MANUAL NO:U4283-3

DAIHEN Corporation

# OWNER'S MANUAL

FOR

# WIRE FEEDER

## MODEL : CMW-145 U4283

**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

May 15, 2000

**Upon contact, advise MODEL and MANUAL NO.**

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.<br>Be sure to:<br>・Keep children away.<br>・Keep pacemaker wearers away until consulting a doctor.<br><br>◆ Read and understand the summarized safety information given below and the original principal information that will be found in the PRINCIPAL SAFETY STANDARDS.<br><br>◆ Have only trained and experienced persons perform installation, operation, and maintenance of this equipment.<br><br>◆ Use only well maintained equipment. Repair or replace damaged parts at once. |
| ARC WELDING is safe when precautions are taken. |

ELECTRIC SHOCK can kill.

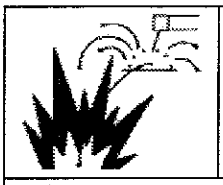
Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuits are electrically live whenever the output is on. The power line and internal circuits of this equipment are also live when the line disconnect switch is on. When arc welding all metal components in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

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.

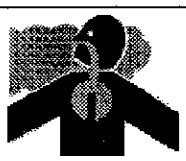
1. Wear face shield with a proper shade of filter ( See ANSI Z 49.1 listed in PRINCIPAL SAFETY STANDARDS) to protect your face and eyes when welding or watching a welder work.
2. Wear approved safety goggles. Side shields recommended.
3. Use protective screens or barriers to protect others from flash 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



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 (35ft.) 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 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 work areas are potentially hazardous. |
| --- |
| FALLING or MOVING machine can cause serious injury.<br>◆ Use both eyebolts, if installed, to lift the welding power source.<br>◆ Put the welding power source and wire feeder solidly on a flat surface.<br>◆ Do not pull the welding power source across a floor laid with cables and hoses.<br>◆ Do not put wire feeder on the welding power source.<br>◆ Do not put the welding power source and wire feeder where they will pit or fall.<br><br>WELDING WIRE can cause puncture wounds.<br>◆ Do not press gun trigger until instructed to do so.<br>◆ 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 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.

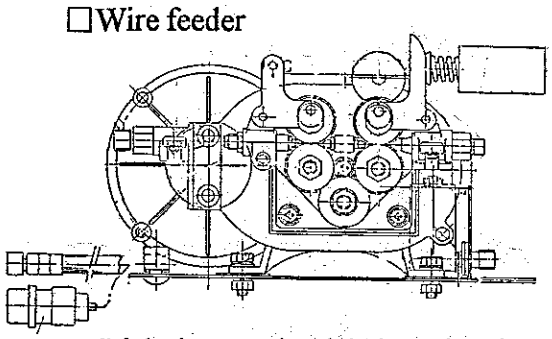
Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute.

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

## 3. CHECKING OF PACKAGE CONTENTS

・Check of quantity at open the package.

