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AUTOLUB

AUTOMATIC LUBRICATING SYSTEMS & SERVICES

ระบบหล่อลื่นน้ำมันและจาระบี สำหรับเครื่องจักร

SPECIALIST IN CENTRALIZED LUBRICATION SYSTEM

ติดตั้ง จำหน่าย อุปกรณ์ระบบ จ่ายสารหล่อลื่นอัตโนมัติ และให้คำปรึกษา
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สำหรับโรงงานอุตสาหกรรม

บริษัท ออโต้ลูบ ซิสเต็ม เอ็นจิเนียริ่ง (ไทยแลนด์) จำกัด
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CONTENTS

INCREDIBLE PRECISION

IHI announces the birth of an epoch-making precise fluid dispenser that can handle any changes in temperature or viscosity of the materials.

The IHI precise fluid dispenser is capable of supplying a fixed amount of material with high accuracy. Precise Dispensing System are consisted of pneumatic pump for pumping lubricant and Precise dispenser for supplying lubricant to work pieces.
Pneumatic pump can use up the grease without waste until the neighborhood of pail bottom. We have a variety of precise dispensers. Therefore, you can select the type that best suits your system's materials and use. The dispensable volume can be precisely adjusted by an operational pneumatic system. In addition, the system is capable of suction backing, so there is no drops of backflow.

Uses

- The manufacture and assembly of all kinds of automobile components for electrical wire connectors, brakes, door locks, windshield wipers, etc...
- The manufacture and assembly of semiconductors and electrical components for CD,DVD recorders, Video camera, Printer and Electrical appliances.
- The manufacture of ball and roller bearings, the maintenance of a proper level of oil filling in gas meters and other such devices and other manufacturing and assembling processes.

Precise Fluid Dispenser Selection Table

Item \ Precise Fluid Dispenser model		ACV-001	ACV-002	ACV-010	ACV-020SDD	CVM-03	CVM-10	CVM-50	CVM-100	CVM-200	CVN-02	SDV-002L
Dispensing volume cil/stroke/port	0.005~ 0.12	●										
	0.01 ~ 0.23		●									
	0.02 ~ 0.21											●
	0.03 ~ 0.2										●	
	0.04 ~ 1.2			●								
	0.05 ~ 0.3					●						
	0.06 ~ 2.0				●							
	0.2 ~ 1.2						●					
	0.5 ~ 5.0							●				
	2 ~ 10								●			
	4 ~ 20									●		
Required pressure (fluid line)	3MPa以下	●	●	●	●							●
	5.9~14.7MPa					●	●	●	●	●		
	5.9~20.6MPa										●	
Required pressure (air line)	0.2~0.7MPa	●	●	●	●							●
	0.3~0.7MPa					●	●	●	●	●	●	
Used grease (NLGI No.)	No.0~No.2	●	●	●	●	●	●	●	●	●	●	●
Referring of page		12	12	12	12	18	18	18	18	18	20	17

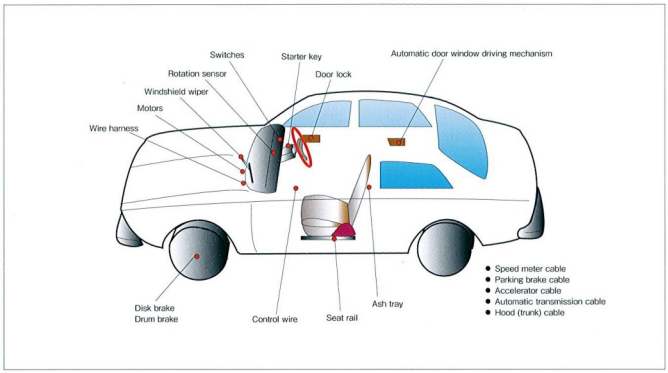
Air-operated pump Selection Table

Item \ Air-operated pump model		ACG-011FK	ACG-020	ACG-040	GSI-P334FK
Viscosity of grease (NLGI No.)	No.0~No.2	●	●	●	●
Container	1can	●			
	2.5can	●			
	16·18can(pail can)		●	●	●
Referring of page		21	21, 22	22	23

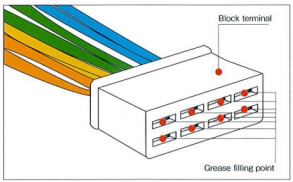
IHI PRECISE DISPENSING SYSTEM APPLICATION

Precise volume grease dispensing and filling

Applicable for Automobile parts and Home electronics.

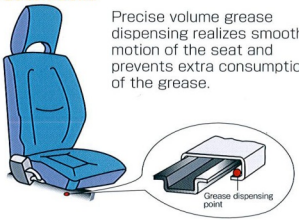


Grease filling for automobile wire harness connector



Grease dispensing for seat slide rail of automobile

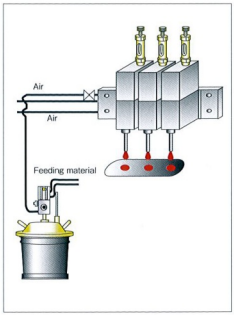
Precise volume grease dispensing realizes smooth motion of the seat and prevents extra consumption of the grease.

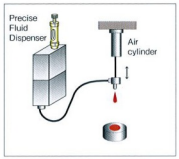


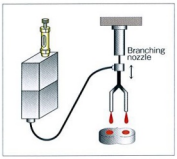
Grease dispensing for housing of audio set, etc.

Precise volume grease dispensing for rotating/swinging part of CD,DVD recorders and Video camera, etc. makes their operation smooth and eliminates noise.

Precise spot grease dispensing

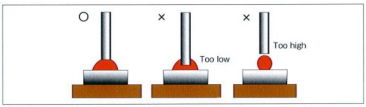




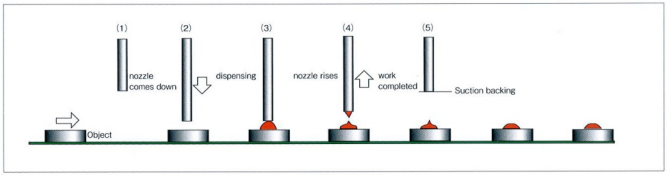


Knowhow to achieve precise spot dispensing

(i) nozzle comes down→dispensing→nozzle rises and OFF pilot plunger and OFF main plunger.
(ii) Adjust the clearance between the nozzle end and grease surface depend on grease Q'ty→keep the nozzle end not to go into the grease.



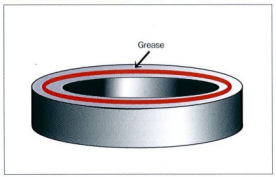
Relative position and flow of the nozzle and products



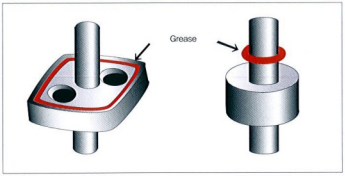
Applications Drawings of a grease line (Please contact us for details.)

Easily control grease volume and dispensing time

Grease dispensing to oil seal

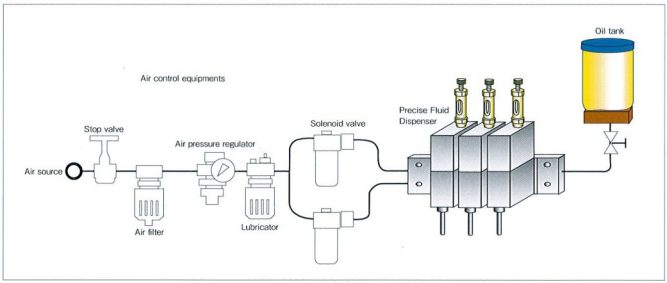


Grease dispensing to mechanical parts

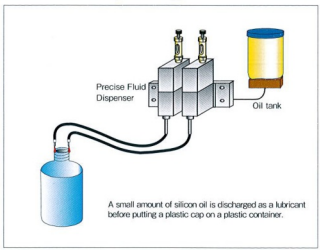


Precise volume dispensing system for various fluids

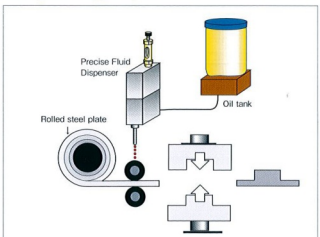
Precise volume of water, alcohol, etc. can be dispensed by utilizing ACV-□□□L Precise Fluid Dispenser for oil. Maximum 150 dispensing times per minute are available.



