

# Operation and Maintenance Manual

## GEAR PUMP

*GP05/15(F)/30(F)/45*



This manual contains important information on warnings and cautions. Read the manual thoroughly before starting to operate the equipment, and follow the instructions.

Always keep the manual handy until such time as the equipment is no longer being used.

If your manual is lost or worn badly, do not hesitate to contact our agency which is closest to you, or the Asahi Sunac Corporation, directly, and ask us to send you a new one.

# Thank you for buying our product.

Thank you for buying our product, Gear Pump <GP05/15(F)/30(F)/45>.

Please read this manual carefully before starting to operate the pump. Please pay particular attention to major specifications, warnings and precautions, including prohibited items. Use the pump appropriately and with care, following the instructions. We hope that by doing so you win benefit from use of the product over a long period of time.

The pump is geared to industrial painting. It is for use only by those who are familiar with its workings and have undergone proper training; persons without such knowledge should not be allowed to operate the pump.

Should you have any questions with regard to the manual, please give us the “Model Name” and “Serial Number” of your equipment, so that we may be able help you with your questions. You can reach us at any of the addresses, phone numbers and fax numbers shown on the back cover.

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Please read and understand this manual. Always follow the instructions in it.

Failure to do so may **result in injury to the user, or damage to equipment.**

The manual contains only minimum safety precautions and no implication is intended that other measures are unnecessary. Needless to say, regulatory and corporate safety rules and regulations must invariably be observed.

Shown below are minimum basic safety precautions in connection with use of our product:

● **The safety precautions are divided into three (3) categories, based on the degree of severity of the hazard:**

 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided by following the instructions given, could result in injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided by following the instructions given, could result in damage or breakage of the equipment.
<b>NOTE</b>	Indicates general safety rules, including key practices and useful tips.

※ A potential hazard classified into the CAUTION category could still bring about serious results, depending on the circumstances. Always follow precautionary instructions issued to protect you and the equipment from potential injury or damage.

## **WARNING**

### **Potential Hazards: Misuse**

#### **《General safety precautions》**

- Never attempt to change component parts or modify the pump without prior consultation with Asahi Sunac. Any attempt to do so may result in equipment failure.
- Conduct periodic, and thorough inspections of the equipment, and repair and replace parts, as required.
- When spraying, ALWAYS use Personal Protective Equipment, such as protective goggles, working clothes, and/or means for breathing protection, as recommended by a manufacturers of paints or solvents. Depending on the chemical contents of the paint or solvent, and the ventilation system used, a different type of Personal Protective Equipment may be required. Please consult with the maker of the paint, or solvent concerned.
- Never leave the pump unattended while it is running. Keep children, and other unauthorized people well away from the painting equipment.

#### **《Compatibility of paint and solvent》**

Make sure that any fluid, any mixture of paint and solvent used, is chemically compatible with the material of the part of the pump with which it is likely to come into contact. Before use, carefully consider makers, and confirm whether or not it is compatible.

### **Potential Hazards: Fires and Explosions**

#### **《Sources of fires》**

As liquid paint flows through pumps and hose, static electricity is generated.

If painting equipment is not properly grounded, sparking may occur due to static electricity.

If sparks come into contact with spray paint particles, floating dust, or other inflammables the sparks could cause a fire or an explosion, possibly causing serious injury to the user and/or damage to the equipment.

- Provide good ventilation in the vicinity of spraying operations.
- Never conduct painting operations in the vicinity of source of a fire, a pilot lamp, or other inflammables.
- When cleaning the painting system,  
Always: Remove the nozzle, Point the tip of a spray gun at a grounded metal paint can, Keep part of the gun in contact with the can, and Pull the trigger for cleaning.
- Ensure that the painting equipment and workpiece are properly grounded. If they are not grounded, a fire or an explosion could result, caused by static electric discharge or sparking.
- Interrupt painting operations immediately if you feel static electric shock, no matter how slight it might be. Check the equipment for grounding. Do not resume operations until you clarify the cause, and take appropriate countermeasures.
- Always keep handy a powerful fire extinguisher in the spray painting area.