□Wire feeder

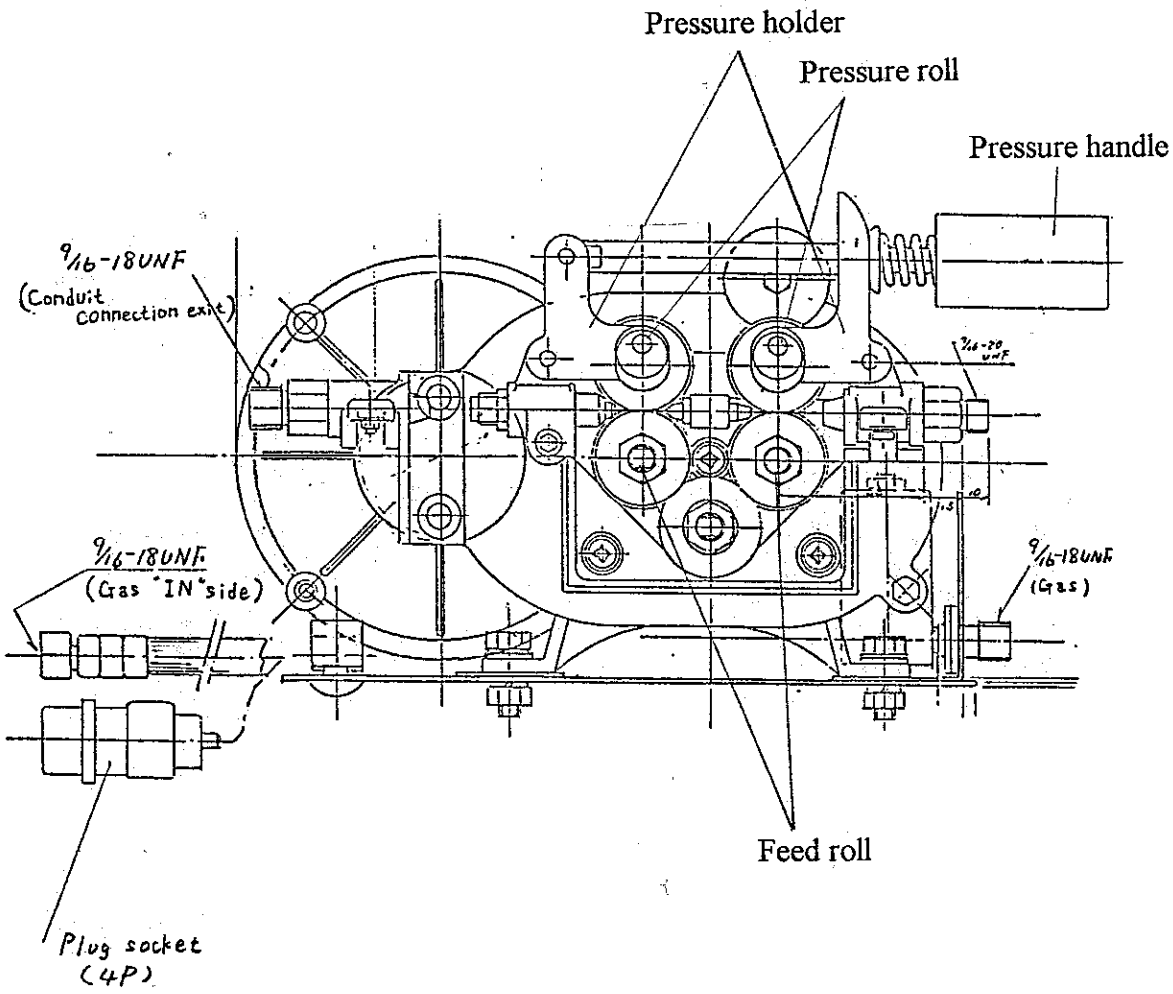


・Standard accessories

| Description | Specification | Q'ty |
|---|---|---|
| Wire straightener | K1821J00 | 1 |
| Wire guide | U1962D02 | 1 |
| Conduit adapter | K420B09 | 1 |
| Hexagon rod spanner | No. 5 (M6) | 1 |
| Warning label | NK5441 | 1 |

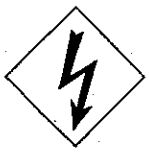
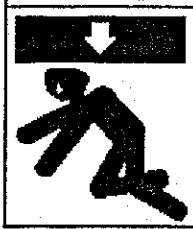
・Stick the warning label on the place near feed roll.

## 4. EACH DESIGNATION AND OPERATION



# 5. TRANSPORTATION AND INSTALLATION

## 5.1 Transportation

| ⚠ WARNING | |
|---|---|
| Observe the following to prevent troubles in running and breakage of the welder. | |
|  | ● When carrying or transferring the wire feeder, be sure to turn OFF input power supply by the switch of the distribution box. |
|  | ● When carrying the wire feeder to height, remove the wire from wire feeder. |

## 5.2 Installation

| ⚠ CAUTION | |
|---|---|
| In installing the welder, observe the following to prevent occurrence of fires by welding and physical damage by fume gas. | |
|  | ●Do not install the welder near combustible materials and inflammable gas.<br>●Remove combustible materials not to attach the spatter to them.<br>If not removed, cover combustible materials with the noncombustible cover. |
|  | ●For preventing gas-poisoning at choking, use local exhaust equipment or use protectors for respiration.<br>●In welding at narrow space, ventilate the place sufficiently or wear the protectors for respiration, and work under supervision by a trained supervisor. |

INSTALLATION PLACE

● Observe the following when selecting a installation place.

