 Wire feeding by inching operation

⚠ WARNING

●Do not look into the tip hole to check on feeding of the wire while inching.

⚠ CAUTION

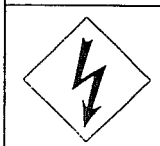
●Do not put your hands, fingers, hair or clothes near the rotating parts of the feed roll, etc. while inching. Biting may occur, causing injuries.



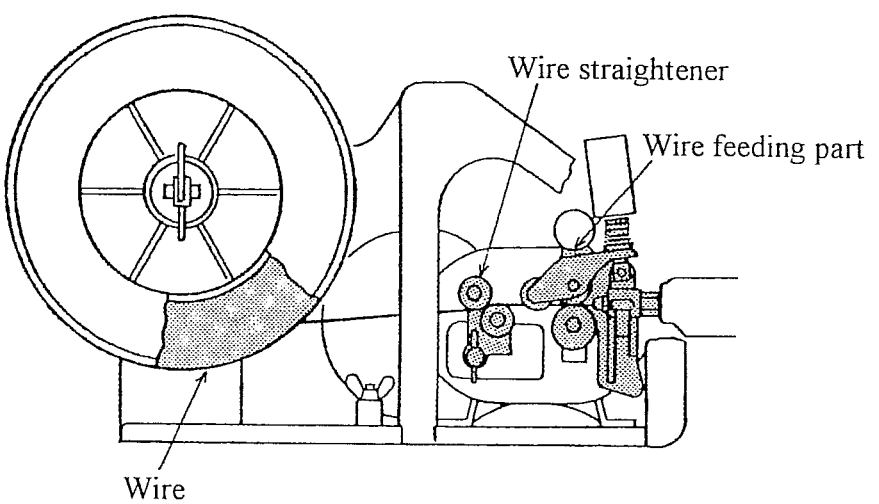
Feed the wire while stretching the welding torch straight and pressing the inching button, and release from the button when the wire is projected from the welding torch head by about 0.4"(10mm).

⚠ WARNING

※Touching the electrified parts may cause fatal electric shook and burn.



●Never touch the electrically hot parts of wire and wire feeder.
▒▒ part is indicated to electrically hot part at welding.
● Cover the wire reel cover during welding.

