MANUAL NO:U4276

OWNER'S MANUAL

FOR

WIRE FEEDER

MODEL: CM-2301 U4276
CML-2301 U4312

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
January 7, 2005

12-2-033-7

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.
1. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. Be sure to: **・Keep children away.** **・Keep pacemaker wearers away until consulting a doctor.** **2. Read and understand the summarized safety information given below and the original principal information that will be found in the PRINCIPAL SAFETY STANDARDS.** **3. Have only trained and experienced persons perform installation, operation, and maintenance of this equipment.** **4. Use only well maintained equipment. Repair or replace damaged parts at once.**
ARC WELDING is safe when precautions are taken.

2. ARC WELDING SAFETY PRECAUTIONS (continued)

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 arc welding 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 disconnect 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.**

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 can cause flying metal. As welds cool, they can throw off slag.
6. **Wear approved face shield or safety goggles. Side shields recommended.**
7. **Wear proper body protection to protect skin.**

2. ARC WELDING SAFETY PRECAUTIONS (continued)

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.

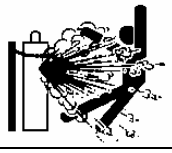
1. **Protect yourself and others from flying sparks and hot metals.**
2. **Do not weld where flying sparks can strike flammable material.**
3. **Remove all flammables within 10m (33ft) of the welding arc. If this is not possible, tightly, cover them with approved covers.**
4. **Be alert that welding 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. **Does not use the welding power source for other 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.**
14. **When there is an electrical connection between a work piece and the frame of wire feeder or the wire reel stand, are may be generated and cause damage by a fire if the wire contacts the frame or the work piece.**

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.**

2. ARC WELDING SAFETY PRECAUTIONS (continued)



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, gas regulator, 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.**
9. **Do not disassemble or repair the gas regulator except for the person authorized by the manufacturer of them.**

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.**

2. ARC WELDING SAFETY PRECAUTIONS (continued)

ARC WELDING work areas are potentially hazardous.

FALLING or MOVING machine can cause serious injury.

1. **When hanging the welding power source by a crane, do not use the carrying handle.**
2. **Put the welding power source and wire feeder solidly on a flat surface.**
3. **Do not pull the welding power source across a floor laid with cables and hoses.**
4. **Do not put wire feeder on the welding power source.**
5. **Do not put the welding power source and wire feeder where they will pit or fall.**

WELDING WIRE can cause puncture wounds.

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

PRINCIPAL SAFETY STANDARDS

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

Arc welding equipment Part 1: Welding power sources IEC 60974-1, from International Electro technical 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.

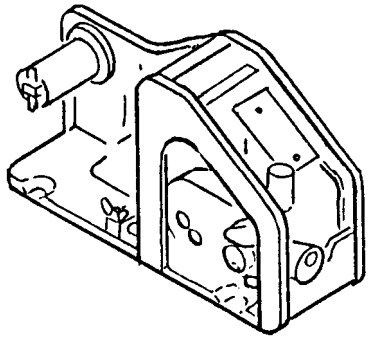
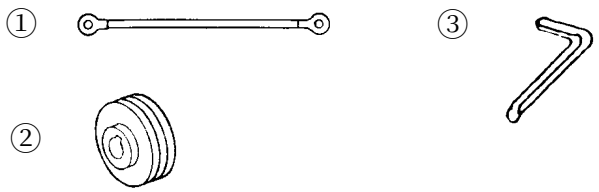
Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association.

NOTE: The codes listed above may be improved or eliminated. Always refer to the updated codes.

3. CHECKING PACKAGE CONTENTS

Make sure you have the items below before you use the wire feeder.

