

IHI

Realize your dreams

LUBRICATING SYSTEM

AUTO GREASTAR

4th edition

IHI Rotating Machinery Engineering Co., Ltd.

AUTO GREASTAR

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PREFACE

Machine tools such as general-purpose presses and machining centers have been rapidly automated and made faster and consequently they have been more and more complicated and had more and more lubricating points for faster working operations.

Judging from this, such machine tools have required means for safer and more effective management lubrication, particularly unattended means for lubricating correct amounts of grease periodically.

Recently, effective lubrication of correct amounts of grease has been very significant.

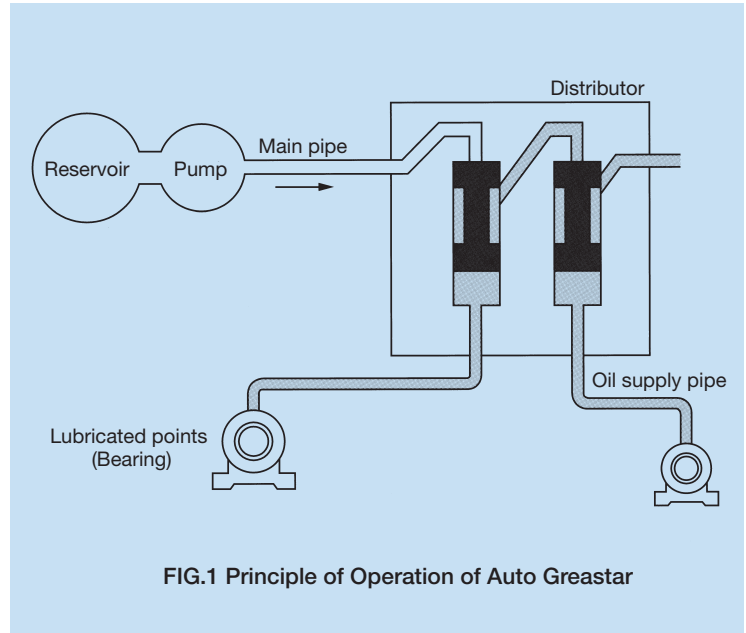
We have been developing, manufacturing and distributing various kinds of centralized (dual line) lubricating systems since 1939. They have been widely used for forging machines, paper-making machines, cement plants, sewage disposal plants, garbage burning plants, chemical plants, loading and transferring machines, mining machines, water gates, etc. with good reputations.

Auto Greastar ---- Outline and Principle of Operation

Auto Greastar mainly consists of a lubricating pump, a distributor, and piping.

Figure 1 shows its structure and principle of lubrication.

The distributing valve of the progressive type always supplies a preset quantity of grease each bearing independently of the backpressure.



Auto Greastar dissolves all lubricating problems.

- ▶ **Auto Greastar shortens machine stop periods and increases the productivity of the machine.**
- ▶ **Accurate grease supply quantity and saving of lubricants**
- ▶ **Extending the service lives of machines and bearings**
- ▶ **Preventing skips of lubrication**
- ▶ **Preventing dangers**
- ▶ **Preventing invasion of foreign objects into grease**

Auto Greastar --- the most suitable lubricator for the following:

Below are listed machines in the field which Auto Greastar is assumed to be the most suitable.

► Vehicles

Buses, trucks, railway cars, garbage trucks, etc.

► Particular vehicles for civil engineering and construction works

Power shovels, bucket loaders, truck cranes, motor graders, bulldozers, transit mixers, concrete pump trucks, road rollers, etc.

► Agricultural machines

Tractors, power carts, combines, hay baler, harvesters, etc.

► Pressing machines

Mechanical presses, hydraulic presses, injection machines, die-casting machines, etc.

► Mining machines

Hoisting machines, winches, crushers, cement finishers

► Machine tools

► Steel manufacturing and forging machines and their incidental facilities, small-scale rolling mills, tables, chassis, levelers, welded-pipe manufacturing machines, wire extruders, etc.

► Loading machines such as cranes and conveyors, part of sight-seeing transportations such as ropeways, ceiling running clubs, etc.

► Power plant water turbines and their incidental facilities

► Paper making machines

► Textile machines

► Printing machines

► Other machines and equipment

Food, medicine, and cosmetics manufacturing machines, wrapping machines, bottling machines, bottle washing machines, pumps, etc.

Particularly, centralized greasing systems (dual line) and one-way greasing systems are also available to large-scale and heavy machines.

Table 1 Classification of Auto Greastars by

Piping method	Structure	
	Lubricating pump	
	Driving method	Basic model
Single-end line method 	Motor-driven	SK-505BM SK-505BM-AGT SK-521
	Air-operated	SKB-881 (reciprocating type) SKC-800 (single-shot type)
	Mechanically-driven	SKA-722
	Manually operated	SKA-244 SKA-214

Note 1

As standard, the main pipe is 8 mm dia. by 6 mm dia. (or 6 mm dia. by 4 mm dia. for oil) and the branch pipe is 6 mm dia. by 4 mm dia. (or 4 mm dia. by 3 mm dia. for oil) and 3 meters long.

Note 2

If you require more ports and longer pipes than standard ones, call your local our distributor.

Piping Methods

	Performance				Standard discharge quantity per distributor port
Basic distributor type	Number of supply ports*2		Full length of a main pipe *1, *2		
Grease, Oil	Grease	Oil	Grease	Oil	
BU-□R type BMUM-□R (□-□) type *5	60 ports	60 ports	25 m	50 m	0.3 cm ³ /stroke
	—		—	30 m	
BU-□R type BMUM-□R (□-□) type*5	60 ports		25 m	50 m	

Note 3

When ordering lubricating pumps, please let us know the lubricant type (grease or oil).

Note 4

The mechanically-driven lubricating pump is for oil only.

Note 5

See Page 30, 31 for combinations of distributors.

Operating temperature

Working Temperature: -20 to 60°C (No condensation)

It can't be sometimes applied depending on grease and oil used.

(In particular, we recommend the grease for low temperature in case of less than 0°C)

Lubricating Pump (Motor Driven Type)

Each of the IHI motor-driven lubricating pumps consists of a pump body, a motor, and a reservoir. Plug the power cable of the pump to the outlet and turn on the power switch. The pump pressure supplies grease (or oil).

Table 2 Selection of Motor-Driven Lubricating Pumps and Available Distributors

Motor-driven lubricating pump			Distributor	Maximum number of oil ports	
Grease	Oil	Power supply		Grease	Oil
SK-505BM-04	SK-505BML-04	24 V DC	BU-□R BU-□M BMUM-□R (□-□) BMUM-□M (□-□)	60 ports	60 ports
SK-505BMS-1	SK-505BMLS-1				
SK-505BMS-1-LLS	SK-505BMLS-1-LLS				
SK-505BM-04-AGT	SK-505BML-04-AGT				
SK-505BM-1-AGT	SK-505BML-1-AGT				
SK-505BM-1-LLS-AGT	SK-505BML-1-LLS-AGT				
SK-521-2	SK-521L-2	200 V AC ø3		120 ports	120 ports
SK-521-2-LLS	SK-521L-2-LLS				

Note: “Maximum number of lubricating ports” for the use of the BMUM distributor (See Page 30)