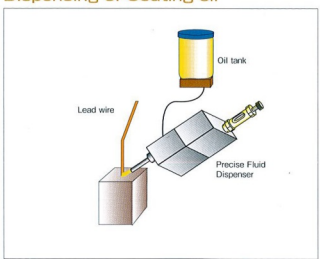
Silicon oil dispensing



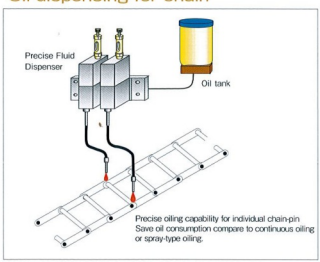
Dispensing of press-die removal oil



Dispensing of Coating oil



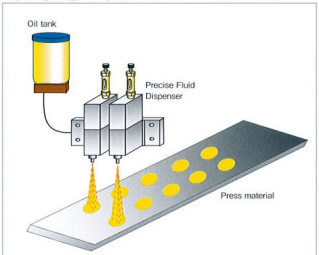
Oil dispensing for chain



Precise fluid volume control for one-component spray

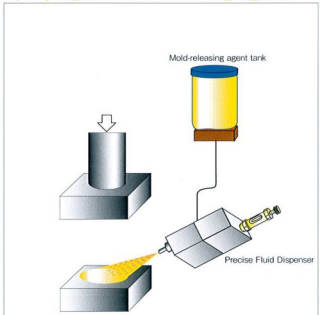
The spray method to apply high pressure direct to fluid is called one-component spray. Splash is much less by one-component spray, compare to the general oil spray. It is an environment-friendly spray method.
One-component spray can be achieved by using ACV Precise Fluid Dispenser.
Spraying conditions may vary depending on fluid viscosity and volume, and air pressure. Please contact us in details.

Spraying of press-die removal oil



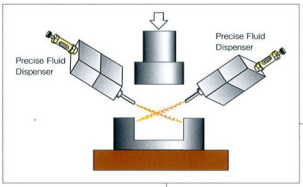
Lubricant oil can be sprayed on press material.
One-component spray achieves less splash and less waist of oil.

Spraying of mold-releasing agent



Remote oil spraying

Oil can be sprayed to horizontal direction.
Spray distance may vary depending on fluid viscosity and volume, and air pressure. Please contact us in details.

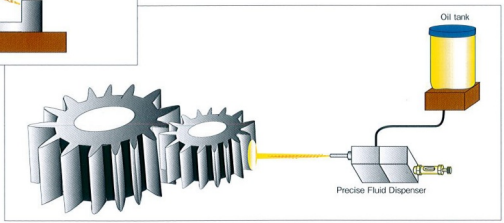


Oiling to press mould

Lubrication oil for press-mould can be sprayed.

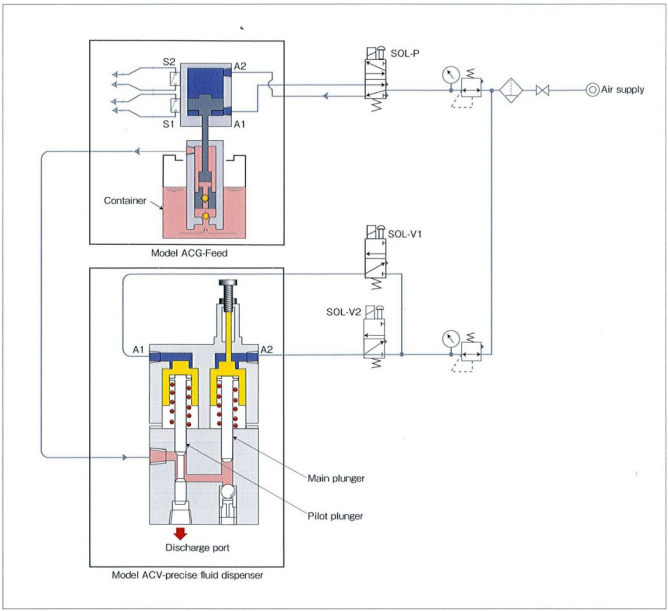
Oiling to gear

Oil can be sprayed to the gear with vertical tooth surface.



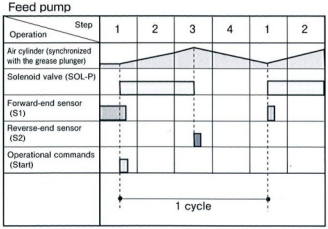
System Flow Chart - ACG & ACV Series

Circuit Diagram

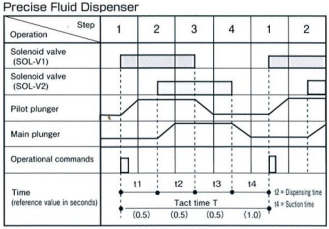


Time Charts

Feed pump

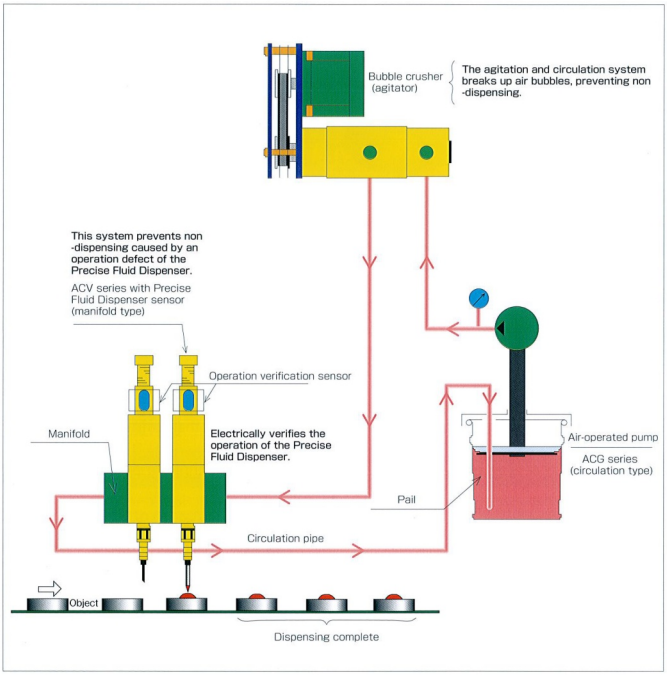


Precise Fluid Dispenser



on the control, you don't need to link the pneumatic pump and precise dispenser

Bubble crusher system + Precise Fluid Dispenser with sensor



Fail safe system

Point 1

The bubble crusher (agitation and circulation system) breaks up air bubbles, preventing No dispensing.(Refer to P22.)

Point 2

The sensor electrically verifies the operation of the Precise Fluid Dispenser (indicator rod).(Refer to P21.)

Air-operated pump - ACG Series

FEATURE for Air-operated Pump of ACG series

1. No loss is caused for most types of grease except for special type one.
2. Oil separation can be minimized because a follower plate is only put on the grease and the grease is not pressed at high pressure.
3. No grease disposal for air purge is required when pail can be is exchanged.