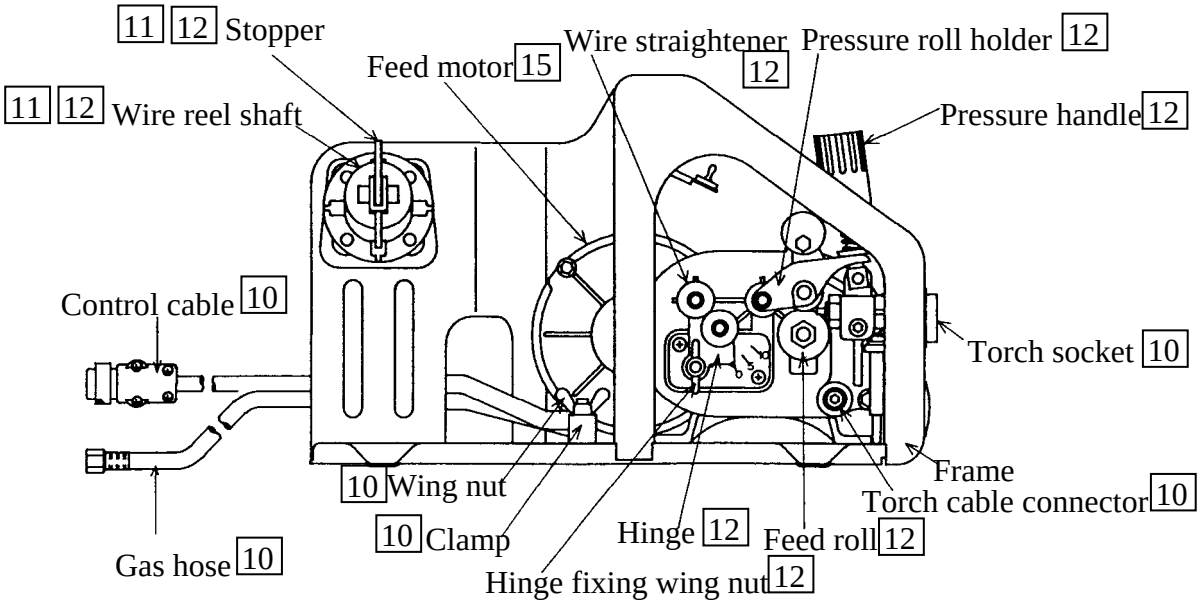
Wire feeder

Wire feeder	Accessory
	

No.	Description	Specification	Quantity	
			CM-2301	CML-2301
①	Base metal cable	60mm^2×1.8m	1	1
②	Feed roll	For φ1.2, 1.6	—	1
③	Alen key	No. 6	1	1

4. EACH DESIGNATION AND OPERATION

The numbers in □ indicate the page numbers.



5. TRANSPORTATION AND INSTALLATION

5.1 Transportation

⚠ WARNING	
Observe the following to avoid damage to the wire feeder or physical injury when carrying the equipment.	
	● Disconnect the wire feeder from the welding power source by turning off the line disconnect switch in the power box to avoid an electric shock before carrying the quipment.
	● Be sure to detach the wire reel from the fire feeder before lifting the equipment to the high places by a crane.

5.2 Installation

⚠ WARNING	
When installing the wire feeder, follow the instructions below to avoid occurrence of fires during welding and physical damage by fume gas.	
	● Do not place the welding machine near combustible materials and flammable gas. ● Remove combustible materials to prevent dross coming into contact with combustible objects. If that not possible, cover them with noncombustible covers.
	● To avoid gas poisoning and danger of suffocation, wear a gas mask or adequately ventilate when the welding machine is used in the place regulated by a local law. ● To prevent disorder or poisoning caused by fume, wear a gas mask or weld at a partial exhaust facility approved by the local regulation. ● Adequately ventilate or wear a gas mask when using the welding machine in a tank, a boiler, a hold of a ship, because heavier gas such as carbon dioxide or argon gases are drifting there. ● When using the welding machine at a narrow space, comply with a trained supervisor's directions. And be sure to wear a gas mask. ● Do not operate the welding machine near the place where degreasing, cleansing, and spraying are performed. Otherwise, poisonous gas may be generated. ● Be sure to wear a gas mask or adequately ventilate when welding a coating steel plate. (Poisonous gas and fume may be generated.)

INSTALLATION PLACE

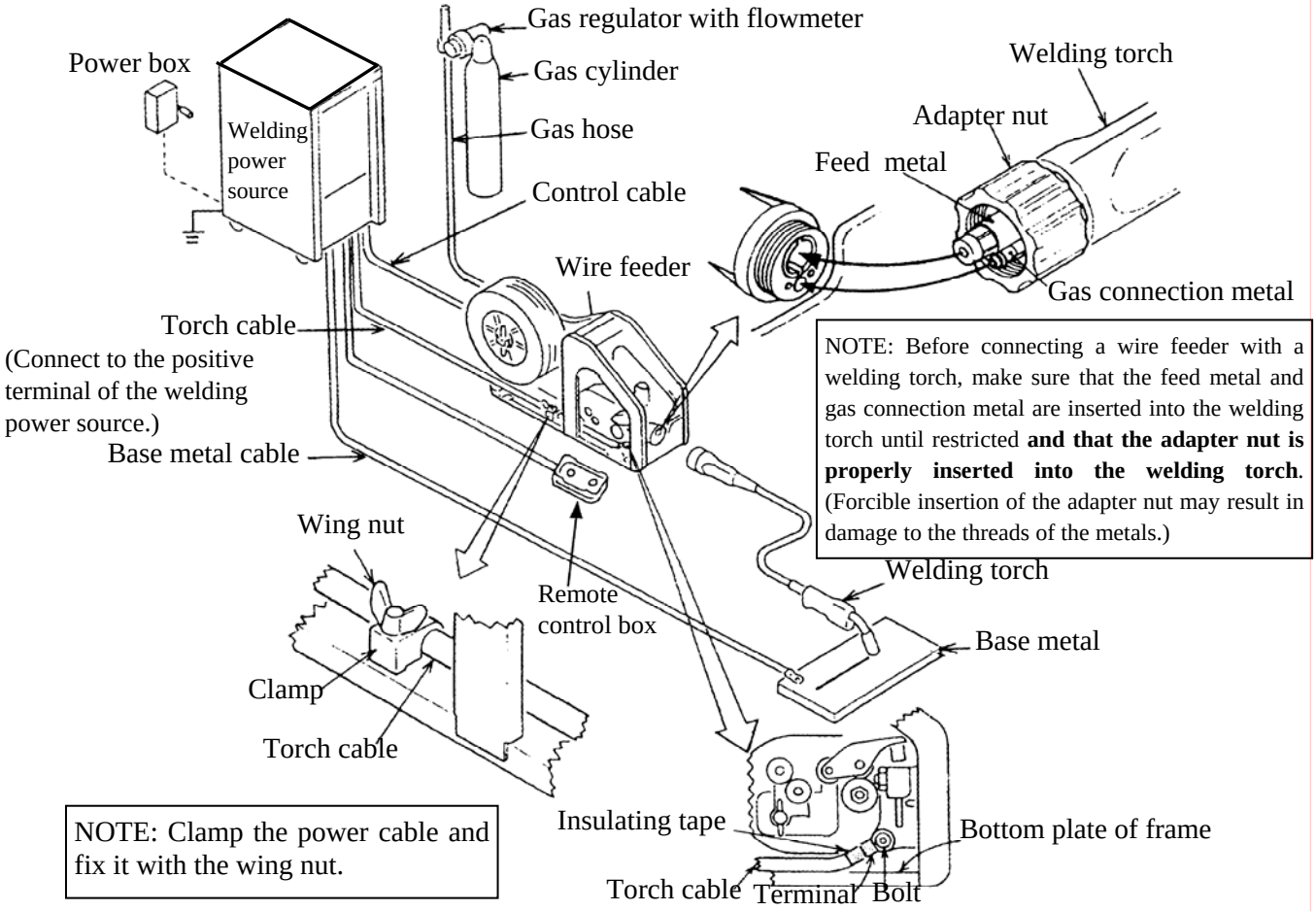
Follow the instructions below when selecting an installation place of the wire feeder.