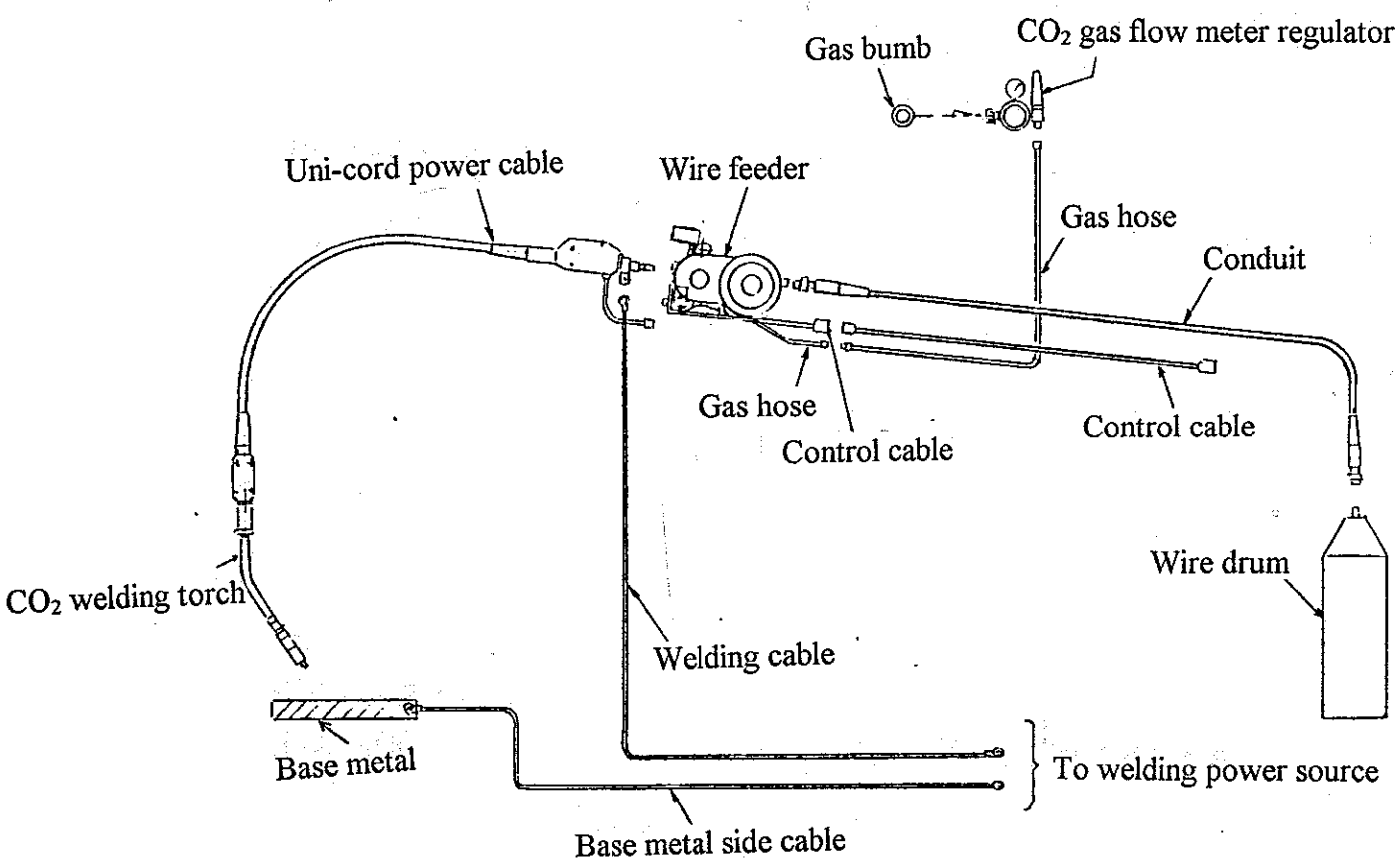
- Less humidity, dirt and dust. And do not expose welding machine to direct sun light, wind and rain.
- Ambient temperature is −10～40℃.
- There is not window.
  (Use a wind shield to protect arc from wind, otherwise blow hole may be caused.)

## 6. CONNECTION

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

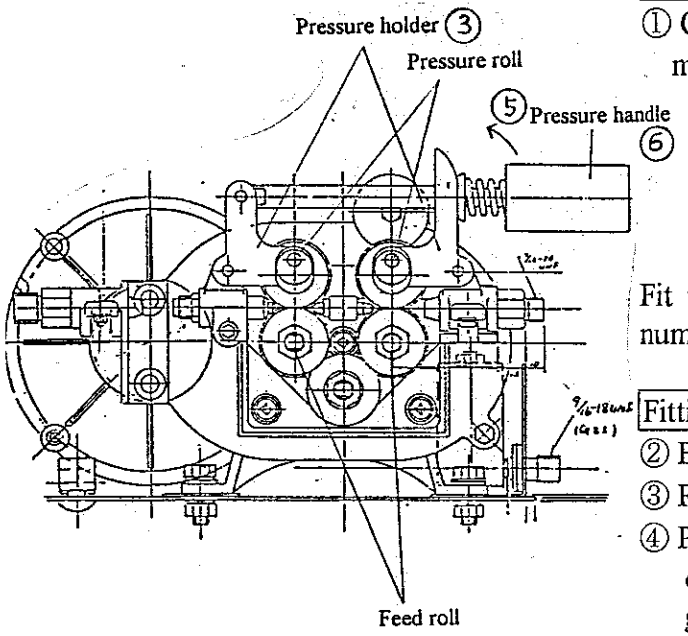
| ⚠ CAUTION |
| --- |
| ●Securely tighten connecting parts of cables. |

●Water cooled type



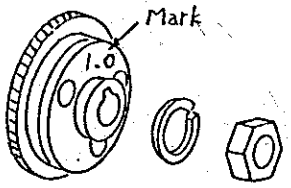
# 7. WELDING PREPARATION

## 7.1 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 matches with the welding wire size.




Fit the feed roll to be able to see the same marking numeric value as the wire size to be used.

**Fitting of wire**

② Bring down the pressure handle.
③ Raise the pressure roll holder.
④ Pull out the wire to let it through the conduit connection adapter, and insert it into the outlet guide. (Refer to Fig. 3)
⑤ Return the pressure roll holder and the pressure handle, in this holder.

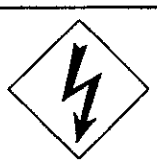
**Adjusting of pressure and straightener**