Applicable Pail Specifications

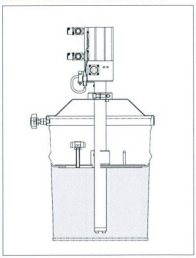
*specifications of pail can be used for Model ACG-020, ACG-040 and GSI-P334FK are as follows:

Specifications of adaptable pail can

Model	Inner diameter		Inner height	Capacity (litter)
	Top	Bottom		
1-type	285±3	272±3	315±5	18
2-type	285±3	272±3	342±5	20

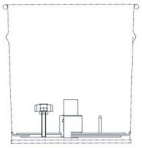
JIS Z1620/Type 1,2 and Model 1,2

During Use



After Use

Position of Follower plate



Pail can and Follower plate (remaining amount of grease)

When you use up grease until the pail bottom, it may cause a air suction. Please be careful of this point (you can adjust it by the height of the low level switch of the pump, for remaining grease amount.)

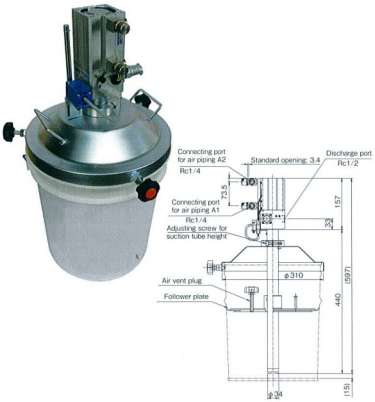
ACG-020 Air-operated pump used for ACV Precise Fluid Dispenser (Product code: RK970800)

This pump is developed for a Pail can. (Pail can is not included.)

Specifications

Item	Specifications	
Discharge volume	24 cm³/cycle	
Pump ratio	8:1	
Discharge pressure	3.1 MPa/at air pressure 0.4MPa	
Min. operating air pressure	0.2MPa	
Supply air pressure	0.2~0.4MPa	
Adaptable can	Pail can (*Refer to the applicable pail specifications on this page.)	
Air consumption	100 NL/min (at air pressure 0.4MPa)	
Sensor switch for air cylinder (With LED indicator)	Model	ZE135A, 2-wire contact type
	Operating voltage range	DC10~28V
	Load current range	4~20mA(25℃)4~10mA(60℃)
	Voltage drop by internal resistance	4V MAX.
	at leakage current	0.7mA MAX. (DC24V,25℃)
Low level switch (With IED indicator)	Model	FL2R-12K6H (N/C)
	Operating voltage range	DC10~30V
	Load current range	4~100mA
Mass	Approx. 11 kg	

Sensor Switch of air cylinder has been changed to a non-contact method. Since July 2014



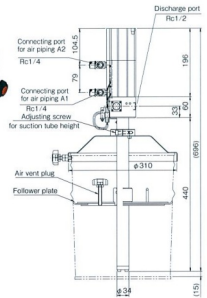
ACG-040 High pressure air-operated pump used for CVM Precise Fluid Dispenser (Product code: RK970900)

This high pressure pump is developed for a pail can. (Pail can is not included.)

Specifications

Item	Specifications	
Discharge volume	21cm³/cycle	
Pump ratio	20:1	
Discharge pressure	9.8Mpa/at air pressure 0.5MPa	
Min. operating air pressure	0.3MPa	
Supply air pressure range	0.4~0.6MPa	
Adaptable can	Pail can (*Refer to the applicable pail specifications on P9.)	
Air consumption	300 NL/min (at air pressure 0.5MPa)	
Sensor switch for air cylinder (With LED indicator)	Model	ZE135A, 2-wire contact type
	Operating voltage range	DC10~28V
	Load current range	4~20mA(25℃)4~10mA(60℃)
	Voltage drop by internal resistance	4V MAX.
	a leakage current	0.7mA MAX. (DC24V,25℃)
Low level switch (With IED indicator)	Model	FL2R-12K6H (N/C)
	Operating voltage range	DC10~30V
	Load current range	4~100mA
Mass	Approx. 12kg	

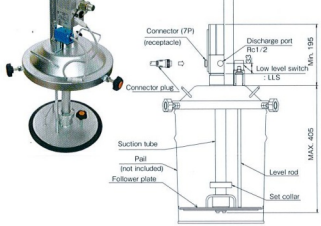
Sensor Switch of air cylinder has been changed to a non-contact method. Since July 2014

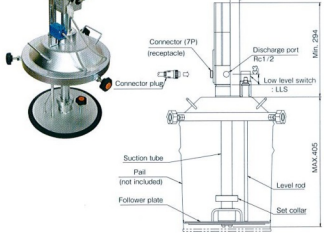


ACG-020H Air-Operated Pump used for ACV Precise Fluid Dispenser (Product code: RK790500)

ACG-040H Air-Operated Pump used for CVM Precise Fluid Dispenser (Product code: RK971000)

This pump improves suction performance by pump own weight, making it possible to handle grease with relatively high stickiness as well.
Please be careful to construct Hose, Tube and Cable that connect to the pump not to apply the reaction force or tension to the pump and not to interfere with the raising and lowering of the pump.





*Refer to ACG-020 pump specifications on P9.

*Refer to ACG-040 pump specifications on this page.

Air-operated pump - ACG Series

ACG-011FK Air-Operated Pump (Air Lifter Type) (Product code: RK970400)

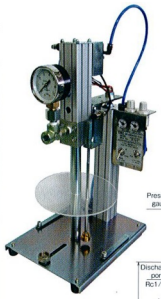
This pump is a small-sized supply pump developed for use with a 1-kg to 2.5-kg grease pail. (The grease pail is not included.)

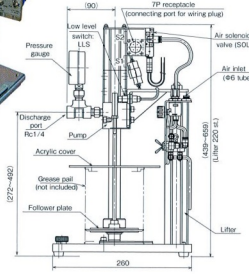
- Simple grease pail replacement
- Provided with air device and pressure gauge as standard

Specifications

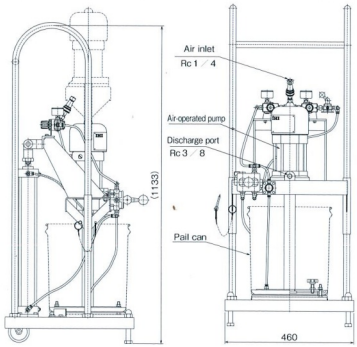
Item		Specifications
Discharge volume		6.3㎤/cycle
Pump ratio		5:1
Dispensing pressure		Max. 2.5 MPa, with an air pressure of 0.5 MPa
Air supply pressure		For pump (RP): 0.3~0.5 MPa For lifter (RL): 0.2 MPa or less
Air consumption		64 NL/min. (with an air pressure of 0.4 MPa)
Air cylinder sensor switch (S1, S2)	Model	ZE135A, 2-wire contact type
	Working voltage range	DC10~28V
	Load current	4~20mA(25℃)4~10mA(60℃)
Low level switch (LLS)	Model	GX-12MLUB (Turns ON at approach)
	Working voltage range	DC12~24 V, Ripple P-P 10% or less
	Current consumption	0.8 mA or less
	Output	Load current: 3~70 mA, Residual voltage: 3 V or less
Air solenoid valve (SOL)	Model	G110-4E1-PSL-24V
	Working voltage range	DC21.6~26.4 V, Rating: DC24 V
	Current value	21 mA (with a rated voltage of 24 V applied)
	Lead wire	Length: 300 mm, + side: Red, - side: Black
	Solenoid specifications	Single solenoid 2 positions, 5 ports
Applicable grease		NLGI Nos. 0~2, 1-kg to 2.5-kg pails
Mass		Approx. 6kg (follower plate and grease pail not included)

*The follower plate is fabricated in accordance with the shape of the grease pail and the composition of the grease.
When ordering, please provide us with a grease pail drawing and grease brand.
Sensor Switch of air cylinder has been changed to a non-contact method. Since July 2014





GSI-P334FK Grease station used for CVM Precise Fluid Dispenser (Product code: RK972500)



Specifications

Item	Specifications
Discharge volume	11 ㎤/cycle
Pump ratio	34 : 1
Dispensing pressure	MAX. 22.5MPa
Operating air pressure	0.3~0.7MPa
Applicable grease	NLGI 0~2
Applicable pail	Pail(*)Refer to page 9 for the applicable pail specification
Mass	Approx. 47kg (excluding pail)

ACV Precise Fluid Dispenser

Low Pressure Specification

This series of Precise Fluid Dispenser operate by means of air pressure.
No high-pressure compression on supply materials is required. For low liquidity fluid, no supply pump is required. For high viscous materials, ACG series of low discharge pressure Supply Pump or pressure tank is used.
The Precise Fluid Dispenser consists of manifolds to easily increase or decrease the number of discharge ports by means of block plates.