● Do not install the wire feeder in the place subject to direct sunlight and rain.
● Install the welding machine in the place where the ambient temperature is between -10 ˚C and +40 ˚C.
● Use a wind shield to protect arc from a wind blow when welding on a windy day.

6. CONNECTION

⚠ WARNING
●Disconnect the wire feeder from the welding power source by turning off the line disconnect switch in the power box to avoid an electric shock before make connections.

⚠ CAUTION
●Firmly attach the cables or hoses to the wire feeder.



NOTE: Before connecting a wire feeder with a welding torch, make sure that the feed metal and gas connection metal are inserted into the welding torch until restricted **and that the adapter nut is properly inserted into the welding torch**. (Forcible insertion of the adapter nut may result in damage to the threads of the metals.)

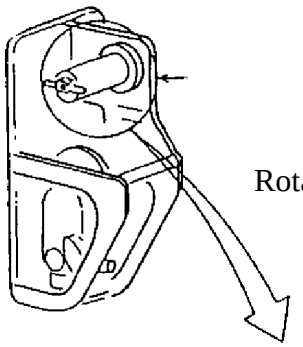
NOTE: Clamp the power cable and fix it with the wing nut.

NOTE:
- ● Firmly screw torch cable connector to avoid contact with the bottom plate of frame.
- ● Do not remove alcan compound that coats the terminal on the wire feeder to prevent the failure of power distribution.
- ● Insulate the terminals by putting aroud them with a insulating tape.

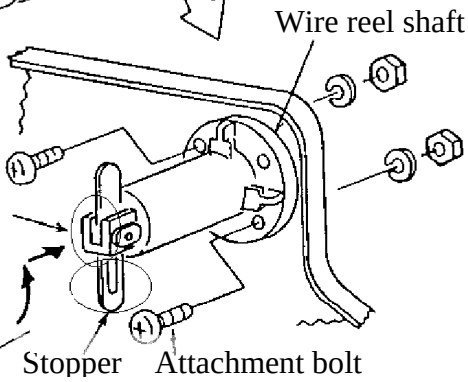
7. WELDING PREPARATION

7.1 Reattaching the wire reel shaft when hanging the wire feeder

⚠ CAUTION
●Observe the following when hanging the wire feeder to prevent the wire reel from dropping.

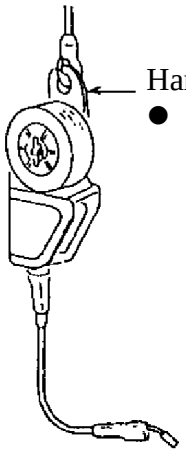


Rotate the wire reel shaft to an angle of 90°.



Attach the wire reel shaft as the figure shown right. Be sure to tighten the bolts firmly.