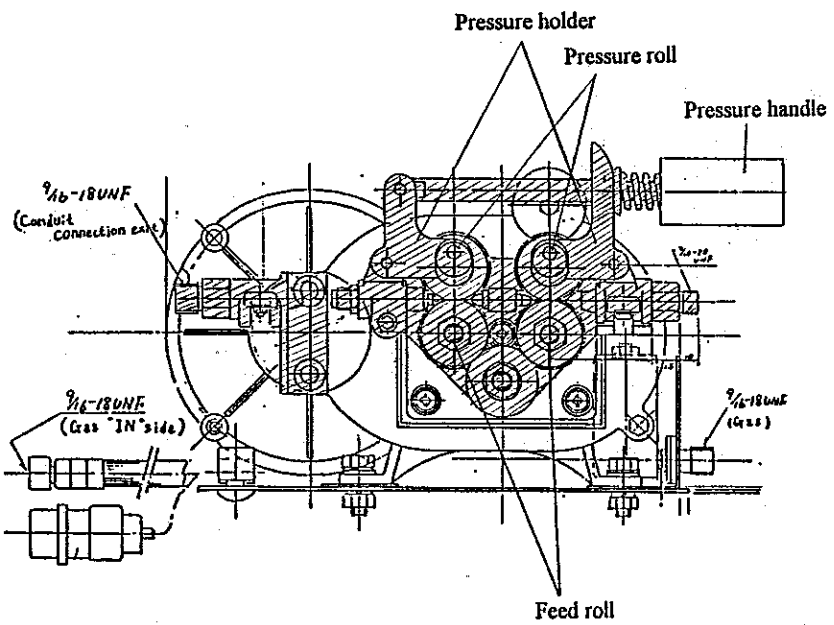
⑥ Rotate the pressure handle to set pressure force matching the wire diameter.

| Aluminum | | Steel | Pressure handle scale |
|---|---|---|---|
| Hard | Soft | | |
| 2.4 | — | 1.6 | 4～5 |
| 1.6 | 2.4 | 1.2 | 3～4 |
| 1.2 | 1.6 | 1.0 | 2～3 |
| — | 1.2 | — | 1～2 |

7.2 Wire feeding by inching operation

| ⚠ WARNING |
|---|
|  ●Do not look into the chip hole to check on sending of the wire in inching. |
| ⚠ WARNING |
| ●Do not put your hands, fingers, hair and clothes near the rotating parts of the feeding roll, etc. in inching. Biting may occur, causing injuries. |

| ⚠ WARNING |
|---|
| ※Touching the electrification parts may cause fatal electric shook and burn. |
|  ● Never touch the charge parts of wire and wire feeder.<br>●Be sure to attach the wire reel cover to prevent the electrical shock and wire protection.<br>▨ part is indicated to charging part at welding. |



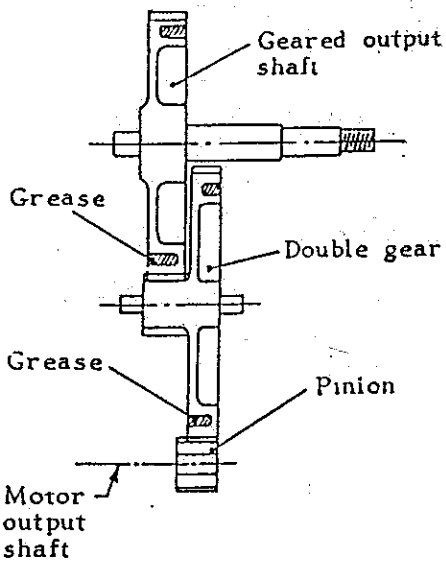
8. MAINTENANCE AND REPAIR OF TROUBLES

8.1 Inspection in working

| Parts | Inspection point | Trouble | Measures |
|---|---|---|---|
| Pressure scale | ●Is pressure force matching with the wire diameter? | Pressure force is too week or too strong. | Match pressure force with the value of wire pressure adjustment recommended in item 7.1. |
| Inlet guide<br>Center guide | ●Are not chips and dusts left around the inlet of the inlet guide and the feeding roll? | Chips and dusts are left. | Remove chips and dusts. |
| Feed roll | ●Are the wire diameter and the marking of the feed roll matching? | Wire diameter and the marking do not match. | Change to the feed roll matching with the wire diameter. |
| | ●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 |
| 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 connecting part is loosened. | Firmly tighten. |
| Gas hose | ●Is not crazing formed? | Crazing is formed. | Replace to new one. |

8.2 Yearly inspection

(1) Grease replacement of reduction gear




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

If this grease is not there, use the grease No.1 of each lithium type.

| CAUTION |
| --- |
| Never fill the gear box with grease, otherwise motor will be burnt. |

(2) Replacement of feed motor

| CAUTION |
| --- |
| • Never disassemble the feed motor. It is caused in troubles. |
| • Never replace and check of brushing friction. |

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

## 9. PARTS LIST

Please order parts necessary for repair from OTC or its agents, indicating description, item No., and part No..