Applicable materials
Grease, Oil

Note: Do not use pumps made by other manufacturers in combination with Precise Fluid Dispenser Doing so results in the risk of Precise Fluid Dispenser failure.
When using a pump, use the dedicated pump ACG-011 FK or ACG-020

Specification

Item	Model	Product code	Model	Product code	Model	Product code	Model	Product code
	ACV-001	RK380100	ACV-002	RK380200	ACV-010	RK380300	ACV-020SDD	RK386600
	ACV-001S	RK381400	ACV-002S	RK382800	ACV-010S	RK384000		
	ACV-001L	RK381600	ACV-002L	RK382900	ACV-010L	RK381900		
	ACV-001SPP	RK386700	ACV-002SPP	RK386800	ACV-010SDD	RK386500		
Dispensing volume	0.005~0.12cm³/ stroke		0.01~0.23cm³/ stroke		0.04~1.2cm³/ stroke		0.06~2.0cm³/ stroke	
Supply air pressure	0.2~0.7MPa							
Fluid pressurization	MAX.3MPa							
Pump ratio	1:14		1:9		1:9		1:7	
Mass	Approx. 0.45kg		Approx. 0.45kg		Approx. 1.6kg		Approx. 1.6kg	

Model (For outline drawings, refer to P13-P16.) Model

ACV−0□□□

- L, S, F, DD, PP, With sensor
- Dispensing volume
- Model

ACV-001·ACV-002·ACV-010·····Page 13,14
L·····For oil·····Page 16
S·····With indicator rod of pilot plunger···Page 15
F·····Pilot plunger is made by SUS 316
(Please contact us in details.)
DD···Both pilot plunger and main plunger are of double-action type.
(Please contact us in details.)
With sensor···With sensor for operation verification···Page21
PP···clearance - expending type between plunger

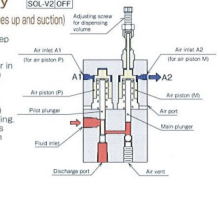
Description of ACV Dispenser Operation

Refer to page 7 for time chart

1 Standby
(Main plunger goes up and suction)

SOL-V1 OFF
SOL-V2 OFF

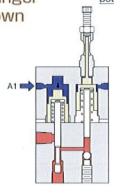
(Continuation from Step [4])
With the air solenoid valve (SOL-V2) OFF, air in the air cylinder (Upper) on the main side is exhausted from A2. The air piston (M) and main plunger rises (up) under the force of spring. In this case, the fluid is sucked below the main plunger, and the dispenser enters the standby state.



2 Pilot plunger goes down

SOL-V1 ON
SOL-V2 OFF

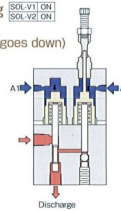
With the air solenoid valve (SOL-V1) ON, Air comes in the upper portion of air cylinder on the pilot side from A1. Along with lowering of the air piston (P), the pilot plunger lowers (down). At end of lowering, the dispensing outlet and the lower passage of main plunger open.



3 Dispensing process
(Main plunger goes down)

SOL-V1 ON
SOL-V2 ON

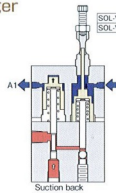
With the solenoid valve (SOL-V2) ON, air comes in the upper portion of air cylinder on the main side from A2. Along with lowering of the air piston (M), the main plunger lowers (down).
In this case, fluid accumulated under the main plunger is dispensed through the discharge port to the nozzle side.



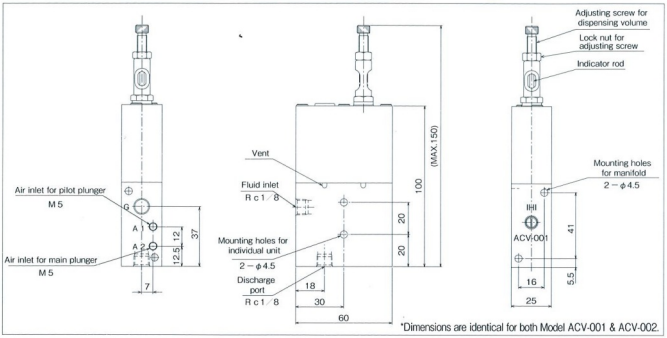
4 Pilot plunger goes up

SOL-V1 OFF
SOL-V2 ON

With the air solenoid valve (SOL-V1) OFF, air in the air cylinder is exhausted from A1. The air piston and plunger on the pilot side go (up) under the force of spring. In this case, the dispenser draws back the fluid accumulating in the discharge port, preventing fluid dripping. This function is called [Suction back].

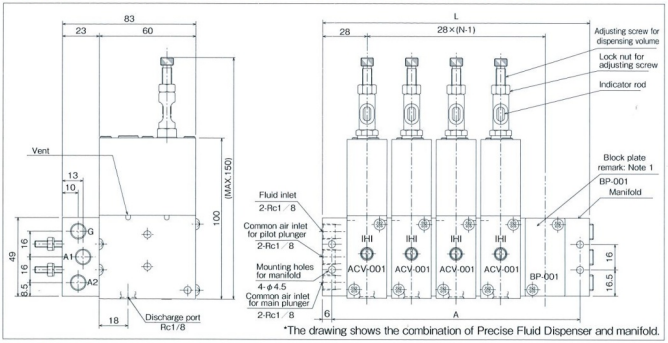


ACV-001 Precise Fluid Dispenser (Main Unit only)



*Dimensions are identical for both Model ACV-001 & ACV-002.

M□-ACV-001 Precise Fluid Dispenser (Manifold Type)



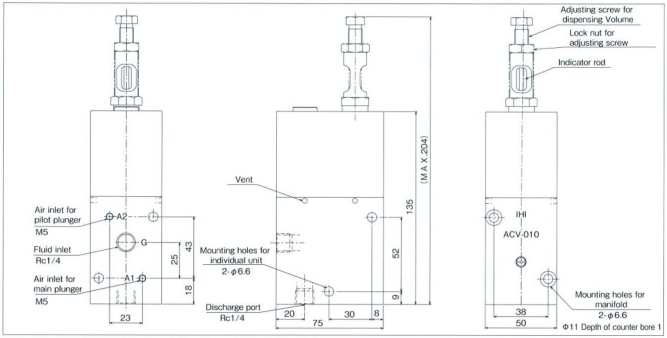
*The drawing shows the combination of Precise Fluid Dispenser and manifold.

