

## INSTRUCTION

### METERING GUN

MODEL. KGK-100 series



### WARNING

Prior to operating this pump, be sure to read this operation manual for safety. After reading the manual, please keep it at hand any time for your quick reference.

# YAMADA CORPORATION

---

## [Introduction]

---

This instruction manual contains important safety information and operational instructions.

Read this manual before installation, operation, maintenance, and repair.

Do not use the product without reading this manual. Thoroughly read and understand all of the product information, safety information, and warning information in the manual.

If you have any questions, please contact the store you purchased the product or our business office.

---




## [For Safe Operation]

---

According to the hazard level, all safety notes in this manual are classified into “DANGER”, “WARNING”, and “CAUTION”.

Be sure to read and observe the safety notes to ensure safety and correct use of this product.

---

	<b>DANGER</b>	indicates a potentially hazardous situation which, if not avoided, <b>WILL</b> result in death or serious injury.
	<b>WARNING</b>	indicates a potentially hazardous situation which, if not avoided, <b>COULD</b> result in death or serious injury.
	<b>CAUTION</b>	indicates a potentially hazardous situation which, if not avoided, could result in injury or property damage.

---

## — Table of Contents —

<b>[Introduction]</b> .....	<b>1</b>
<b>[For Safe Operation]</b> .....	<b>1</b>
<b>1. Precautions on Use</b> .....	<b>2</b>
<b>2. Product Description</b> .....	<b>3</b>
<b>3. Principle of Operation</b> .....	<b>4</b>
<b>4. Installation and Connection</b> .....	<b>5</b>
<b>5. Adjustment and Discharge Test</b> .....	<b>5</b>
<b>6. Troubleshooting</b> .....	<b>6</b>
<b>7. Disassembly and Assembly</b> .....	<b>7</b>
<b>8. Product and Part List for Grease Metering Gun</b> .....	<b>9</b>
<b>9. Product and Part List for Adhesive Metering Gun</b> .....	<b>14</b>
<b>10. Limited Warranty</b> .....	<b>19</b>

## 1. Precautions on Use

The following warnings and cautions are very important. Be sure to observe them.

[Operating condition]



### CAUTION

- For your safety, read and understand all information provided in this manual. If you have lost or damaged your instruction manual, please contact us or our distributor to place an order.
- Never let anyone operate this unit without understanding this manual.

[Installation and piping]



### CAUTION

- Before maintenance operation, be sure to stop air, and release the internal pressure (both air and material) of the product.
- Immediately stop using the product if there is any danger or defect. Be sure to eliminate the cause and confirm safety before restarting.
- Follow the safety instructions for installation and be sure to use appropriate piping material and size to avoid leakage and damage.

[Operating method]



### WARNING

- Understand this manual completely before operating the machine. Operators and maintenance personnel are required to read this manual thoroughly before operating or servicing. Do not handle this machine without understanding the instructions.
- Do not handle unspecified material with this product. It may cause a product failure.
- Do not use this product for improper purposes.
- During operation, high pressure is continuously applied to the inside of the gun. Thus, even when supply air to the gun is shut off, residual pressure may be trapped inside. Be sure to release residual pressure completely **BEFORE** disassembly and repair for maintenance and inspection. Also, be sure to stop air supply and power supply before disassembly and repair.

[Disassembly, maintenance and inspection]



## WARNING

- Shut off air supply to the product and remove residual pressure completely BEFORE disassembling.
- Alternating the unit may result in personal injury or product malfunction. Please do not try to alter, modify, or change the machine.

[Shutdown and storage]

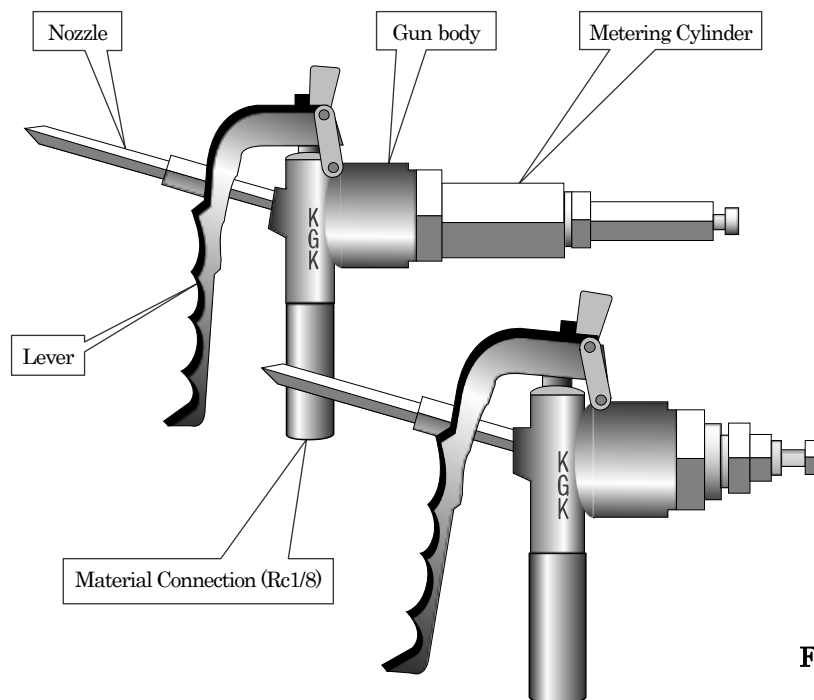


## CAUTION

- When leaving the product unused for a long time (more than a week) or shutting it down:
  - remove material inside completely and wash the product and
  - release material supply pressure.

## 2. Product Description

KGK metering guns are able to apply metered shots of media such as greases and adhesives. By replacing a built-in metering cylinder, KGK metering valves cover metered shot volumes between 0.3mL to 20mL. One metered shot is discharged by pulling the lever once and thus material will not be discharged more than necessary.