Piping Diagram

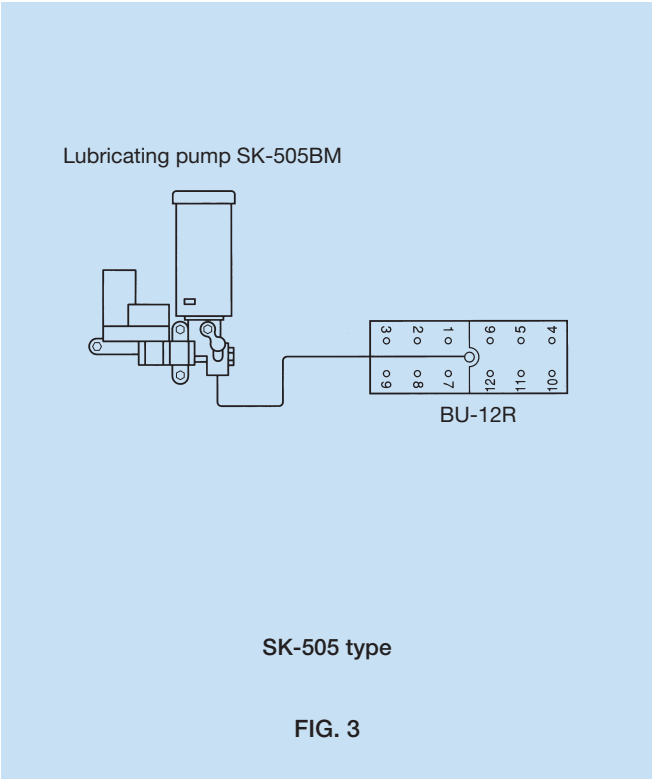
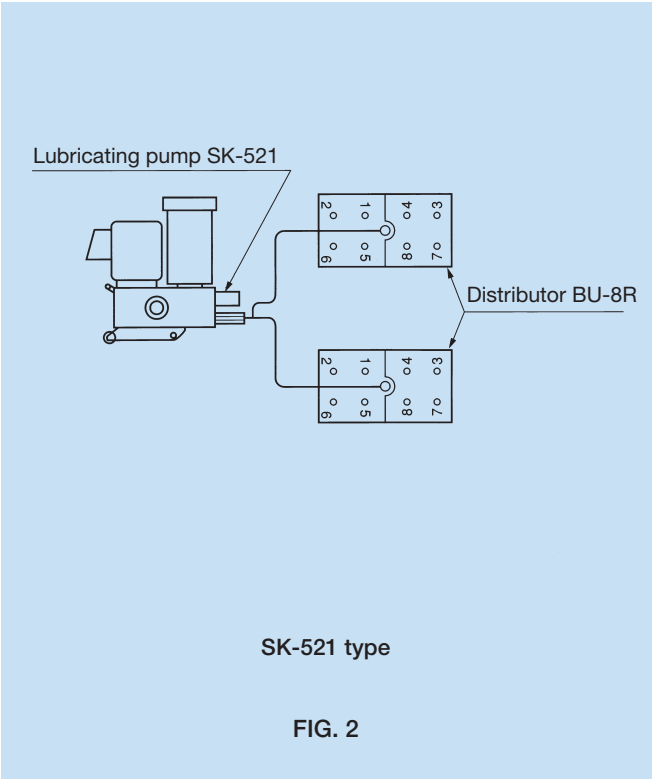


Table 3 Specifications of Motor-Driven Lubricating Pumps

Lubricant	Product Code	Model	Port	Discharge Pressure	Discharge Capacity	Reservoir Capacity	Reservoir Empty switch	Power supply	Net Weight	Dimensions
Grease	RK990100	SK-505BM-04	1 port	Maximum 14.7 MPa	13 cm ³ /min or more	0.4 ℓ (0.3)	None	24 V DC, 1.5A or less, 5 minutes rating	1.1 kg	FIG. 4
	RK999300	SK-505BMS-1				1 ℓ (1.0)	None		1.5 kg	FIG. 5
	RK999400	SK-505BMS-1-LLS					Pre-installed		1.6 kg	FIG. 6
	RK986500	SK-521 w/o tank	2 ports (or 1 port when ordered)	(Relief pressure: 15.7 +/- 1 MPa)	20 cm ³ /min x 2 ports (at 50 Hz) 25 cm ³ /min x 2 ports (at 60 Hz)	w/o tank	None	200 V AC, 0.1 kW, 3 phases, continuous rating	10.0 kg	
	RK988500	SK-521-2				2 ℓ	None		11.0 kg	FIG. 8
	RK988600	SK-521-2-LLS					Pre-installed		11.5 kg	FIG. 9
Oil	RK991100	SK-505BML-04	1 port	Maximum 5.9 MPa	13 cm ³ /min or more	0.4 ℓ (0.3)	None	24 V DC, 1.5A or less, 5 minutes rating	1.1 kg	
	RK999500	SK-505BMLS-1				1 ℓ (1.0)	None		1.5 kg	
	RK999600	SK-505BMLS-1-LLS					Pre-installed		1.6 kg	FIG. 7
	RK986800	SK-521L w/o tank	2 ports (or 1 port when ordered)	(Relief pressure: 6.9 +/- 1 MPa)	2.5 - 20 cm ³ /min x 2 ports (at 50 Hz) 3 - 25 cm ³ /min x 2 ports (at 60 Hz)	w/o tank	None	200 V AC, 0.1 kW, 3 phases, continuous rating	10.0 kg	
	RK989500	SK-521L-2				2 ℓ	None		11.0 kg	
	RK989600	SK-521L-2-LLS					Pre-installed		11.5 kg	FIG. 10
	RK987000	SK-521L-10-LLS				10 ℓ	Pre-installed		21.0 kg	

• The reservoir capacity enclosed in parentheses is an effective capacity. • The discharge capacity is at 9.8 MPa for grease or at 4.9 MPa for oil.



SK-505BM-04 (for grease)

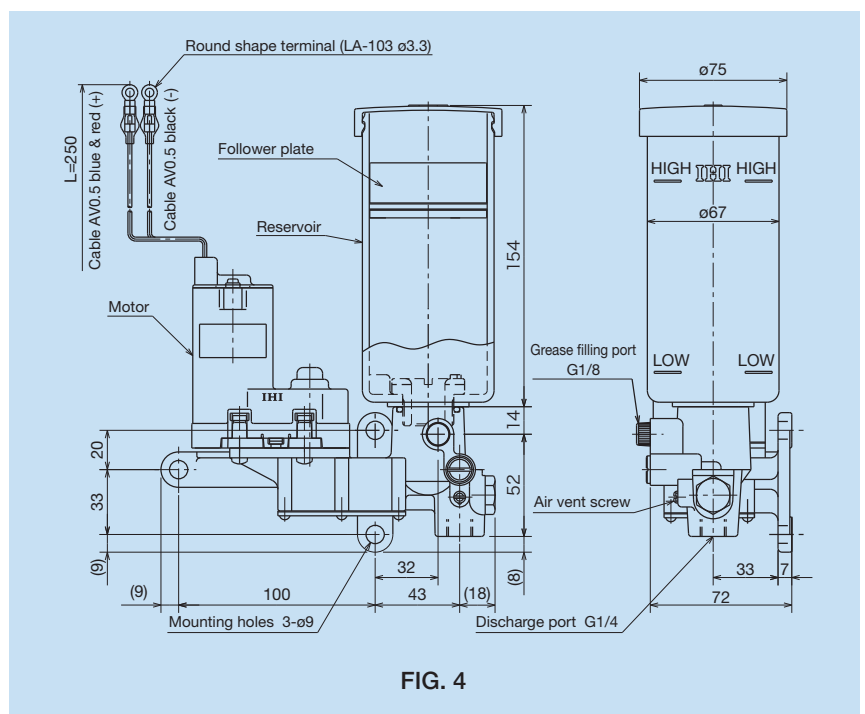
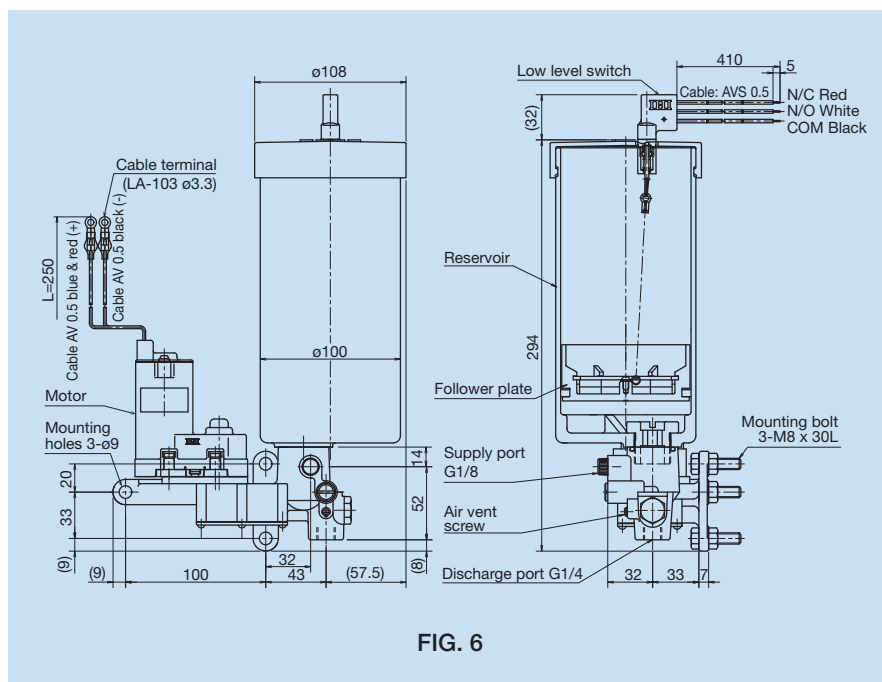