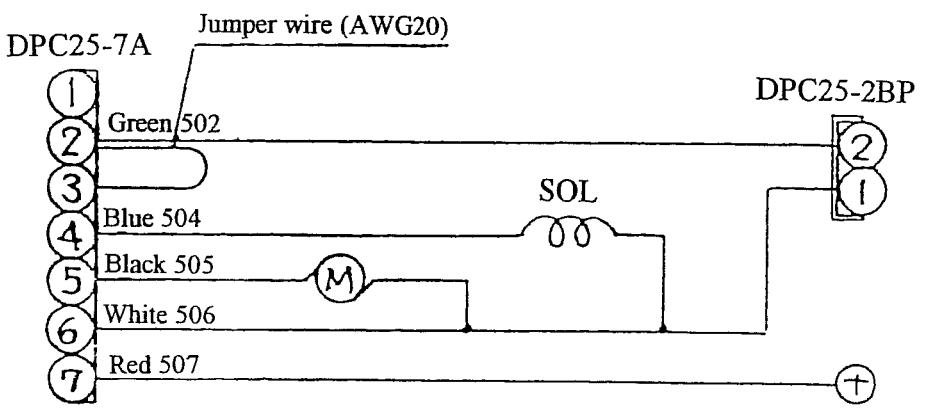


8. MAINTENANCE AND REPAIR OF TROUBLES

8.1 Inspection in working

Parts	Inspection point	Trouble	Measures
Pressure scale	●Is pressure force matching with the wire size?	Pressure force is too week or too strong.	Match pressure force with the value of wire pressure adjustment recommended in item 7.2.
Outlet guide	●Are not full of chips and dusts left around the inlet of the outlet guide and the feed roll?	Chips and dusts are left.	Remove chips and dusts.
Feed roll	●Are the wire size and the marking of the feed roll matching?	Wire size and the marking do not match.	Change to the feed roll matching with the wire size.
	●Wire touching surface condition.	The surface is worn.	Replace to new one.
Pressure roll	●Does the roll rotate smoothly.	The roll does not rotate smoothly.	Replace to new one
Wire straightener	●Are not full of chips and dusts left?	Chips and dusts are left.	Remove chips and dusts.
	●Does the roll rotate smoothly.	The roll does not smoothly.	Remove chips and dusts, or replace to new one.
Cable	●Is not the cable coating broken, or is not the cable liable to be disconnected?	The coating is broken or the cable is likely to be disconnected.	Replace to new one.
	●Is not the connecting part loosened?	The connection part is loosened.	Firmly tighten.
Gas hose	●Is not crazing formed?	Crazing is formed.	Replace to new one.

Schematic diagram

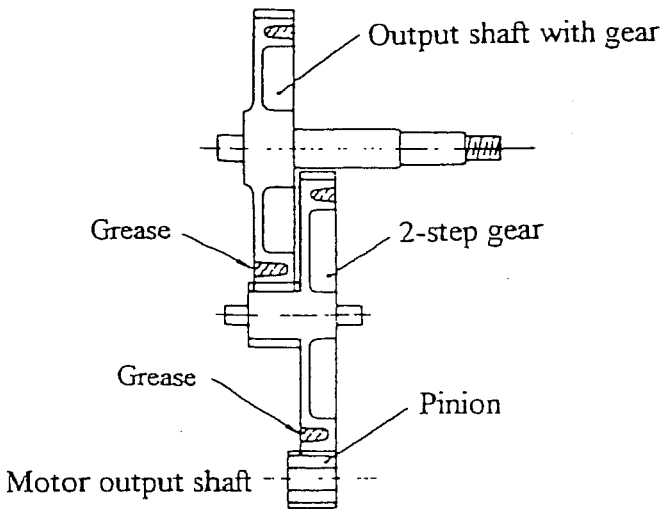


PARTS LIST

Symbol	Description	Specification
M	Print motor	PMEE-12CBB 75W
SOL	Gas solenoid valve	W-31156

8.2 Yearly inspection

(1) Grease replacement of reduction gear



After removing aged grease, apply new to the gear tooth surface and side faces as shown in figure.

Use the grease No.1 of each lithium type.

⚠ CAUTION
Apply grease on the side faces of gear as shown in this figure. Never fill the gear box with grease, otherwise motor will be burnt.

(2) Replacement of feed motor

⚠ CAUTION
• Never disassemble the feed motor. Trouble may occur. • Never replace and check of brushing friction.

Usually service life of brush is about 4,000 hours (about 2 years, if used six hours a day). Replace the feed motor periodically.

9. PARTS LIST

When calling to order parts, have the following Descriptions and Part numbers handy.
For optional accessories, refer to 9.3.

9.1 Wire feeding reduction gear unit (Refer to Fig. 2)

Item	Part No.	Description	Q'ty	Remarks
1	K1123B01	Gear case	1	
2	4802-006	Print motor	1	
3		Screw (small)	4	M5-20
4		Spring washer	4	M5
5		Washer	4	M5
6		Nut	2	M5
7	U2057B01	Pinion	1	
8	3361-401	CS type snap ring	3	CSTW-10
		Screw (M6×6)	1	
9	K1821B02	2-step gear	1	
10	K1123B05	Bush	2	
11	K1123B04	Output shaft with gear	1	
12	K1123B06	Insulating spacer	1	
13	3311-001	Radial ball bearing	1	No. 6000ZZ
14	3361-206	Key	1	4×4×8
15	3311-008	Radial ball bearing	1	No. 6001LL
16-1	K1200B04	Torch holder	1	
16-2	K1200B05	Gear case	1	
16-3	K1230B14	Insulating washer	1	
16-4		Hexagon bolt	1	M6-35
16-5		Hexagon bolt	1	M6-40
17	K1123B07	Spacer	1	
18	K1678H05	Feed roll (.035" - .045")	1	
19		Washer	1	M10
20		Spring washer	1	M10
21		Nut	1	M10
22	K1200B02	Bolt fixing plate	1	
23		Screw (small)	2	M5-20
24		Spring washer	2	M5
25	K1123F00	Hinge assembly	1 set	
26	K1123C01	Pressure roll holder	1	
27	K1123C05	Pressure roll shaft	1	
28	3311-003	Radial ball bearing	1	No. 6200LL
29		Washer	2	M10
30	K1123C06	Straight roll (1)	1	with bush
31	K1123C07	Straight roll (2)	2	with bush
32	3361-402	Thrust washer	4	STW-FT-8.0×0.5
33	3361-403	E-type snap ring	4	for ϕ 6
34	3361-503	Cup square neck bolt	1	B type M8-40
35	3361-505	Wing nut	1	M8