**Fig.1**

### 3. Principle of Operation

① Charge (standby)

Material, under pressure from a supply pump, flows into the rear side of the piston and constantly pushes the piston forward. At the same time, material passes through Port A, lifts up the ball to close Port B, and flows into the metering chamber. Material in the metering chamber pushes the piston backward and thus a metered shot is charged. The amount of material can be adjusted to your desirable value with the adjustment screw. (Fig. 2)

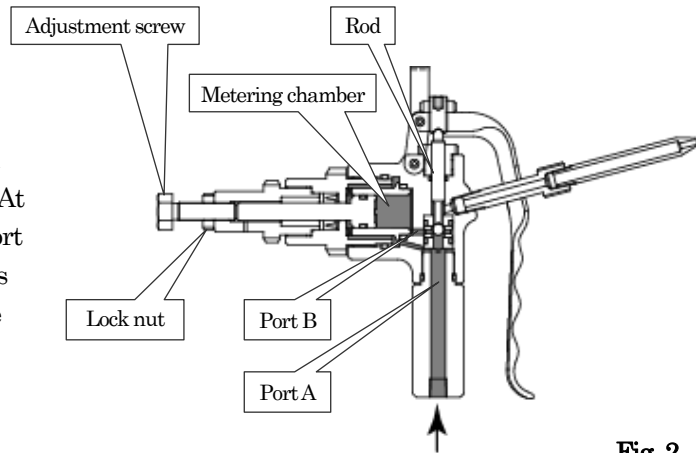


Fig. 2

② Discharge

Once the lever is pulled, the piston rod pushes down the ball to close Port A. Then, the metering chamber is connected to the discharge port. The piston is pushed forward by material pressure from the rear side and thus a metered shot in the chamber is finally discharged. (Fig.3)

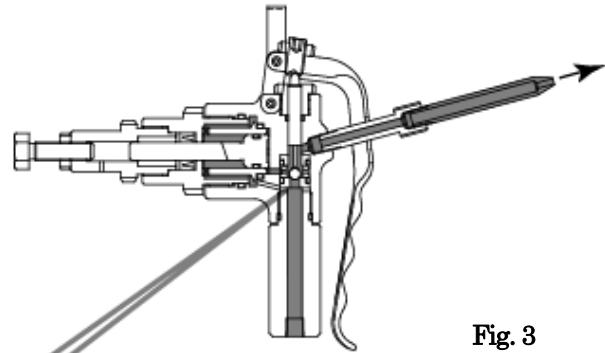


Fig. 3

Fig.4

#### Three way directional valve

① Material comes from the bottom seat lifts up the ball and flows out of the middle path. The ball is pressed against the upper seat to close the outlet so that material will not be discharged from the upper side.

Fig.5

② The piston rod pushes the ball down. Since the ball goes down, being sealed by the rubber in the middle, material will not flow out even after the ball moves away from the upper seat.

Fig.6

③ Furthermore, the ball passes through the path in the middle and seals the inlet on the bottom seat to stop the flow of material. Accordingly, the middle path and outlet on the upper seat are connected and finally material flows out.

## 4. Installation and Connection

- ① Connect a material supply pump or an outlet of a pipe to the metering gun using a hose. (The connecting port of the gun is Rc1/8.)  
It is recommended to attach 850K513 Swivel (sold separately) to the connecting port of the gun for easy operation. (Fig.7)
- ② Install your metering gun as close as possible to the equipment or its inlet port you are going to work on.
- ③ Trapped air in material being metered will be compressed through a pump, pipe, hose, and metering gun and expand when material is discharged. As a result, the metering gun will have difficulty stopping discharge and thus it may seem to be leaking. Also, each shot will vary.  
Since air is discharged together with material, be sure to expel trapped air completely when using the gun for the first time and after replacing a material container.



### CAUTION

- Dust and dirt, if contained in material, will damage the sealing part of the valve and cause material leak. Be sure to keep material clean.

## 5. Adjustment and Discharge Test

- ① Supply material to the gun. The rod lifts up the lever with material pressure and the lever opens. At this time, if material leaks from the nozzle, check if the lever has a slight play back and forth at first. Then, if the lever touches connector, loosen connector. If material still leaks, loosen the adjustment screw using a hex wrench until leak stops and then tighten the locknut temporarily.
- ② With the lever pulled, perform a discharge test. If a desired metered shot is discharged, tighten the locknut. When material flows out persistently, tighten the locknut with the lever pulled until material flow stops.

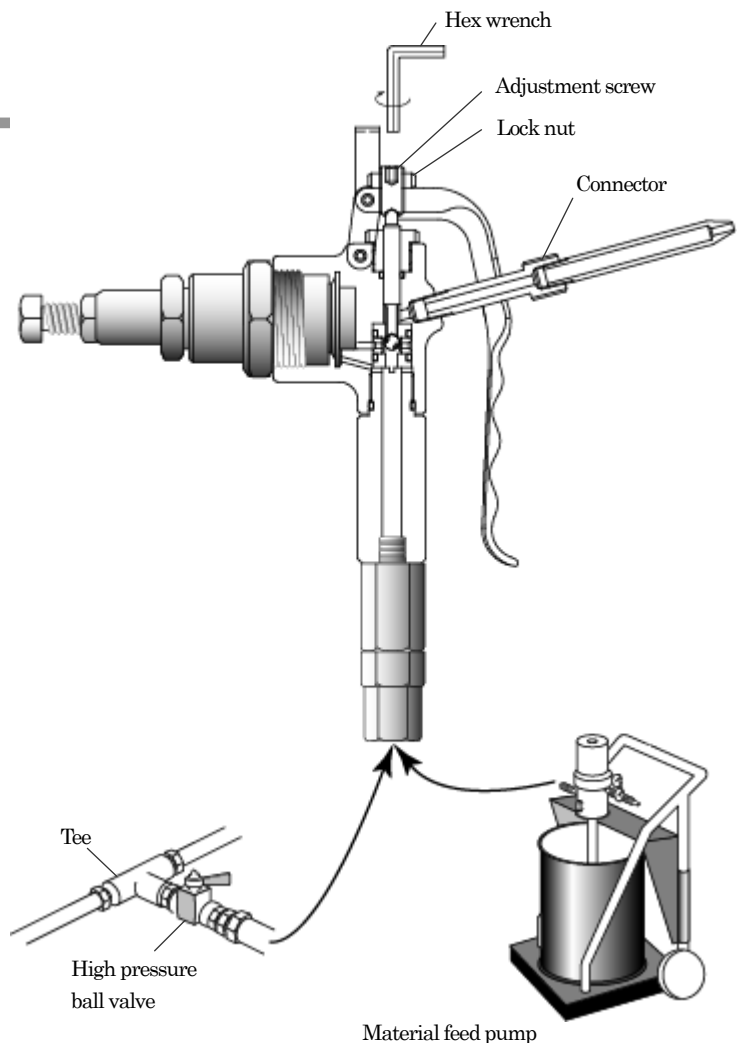


Fig.7



## PRECAUTION FOR USE

- Be sure to shut off the air supply to a supply pump and set the material pressure (primary pressure) to zero. Leaving a metering valve under pressure will be a cause of material leak or some other problem.
- Once a metered shot is dispensed, be sure to put the valve back to the standby condition.
- Do not use material which contains dirt and dust. Seal parts will be damaged, causing a material leak.