 **WARNING**

《Grounding》

To remove potential static electricity hazards, ensure that the pump, the work-piece, and all other items within the painting system (including other equipment in use near by) are grounded. If you find something that is not properly grounded, ground it in accordance with the grounding methodology specified by Electrical Equipment Technical Standard (Class D or equivalent). The grounding method for each item within the painting system is as follows:

- Pump  
Connect a ring crimp terminal (that comes with the equipment) to the pump grounding terminal (⊕), and then connect the other clip to a Class D grounding object.
- Air compressor  
Arrange the grounding in accordance with the maker's instructions.
- Painting hose  
Use a properly grounded hose. When using an extension hose, ensure that it is securely grounded.
- Spray gun  
A spray gun connected to a hose and pump that have been properly grounded, is itself deemed to be properly grounded.
- Work-pieces  
Always remove dirt from hangers and grounding clips in order to keep work-pieces grounded.
- Paint container  
Among paint containers, only those made of a conductive metal should be placed on a grounded floor or table. For details, refer to the local regulatory requirements, and comply with them.
- Cleaning solvent can  
Among the solvent cans, only those made of a conductive metal should be placed on a grounded floor or table. Do not place the conductive metal can on a non-conductive sheet, such as paper or corrugated fiberboard. Before you pull the trigger for cleaning the pump, or for reducing pressure, ensure that the metal portion of the gun is in contact with the grounded container, and securely supported.

《Solvents》

- Never use a halogenated hydrocarbon solvent: When such a solvent comes into contact with an aluminum, or plated, portion of the painting equipment, it will react chemically in a way that is very dangerous.
- Further, such a solvent may explode upon coming into contact with an aluminum, or plated, portion of a pressure vessel (pump, heater, filter, valve, gun, etc.), on occasions leading to death or injury.

《Some examples of halogenated hydrocarbon solvents》

Chlorines	Trichloroethylene, Tetrachloroethylene, Ethylene chloride
Bromines	n-Propyl Bromide
Carbon-fluorines	HCFC-225, HFC-43-10mee, HFE-449s1(HFE-7100)

(Please note that the above examples do not cover all halogenated hydrocarbon solvents. Please contact a paint maker for further details.)

 **WARNING**

**In an atmosphere contaminated with paint- or spray-mist, you may suffer from respiration difficulties or you may even be intoxicated from organic solvents contained therein.**

- Do not use the painting system in a room, tunnel, tank, etc., where sufficient ventilation is not available. When you do use it, make sure that no people or livestock are within a vicinity where they may be affected.

# 2

## Outline of the Equipment

- ① This equipment is a self sucking type gear pump to output viscous liquid fluid with highly accurate volume control being proportional to its cycling number.
- ② It is a leakless pump featured by specially designed fluid passage and seating part .  
As its driving shaft is directly surrounded by fluid passage, fluid stagnation is minimum. Also, self-enlarging packing used for sealing ensure more reliable and stable duty than other conventional packings.
- ③ At customer's option, there are special models of this pump having by-pass valve which can reduce dramatically the cleaning time. (GP15F • 30F • 45F)
- ④ This equipment doesn't correspond with every paints. You need to confirm compatibility between paints and the gear pump.

# 3

## Specifications and Models of Gear Pump

### ① Applicable liquid

Melamine, Acryl and other paint usually use for general industrial surface coating (including metallic paint)  
Water borne paint including over 15% of solvent (excluding water emulsion paint)

### ② Specifications

Pressure durability : 2MPa

Permissible cycles :	• Paint transfer	300rpm	200rpm if viscosity exceeds 30sec/FC#4
	• Solvent transfer	250rpm	continuous working time within 20sec.
	• Dried state	100rpm	continuous working time within 5sec.
	• Suction head	$\phi 6 \times 1.5m$	adaptation fluid viscosity 20mPa·s~150mPa·s

Output accuracy (Liquid = Turbine oil #32)