Item	Part No.	Description	Q'ty	Remarks
36	3361-208	Spring roll pin	1	ϕ 3-20
37	U785C13	Guide adapter	1	
38	K1200B03	Spring plate	1	
39	U785C11	Protection cover	1	
40		Screw(small)	1	M4-8
41		Spring washer	1	M4
42		Nut	1	M4
43		Screw	1	M5-6
44		Spring washer	1	M5
45	K1123D00	Pressure handle assembly	1 set	
46		Hexagon rod bolt	2	M6-25
47		Spring washer	3	M6
48		Nut	1	M6
48-1		Loose fixing nut	1	M6
49	K1200B06	Remote stopper	1	

9.2 Others

Item	Part No.	Description	Q'ty	Remarks
50	U4179B00	Frame body	1	
51	4813-001	Gas solenoid valve	1	W-31156, DC25V
52	K476B00	Spindle type wire reel	1	
52-1	U4450C01	Insulating plate	1	
52-2	K355D03	Insulating bush	2	
53	U3557C01	Wire reel cover	1	
54	U1997C01	Cable clamp	1	
55	U4447D00	Gas hose assembly	1	
56	U4377E00	Control cable assembly	1	
56-1	4730-619	Plug socket	(1)	7P
57	4730-002	Receptacle	1	2P

9.3 Optional accessories

(1) Extension cables

· Torch side cable

Applicable current (Rated current)	350A	500A
16ft.(5m) length	BKPJ-3805	BKPJ-6005
33ft.(10m) length	BKPJ-3810	BKPJ-6010
49ft.(15m) length	BKPJ-3815	BKPJ-6015
66ft.(20m) length	BKPJ-3820	BKPJ-6020

· Control cables

length	16ft.(5m)	33ft.(10m)	49ft.(15m)	66ft.(20m)
Control cable (7P)	BMCPJ - 0705	BMCPJ - 0710	BMCPJ - 0715	BMCPJ - 0720
Remote control cable (6P)	BMCPJ - 0605	BMCPJ - 0610	BMCPJ - 0615	BMCPJ - 0620