FIG. 4

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SK-505BMS-1-LLS (for grease)



SK-505BMLS-1-LLS (for oil)

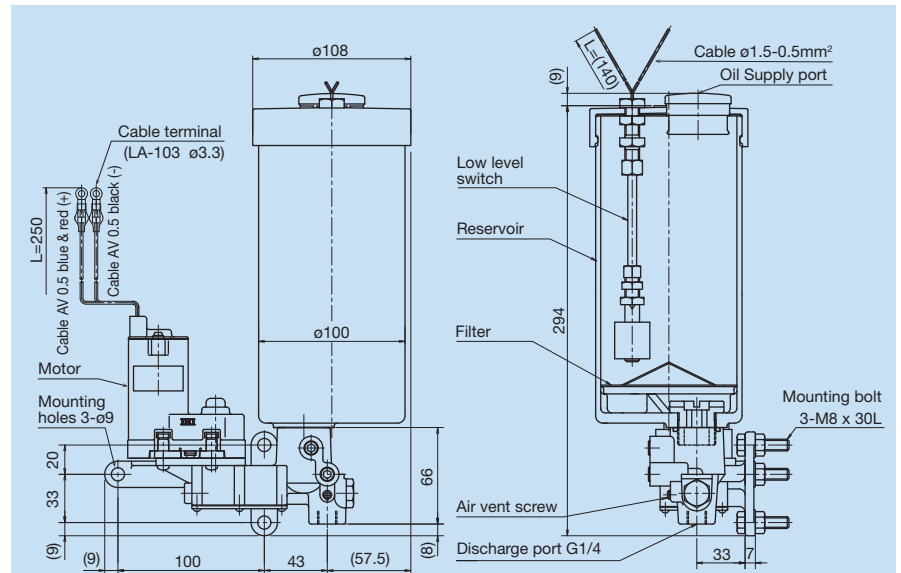


FIG. 7

SK-521-2 (for grease)

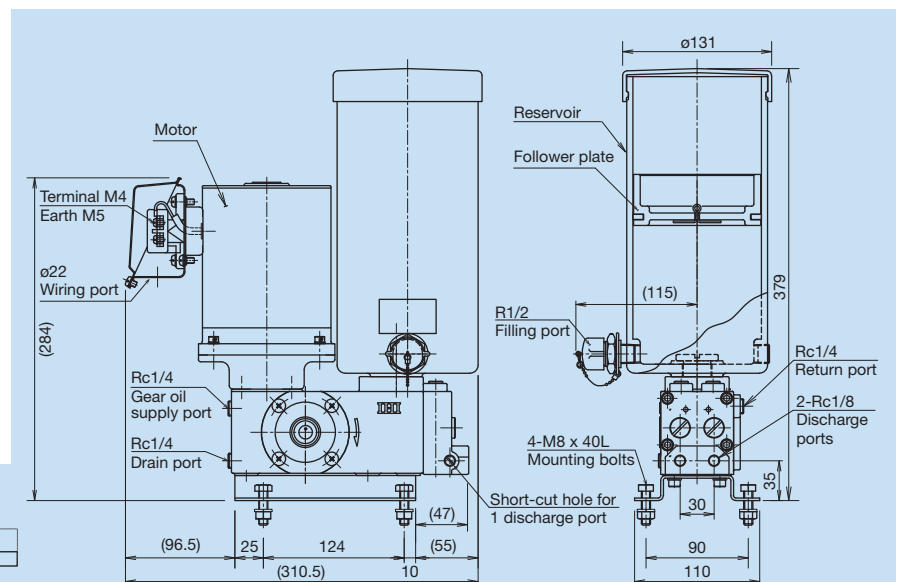


FIG. 8

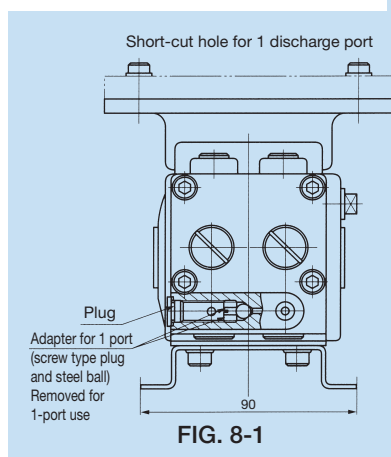
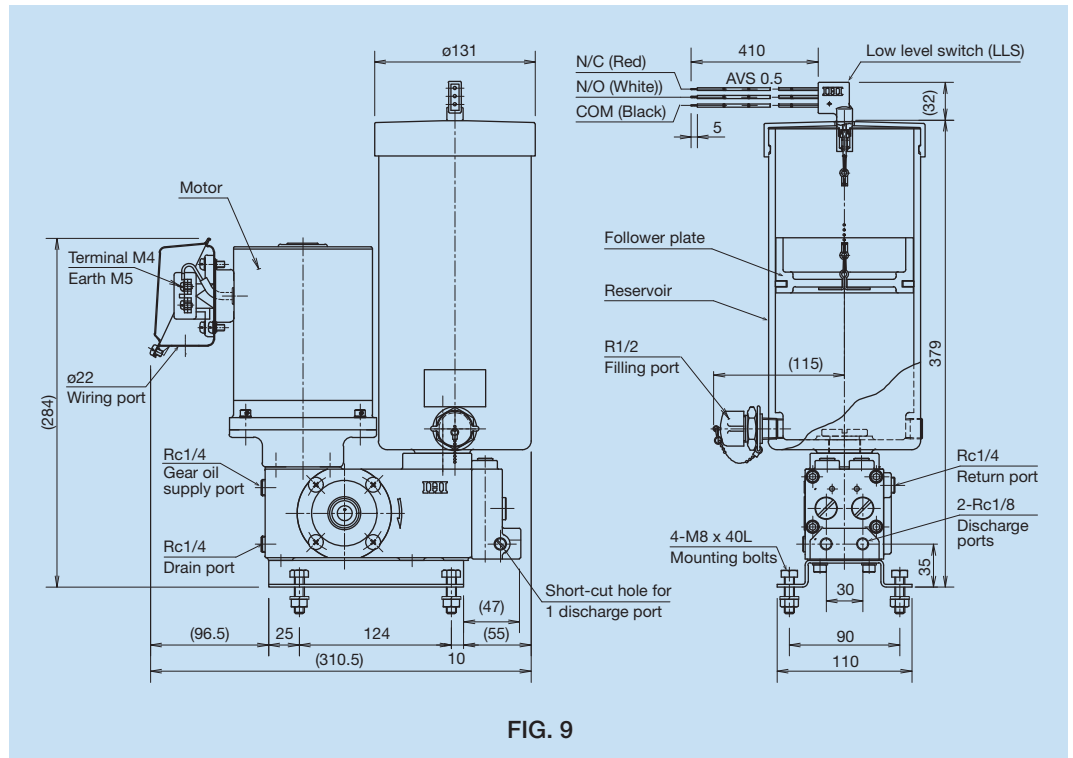