## 6. Troubleshooting

### <Problem>

- Material cannot be discharged.
- Material comes out during Recharge or Standby.
- Material leaks.

### <Possible Cause>

#### Metering gun (external factor)

- Material is not being delivered.
- Material supply pressure (primary pressure) exceeds the specified pressure of the metering gun.
- Adjustment at the initial use or after repair was not done.
- Air inside the gun is not released.

#### Metering gun body

- Ball or valve seat is damaged or worn out
- O ring is damaged or worn out.
- Side ring is damaged or worn out.
- Adjustment screw is loose.

#### Metering cylinder

- Inner surface of cylinder is damaged or worn out.
- Outer surface of piston, packing, or sleeve is damaged or worn out.
- O ring is damaged or worn out.
- Adjustment screw is over tightened.

### <Solution>

- Check the supply pump and supply air.
- Check air pressure in the supply pump (primary pressure = pump ratio × air pressure)
- Perform Adjustment and Discharge Test on the previous section.
- Release air completely.

- Replace with new ones.
- Replace with new ones.
- Replace with new ones.
- Readjust the screw and securely tighten it with a locknut.

- Replace with new ones.
- Replace with new ones.
- Replace with new ones.
- Adjust the adjustment screw to your desirable shot amount and then secure it with a locknut.



## CAUTION

- Be sure to use material compatible with the material used in the O ring and packing. Use of inappropriate material can cause a leak or product malfunction.
- When using a special kind of material, adjustment of the joint of the valve and sleeve may be needed. In such case, please contact us or your local retailer.

## 7. Disassembly and Assembly



## CAUTION

- Release residual pressure completely BEFORE disassembling metering valves.
- Wash the parts with wash oil and apply a thin layer of lithium grease BEFORE reassembling. Be extremely careful not to let dust and dirt attach to any of the parts.

### 7-1. Disassembly

- ① Unscrew the metering cylinder to remove it from the metering gun body. Remove two O rings from the body. (Fig.8)
- ② Unscrew connector and remove attached. (Fig.9)

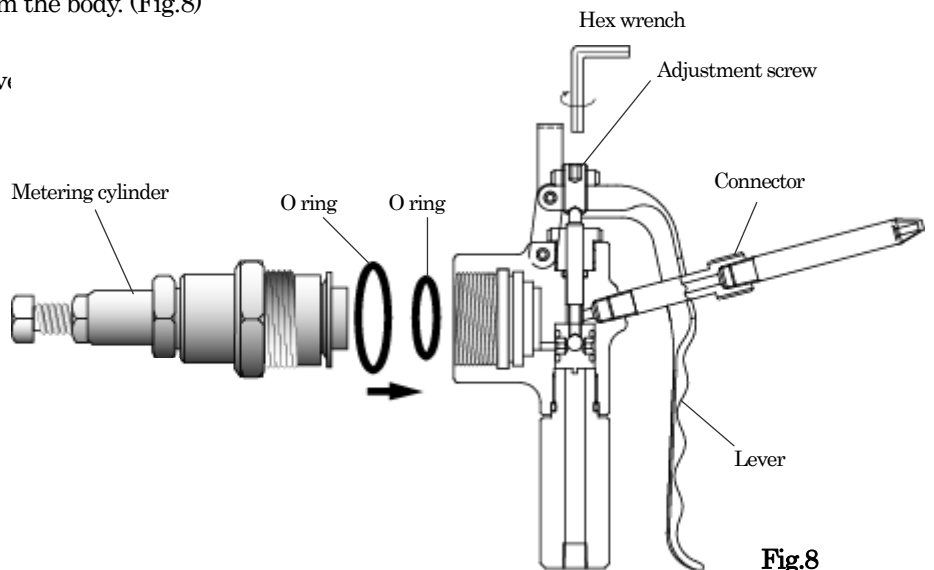


Fig.8

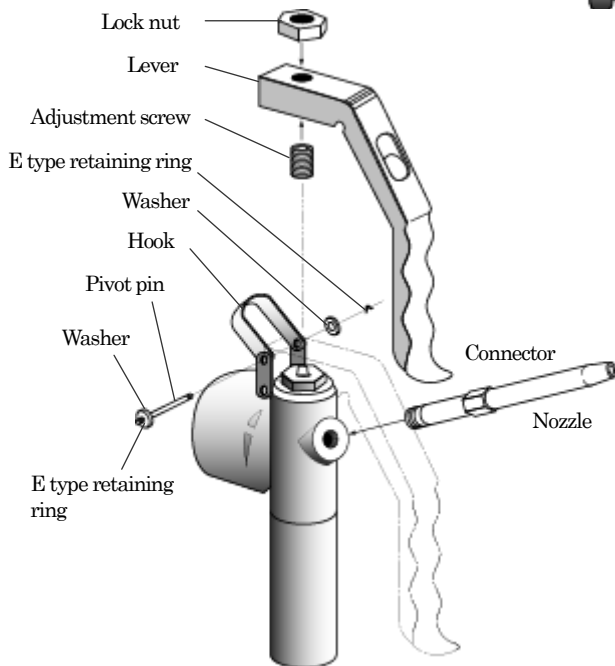


Fig.9

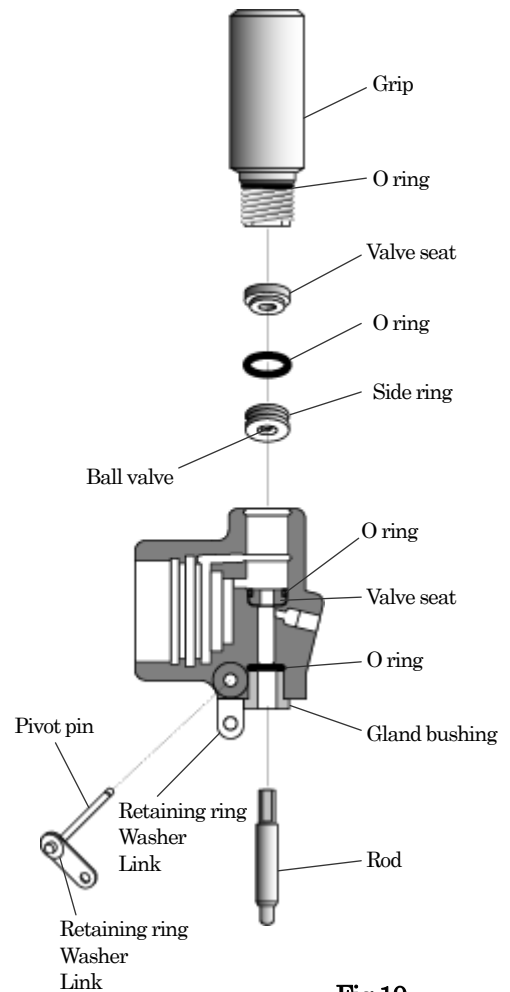
- ③ Remove the E type retaining ring on the one side of the pivot pin connecting the hook and lever and pull out the pivot pin from the link. Then, the hook and lever can be removed.
- ④ Remove the E type retaining ring on the one side of the pivot pin connecting the link and body and pull out the pivot pin from the body. Then, the link can be removed.
- ⑤ Unscrew the lock nut on the lever and remove it from the lever.