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

| Item | Part No. | Description | Q'ty | Remarks |
|---|---|---|---|---|
| 1 | K1123B01 | Gear case | 1 | |
| 2 | 4802-006 | Print motor | 1 | PMEE-12CBB |
| 3 | K1123B02 | Pinion | 1 | |
| 3-1 | | CS type snap ring | 1 | CSTW-10 |
| 4 | K1123B03 | Two speed gear | 1 | |
| 5 | K1123B04 | Output shaft with gear | 1 | |
| 6 | 3361-206 | Key | 3 | 4×4×8 |
| 7 | K1123B05 | Bush | 2 | |
| 8 | K1123B06 | Insulating spacer | 1 | |
| 9 | 3311-001 | Radial ball bearing | 1 | No. 6000ZZ |
| 10 | K1821C01 | Gear case | 2 | |
| 11 | K1822C02 | Insulating plate | 1 | |
| 12 | K1123C04 | Insulating sleeve | 1 | |
| 13 | 3311-008 | Radial ball bearing | 5 | No. 6001LL |
| 14 | K1822C01 | Bracket | 1 | |
| 15 | K1822C03 | Pressure roll holder (1) | 1 | |
| 16 | K1822C04 | Pressure roll holder (2) | 1 | |
| 17 | K1821C04 | Pressure roll pin | 2 | |
| 18 | K1821C05 | Fulcrum pin | 3 | |
| 19 | 3361-404 | E-type snap ring | 6 | $\phi$ 5 |
| 20 | K1822C05 | Pressure bolt | 1 | |
| 21 | U929C16 | Pressure spring | 1 | |
| 22 | K1123D01 | Pressure handle | 1 | |
| 23 | | CS type snap ring | 1 | CSTW-6 |
| 24 | K1123D03 | Spring bearing | 1 | |
| 25 | K1123D05 | Pressure nut | 1 | |
| 26 | K1822C06 | Guide block | 1 | |
| 27 | K1822C07 | Center cuide | 1 | |
| 28 | K1822C09 | Feed axis | 2 | |
| 29 | K1822C10 | Spacer | 3 | |
| 29-1 | K1123B07 | Spacer | 1 | |
| 30 | K1822C11 | Middle gear | 1 | |
| 31 | K1821V00 | Feed roll (1.0) | 2 | For steel |
| 32 | K1822H00 | Pressure roll | 2 | For steel |
| 33 | U2344B09 | Guide adapter | 1 | |
| 34 | U785C09 | Plate spring | 1 | |
| 35 | U785C11 | Protection cover | 1 | |
| 36 | K1123C08 | Remote stopper | 1 | |
| 37 | K2571C01 | Gear case cover | 1 | |
| | | Hexagon head bolt | 2 | M6 |

| Item | Part No. | Description | Q'ty | Remarks |
|---|---|---|---|---|
| | K1821J00 | Wire straightener assembly | (1) | ※ |
| 38 | K1821J01 | Wire straightener body | 1 | ※ |
| 39 | K1821J02 | Patch | 1 | ※ |
| 40 | K1821J03 | Adjusting screw | 1 | ※ |
| 41 | U2344C04 | Roller shaft | 2 | ※ |
| 42 | 3311-014 | Radial ball bearing | 2 | ※ No. 629ZZ |
| 43 | | E type snap ring | 3 | ※ For $\phi$ 7 |
| 44 | U2344C05 | Slide shaft | 1 | ※ |
| 45 | U69C02 | Bearing with gloove | 1 | ※ |
| 46 | U2344C07 | Adapter | 1 | |
| 47 | U2344C08 | Pilot | 1 | ※ |
| 48 | | Narld knob | 1 | ※ KN15 |
| 49 | U2344C10 | Inlet guide | 1 | |

※ : Standard accessory

9.2 Others (Refer to Fig. 1)

| Item | Part No. | Description | Q'ty | Remarks |
|---|---|---|---|---|
| 50 | U4283B00 | Frame body | 1 | |
| 51 | U3698D00 | Gas hose assembly | | |
| 51-1 | 4813-001 | Gas solenoid valve | 1 | D.C25V |
| 52 | U3698E00 | Control cable assembly | 1 | |
| 52-1 | 4730-005 | Plug socket | 1 | 4P |
| 53 | U1779C01 | Cable clamp | 1 | |
| 54 | K2801W01 | Conduit connection metal | (1) | |
| 54-1 | K1687D02 | Conduit connection metal | 1 | |
| 55 | U1997L02 | Insulating plate | 1 | |
| 56 | U1230B14 | Insulating washer | 2 | |
| 56-1 | | Hexagon head bolt | 2 | M6-35 |
| 57 | U785C09 | Flat spring | 1 | |
| 57-1 | | Pan head screw | 1 | M5-12 |
| 58 | U785C11 | Protection cover | 1 | |
| 58-1 | | Rounded end screw | 1 | M3-6 |
| 58-2 | | Nut | 1 | M3 |
| 58-3 | | Spring washer | 1 | M3 |
| 59 | U1962D02 | Wire guide | 1 | |