Manifold specifications (The product code in the table does not include Precise Fluid Dispenser unit)

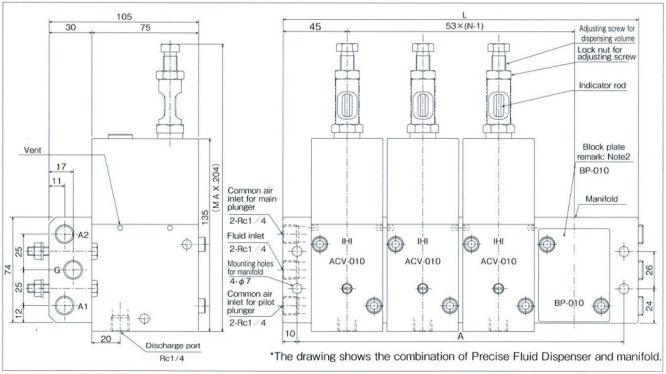
Product code	Manifold model	Number of outlets N	L	A	Mass of a whole unit including Precise Fluid Dispenser (kg)
RK871200	MC2-001	2	84	72	1.15
RK871300	MC3-001	3	112	100	1.67
RK871400	MC4-001	4	140	128	2.19
RK871500	MC5-001	5	168	156	2.71
RK871600	MC6-001	6	196	184	3.22
RK871700	MC7-001	7	224	212	3.75

Note 1: The position where Precise Fluid Dispenser is not used can be plugged by a BP-001 Block plate (Product code: RK872900)sold separately.
Note 2: Manifold specifications for ACV-002 Precise Fluid Dispenser are common to the above table.
Note 3: Recommended mounting screw for manifold: 4-M4x40L

ACV-010 Precise Fluid Dispenser (Main Unit only)



M□-ACV-010 Precise Fluid Dispenser (Manifold type)



*The drawing shows the combination of Precise Fluid Dispenser and manifold.

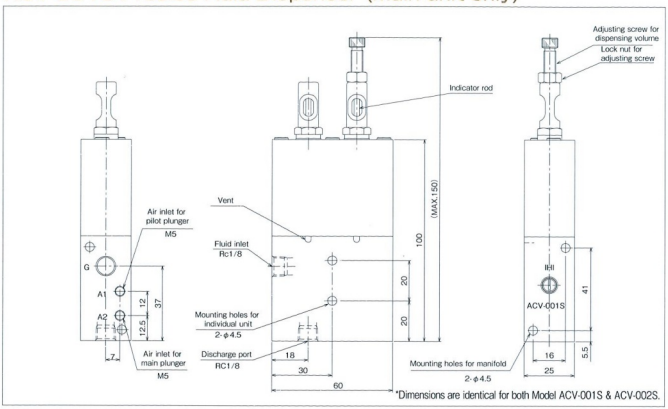
Manifold specifications (The product code in the table does not include Precise Fluid Dispenser unit)

Product code	Manifold model	Number of outlets N	L	A	Mass of a whole unit including Precise Fluid Dispenser (kg)
RK872300	MC2-010	2	143	123	3.5
RK872400	MC3-010	3	196	176	5.2
RK872500	MC4-010	4	249	229	6.9

Note 1: The number of outlet five and more can be manufactured. (Please contact us in details.)
Note 2: The position where Precise Fluid Dispenser is not used can be plugged by a BP-010 Block plate (Product code: RK873000) sold separately.
Note 3: Recommended mounting screw for manifold: 4-M6x45L

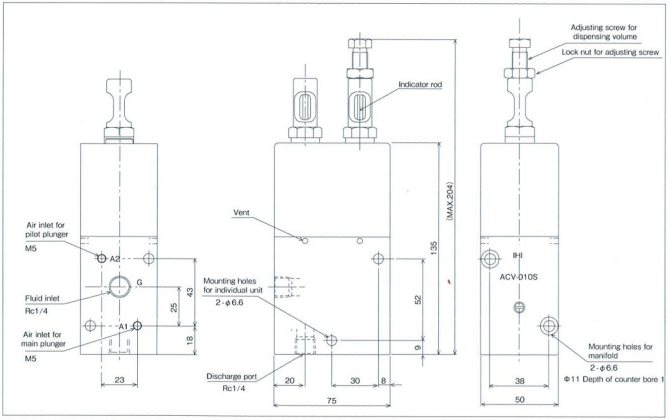
ACV-0□□S Precise Fluid Dispenser "Position of pilot plunger is visible."

ACV-001S Precise Fluid Dispenser (Main unit only)



*Dimensions are identical for both Model ACV-001S & ACV-002S.

ACV-010S Precise Fluid Dispenser (Main unit only)

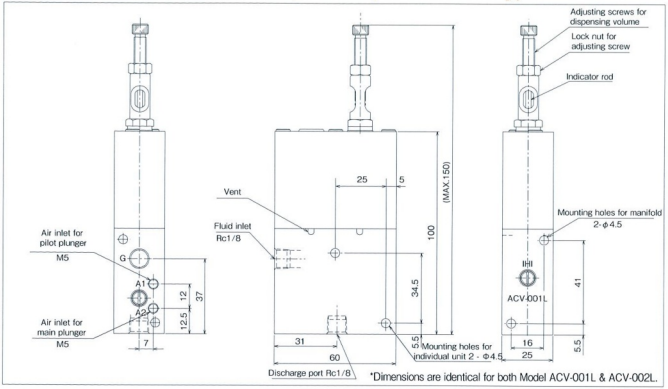


ACV-0□□L Precise Fluid Dispenser (For oil)

Suction-back function is eliminated from Model ACV-0□□L.

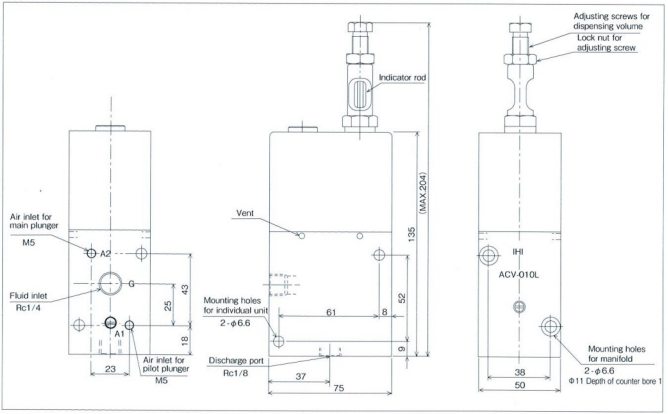
(When a Precise Fluid Dispenser with suction-back function is used for oil, surrounding air is sucked through a nozzle and dispensing oil volume becomes unstable.)

ACV- 001L Precise Fluid Dispenser (Main unit only)



*Dimensions are identical for both Model ACV-001L & ACV-002L.

ACV-010L Precise Fluid Dispenser (Main unit only)



SDV-002L Self-Adjusting Type Precise Fluid Dispenser (Enables line drawing, spot dispensing, and pattern setting)

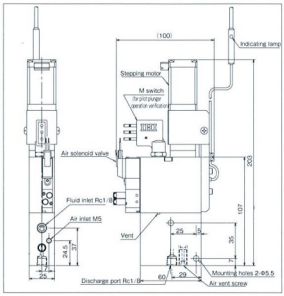
(Stepping motor utilized)

- Unrestricted grease line drawing and spot dispensing
- Unrestricted setup of dispensing volume and dispensing speed
- Provides precise repeatability without impacting changes in viscosity since it is a plunger-type Precise Fluid Dispenser
- Permits the dispensing of various liquids, from those with grease-like high viscosity to those with oil-like low viscosity
- Permits selection of four dispensing patterns by means of a dedicated ACC-802 controller (sold separately: RK842400)
  For details, contact us.[If you want to separately utilize a PLC, use a dedicated driver (sold separately: RK842401).]