- ⑥ Unscrew to remove the gland bushing and remove the rod and O ring from the body. (Fig.10)
- ⑦ Unscrew to remove the grip and remove the O ring.
- ⑧ Remove the valve seat, O ring, side ring, and ball from the body.

**7-2. Assembly**

- ① Put the parts on the bottom hole of the body in the following order: valve seat, O ring, side ring with ball inside, o ring, and valve set. Then securely tighten the grip with o ring attached.
- ② Put the O ring on the upper hole of the body first, then screw the gland bushing tightly, and finally insert the rod.
- ③ Attach the retaining ring, washer, and link in this order to one side of the pivot pin and insert the pin into body. Then secure the other side with the link, washer, and the retaining ring.
- ④ Attach the adjustment screw to the lever and secure it with a lock nut.
- ⑤ Set the hook first and then the lever to the inside of the link. Then, secure with the pivot pin attached on ③ above. Be sure to fit the rod head in the tapered hole of the adjustment screw. If failed, the lever will not work.
- ⑥ Screw to insert the connector with the nozzle attached into the body through the hole on the side of the lever.
- ⑦ Insert the o ring to the side hole of the body and securely tighten the metering cylinder.



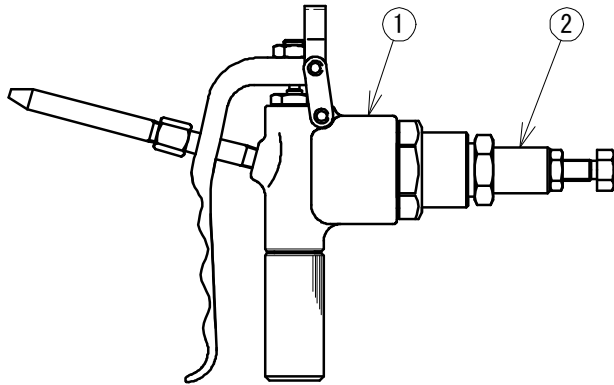
**Fig.10**

 **CAUTION**

- When reassembling the disassembled meter valve, be sure to replace O Rings and Packings with new ones at the same time as defective parts.

## 8. Product and Part List for Grease Metering Gun

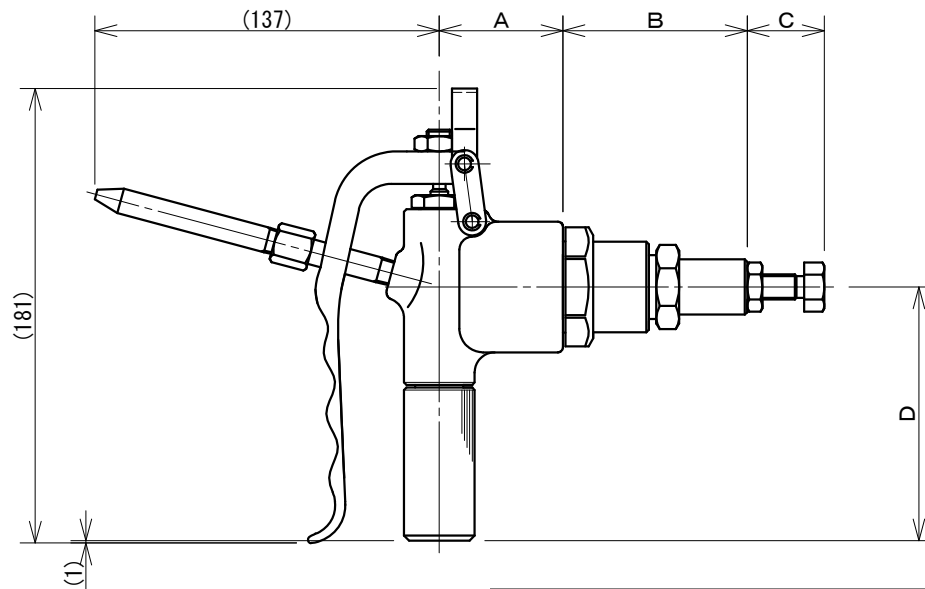
### 8-1 Metering Gun



#### MODEL LIST

Size	Product No.	①Switching Valve	②Cylinder
1mL	686427	800K365	800K856
3mL	686428	800K365	800K857
5mL	686429	800K365	800K858
10mL	686430	800K365	800K859
20mL	686431	800K365	800K860