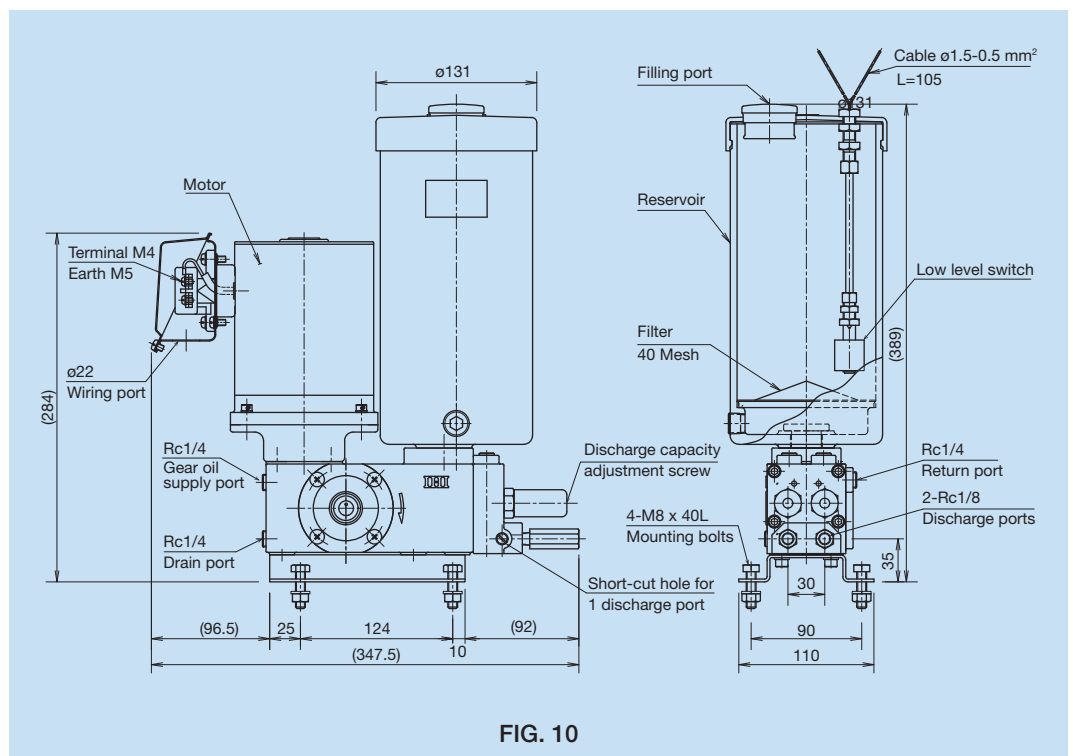
FIG. 8-1

Lubricating Pump (Motor Driven Type)

SK-521-2-LLS (for grease)



SK-521L-2-LLS (for oil)



IHI FULLAUTO PUMP

The IHI fullauto Pump SK-505-AGT Series provides a handy package of lubricating pump combined with a control box which incorporates timers. The pump package is small in size, light in weight and simple in operation. The power supply is provided with high function, which is available for a type of either 100V AC or 200V AC use, a long-hours timer type, or an automatic stop type.

FEATURES

- 1** Being fully automatic, what user should do is only to connect the pump to an AC power supply (100V or 200V), and the pump will be ready for operation.
- 2** A compact, lightweight design allows the pump package to be installed even in a limited space.
- 3** The timer causes the lubricating pump to start at constant cycle intervals and the distributor to make cycle operations until lubrication is completed. The stop timer can also cause to stop the pump. (which can be selected by the switch.)
- 4** A plunger type pump used on the package is provided with high pressure discharge capacity.
- 5** When combined with the IHI Lubricating System distributors, the Fullauto Pump Package SK-505 AGT ensures appropriate lubrication of a number of bearings.



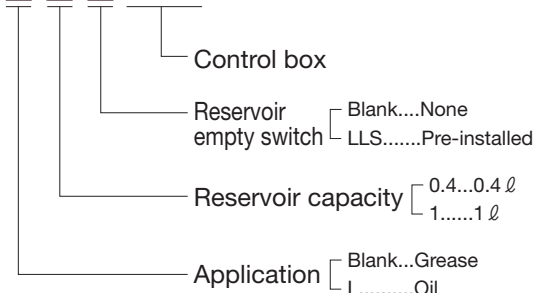
Table 4 SK-505-AGT Series Specifications

Product Code	Model	Lubricant	Discharge pressure	Discharge capacity	Reservoir capacity	Reservoir empty switch	Weight	Dimensions
RK993200	SK-505BM-1-AGT	Grease	Maximum 14.7 MPa	13 cm³/min or more	1 ℓ	None	5.7 kg	Fig. 11
RK993300	SK-505BM-1-LLS-AGT				1 ℓ	Pre-installed	5.8 kg	Fig. 12
RK993100	SK-505BM-04-AGT				0.4 ℓ	None	5.0 kg	Fig. 13
RK994200	SK-505BML-1-AGT	Oil	Maximum 5.9 MPa		1 ℓ	None	5.7 kg	(Fig. 11)
RK994300	SK-505BML-1-LLS-AGT				1 ℓ	Pre-installed	5.8 kg	Fig. 14
RK994100	SK-505BML-04-AGT				0.4 ℓ	None	5.0 kg	(Fig. 13)

- ▶ **Supply power:** 100 V AC or 200 V AC, single phase, 50/60 Hz
- ▶ **Motor:** 24 V DC, output rating of 5 minutes; current value of 1.5 A or less
- ▶ **Start-up timer setting time:**
Available for 30 minutes. 1, 2, 5, 10, 20, 50, 100, 200 hours and 1/100. It can be selected by the clip switch. In addition, it can be adjusted up to each range x 1/2 with a vernier.
- ▶ **Stop timer setting time:**
Available for 1, 2, 4, 10, 20, 40 minutes, and 1 x 10. It can be selected by the clip switch. In addition, it can be adjusted up to each range x 1/2 with a vernier.