Recommended tightening torque:
12.4 N·m



Hanging bracket (not supplied)

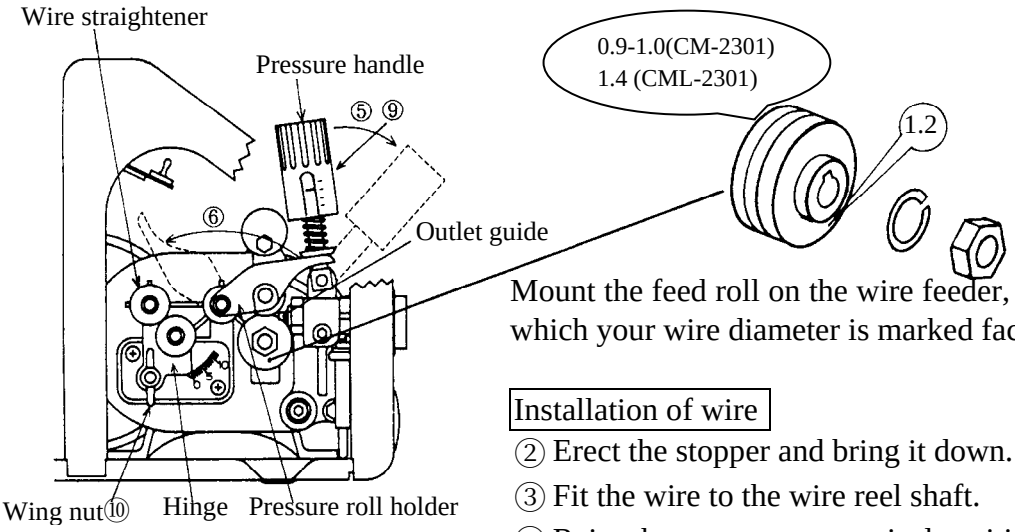
- Use the device with enough load capacity.

- Place the stopper in the vertical position to prevent the wire reel from dropping after the wire reel is attached.

7. WELDING PREPARATION
7.2 Fitting of wire

Confirmation of the wire diameter of the feed roll

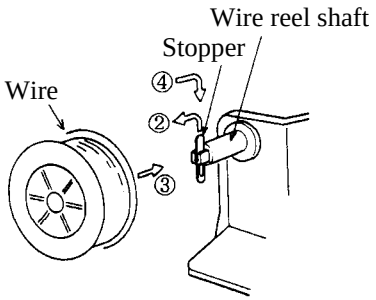
① Check if the proper feed roll that matches the welding wire diameter is mounted.



Mount the feed roll on the wire feeder, with the side on which your wire diameter is marked facing out.

Installation of wire

② Erect the stopper and bring it down.
③ Fit the wire to the wire reel shaft.
④ Raise the stopper to a vertical position again.
⑤ Bring down the pressure handle.
⑥ Lift the pressure roll holder.
⑦ Pull out the wire to let it through the wire straightener, and insert it into the outlet guide. Return the stopper.
⑧ Return the pressure roll holder, then the pressure handle.



⚠ CAUTION
Be sure to return the stopper to a vertical position to prevent the wire from dropping.

Adjustment of pressure force and straightener

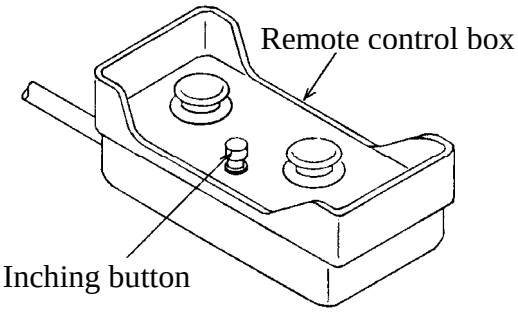
⑨ Turn the pressure handle to set to the correct pressure force for your wire diameter.
⑩ Loosen the wing nut, turn the hinge, and fix the wire in position.

Recommended wire pressure adjustment

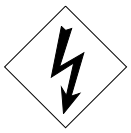
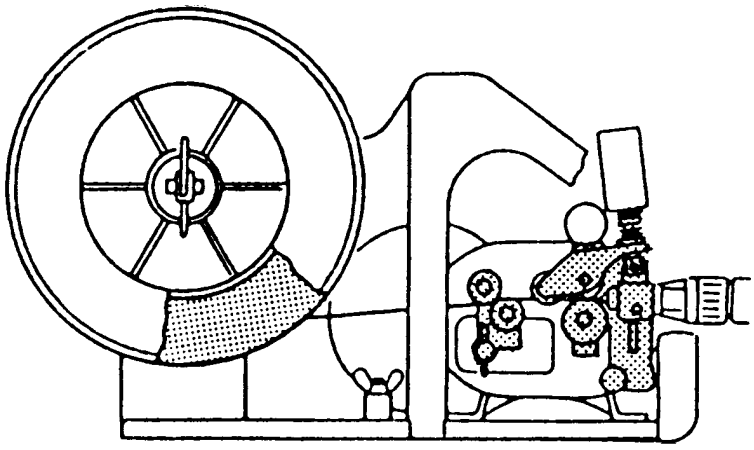
Wire size	Adjustment of wire pressure		Adjustment of wire straighter
	Solid wire	Flux cored wire	
φ1.6	5～6	4～5	0～2
φ1.2, 1.4	5～6	3～4	1～3
φ1.0, 0.9	3～4	—	2～4
φ0.8	2～3	—	3～5

7.3 Inching operation

⚠ WARNING
 ●Do not look into the tip hole to check the amount of wire feeding while inching.
⚠ WARNING
 ●Do not put your hands, fingers, hair, and clothes near the rotating parts of the feed roll, etc. while inching. You may be injured from biting.