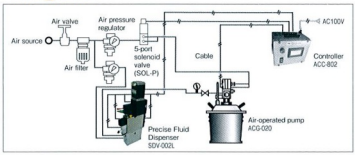
○Specifications

Item	Specifications
Model	SDV-002L
Product code	RK387200
Dispensing volume	0.02~0.21㎖ /stroke (variable)
Operating grease pressure	MAX.3MPa
Supply air pressure	0.2~0.7MPa
Used grease	NLGI.No.0~2
Motor	5-phase stepping motor, DC24V, 0.78 A/phase
Air solenoid valve	5-port single DC24V, 28 mA
Mass	0.9

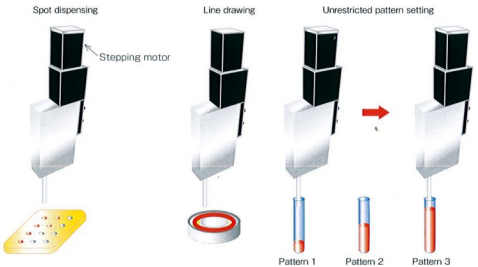
○Outline Drawing



○System Configuration Diagram



Use of a stepping motor enables spot dispensing, line drawing, and unrestricted pattern setting.



CVM Precise Fluid Dispenser

High Pressure Specification

- Pilot block and main block are separated. Discharge volume can be changed by exchange only main block while pilot block is left as it is.
- Selling unit is one set. (Pilot Block + Main Block)
- Up to 4 blocks can be combined as one assembled body by utilizing tie bolts.
- Large, middle, small valves can be combined as one assembled body.
- Pilot plunger is of double action type, hence 5-way air solenoid valves shall be applied.

Supply material: Grease (Oil is not applicable.)

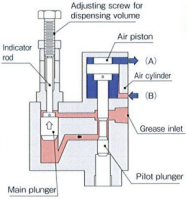
Item		Specifications				
		CVM−03	CVM−10	CVM−50	CVM−100	CVM−200
Dispensing volume		0.05~0.3 ml/stroke	0.2~1.2 ml/stroke	0.5~5 ml/stroke	2~10 ml/stroke	4~20 ml/stroke
Working pressure range	Grease line	5.9~14.7MPa				
	Air line	0.3~0.7MPa				
Proof pressure for grease line		20.6MPa				
Used grease		NLGI No.0~No.2				
Produce No.		RK792100	RK792500	RK792900	RK793300	RK793700
Mass		Approx. 1.4 kg	Approx. 1.5 kg	Approx. 1.6 kg	Approx. 3.6 kg	Approx. 4.3 kg

Description of CVM Dispenser Operation

1 Standby

SOL-V OFF

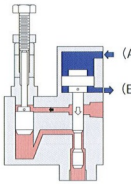
With the air solenoid valve OFF, the air comes in the air cylinder from its bottom (B). The top side (A) is open to the atmosphere. The main plunger stops at the top point due to difference in the area receiving the pressure. In this case, the grease comes through the inlet into the bottom side of the main plunger for filling.



2 Pilot plunger goes down

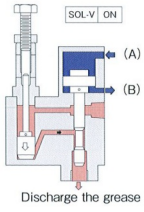
SOL-V ON

When the air solenoid valve is turned ON, the air comes from the top (A) of air cylinder, lowering the pilot plunger. Accordingly,the grease that has come through the inlet flows through the upper pass to come in the top of main plunger. On the other hand, the lower pass of main plunger is connected to the discharge port.



3 Dispensing process (Main plunger goes down)

The discharge port opens to the atmosphere, so that the main plunger lowers under the grease pressure, dispensing the grease filled in the lower chamber.

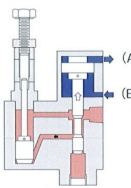


Discharge the grease

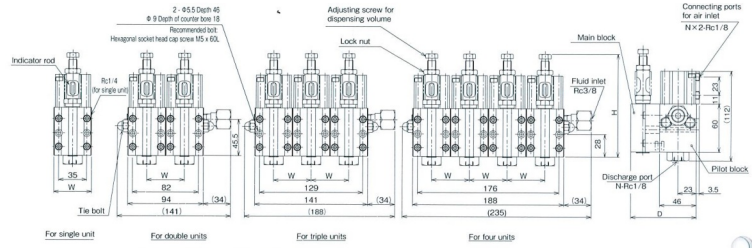
4 Pilot plunger goes up

SOL-V OFF

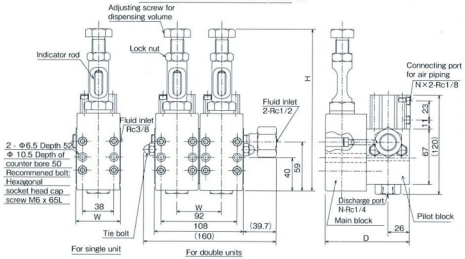
With the solenoid valve OFF, the air comes through the bottom (B) of the air cylinder (with the top side (A) opening to the atmosphere). The pilot plunger rises along with the air piston. Accordingly, the grease flowing through the inlet comes the bottom side of main plunger, and the main plunger rises due to difference in the area receiving the pressure. In the case, the dispenser draws back the fluid accumulating in the discharge port. Preventing fluid dripping. The function is called "Suction back".



Outline Drawings (Assembled Examples)



In case of Model For CVM-03/10/50



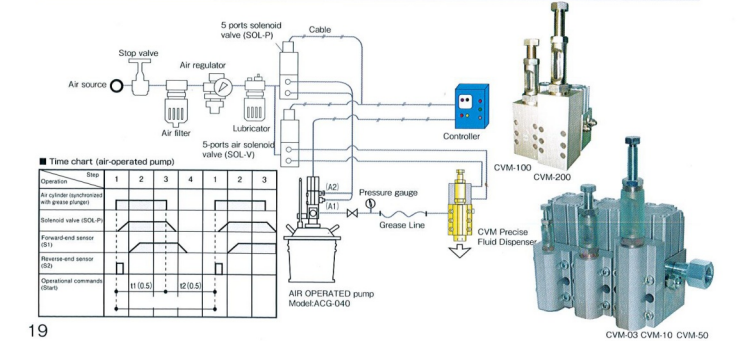
In case of Model CVM 100/200

*N indicates the number of ports.

Model	Dimension (For Single Unit)		
	W	D	H(MAX)
CVM-03	47	82	104.2
CVM-10	47	82	128.0
CVM-50	47	82	176.3
CVM-100	54	102	195.5
CVM-200	54	110	247

When using units in series as shown in this drawing, use the tie bolts below (sold separately).

Model	Discription	Product code
CVM-03/10/50	Tie bolt set 2-CVM (2 units)	RK870800
	Tie bolt set 3-CVM (3 units)	RK870900
	Tie bolt set 4-CVM (4 units)	RK871000
CVM-100/200	Tie bolt set 2-CVM-100 (2 units)	RK873700



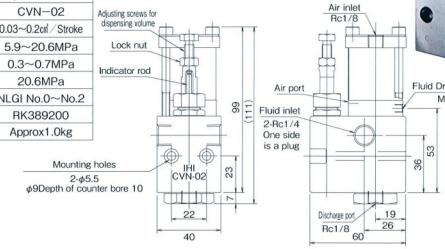
CVN Precise Fluid Dispenser

High Pressure Specification

·It is 30% lightweight compared with CVM-03 type.
The size is compact.
·Improved stability and maintainability in supplying a small amount of lubricant.
(*)Time chart is the same of CVM (refer to page 19)

Supply material:Grease(Oil is not applicable.)

Item		Specifications
		CVN-02
Dispensing volume		0.03~0.2cal / Stroke
Working pressure range	Grease line	5.9~20.6MPa
	Air line	0.3~0.7MPa
Proof pressure for grease line		20.6MPa
Used grease		NLGI No.0~No.2
Produce No.		RK389200
Mass		Approx1.0kg

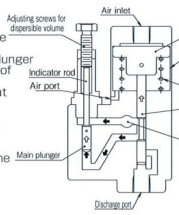


Description of CVN Dispenser Operation

1 Standby

SOL-V OFF

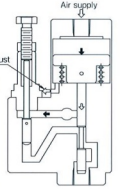
With the air solenoid valve OFF,
The air piston and pilot plunger rises(up)under the force of spring.
The main plunger stops at the top point due to difference in the area receiving the pressure. In this case, the grease comes through the inlet into the bottom side of the main plunger for filling.