▶ How to Read Model Code

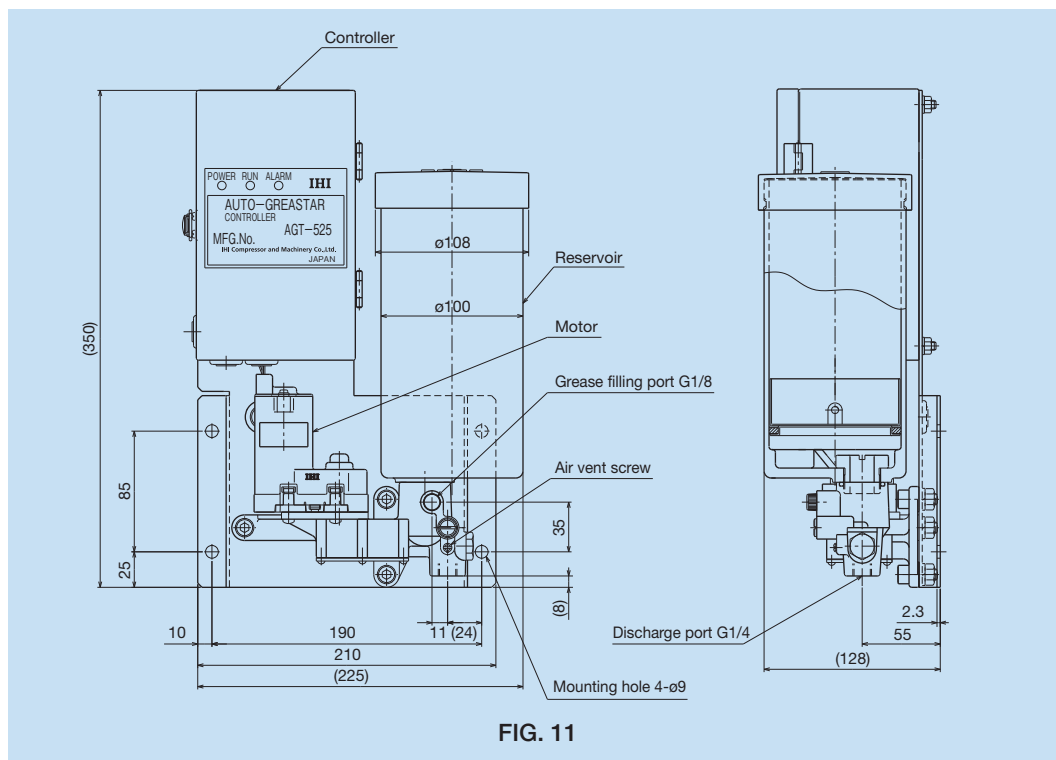
SK-505BM- - - -AGT



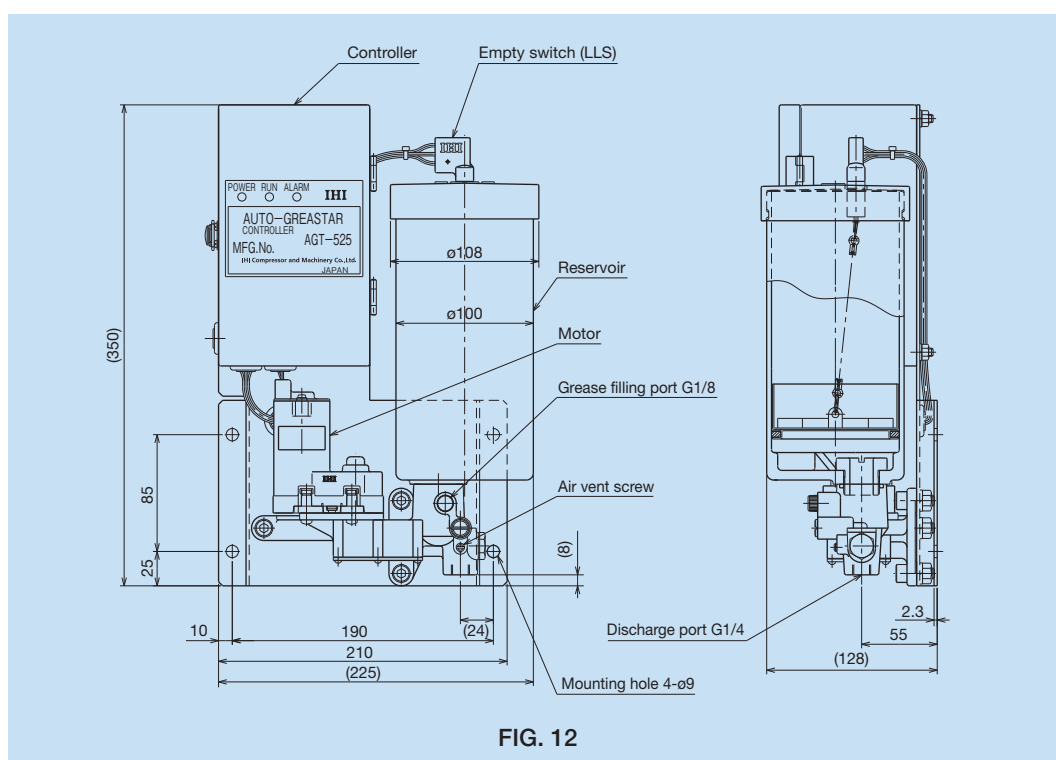
IHI FULLAUTO PUMP (PACKAGE SERIES SK-505BM-AGT)

SK-505BM-1-AGT (for grease)

Note: SK-505BML-1-AGT (for oil) is the same as SK-505BM-1-AGT (for grease) in dimensions.

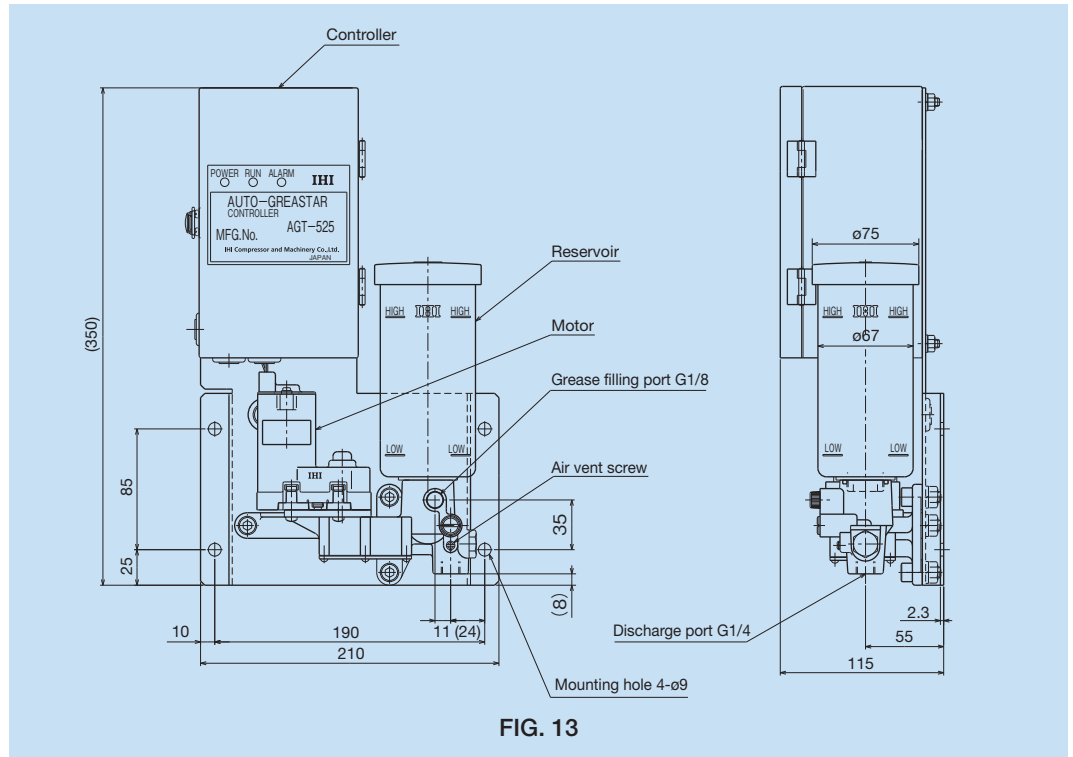


SK-505BM-1-LLS-AGT (for grease)

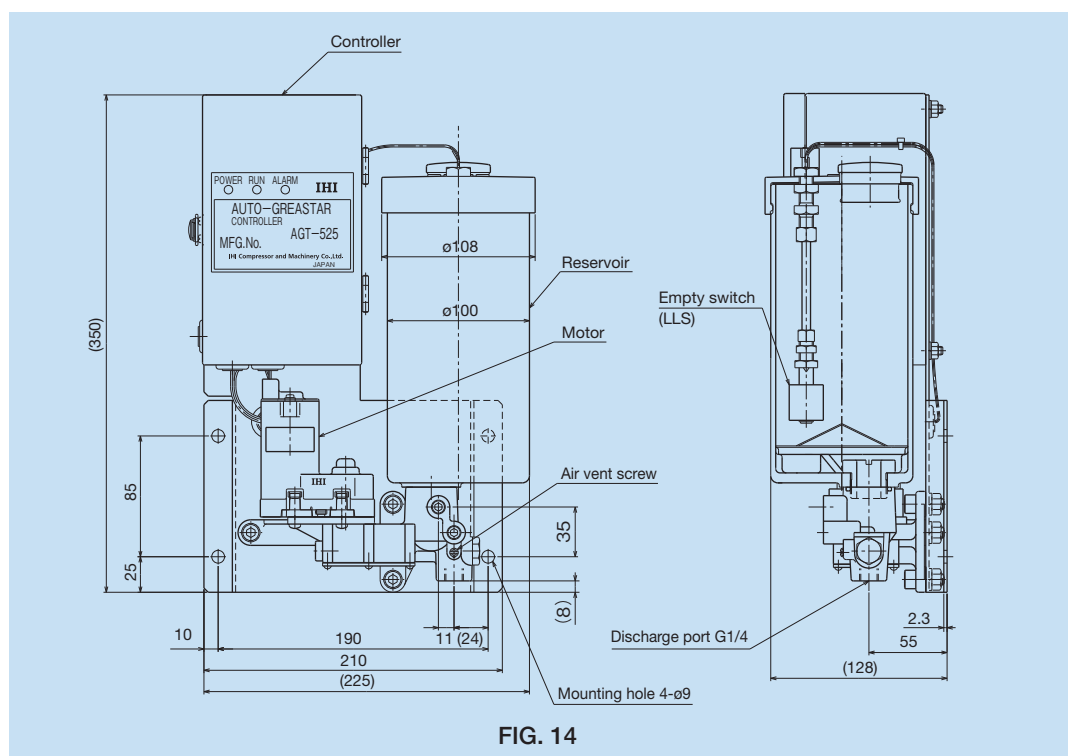


SK-505BM-04-AGT (for grease)

Note: SK-505BML-04-AGT (for oil) is the same as SK-505BM-04-AGT (for grease) in dimensions.