Straighten the welding torch, and feed the wire while pressing the inching button. When the wire appears from the end of the torch, release the inching button. Cut the wire at about 10mm length from the end of the torch.

⚠ WARNING
※Touching the charging parts may cause fatal electric shooks and burns.
 ● Never touch the charging parts of wire and wire feeder. The ereas indicated as ▨ in the figure are the charging parts during welding.


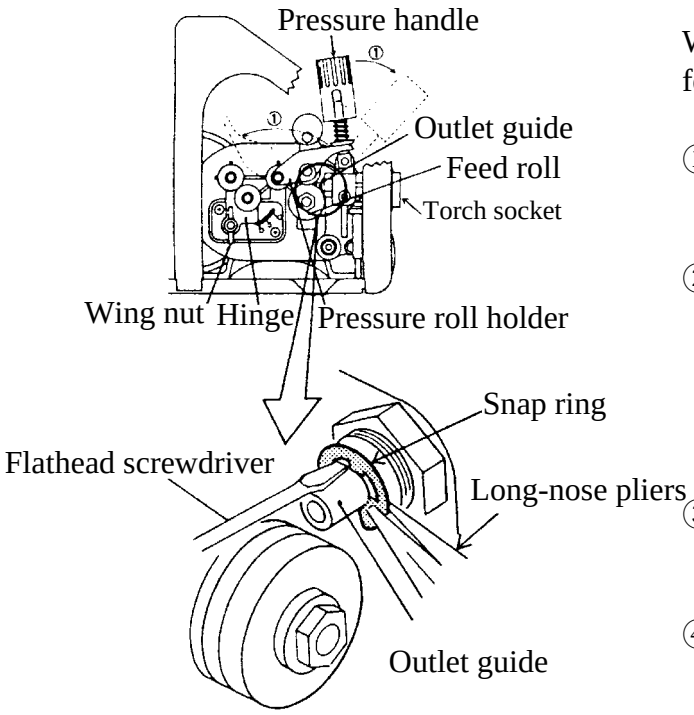
8. MAINTENANCE AND REPAIR OF TROUBLES

8.1 Inspection in working

Parts	Inspection point	Situation	Solution
Pressure scale	Is pressure force properly applied to the wire?	Too weak or too strong	Set the proper pressure force. (See Section 7.2.)
Outlet guide	Are chips and dusts accumulated on the inlet of the outlet guide or around the feed roll?	Yes	Remove chips and dusts.
Feed roll	Does the size of the wire you use match the one marked on the feed roll?	No	Use the proper feed roll for wire size.
	Check for condition of wire touching surface.	Worn	Replace the feed roll with a new.
Pressure roll	Does the pressure roll smoothly rotate?	No	Replace the pressure roll with a new.
Wire straightener	Are chips and dusts accumulated?	Yes	Remove the chips and the dusts.
	Does the wire straightener smoothly rotate?	No	Remove the chips and the dusts or replace the wire straightner with a new.
Cable	Is a cable damaged?	Yes	Replace the wire cable with a new.
	Do the cable connections are loose?	Yes	Tighten the connections.
Gas hose	Is there a break in the gas hose?	Yes	Replace the gas hose with a new.

〈Schematic diagram〉

8.2 Replacement of the outlet guide



When the outlet guide gets worn, replace it following the steps below.

①Bring down the pressure handle first, and then pressure holder.

②Forcibly insert the flathead screwdriver, etc. into the space between the outlet guide and the snap ring, and then remove the snap ring while holding the snap ring with a long-nose pliers.

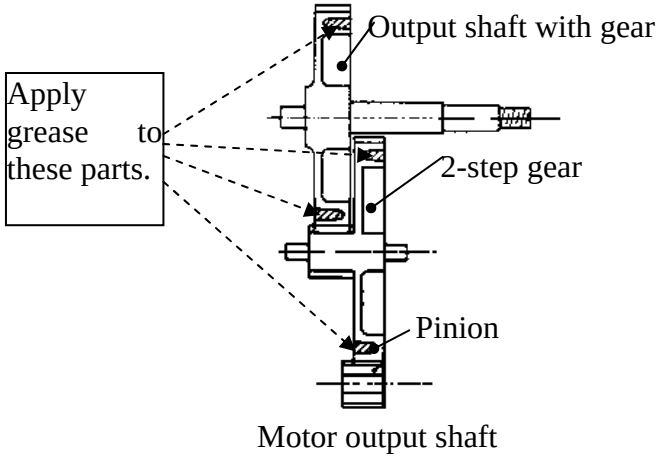
③ Remove the outlet guide by pushing it toward the torch socket.

④Insert a new outlet guide from the direction of the torch socket, and then place the snap ring under the new outlet guide.

⑤Return the pressure roll holder first, then the pressure handle.

8.3 Yearly inspection

(1) Grease replacement of reduction gear



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

Be sure to use Sunlight Grease 1, which is produced by Showa Shell Sekiyu K.K. If Sunlight Grease 1 is not available, use lithium type of Grease 1

⚠ CAUTION
Never fill the gear box with grease. Otherwise, the motor may be burnt.