- Output pressure 0MPa (open exit) within 2%
- Output pressure 0.3MPa within 4%

Reproduction accuracy : • within 1.5%

Maximum fluid temperature : • 50°C

Weight • GP05 : 1.9kg GP15 : 2.0kg GP30 : 2.1kg GP45 : 2.2kg

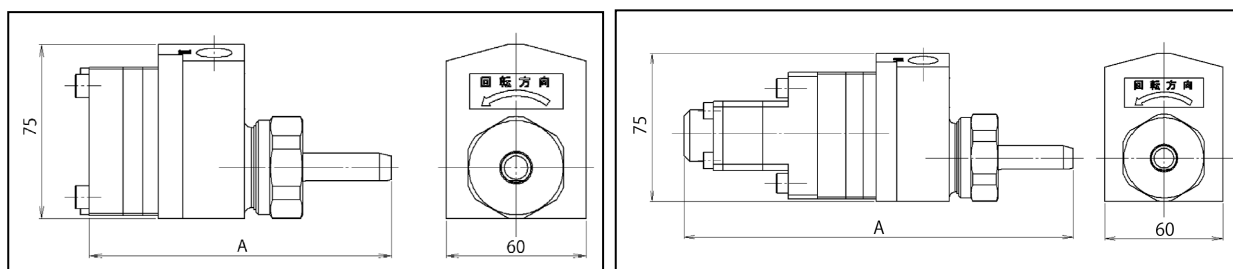
Permissible use frequency of By-pass valve : • 30 times or under per day

Models and pump size

## Models and pump size

● Standard type (GP05/15/30/45)

● with by-pass for cleaning (GP15F/30F)



Model	Unit No.	Output	size : A(mm)	Remarks
GP05	3703	0.5mL/cycle	123.8	Standard type
GP15	3704	1.5mL/cycle	129.5	
GP30	3705	3.0mL/cycle	138	
GP45	3706	4.5mL/cycle	146.5	
GP15F	3708	1.5mL/cycle	197.5	with by-pass for cleaning
GP30F	3709	3.0mL/cycle	206	

# 4

## Operation Precautions

- ① When to clean liquid passage in the pump with solvent, drive the pump within the permissible rotation speed (250rpm) and for a continuous time length within 20 sec. After cleaning, stop pump driving first, then put out suction pipe. Never make the pump driven with non-load, air or non-lubricant liquid.
- ② When to use this gear pump for feeding hardener in two component system, the hardener may easily stick to its bearing section. Regular overhauling (once a month or two months) will be necessary.
- ③ When to use this gear pump with metallic paint, avoid to install it in circulating liquid passage as possible. (If such metallic paint is circulated over five times, there will be deformation of aluminum flakes in the paint, which may darken the finished color tone.)
- ④ Some painting material including few resin may not be used on this gear pump. Consult manufacturer.
- ⑤ When delivered, the pump is filled with transparent plasticizer for protection, so at the time of assembly, clean it with a solvent before use.
- ⑥ The gear pump should be used with its rotating direction of counter-clock viewed from its shaft side.
- ⑦ Liquid suction (entrance) is left side of the pump viewed from shaft side. (marked as "IN")

# 5

## Maintenance and Periodical Inspection

### ① Maintenance

Conduct periodical inspections in accordance with the following table so that the performance of this equipment will be demonstrated sufficiently.

Item	Disposal	Period
Measurement of output volume	Correction based on measured value	Every 100 hours of operation
Check of leakage from seal at shaft part	Replacement of seal and packing	Every 1000 hours of operation

### ② Replacement periods of consumables

Replacement periods in case of normal output: 200 ml/min

Name of part	Part No.	Standard base paint	Abrasive paint (Mica • Primer paint)
U packing	3704-005	~7000hours	~2000hours
Lip seal	3704-004		