SK-505BML-1-LLS-AGT (for oil)



Auto Greastar Controller (AGT-525 type)

A dedicated controller for SK-505-AGT series full automatic pumps



Table 5 Specifications of the AGT-525 Controller

Product code	RK844800
Supply voltage	100 V AC or 200 V AC, single phase, shared
Start timer setting time (T1: min. 9 seconds, max. 200 hours)	30 minutes, 1, 2, 5, 10, 20, 50, 100, 200 hours, and x 1/100. The time is switched by the selector DIP switch. The time can be adjusted up to 1/2 of each range by a vernier.
Stop timer setting time (T2: min. 3 seconds, max. 40 minutes)	1, 2, 4, 10, 20, 40 minutes and x 1/10. The time is switched by the selector DIP switch. The time can be adjusted up to 1/2 of each range by a vernier.
Start method	① Automatic start by the T1 timer (integrating) ② External signal ③ Manual switch (① and ② are selected by S3 switch.)
Stop method	① T2 timer stop ② One-cycle stop (LS) ③ Manual switch (① and ② are selected by the selector switch S4. In the operation of ② the T2 timer is operated for alarm.)
Output	For SK-505 motor (24 V DC, 1.5 A max.)
Ambient temperature	-20°C to +50°C
Ambient humidity	85% RH max. (Free of dew condensation)
Weight	About 3 kg
Paint color	Munsell No. 5Y7/1

Drawing

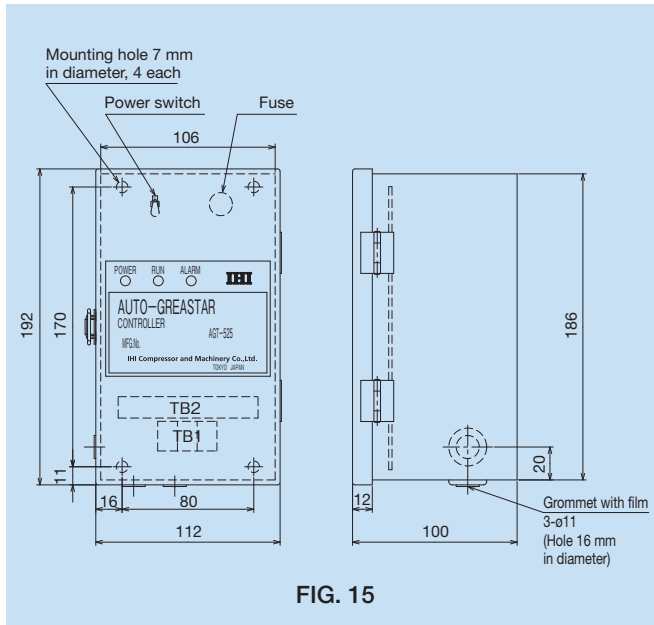


FIG. 15

Operation procedure

- ▶ Connect the lead connectors as shown in the connection diagram.
- ▶ Start and stop modes can be selected by S3 and S4 switches.
Original setting modes for S3 and S4 are “timer start” and “stop after one cycle”.
- ▶ When the KEY switch is ON (the machine is running), the start timer starts counting. When the KEY switch is turned OFF, the timer stops counting.
- ▶ When the pump is turned ON, the protection timer also starts counting simultaneously. When the pump does not stop after the T2 time elapses (the distributor is faulty or grease leaks from the pipe), the alarm lamp lights and the pump stops. (In the case of the one-cycle stop method)
- ▶ If this occurs, the controller is reset by pressing the RESET button and the lamp goes OFF. Check and remove the error cause.
- ▶ In the case of timer stop, the pump stops at the set time of the T2 timer.
- ▶ The pump may optionally be turned ON by pressing the MANU. START button. If this occurs, the start timer is reset to the initial state.
- ▶ The pump may be stopped halfway by pressing the RESET button.
- ▶ Set T1 time longer than the time of T2 timer.

External connection diagram

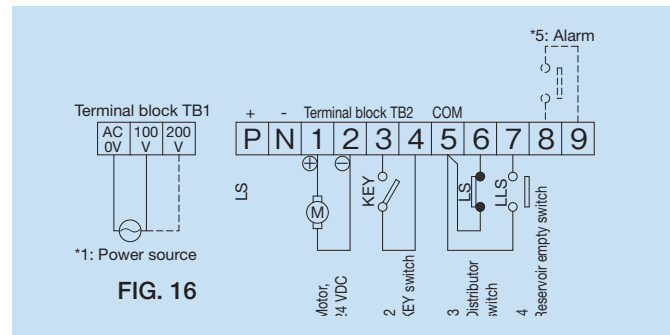


FIG. 16

Notes

- *1: Connect the power cable to two terminals of the TB1 terminal block. For 200VAC, connect the cable to the left end terminal and the right end terminal. For 100VAC, connect the cable to the left end terminal and the intermediate terminal.
- *2: The KEY switch is used to count the operation time of the machine to be oiled and to perform the interlocking operation.
Use the contact (dry contact a) which interlocks with the machine operation. When this contact is off, the T1 timer does not count the time.
When the interlocking operation is not performed, short-circuit terminals 3 and 4.
If this occurs, the T1 timer operates while the power is on.
- *3: Use a 1b contact for the distributor switch LS. (A 1c contact is used for the standard M switch. Tape the remaining normal open cable for insulation.) When the T2 timer stop method is selected, the LS (Distributor switch) wire need not connect.
- *4: Use a 1a contact for the tank low-level switch. When the contact is closed, an alarm is outputted and the pump stops.
(ON: at LOW-LEVEL)
- *5: When a tank low-level signal is supplied, terminals 8 and 9 are closed and an alarm signal is outputted. (Contact capacity: 0.4A, 24V DC) In the case of one-cycle stop, an alarm signal is outputted even when the time of the alarm timer T2 is over.

Operation chart (Selected by switch S4)

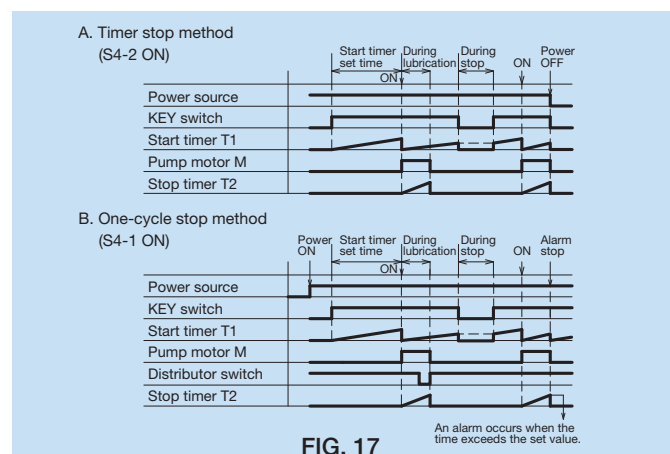


FIG. 17

Lubricating pump (air-operated)

Air-operated lubricating pumps for pneumatic lubrication

Features

This pump is driven by compressed air to feed grease or oil with application of pressure. You can control the pump adequately by opening and closing the air supply path. This pump is small but strong, having a wide range of discharge pressure from 2.9 MPa to 19.6 MPa depending upon the supply air pressure.

The SKB-881 pump continuously works in a reciprocating manner while the compressed air is supplied and its speed is dependent upon the supply air pressure. So you can get a desired discharge quantity by controlling the supply air pressure. See FIG.18 and FIG.19 respectively for a relationship between the discharge pressure and the supply air pressure and a relationship between the discharge quantity and the supply air pressure.

The SKC-800 pump works in a single-shot manner which supplies a preset amount of grease or oil each time air is supplied.