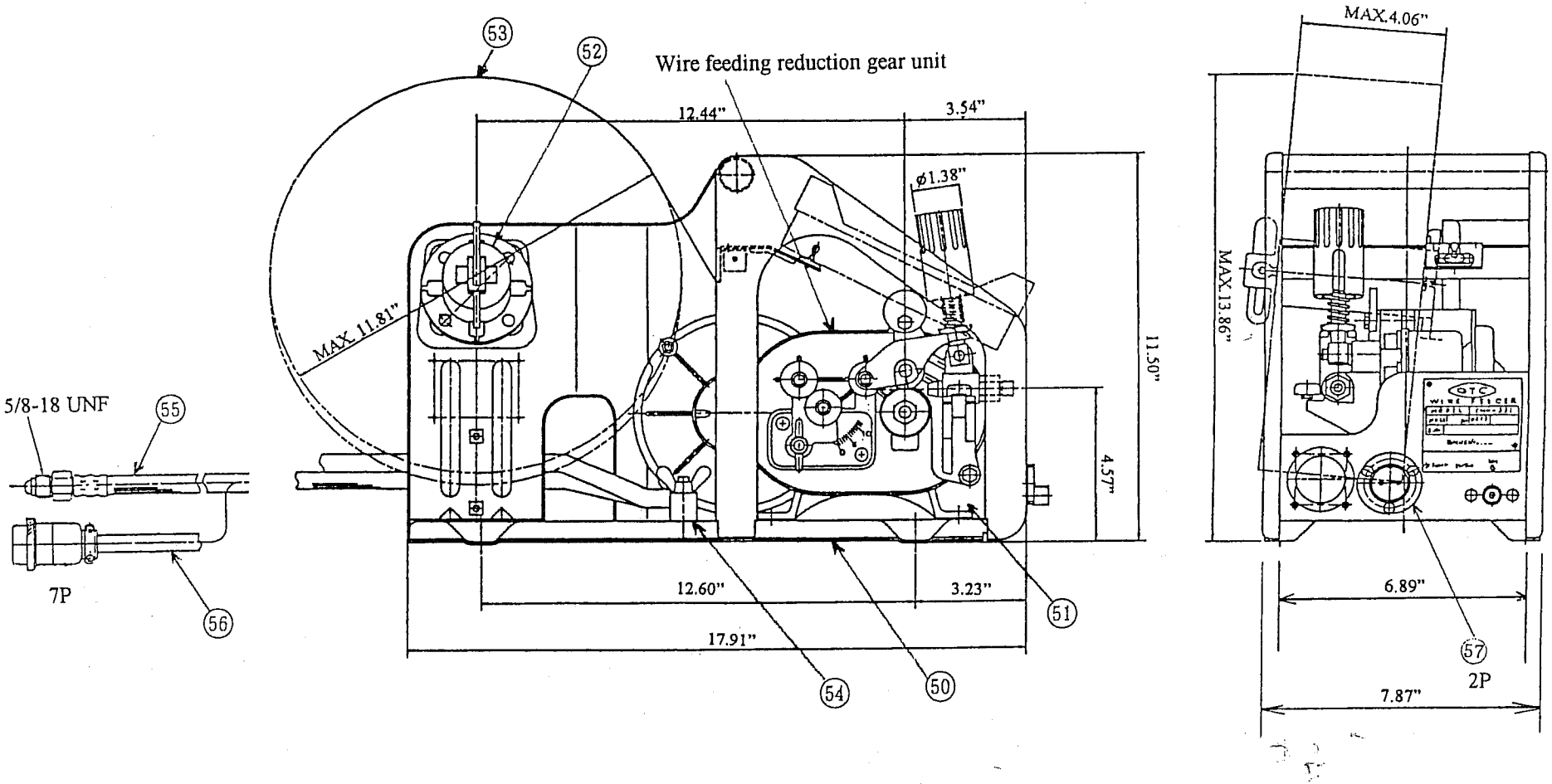


Fig. 1 External view of wire feeder

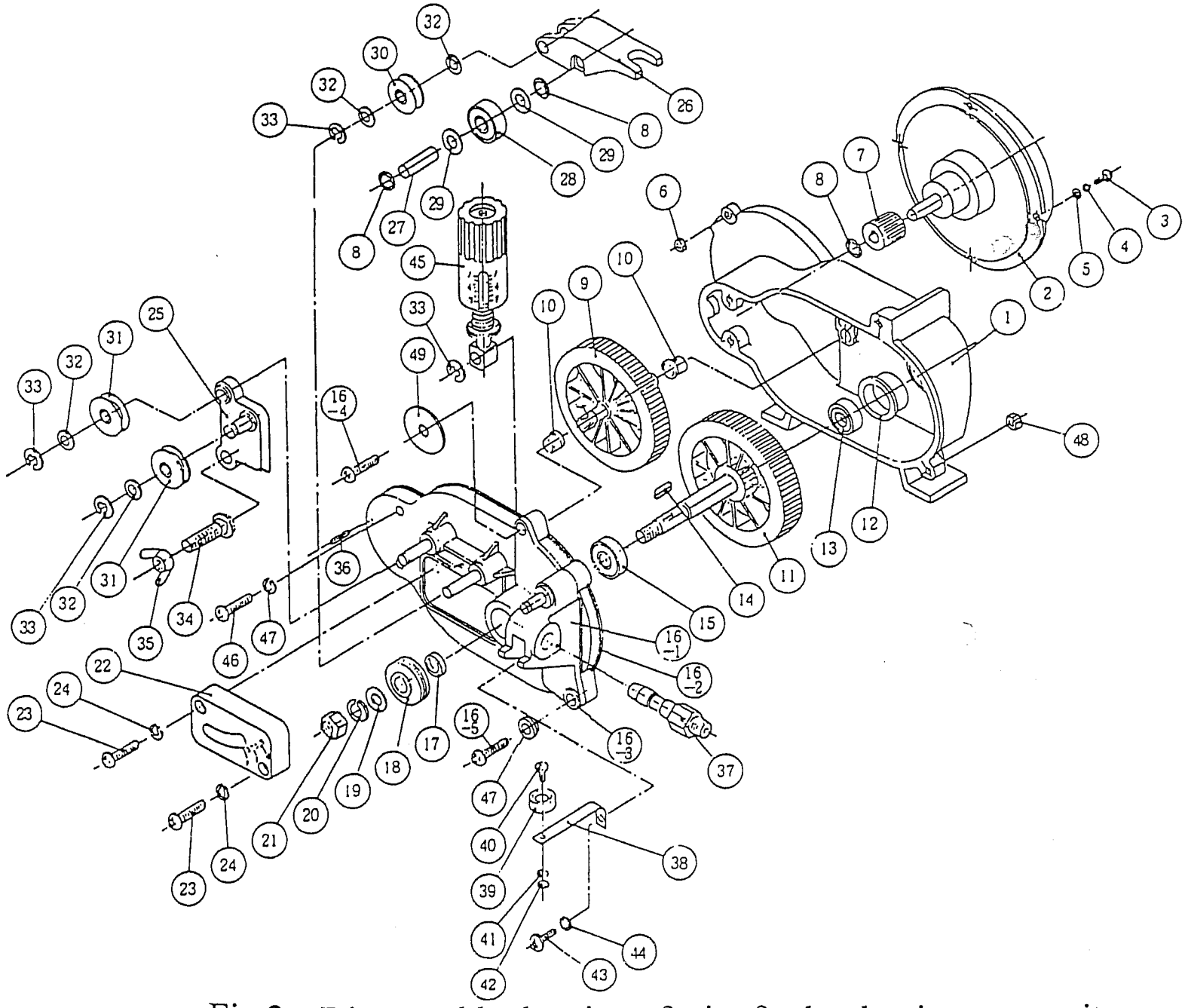


Fig.2 Disassembly drawing of wire feed reduction gear unit

10. SPECIFICATIONS

10.1 Specifications

Model		CMH-231
Applicable wire size		.035", .045"
Applicable wire		Solid wire, cored wire
Wire feeding speed		Max. 59 ft. / min
Applicable wire reel	Shaft dia.	ϕ 2.0"
	Outer dia.	Max. ϕ 11.8"
	Width	4.1"
Applicable wire mass		Max. 55 lb.
Approximate mass		22 lb.