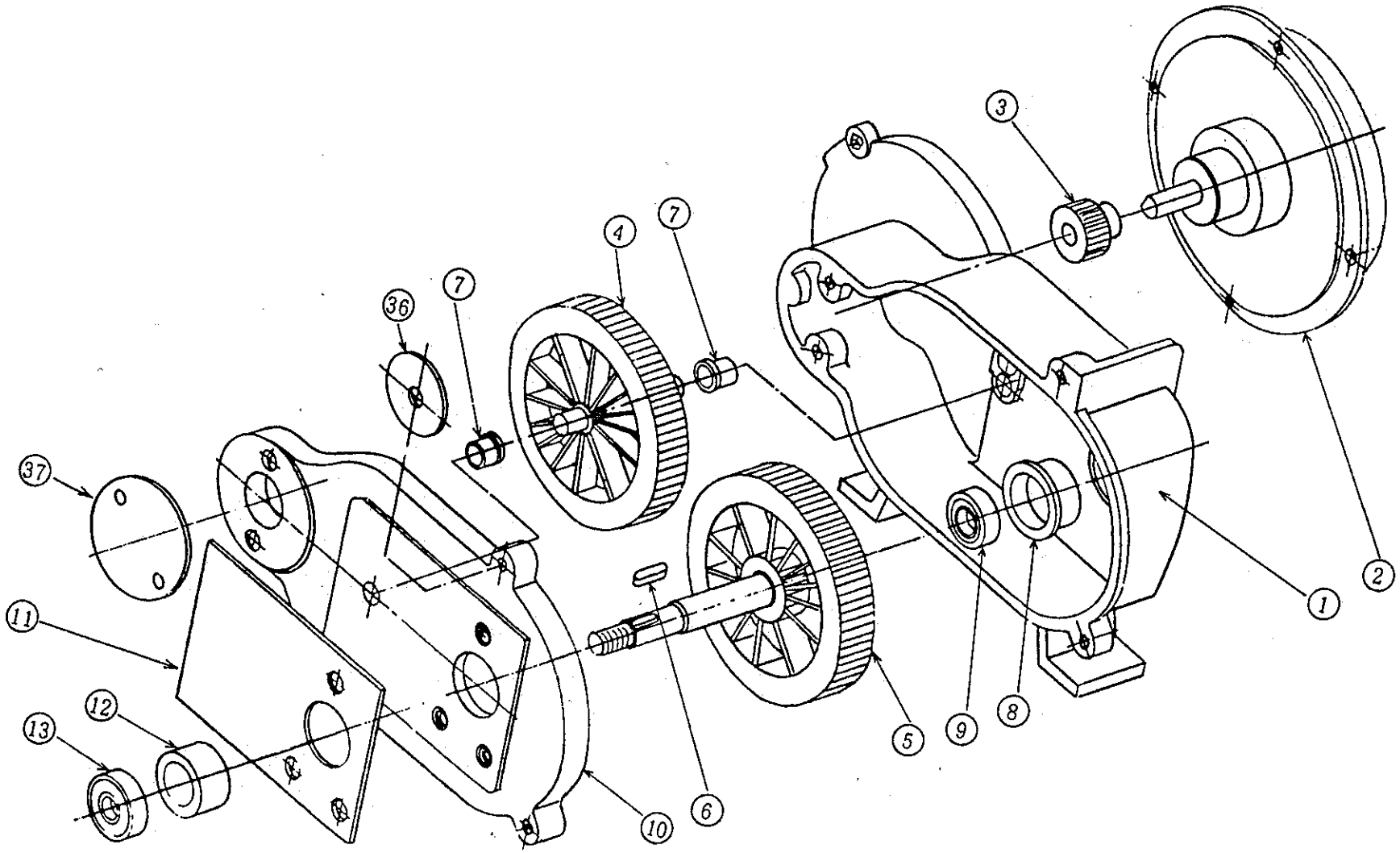



Fig. 1 Exploded view of wire feed reduction gear unit

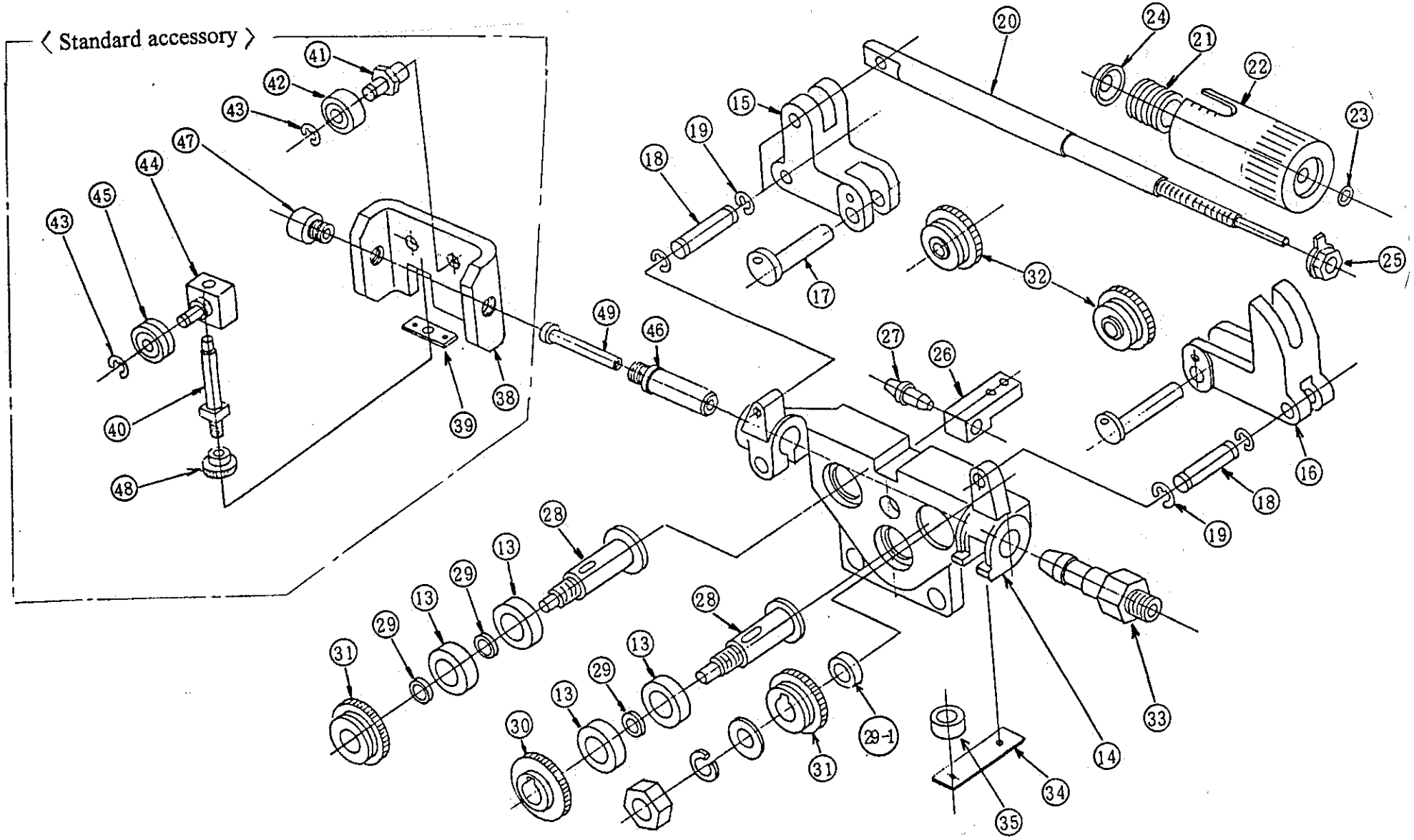



Fig. 2 Exploded view of wire feed and pressure part

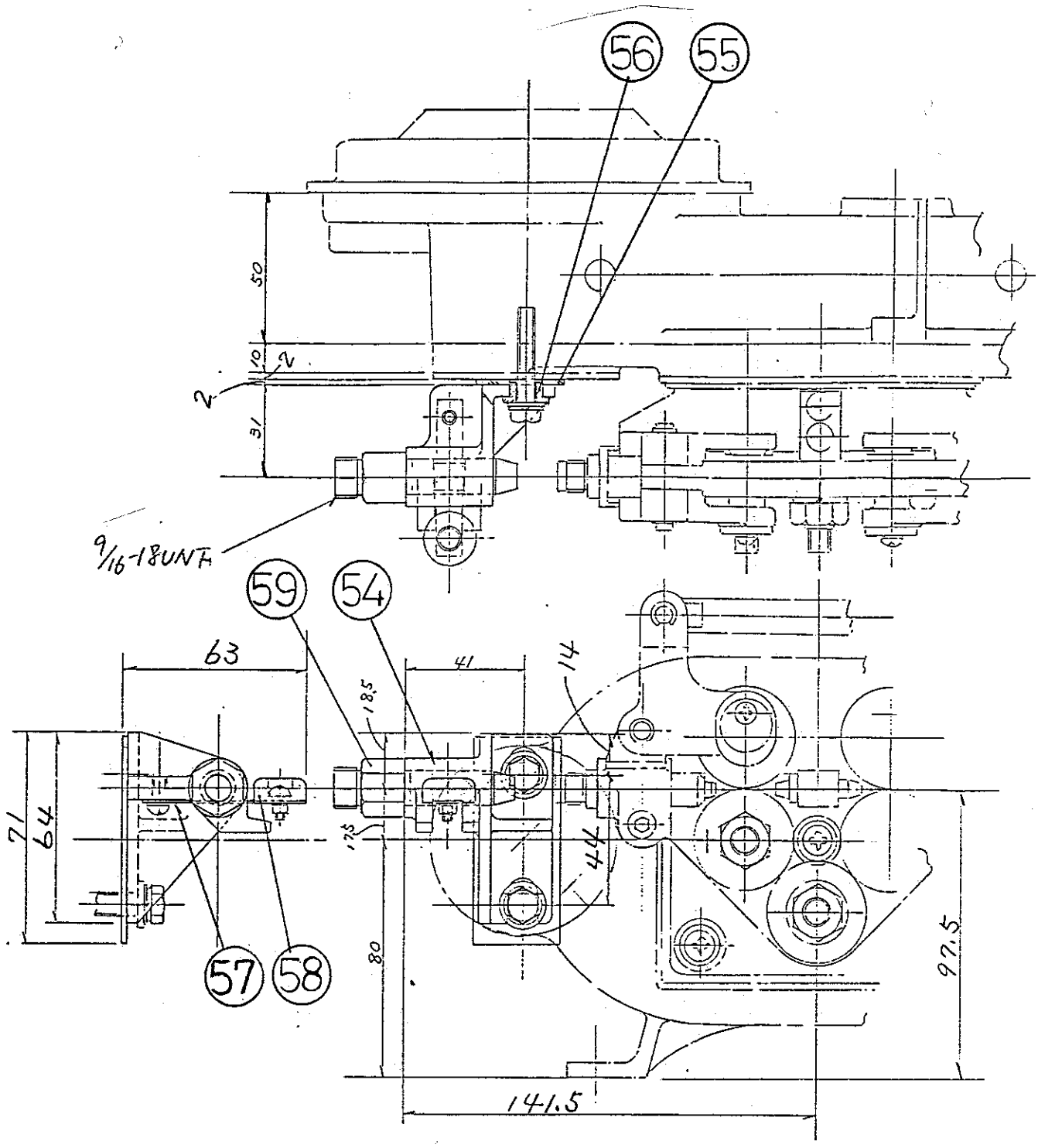



Fig. 3 External view of conduit connection adapter

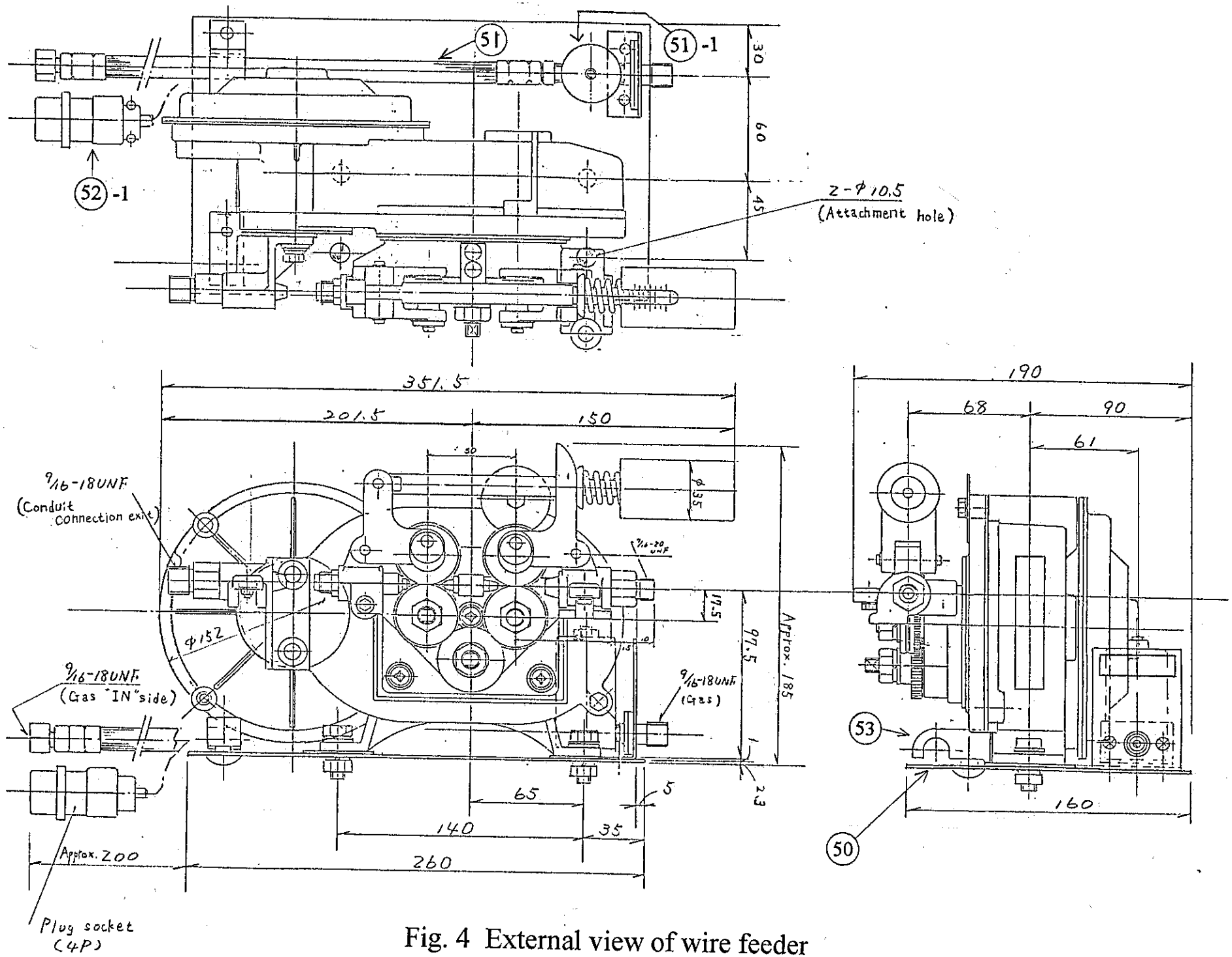



Fig. 4 External view of wire feeder