### 8-2 Dimensions

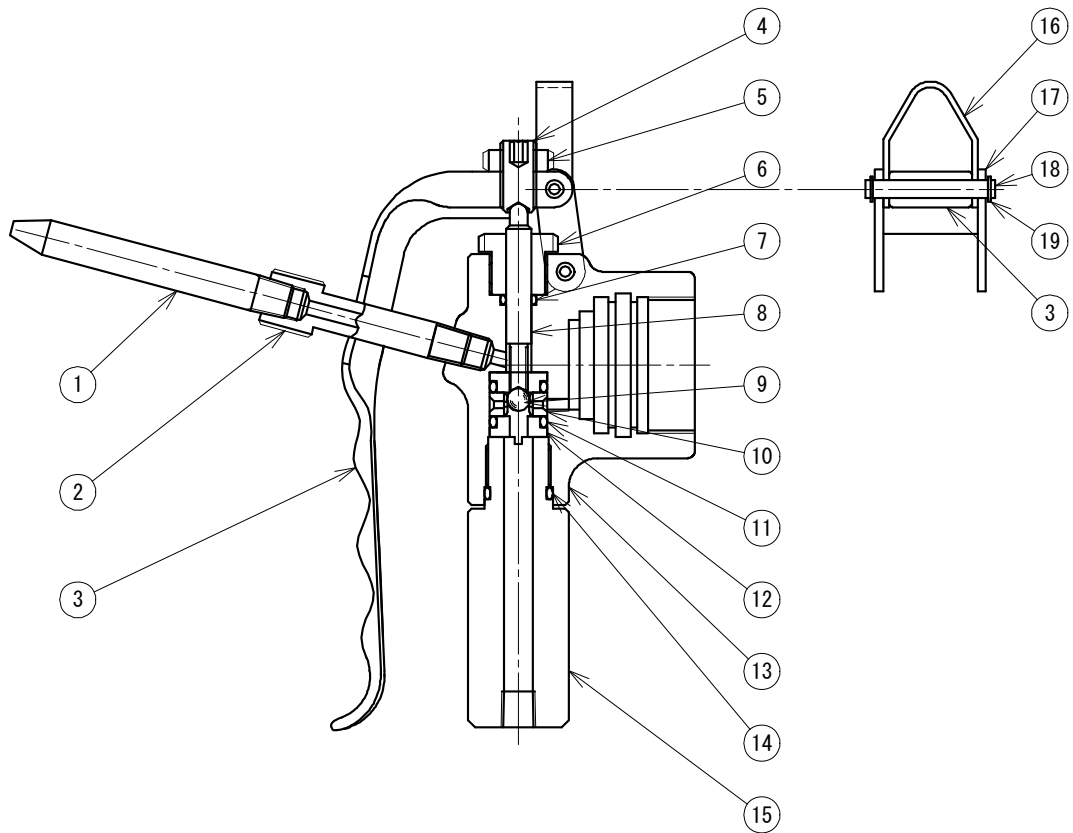


Size	A	B	C*	D
1mL	49	38	29.5	101
3mL	49	55	27.5	101
5mL	49	73	30.5	101
10mL	49	96	39.5	101
20mL	49	144	64.5	101

\*set a maximum value

### 8-3 Metering Gun Body

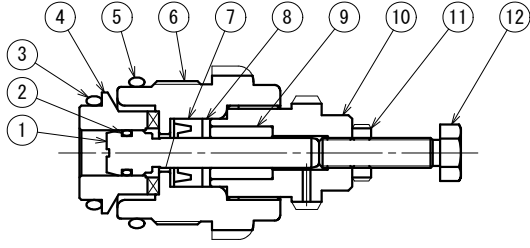
#### 800K365 Metering Gun Body



No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	700K199	Nozzle	1	11	640K011	O ring	2
2	701K300	Connector	1	12	701K297	Valve seat	2
3	703K841	Lever	1	13	701K294	Body	1
4	701K291	Adjustment screw	1	14	640K014	O ring	1
5	627K462	Nut	1	15	701K298	Grip	1
6	701K293	Gland bushing	1	16	703K842	Hook	1
7	640K004	O ring	1	17	703K843	Link	2
8	701K295	Rod	1	18	701K299	Pivot pin	2
9	630K683	Ball	1	19	631K941	E type retaining ring	4
10	800K367	Side ring assembly	1				

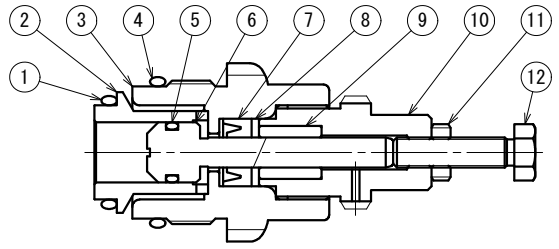
### 8-4 Metering Cylinder

**800K856 Metering Cylinder (1mL)**



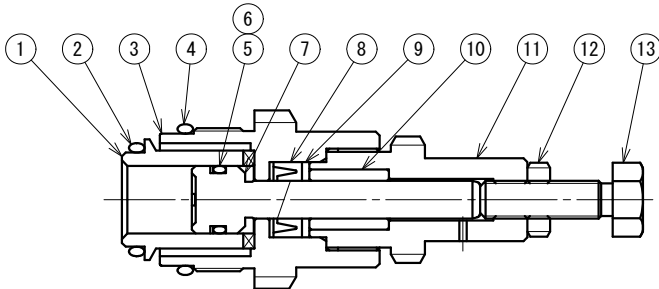
No	Parts No.	Description	Q'ty
1	703K014	Piston	1
2	644K006	O ring	1
3	644K116	O ring	1
4	701K450	Cylinder	1
5	644K118	O ring	1
6	703K015	Housing	1
7	680K185	Packing	1
8	680K328	Back up ring	1
9	770K285	Sleeve	1
10	703K016	Retainer	1
11	627K491	Nut	1
12	701K198	Adjustment screw	1

**800K857 Metering Cylinder (3mL)**



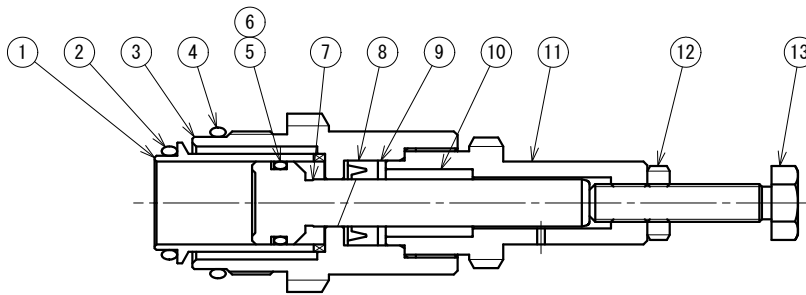
No	Parts No.	Description	Q'ty
1	703K014	Piston	1
2	644K006	O ring	1
3	644K116	O ring	1
4	701K450	Cylinder	1
5	644K118	O ring	1
6	703K015	Housing	1
7	680K185	Packing	1
8	680K328	Back up ring	1
9	770K285	Sleeve	1
10	703K016	Retainer	1
11	627K491	Nut	1
12	701K198	Adjustment screw	1