(2) Replacement of the feed motor

⚠ CAUTION
● Never attempt to disassemble the feed motor. This may result in damage of the welding machine. ● Never check the amount of brushing friction or replace the brush.

Service life of the brush varies depending on ambient temperature, etc., but normally the service life is about 4,000 hours. (If the machine is operated for six hours a day, the service life of the brush will be about two years). Periodical replacement of the feed motor is recommended.

9. PARTS LIST

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

- Please contact your local dealer to order parts. (See the back cover for telephone and fax numbers, and mailing addresses.)

No.	Part No.		Description	Q'ty	Remarks
	CM-2301	CML-2301			
1	K1123B01		Gear case	1	
2	4802-006	4802-007	Print motor	1	
3	3361-856		Screw (small)	4	M5-20
4	3361-713		Spring washer	4	M5
5			Washer	4	M5
6	3361-801		Nut	2	M5
7	K1123B02	K5114B01	Pinion	1	
8	3361-401		CS type snap ring	3	CSTW-10
9	K1123B03	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	K3985G00		Torch clamp	1 set	
16-2			Bolt with hexagon hall	(2)	M8-20
16-3	3361-508		Spring washer	(1)	M8
16-4			Washer	(1)	M8
16-5	K1200B05		Gear case	1	
16-6	U1230B14		Insualting washer	1	
16-7	3361-840		Hexagon bolt	1	M6-35
16-8			Hexagon bolt	1	M6-40
17	K1123B07		Spacer	1	
18	U1376H18	—	Feed roll (0.9-1.0/1.2)	1	
	—	U1369N03	Feed roll (1.2/1.4)	1	
19			Washer	1	M10
20	3361-710		Spring washer	1	M10
21	3361-805		Nut	1	M10
22	K1200B02		Bolt fixing plate	1	
23	3361-856		Screw (small)	2	M5-20
24	3361-713		Spring washer	2	M5
25	K1123F00		Hinge assembly	1 set	
26	K1200C00		Pressure roll assembly	1 set	
27	K1200C01		Pressure roll holder	1	
28	U4345B04		Pressure roll shaft	1	
29	3311-003		Radial ball bearing	1	No. 6200LL

No.	Part No.		Description	Q'ty	Remarks
	CM-2301	CML-2301			
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 φ6
34	3361-503		Cup square neck bolt	1	B type M8-40
35	3361-505		Wing nut	1	M8
36	3361-208		Spring roll pin	1	φ3-20
37	K3985E00		Central adapter	1 set	
37-1	K3985E01		Power metal	(1)	
37-2	K3985E02	K3985E10	Outlet guide	(1)	With snapping
37-3	3361-405		E type snap ring	(1)	for φ4
37-4	K3985E03		Block	(1)	
37-5	K3985E04		Hose exit	(1)	
37-6	K3985E05		Sleeve	(1)	
37-7	3361-858		Nut	(1)	M14
38	K1123D00		Pressure handle assembly	1 set	
39	3361-860		Hexagon bolt	2	M6-25
40	3361-706		Spring washer	3	M6
41	3361-803		Nut	1	M6
41-1	3361-803		Nut	1	M6
42	K1200B06		Remote stopper	1	

9.2 Others (Refer to Fig. 1)

No.	Part No.		Description	Q'ty	Remarks
	CM-2301	CML-2301			
43	U4179B00		Frame body	1	
44	4813-001		Gas solenoid valve	1	W-31156, DC25V
45	K476B00		Spindle type wire reel	1	
46	U3557C01		Wire reel cover	1	
47	U1997C01		Cable clamp	1	
48	U4179D00		Gas hose assembly	1	
49	U3557E00		Control cable assembly	1	
49-1	4730-005		Plug socket	(1)	4P

9.3 Optional accessories

(1) Extension cables and hoses

・Torch side cable

Applicable current (Rated current)	200A	350A	500A
2m	BKPT-2202	BKPT-3802	BKPT-6002
7m	BKPT-2207	BKPT-3807	BKPT-6007
12m	BKPT-2212	BKPT-3812	BKPT-6012
17m	BKPT-2217	BKPT-3817	BKPT-6017
22m	BKPT-2222	BKPT-3822	BKPT-6022

・Control cable (4P)

Cable length	5 m	10 m	15 m	20 m
Model	BKCPJ - 0405	BKCPJ - 0410	BKCPJ - 0415	BKCPJ - 0420

・Remote control cable (6P)