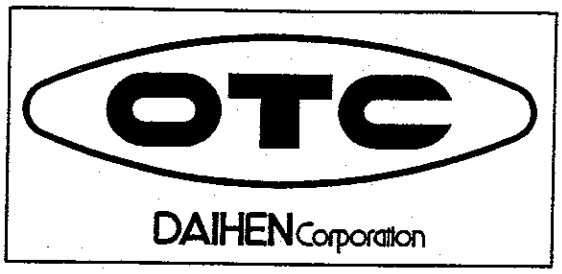
# 10. SPECIFICATIONS

## 10.1 Specifications

| | | |
|---|---|---|
| Model | | CMW-145 |
| Roll method | | 4-roll driving method |
| Applicable wire size | Steel | 1.0 |
| Wire feed speed | | Max. 15m / min |

## 10.2 Standard accessories

| Description | Parts No. | Q'ty | Remarks |
|---|---|---|---|
| Feed roll (1.0) | K1821V00 | (2) | For steel and built in body |
| Pressure roll | K1822H00 | (2) | For steel and built in body |
| Wire straightener | K1821J00 | 1 | |
| Wire guide | U1962D02 | 1 | |
| Conduit adapter | K420B09 | 1 | |
| Hexagon rod spanner | | 1 | No. 5 |
| Warning label | | 1 | NK5441 |

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