**800K858 Metering Cylinder (5mL)**



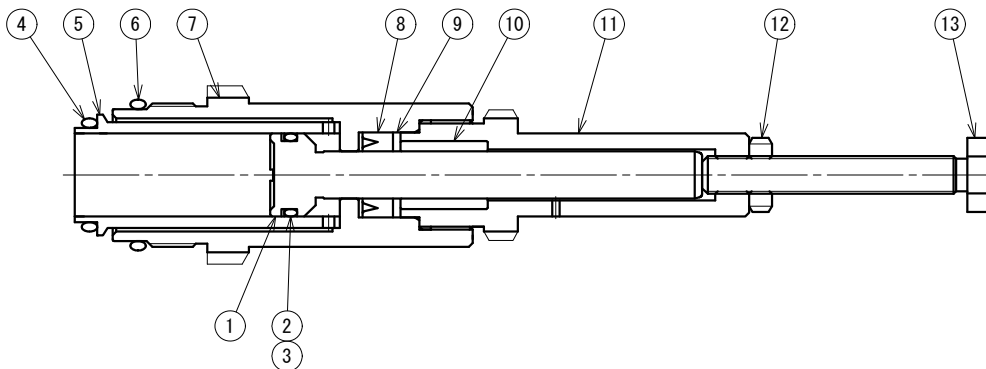
No	Parts No.	Description	Q'ty
1	701K446	Cylinder	1
2	644K116	O ring	1
3	703K021	Housing	1
4	644K118	O ring	1
5	644K013	O ring	1
6	645K643	Back up ring	1
7	703K020	Piston	1
8	680K139	Packing	1
9	680K138	Back up ring	1
10	770K226	Sleeve	1
11	703K022	Retainer	1
12	627K493	Nut	1
13	701K194	Adjustment screw	1

## 800K859 Metering Cylinder (10mL)



No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	701K429	Cylinder	1	8	680K238	Packing	1
2	644K116	O ring	1	9	770K268	Back up ring	1
3	703K024	Housing	1	10	770K236	Sleeve	1
4	644K118	O ring	1	11	703K025	Retainer	1
5	644K016	O ring	1	12	627K493	Nut	1
6	645K646	Back up ring	1	13	701K191	Adjustment screw	1
7	703K023	Piston	1				

## 800K860 Metering Cylinder (20mL)



No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	703K026	Piston	1	8	680K238	Packing	1
2	644K016	O ring	1	9	770K268	Back up ring	1
3	645K646	Back up ring	1	10	770K236	Sleeve	1
4	644K116	O ring	1	11	703K028	Retainer	1
5	701K931	Cylinder	1	12	627K493	Nut	1
6	644K118	O ring	1	13	703K504	Adjustment screw	1
7	703K027	Housing	1				

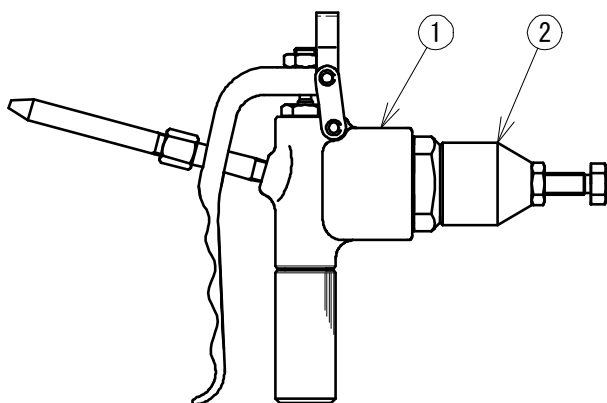
## 8-5 Specifications

Product No.	686427	686428	686429	686430	686431
Model	KGK-112	KGK-114	KGK-115	KGK-116	KGK-117
Applicable Material Capacity	<p>Greases, High Viscosity Oils</p> <ul style="list-style-type: none"> <li>- Please contact us if you are going to use any material such as silicone grease or molybdenum disulfide grease which will affect the operation of a valve.</li> <li>- Any material which contains particles such as aggregate or fast drying type of material is NOT applicable.</li> <li>- Wetted parts in a metering gun are made of steel and aluminum and seal parts are made of NBR and polyurethane.</li> </ul> <p>Make sure that material you are going to use is compatible with these parts.</p>				
Shot Range	1mL	3mL	5mL	10mL	20mL
Shot Accuracy	0.3-1mL	0.5-3mL	1-5mL	3-10mL	5-20mL
Maximum Operating Pressure	± 2 %				
Withstanding pressure	20MPa				
Operating Temperature	30MPa				
Weight	Room Temperature				
Product No.	1.0 kg	1.1 kg	1.2 kg	1.3 kg	1.5 kg

Note: Viscosity of material will vary according to use conditions.

## 9. Product and Part List for Adhesive Metering Gun

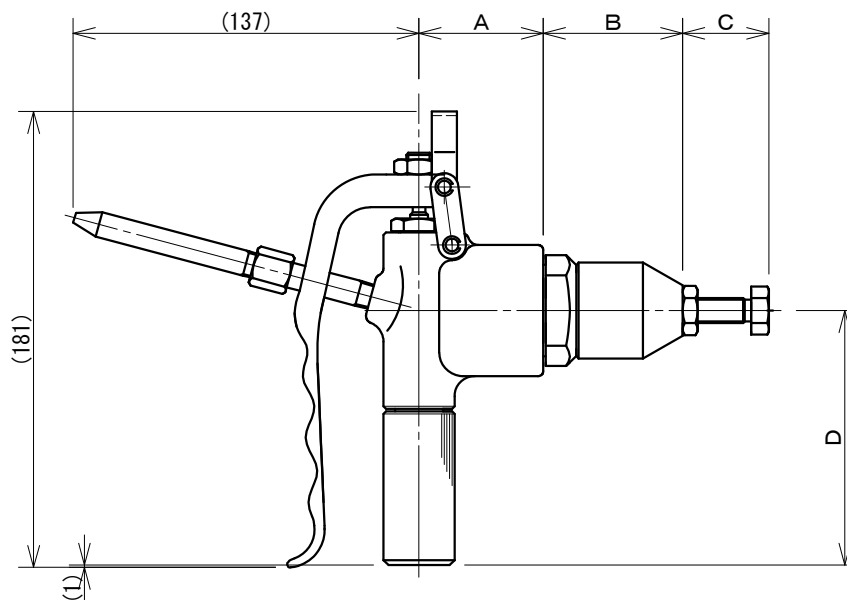
### 9-1 Metering Gun



MODEL LIST

Size	Product No.	①Switching Valve	②Cylinder
1mL	686432	800K375	800K376
3mL	686433	800K375	800K377
5mL	686434	800K375	800K378
10mL	686435	800K375	800K379
20mL	686436	800K375	800K572