## Notes

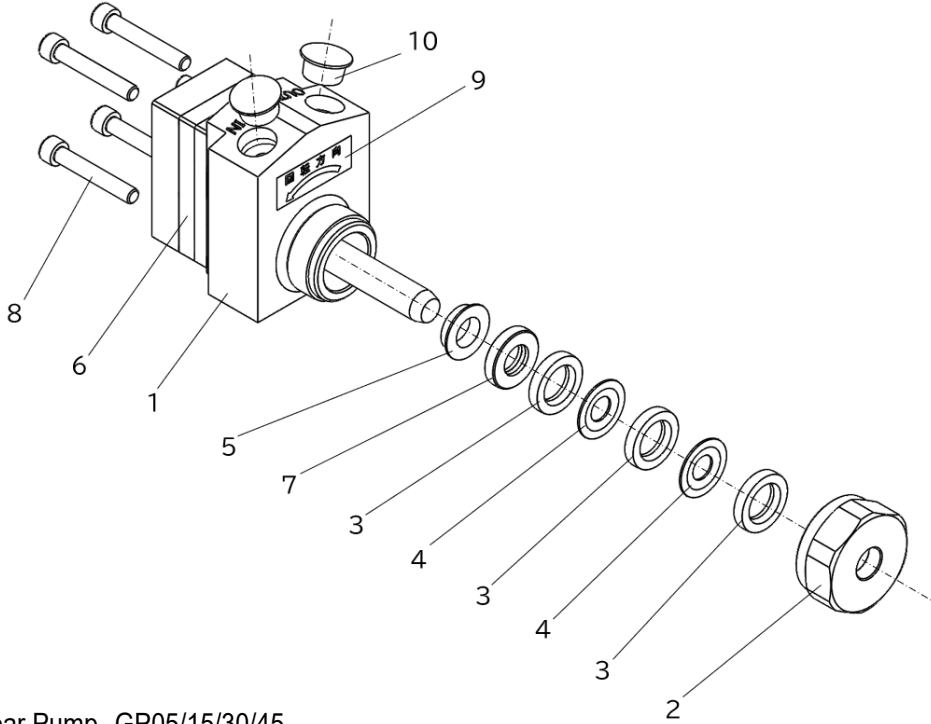
- ① We recommend you to replace the U packing and lip seal at the same time.
- ② Even if the packing and lip seal are replaced due to the wear of the shaft, leakage may occur. In this case, replace the gear pump with a new one.

# 6

## Exploded Diagram and Part Names

- Standard type (GP05, GP15, GP30, GP45)

<b>GP05</b>	<b>GP15</b>	<b>GP30</b>	<b>GP45</b>
<b>3703</b>	<b>3704</b>	<b>3705</b>	<b>3706</b>