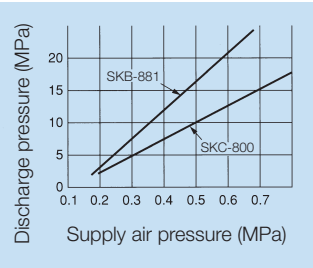


FIG. 18
Discharge pressure vs.
supply air pressure

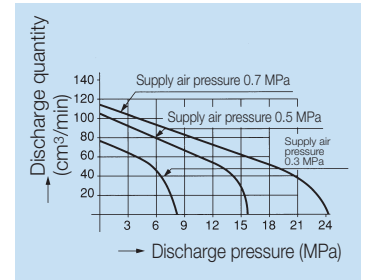


FIG. 19
Discharge Quantity vs
Discharge pressure
(SKB-881) (reference)

Table 6 Selection of Air-Operated Lubricating Pumps and Available Distributors

Air-operated lubricating pump			Distributors	Maximum number of supply ports	
Grease	Oil	Air pressure		Grease	Oil
SKB-881-2	SKB-881L-2	0.3 - 0.7MPa	BU-□R BU-□M BMUM-□R (□-□) BMUM-□M (□-□)	60 ports	60 ports
SKB-881-2-LLS	SKB-881L-2-LLS				
SKC-800A-2	SKC-800AL-2				
SKC-800A-2-LLS	SKC-800AL-2-LLS				
SKC-800M-2	SKC-800ML-2				
SKC-800M-2-LLS	SKC-800ML-2-LLS				

Note: "Maximum number of ports" for the use of the BMUM distributor (See Page 30.)

Piping Diagram

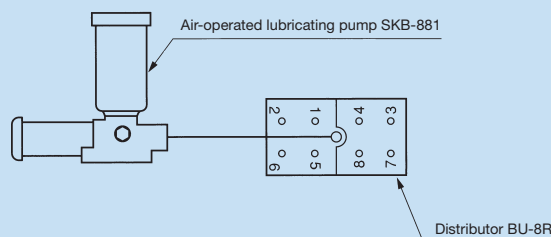


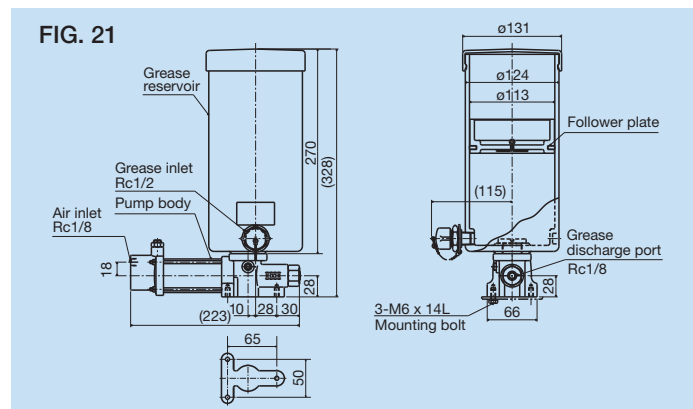
FIG. 20 Single-end line method

Table 7 Specifications of Air-Operated Lubricating Pumps

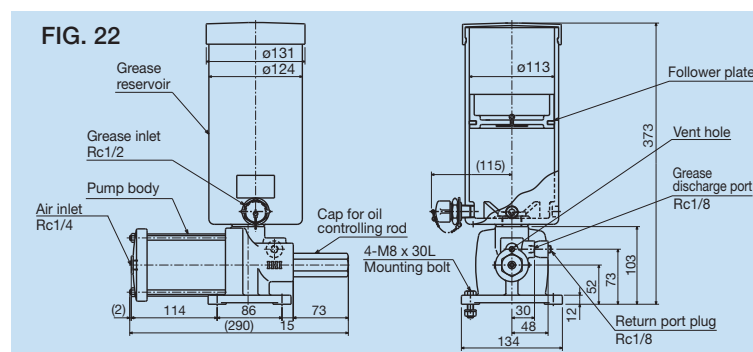
Lubricant	Product Code	Model	Port	Discharge Pressure	Discharge Capacity	Air pressure	Reservoir capacity	Reservoir empty switch (LLS)	Net Weight	Dimensions
Grease	RK948300	SKB-881-2	1 port	Maximum 19.6 MPa	See FIG. 19	0.3 to 0.7 MPa	2 ℓ (1.8)	None	3.2 kg	FIG. 21
	RK948500	SKB-881-2-LLS						Pre-installed	3.4 kg	
	RK985200	SKC-800A-2		Maximum 14.7 MPa	1 – 4 cm ³ stroke			None	7.2 kg	FIG. 22
	RK985300	SKC-800A-2-LLS						Pre-installed	7.4 kg	
	RK985500	SKC-800M-2			0.2 – 1 cm ³ stroke			None	4.1 kg	FIG. 23
	RK985600	SKC-800M-2-LLS						Pre-installed	4.3 kg	
Oil	RK948400	SKB-881L-2		Maximum 19.6 MPa	See FIG. 19			None	3.2 kg	
	RK959000	SKB-881L-2-LLS		Maximum 14.7 MPa	1 – 4 cm ³ stroke			Pre-installed	3.4 kg	
	RK985700	SKC-800AL-2						None	7.2 kg	
	RK985900	SKC-800AL-2-LLS			0.2 – 1 cm ³ stroke			Pre-installed	7.4 kg	
	RK985800	SKC-800ML-2						None	4.1 kg	
	RK986100	SKC-800ML-2-LLS		Pre-installed	4.3 kg					

• The discharge pressure is at an air pressure of 0.7 MPa. • The reservoir capacity enclosed in parentheses is an effective capacity.

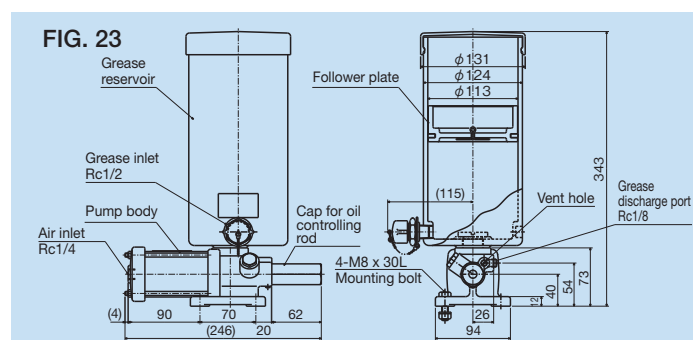
SKB-881-2 (for grease)



SKC-800A-2 (for grease)



SKC-800M-2 (for grease)



Lubricating pump (Manually-operated)

Table 8 Selection of Manually-Operated Lubricating Pumps and Available Distributors

Manually operated lubricating pump			Distributor	Maximum number of ports	
Grease	Oil	Discharge pressure		Grease	Oil
SKA-214-04 SKA-214-1	SKA-214L-04 SKA-214L-1	14.7 MPa	BU-□R BU-□M BMUM-□R (□-□) BMUM-□M (□-□)	60 ports	60 ports
SKA-244-04 SKA-244-1	SKA-244L-04 SKA-244L-1			120 ports	120 ports

Note: "Maximum number of ports" for the use of the BMUM distributor (See Page 30.)