10.2 Combination torches

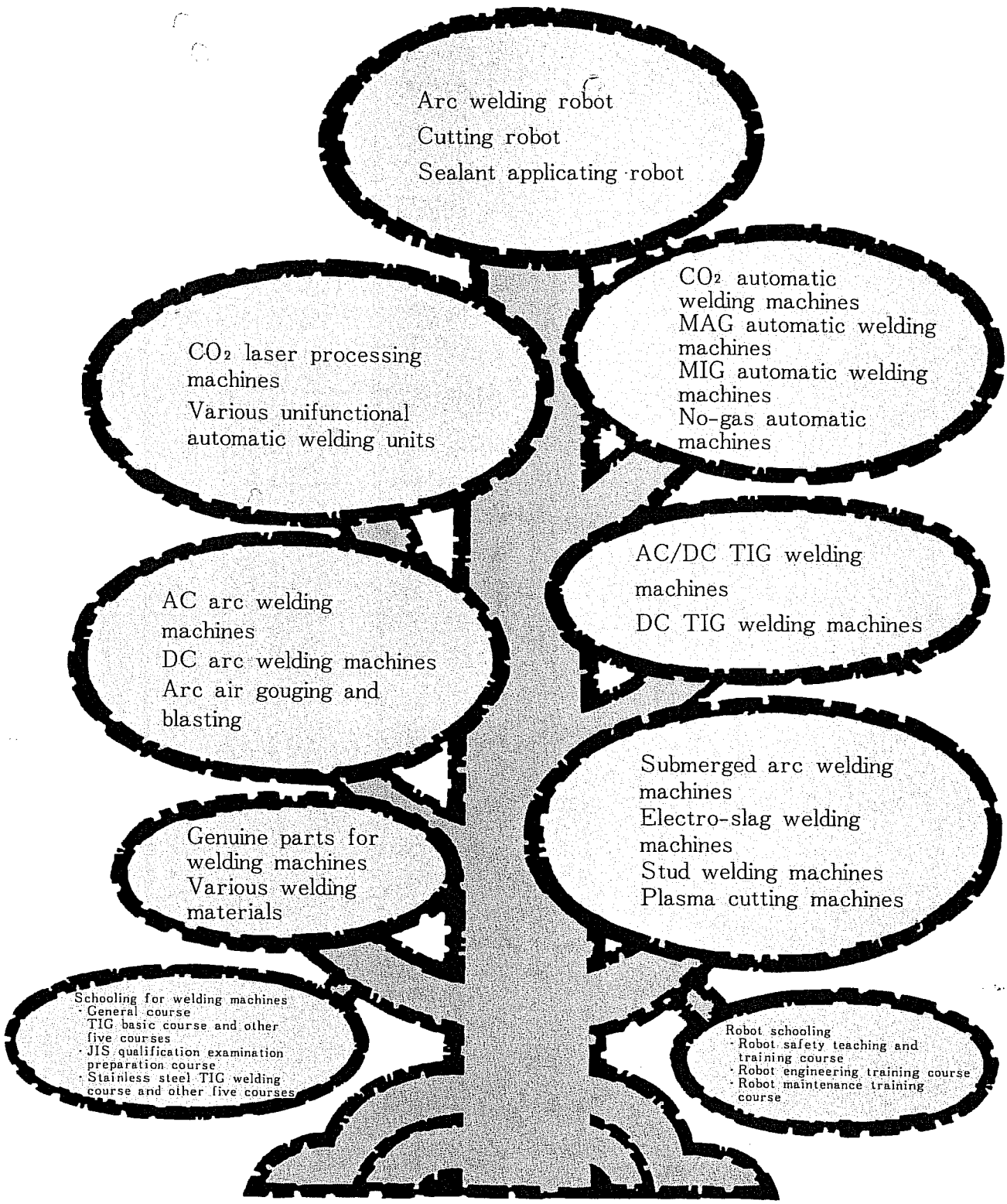
Cable length	10ft.	15 ft.
Torch model	WTC-3503 WTC-3504	WTCMU-3503 WTCMU-4301 WTCMU-5002

10.3 Standard accessories

Description	Part No.	Q'ty	Remarks
Feed roll (.035"-.045")	K1678H05	(1)	Built in body
Welding cable (torch side)	U1997H00	1	AWG 0 ×5.3 ft.
Welding cable (base metal side)	U1997J00	1	AWG 0 ×5.9 ft.
Plug socket	U3396E00	1	

Various kinds of welding machines are available from DAIHEN.

DAIHEN produces and sells every kinds of welding machines.



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