### 9-2 Dimensions

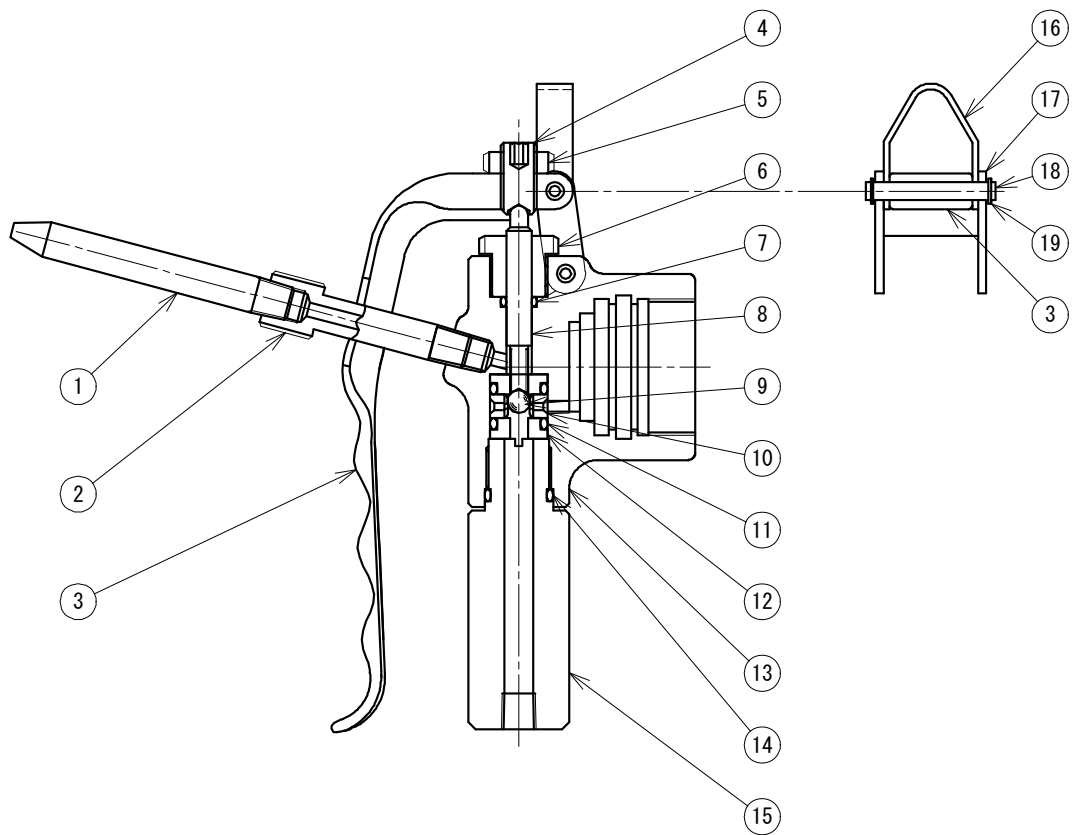


Size	A	B	C*	D
1mL	49	23.5	26.5	101
3mL	49	38	27.5	101
5mL	49	55	37.5	101
10mL	49	67	41.5	101
20mL	49	118	42.5	101

\*set a maximum value

### 9-3 Metering Gun Body

#### 800K375 Metering Gun Body

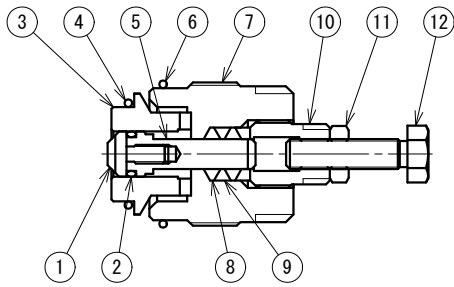


No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	700K199	Nozzle	1	11	643K011	O ring	2
2	701K300	Connector	1	12	701K297	Valve seat	2
3	703K841	Lever	1	13	701K294	Body	1
4	701K291	Adjustment screw	1	14	643K014	O ring	1
5	627K462	Nut	1	15	701K298	Grip	1
6	701K293	Gland bushing	1	16	703K842	Hook	1
7	640K004	O ring	1	17	703K843	Link	2
8	701K295	Rod	1	18	701K299	Pivot pin	2
9	630K683	Ball	1	19	631K941	E type retaining ring	4
10	795K015	Side ring assembly	1				



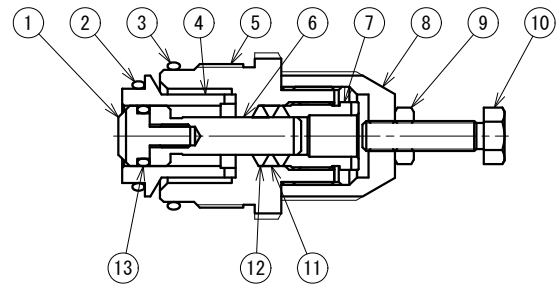
### 9-3 Metering Cylinder

#### 800K376 Metering Cylinder (1mL)



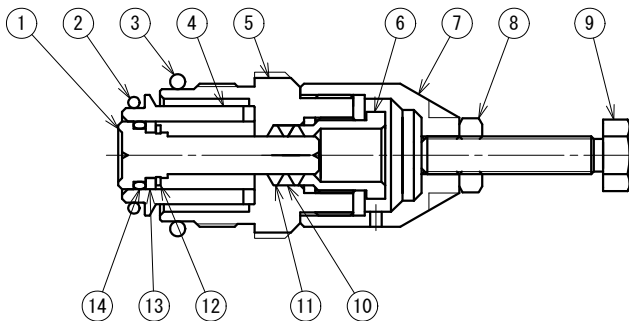
No	Parts No.	Description	Qty
1	701K449	Packing retainer	1
2	643K006	O ring	1
3	701K450	Cylinder	1
4	643K116	O ring	1
5	701K452	Piston	1
6	643K118	O ring	1
7	701K451	Housing	1
8	770K111	Packing	2
9	770K113	Packing	1
10	702K141	Retainer	1
11	627K491	Nut	1
12	701K198	Adjustment screw	1