2 Pilot plunger goes down

SOL-V ON

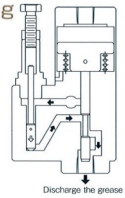
When the air solenoid valve is turned ON, the air comes from the top of air cylinder, lowering the pilot plunger. Accordingly,the grease that has come through the inlet flows through the upper pass to come in the top of main plunger. On the other hand, the lower pass of main plunger is connected to the discharge port.



3 Dispensing process

SOL-V ON

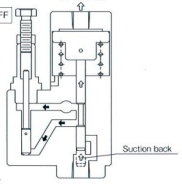
The discharge port opens to the atmosphere, so that the main plunger lowers under the grease pressure, dispensing the grease filled in the lower chamber.



4 Pilot plunger goes up

SOL-V OFF

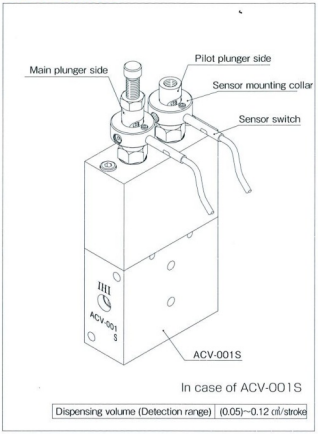
With the solenoid valve OFF, (with the top side (A) opening to the atmosphere). The pilot plunger rises along with the air piston. Under the force of spring. Accordingly, the grease flowing through the inlet comes the bottom side of main plunger, and the main plunger rises due to difference in the area receiving the pressure. In the case, the dispenser draws back the fluid accumulating in the discharge port. Preventing fluid dripping. The function is called "Suction back".



Checking of Operation's Sensor for Precise Fluid Dispenser

By attaching sensor, the operation of Precise Fluid Dispenser can be confirmed by the indicator rod.

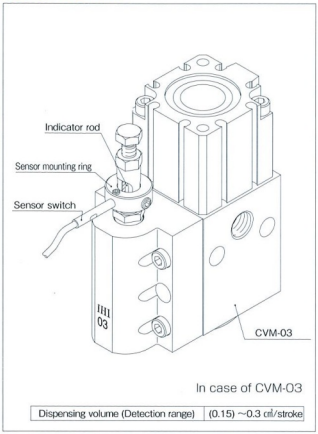
ACV Series



In case of ACV-001S

Dispensing volume (Detection range)	(0.05)~0.12 cm³/stroke

CVM Series



In case of CVM-03

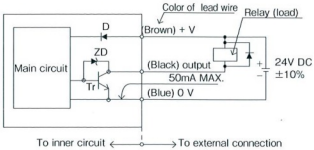
Dispensing volume (Detection range)	(0.15) ~0.3 cm³/stroke

Basic Sensor Specifications

Note: Sensor specifications may be changed. Please contact us for details.

Item	Specifications
Power source voltage	12~24 DC±10% Ripple P-P 10% or less
Consumption current	15 mA or less
Output	NPN transistor open collector ・max current entry: 50 mA ・applied voltage: 30 V DC or less ・residual voltage: 0.4 V DC or less (at current entry 50mA)
Operation indicator lamp	Red LED (On when output is ON without indicator rod)
Protection structure	IP67 (IEC), immersion proof type (JIS)
Cable length	3m

Circuit Diagram



Symbols·····D: Diode to protect against power reverse connection
ZD: Zener diode to absorb surge voltage
Tr: NPN power transistor

Product Code for Sensor

Model	Product code
For ACV-001, ACV-002, CVM-03	RK472100
For ACV-010, CVM-10	RK472200
For CVM-50	RK472300
(The above codes are the assembly of a sensor switch and a mounting ring.)	

Bubble Crusher - AST Series 《For 1- kg to 2.5-kg grease pail》

The AST Series Bubble Crusher is an IHI Proprietary Grease Agitation and Circulation System.

Patent acquired (PAT. No. 4951546)

Are you troubled with No dispensing caused by air bubbles in the grease?

Air bubbles in grease cause No dispensing from the dispenser (Precise Fluid Dispenser).

Are you troubled with operation defects caused by oil separation?

Oil separation in grease causes unevenness in the concentration of included solid particles.
This leads to grease pump and dispenser (Precise Fluid Dispenser) malfunction.

Improve matters by innovating the bubble crusher (circulation system) to the dispensing line.

Are you troubled with disposal of residual grease?

Use of collected residual grease results in air mixed in the grease.
Grease disposal that remains in a pail requires cost for industrial waste treatment.

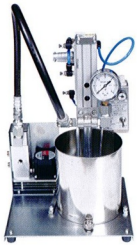
Recycle of disposed grease by innovating the bubble crusher (circulation system) (Reduces disposal costs.)

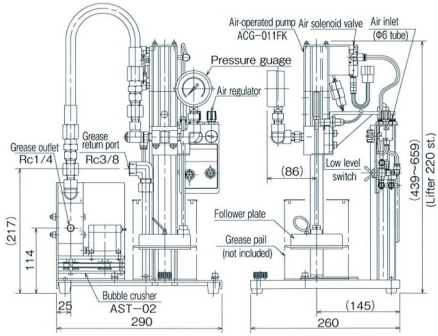
Bubble Crusher Unit

ACG-011FK-AST

Item	Specifications
Air-operated pump model	ACG-011FK
Dispensing volume	6.3 cm³/cycle
Pump ratio	5 : 1
Dispensing pressure	Max. 2.5 MPa, (with an air pressure of 0.5 MPa)
Supply air pressure	0.2~0.5MPa
Air consumption	64 NL/min (with an air pressure of 0.4 MPa)
Sensor switch / Low level switch Air solenoid valve voltage	DC24V
Bubble crusher	Same as those for AST-02 above
Used grease	NLGI No. 0~2 (for 1-kg to 2.5-kg pail)
Mass	Approx. 9 kg
Product code	RK970300

*The follower plate is fabricated in accordance with the shape of the grease pail and the composition of the grease.



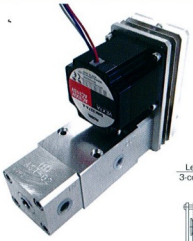


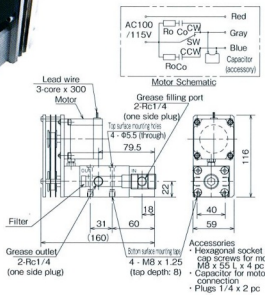
Bubble Crusher

AST-02

Item		Specifications
Grease supply pressure		MAX.3MPa
Used grease		NLGI No.0~No.2
Applicable pump		ACG-011FK
Motor	Voltage	AC100V/100/115V (50/60/60Hz)
	Current value	0.08/0.09/0.10A (50/60/60Hz)
Capacitor capacity		1.2μF
Mass		Approx. 1.8 kg
Product code		RK497100

*1. The motor may lock depending on the grease composition and flow rate. In such a case, apply lower the grease supply pressure and flow rate.
*2. Periodically inspect and clean the internal filter.