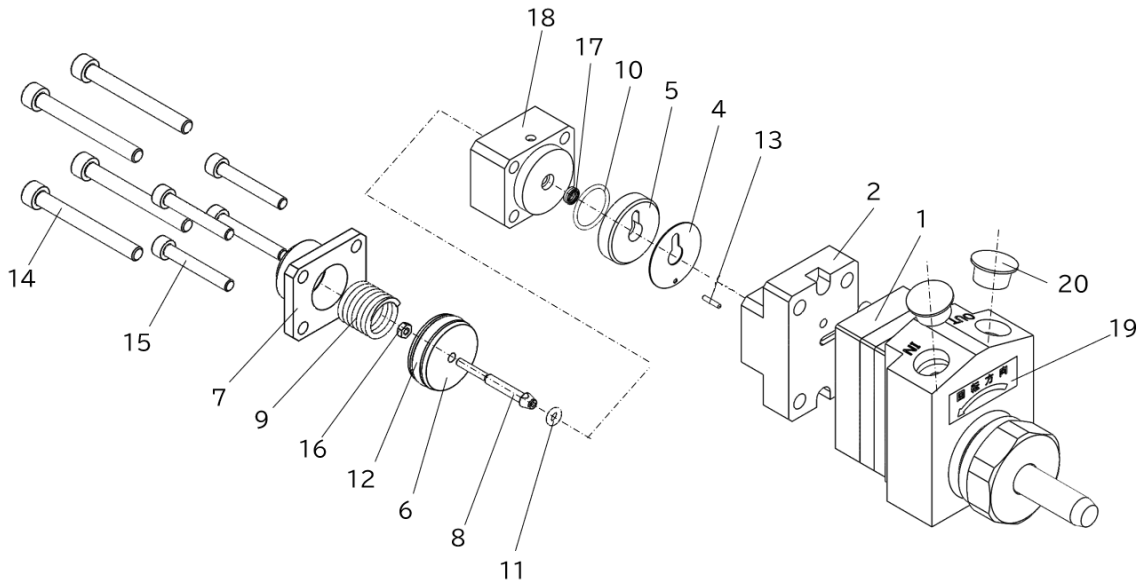
Gear Pump GP05/15/30/45

No.	Part No.	Part Name	Q'ty	Remark
1	-	Housing	1	*
2	3704-002	Retainer	1	
3	3704-003	Spacer	3	
4	3704-004	Lip seal	2	
5	3704-005	U-packing	1	
6	-	Gear pump (for GP05)	1	*
	-	Gear pump (for GP15)	1	
	-	Gear pump (for GP30)	1	
	-	Gear pump (for GP45)	1	
7	3704-007	Back-up ring	1	
8	03-80635	Bolt (for GP05)	4	M6×35L
	03-80640	Bolt (for GP15)	4	M6×40L
	03-80650	Bolt (for GP30)	4	M6×50L
	03-80660	Bolt (for GP45)	4	M6×60L
9	3704-008	Name plate	1	
10	363-0001	Cap	2	

\*We don't sell Housing and Gear pump separately.

● with by-pass for cleaning (GP15F, GP30F)

<b>GP15F</b>	<b>GP30F</b>
<b>3708</b>	<b>3709</b>



Gear Pump GP15F/30F

No.	Part No.	Part Name	Q'ty	Remark
1	3704	Gear pump (for GP15F)	1set	
	3705	Gear pump (for GP30F)	1set	
2	3708-008A	Seat Housing	1set	
3	Nil			
4	3708-009	Packing	1	
5	3708-010	Disk	1	
6	3708-011	Piston	1	
7	3708-012	End cap	1	
8	3708-013	Needle	1	
9	3708-014	Spring	1	
10	130-6018	O-ring	1	S18
11	101-6004	O-ring	1	P4
12	101-6024	O-ring	1	P24
13	3708-015	Pin	1	
14	03-80655	Bolt (for GP15F)	4	M6×55L
	03-80665	Bolt (for GP30F)	4	M6×65L
15	03-80535	Bolt	4	M6×35L
16	15-10300	Nut	1	
17	152-0004	U-packing	1	
18	3708-017	Cylinder	1	
19	3704-008	Name plate	1	
20	363-0001	Cap	2	

Frequency of usage less 30 times / a day

ASAHI SUNAC CORPORATION (the “Company”) shall provide the original purchaser (the “Purchaser”) with warranty service for a period of 6 months from the date of purchase of the product, as follows:

- Should you find defects in design or workmanship with regard to parts, ship them back to the Company, with freight prepaid. The Company shall repair or replace the parts free of charge and reimburse the freight charges, provided that, as a result of an inspection and investigation of the parts conducted by the Company, the defects are deemed to be attributable to the factors within the Company’s responsibility.
  
- In the following cases, free after-sales service is not provided.
  1. Failure resulting from an inappropriate method of installing this equipment.
  2. Failure resulting from a use method not conforming to this instruction manual or mishandling.
  3. Failure resulting from insufficient maintenance management of this equipment and incorrect handling such as non-conformance to the procedures specified in this instruction manual.
  4. Failure resulting from unauthorized alteration or structure change of this equipment without the Company’s consent.
  5. Failure due to force majeure such as earthquake, disaster, flood disaster or lightning.
  6. Warranty for consumables worn or deteriorated even in the case where this equipment is used correctly.
  7. Repair after the machine has been used outside Japan, and shipping cost.
  8. In addition to the above, failure due to circumstances beyond our control.
  
- As for items such as parts purchased by the Company from another manufacturer, the warranty of that manufacturer shall apply.
  
- As for any parts deemed to be defective, the Company shall not be held liable for any expenses beyond the provision of repair or replacement parts free of charge.
  
- The Company shall not be held liable for any damage to the Purchaser caused by factors not attributable to the Company, such as misuse of product, etc.

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- When a transfer of title of this equipment takes place, please see to it that this Operation and Maintenance Manual is handed over to the new owner.
  - This equipment is manufactured in compliance with the Laws and Regulations of Japan.  
In the rare eventuality of this equipment being used outside Japan, compliance with the safety standards of the relevant countries is of course mandatory.
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English



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