#### 800K377 Metering Cylinder (3mL)



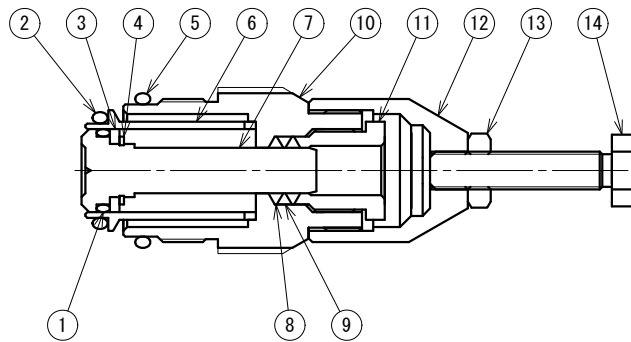
No	Parts No.	Description	Qty
1	701K353	Packing retainer	1
2	643K116	O ring	1
3	643K118	O ring	1
4	701K354	Cylinder	1
5	701K355	Housing	1
6	701K356	Piston	1
7	701K357	Retainer	1
8	701K358	Cover	1
9	627K491	Nut	1
10	701K198	Adjustment screw	1
11	770K125	Packing	1
12	770K112	Packing	2
13	643K011	O ring	1

#### 800K378 Metering Cylinder (5mL)



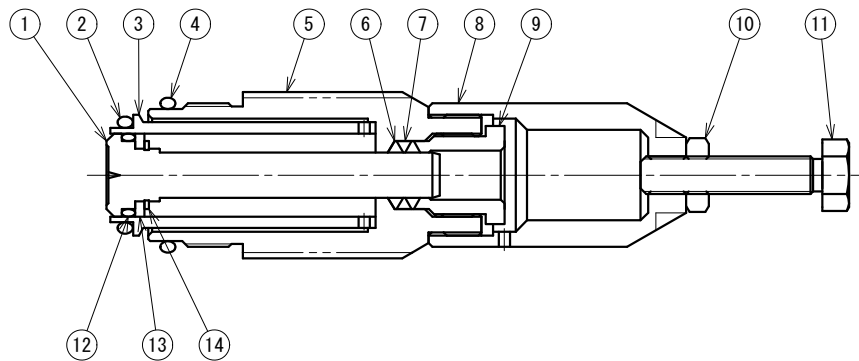
No	Parts No.	Description	Qty
1	701K455	Piston	1
2	643K116	O ring	1
3	643K118	O ring	1
4	701K446	Cylinder	1
5	701K456	Housing	1
6	701K453	Retainer	1
7	701K457	Cover	1
8	627K493	Nut	1
9	701K191	Adjustment screw	1
10	770K125	Packing	1
11	770K112	Packing	2
12	630K582	Retaining ring	1
13	701K458	Washer	1
14	643K013	O ring	1

## 800K379 Metering Cylinder (10mL)



No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	643K016	O ring	1	8	770K131	Packing	2
2	643K116	O ring	1	9	770K130	Packing	1
3	701K463	Washer	1	10	701K461	Housing	1
4	630K584	Retaining ring	1	11	701K459	Packing retainer	1
5	643K118	O ring	1	12	701K457	Cover	1
6	701K429	Cylinder	1	13	627K493	Nut	1
7	701K460	Piston	1	14	701K191	Adjustment screw	1

## 800K572 Metering Cylinder (20mL)



No	Parts No.	Description	Qty	No	Parts No.	Description	Qty
1	702K729	Piston	1	8	702K731	Cover	1
2	643K116	O ring	1	9	701K459	Packing retainer	1
3	701K931	Cylinder	1	10	627K493	Nut	1
4	643K118	O ring	1	11	701K191	Adjustment screw	1
5	702K730	Housing	1	12	643K016	O ring	1
6	770K131	Packing	2	13	701K463	Washer	1
7	770K130	Packing	1	14	630K584	Retaining ring	1

## 9-5 Specifications

Product No.	686432	686433	686434	686435	686436
Model	KGK-112T	KGK-114T	KGK-115T	KGK-116T	KGK-117T
Applicable Material	Adhesive - Any material which contains particles such as aggregate or fast drying type of material is NOT applicable. - Wetted parts in a metering gun are made of steel and aluminum and seal parts are made of fluorine resin. Make sure that material you are going to use is compatible with these parts.				
Capacity	1mL	3mL	5mL	10mL	20mL
Shot Range	0.3-1mL	0.5-3mL	1-5mL	3-10mL	5-20mL
Shot Accuracy	± 2 %				
Maximum Operating Pressure	20MPa				
Withstanding pressure	30MPa				
Operating Temperature	Room Temperature				
Weight	1.0 kg	1.1 kg	1.2 kg	1.3 kg	1.5 kg

Note: Viscosity of material will vary according to use conditions.

## 10. Limited Warranty

If an abnormality occurs during normal operation in accordance with the operating instructions and other operating cautions within the warranty period (12 months after date of purchase) that can be attributed to a manufacturing defect, the defective parts of this product will be serviced or the product will be replaced free of charge. However, this warranty will not cover compensation for incidental damage or any malfunction listed below.

### 1. Warranty period

This warranty will be valid for a period of 12 months after the date of purchase.

### 2. Warranty

If, during the warranty period, any of the material of the genuine parts of this product or the workmanship of this product is found defective, and is so verified by our company, the servicing cost will be fully born by our company.

### 3. Exclusion

Even during the warranty period, this warranty does not cover the following:

- 1) Malfunction arising from use of parts other than manufacturer-specified genuine parts
- 2) Malfunction arising from misuse or operating errors, or lack of storage or maintenance care
- 3) Malfunction arising from use with a fluid that may cause corrosion, inflation or dissolution of the component parts of the product
- 4) Irregularity arising from repair made by other than by our firm, our regional office, dealer or authorized service personnel
- 5) Malfunction arising from modification of the product by other than authorized service personnel
- 6) Wear and tear of parts that must be regularly replaced in the course of normal operation, such as packings, O rings, balls, and valve seats
- 7) Malfunction and/or damage due to transportation, moving or droppage of the product after purchase
- 8) Malfunction and/or damage due to fire, earthquake, flood or other force majeure
- 9) Malfunction arising from use of compressed air that contains impurities or excessive moisture, or use of gases or fluids other than the specified compressed air
- 10) Malfunction arising from use with a fluid that causes excessive abrasion or use of lubricating oil other than that specified for this product

Furthermore, this warranty does not cover the rubber parts, or other parts that are subject to wear in normal operation, used in this product and its accessories.

### 4. Parts

Parts for this product will be kept available for 5 years after discontinuation of production. Once 5 years have elapsed after close of production, availability of parts for this product cannot be guaranteed.

**MEMO.**

Manufactured by  
**YAMADA CORPORATION**

INTERNATIONAL DEPARTMENT

No.1-3, 1-Chome, Mimami-Magome, Ohta-Ku, Tokyo, 143-8504, Japan

PHONE : +81-(0)3-3777-0241

FAX : +81-(0)3-3777-0584

201108 100-494YO