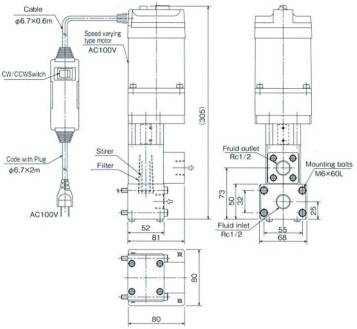


Bubble Crusher

AST-04

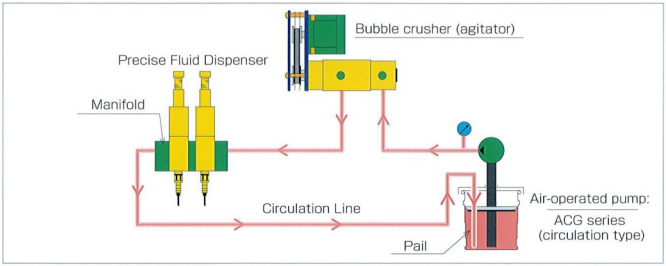
Item		Specifications
Grease supply pressure		MAX.3MPa
Used grease		NLGI No.0~No.2
Applicable pump		ACG-020
Motor	Maximum output	25W
	Voltage	Single phase AC100V
	Current value	0.7A
	Electricity consumption	60W
	Variable speed	90~1400r/min(50Hz) 90~1500r/min(60Hz)
	Reduction ratio	1/3
Mass		Approx. 3.5 kg
Product code		RK497200

*1. The motor may lock depending on the grease composition and flow rate. In such a case, apply lower the grease supply pressure and flow rate.
*2. Periodically inspect and clean the internal filter.



Agitation and Circulation System Configuration Diagram

In the agitation and circulation system, the bubble crusher is installed between the pump and the Precise Fluid Dispenser.
The circulation circuit is configured with return piping provided from the Precise Fluid Dispenser to the pail.
*Shorten the piping from the bubble crusher to the Precise Fluid Dispenser to the extent possible.

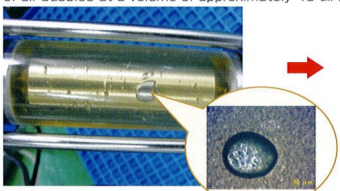


Agitation and Circulation Effect

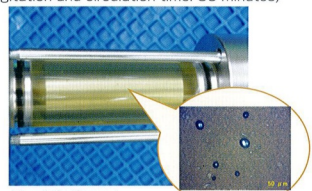
(*The effect of agitation and circulation differs according to the composition of the grease.
If you prefer to verify the effect in advance, contact us.)

Comparison of Air Bubbles Before and After Agitation and Circulation

Comparison of air bubbles before and after agitation and circulation with intentional mixture of air bubbles at a volume of approximately 40 cm³ (agitation and circulation time: 30 minutes)



Before Agitation and Circulation



After Agitation and Circulation

Air bubbles are broken up.

Comparison of Oil Separation

Comparison of Oil Separation Before and After Agitation and Circulation

Before Agitation and Circulation

After Agitation and Circulation

The oil is evenly mixed.

The photo that we collect the grease to other pail by precise dispenser.

Controllers

ACC-200 Controller for ACV Precise Fluid Dispenser

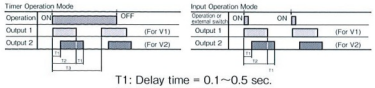
Outline

ACC-200 controller controls ACV Precise Fluid Dispenser. Two types of operation modes are available for tact discharge operation (timer operation) and external start signal operation (input operation).

Specifications

Item		Specifications
Model		ACC-200
Product code		RK842200
Power source		AC100V±10%,50/60Hz
Output	Solenoid valve	DC24V,MAX.0.2A
	Operation signal	1a, Dry contact, max. 1 A
Input	External start signal	1a, Input by dry contact
	Alarm signal	1a, Input by dry contact
Mass		Approx. 0.8 kg

Operation Sequence Chart(Refer to P7.)



T1: Delay time = 0.1~0.5 sec.
T2: Shot time = 0.5~5.0 sec.
T3: Tact time = 1.0~10.0 sec.

ACC-300 Controller for ACG Pump

Outline

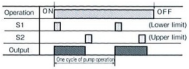
ACC-300 type controller is used to control the operation of ACG air-operated pump. Signals from top/bottom limit sensor built-in a pump automatically control the solenoid valve to reciprocate the pump.

Specifications

Item		Specifications
Model		ACC-300
Product code		RK842300
Power source		AC100V±10%,50/60Hz
Output	Solenoid valve	DC24V, MAX.0.2A
	Alarm signal	1a, Dry contact, max. 1 A
Input	S1,S2 signal	1a, Input by dry contact (2 points)
	Alarm signal	1a, Input by dry contact
Mass		Approx. 0.8 kg

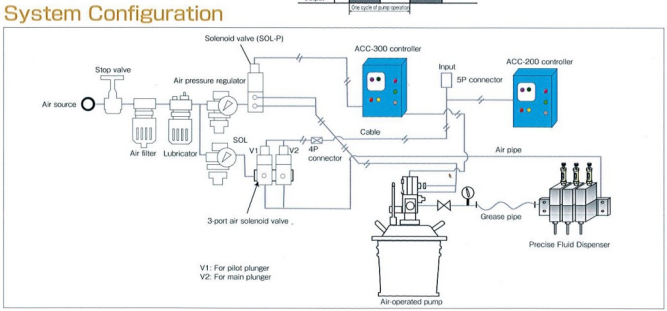
Operation Sequence Chart(Refer to P7.)

By pressing "Operation"button, "Output" becomes ON, which indicates solenoid valve is ON, and the pump cylinder rises. When S2 switch is ON at the upper limit position, "Output" becomes OFF and the pump cylinder moves down. Grease is discharged from the pump by the repetition of this cycle.



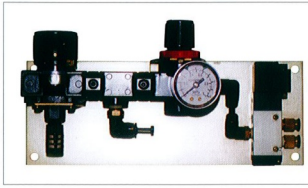
S1: Lower limit of the air cylinder
S2: Upper limit of the air cylinder

System Configuration



Air Control Panel

Control equipments of air flow to operate pump and Precise Fluid Dispenser are mounted on this panel.

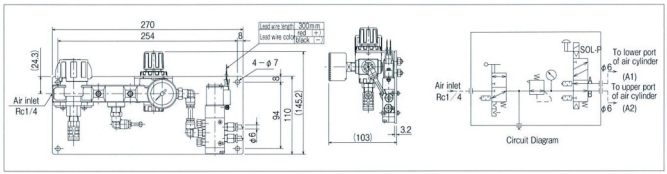


Note:Please arrange air filter and lubricator separately if needed.

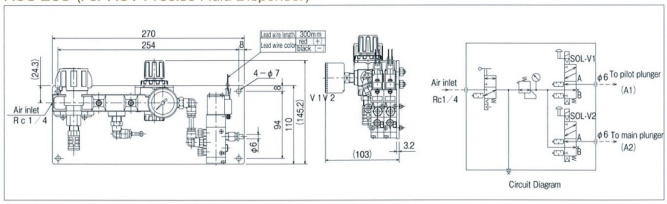
Specifications

Model		AUC-300	AUC-200	AUC-500
Used		For pump	For Precise Fluid Dispenser	For both pump &Dispenser
Operating pressure		Max.0.7Mpa{7kgf/cm²}		
Solenoid valve	Operating voltage range	DC21.6~26.4V		
	Current value	65 mA (at applied voltage DC24V)		
Mass		Approx. 2kg	Approx. 2kg	Approx. 2.2kg
Product code		RK873400	RK873500	RK873600

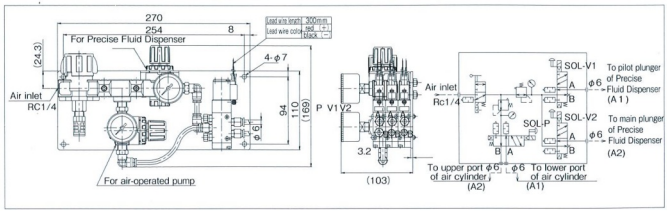
AUC-300 (For ACG Pump)



AUC-200 (For ACV Precise Fluid Dispenser)



AUC-500 (For Both ACG Pump & ACV Precise Fluid Dispenser)



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