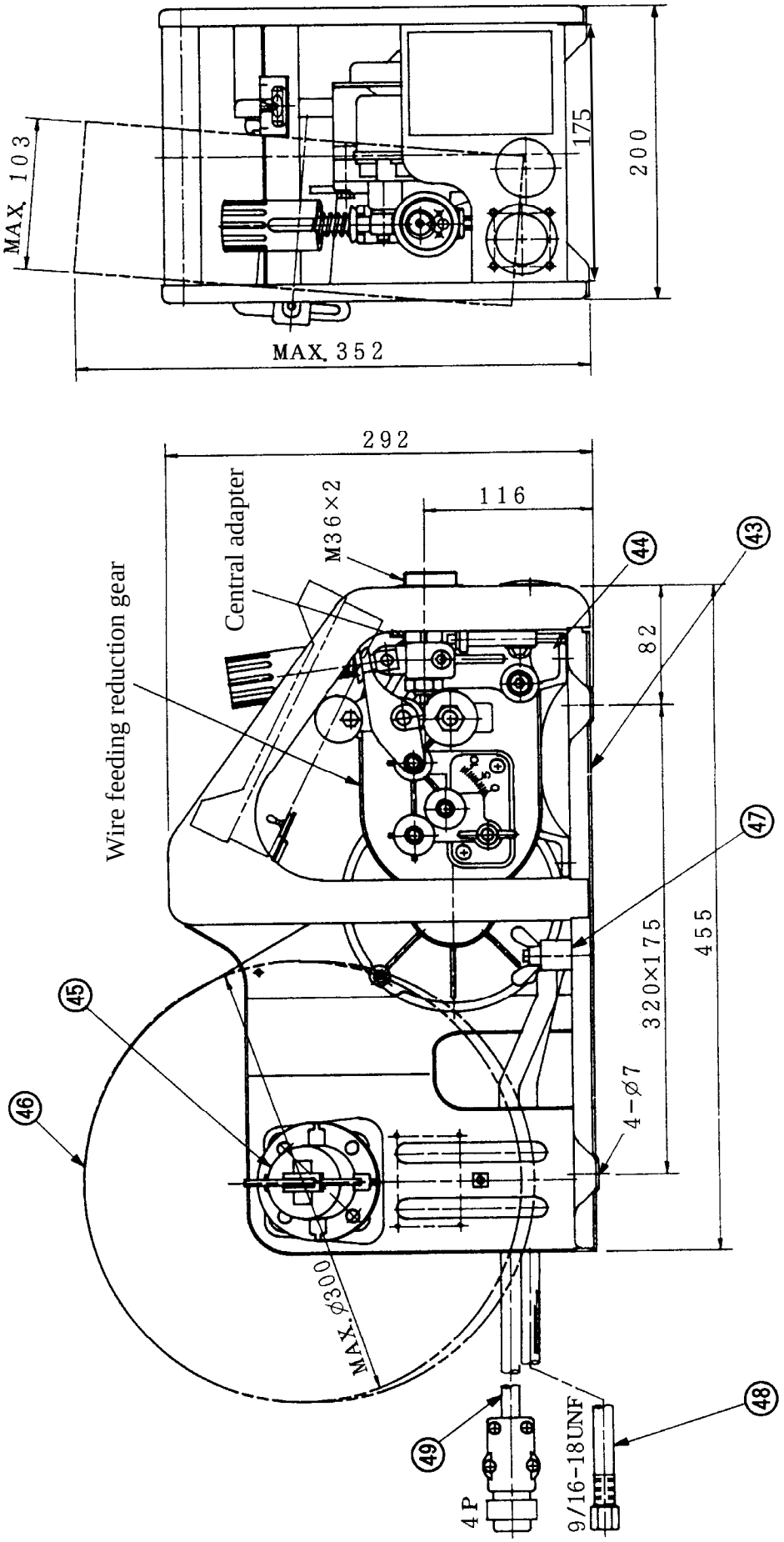
Cable length	5 m	10 m	15 m	20 m
Model	BKCPJ - 0605	BKCPJ - 0610	BKCPJ - 0615	BKCPJ - 0620

・Gas hose

Hose length	5 m	10 m	15 m	20 m
Model	BKGG - 0605	BKGG - 0610	BKGG - 0615	BKGG - 0620

(2) Others

Description	Part No.	Q'ty	Remarks
Feed roll (For φ1.2, 1.6)	U1369N01	1	
Feed roll (For φ1.4, 1.4)	U1376H13	1	
Feed roll (For φ1.4, 1.6)	U1376H16	1	
Feed roll (For φ0.8, 0.9-1.0)	U1376H19	1	
Feed roll (For φ1.2, 1.2)	K970E24	1	Ceramic type
Feed roll (For φ1.2, 1.4)	K970H28	1	Ceramic type
Feed roll (For φ1.4, 1.4)	K970E25	1	Ceramic type
CO_2 gas regulator with flowmeter (with heater)	YR-507FD	1	Max. flow 25 ℓ / min
CO_2 gas regulator with flowmter (without heater)	YC-1G	1	Max. flow 20 ℓ / min
CO_2 gas regelator with flowmeter (with heater)	FCR-100N	1	Max. flow 100 ℓ / min
Caster	U1997G00	1 set	For wire feeder moving
Spindle type wire reel (Insulating type, with brake)	K536A00	1	
Argon gas regulator with flowmeter	RF-16D	1	For MAG gas 28 ℓ / min
Conduit connecting adapter	U1997L00	1	
Outlet guide	K3985E10	1	For 1.2～1.6



Unit: mm

Fig 1 External view

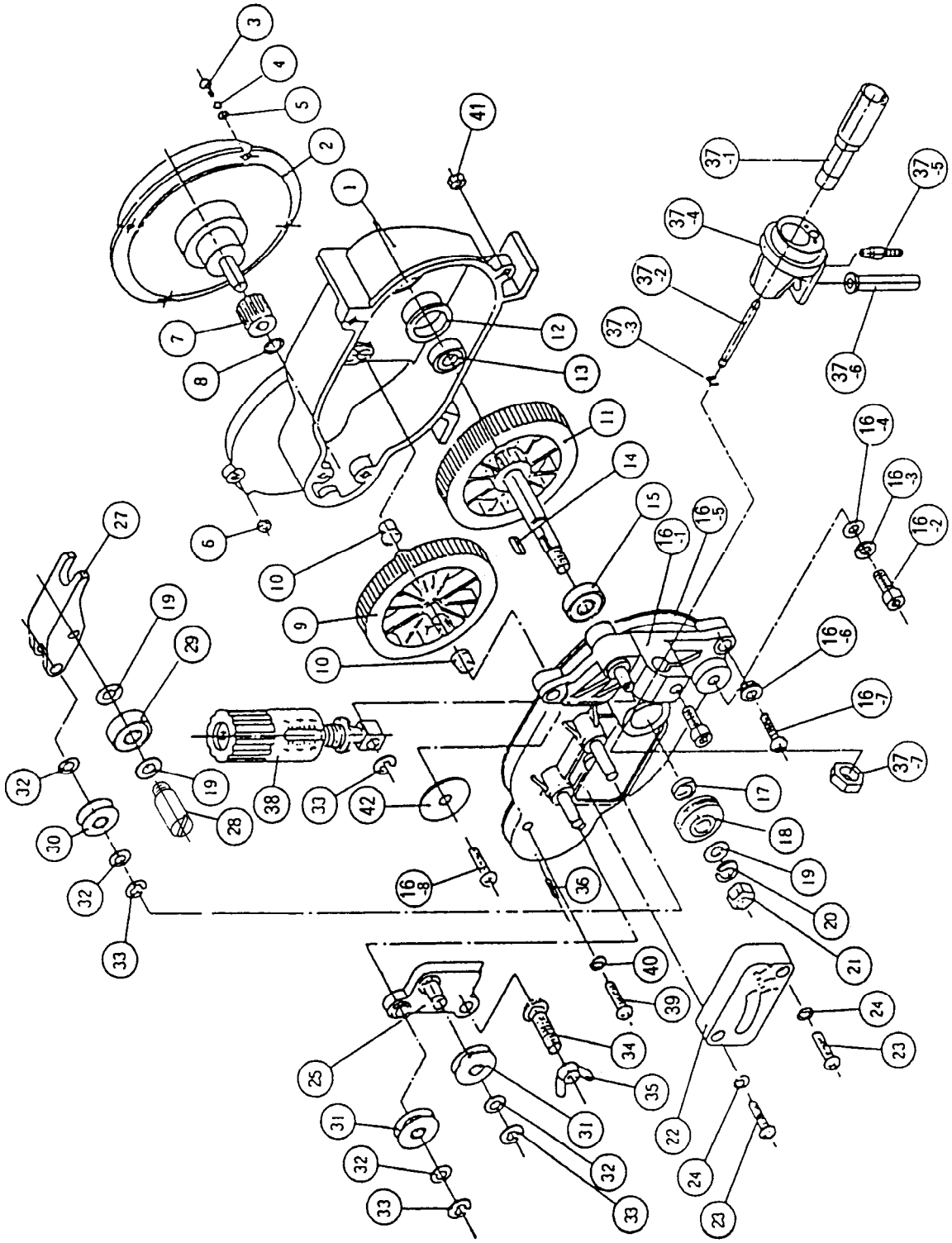


Fig 2 Exploded view of wire feeding reduction gear unit

10. SPECIFICATIONS

10.1 Specifications

Model		CM-2301	CML-2301
Applicable wire size		(0.8), (0.9), 1.0, 1.2, (1.4), (1.6)	1.2, 1.4, (1.6)
Applicable wire		Solid wire, Flux cored wire	
Wire feeding speed		Max. 15m/min.	Max. 18m/min.
Applicable wire reel	Shaft dia.	φ50mm	
	Outer dia.	Max. φ300mm	
	Width	103mm	
Applicable wire mass		Max. 25 kg	
Mass		Approx. 10 kg	

10.2 Combination torches

Welding torch / Wire feeder	Cable length			
	3m	4m	4.5m	6m
CM-2301	WTCX-2001 WTCX-3503 WTCX-3504 WTCX-5002	WTCMX-2001	WTCMX-3503 WTCMX-3504 WTCMX-5002 WTCMX-4301	—
CML-2301				WTCLX-3503 WTCLX-3504 WTCLX-5002

10.3 Standard accessories

Description	Part No.		Q'ty	Remarks
	CM-2301	CML-2301		
Feed roll (0.9-1.0, 1.2)	U1376H18	—	(1)	Built in body
Feed roll (1.2, 1.4)	—	U1369N03	(1)	Built in body
Feed roll (1.2, 1.6)	—	U1369N01	1	
Base metal side cable	U1997J00		1	$60mm^2 \times 1.8m$
Alen key	4739-280		1	No. 6 (M8)