Piping Diagram

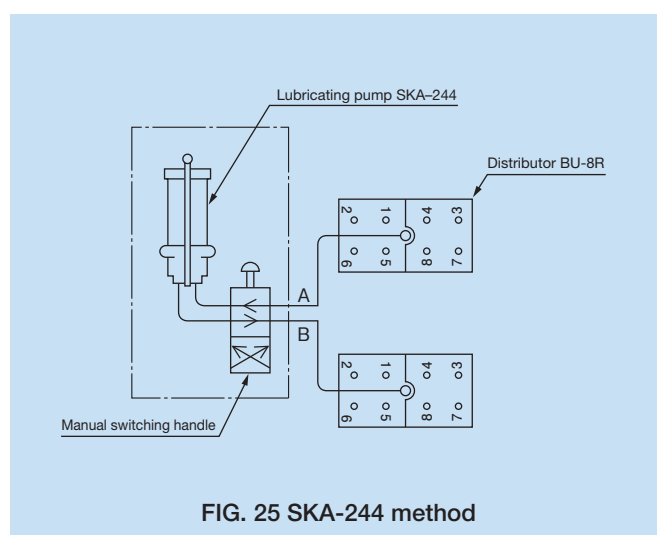
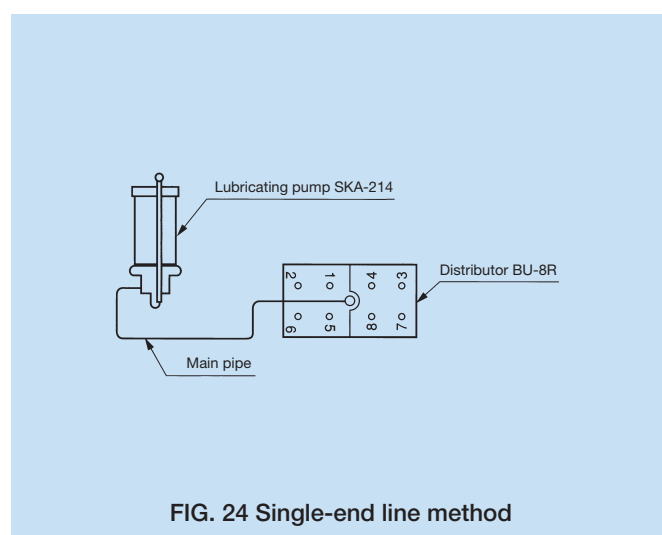
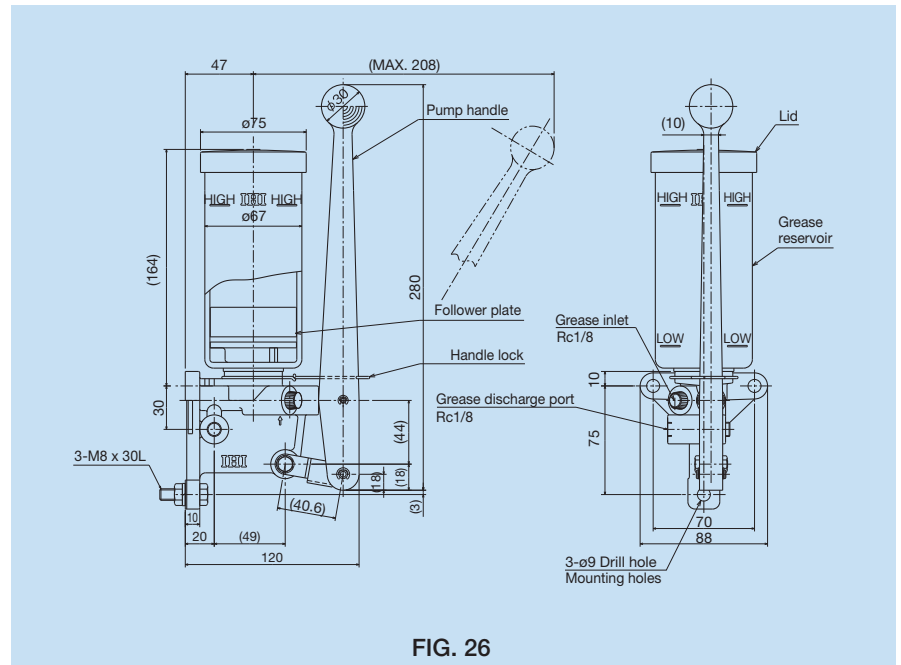


Table 9 Specifications of Manually-Operated Lubricating Pumps

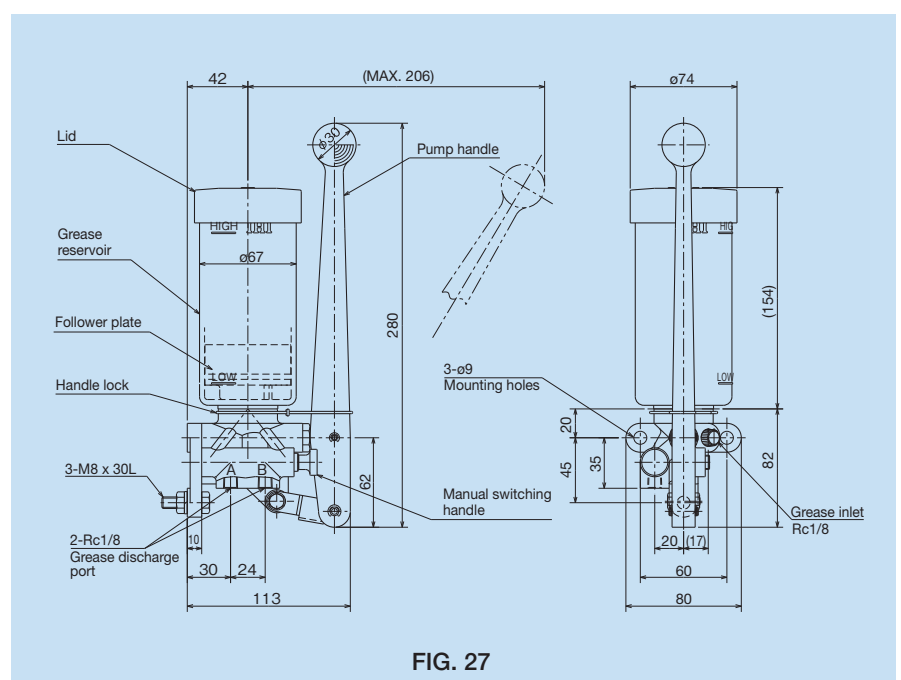
Lubricant	Product Code	Model	Port	Discharge Pressure	Discharge Capacity	Reservoir Capacity	Net Weight	Dimensions	
Grease	RK942800	SKA-214-04	1 port	14.7 MPa	Approx. 1 cm³/stroke	0.4 ℓ (0.3)	1.3 kg	FIG. 26	
	RK943000	SKA-214-1				1 ℓ (1.0)	2.8 kg		
	RK956700	SKA-244-04	2 port			0.4 ℓ (0.3)	1.5 kg	FIG. 27	
	RK956800	SKA-244-1				1 ℓ (1.0)	2.3 kg		
Oil	RK943700	SKA-214L-04	1 port				0.4 ℓ (0.3)	2.0 kg	
	RK943800	SKA-214L-1				1 ℓ (1.0)	2.8 kg		
	RK956900	SKA-244L-04	2 port				0.4 ℓ (0.3)	1.5 kg	
	RK957000	SKA-244L-1				1 ℓ (1.0)	2.3 kg		

• The reservoir capacity enclosed in parentheses is an effective capacity.

SKA-214-04 (for grease)



SKA-244-04 (for grease)



Lubricating pump (Mechanically-driven)

This lubricating pump is for oil supply only.

Features

This lubricating pump is a ratchet-feed type pump which automatically feed oil in cooperation with a machine. (The lubricating pump can be driven by a chain mechanism.) The SKA-722 consists of a pump which compresses and discharges oil, two cams which drive the pump, a lever and a ratchet which drive a cam shaft, two plungers, and two cylinders.

The SKA-722 has two discharge ports but can be changed to have only one discharge port.

Note: For safety, the lever and the moving part of the driving section must be protected with a cover.

Table 10 Selection of Mechanically-Driven Lubricating Pumps and Available Distributors

Mechanically-driven lubricating pump	Distributor	Maximum number of oil ports
SKA-722R SKA-722L	BU-□R BU-□M BMUM-□R (□-□) BMUM-□M (□-□)	60 ports

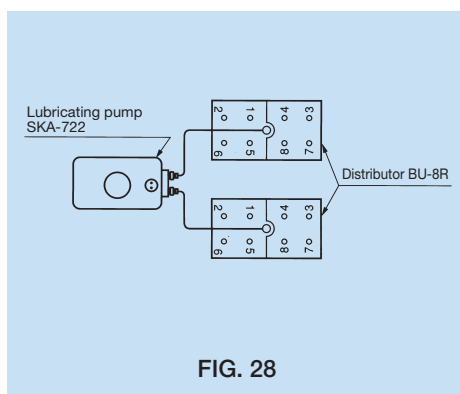


Table 11 Specifications of Mechanically Driven Lubricating Pump

Product Code	Model	Port	Discharge Pressure	Discharge Capacity (per stroke)		Reservoir Capacity	Lever angle	Max. rpm of pump shaft	Min. rpm of pump shaft	Net Weight	Dimensions
RK293300	SKA-722R	1 or 2 ports	Maximum 5.9 MPa	1 port	0 to 1.8 cm ³	2 ℓ (1.9)	Minimum 9°	80min ⁻¹	10min ⁻¹	Approx. 4.2 kg	FIG. 29
RK293400	SKA-722L			2 ports	0 to 0.9 cm ³ × 2						

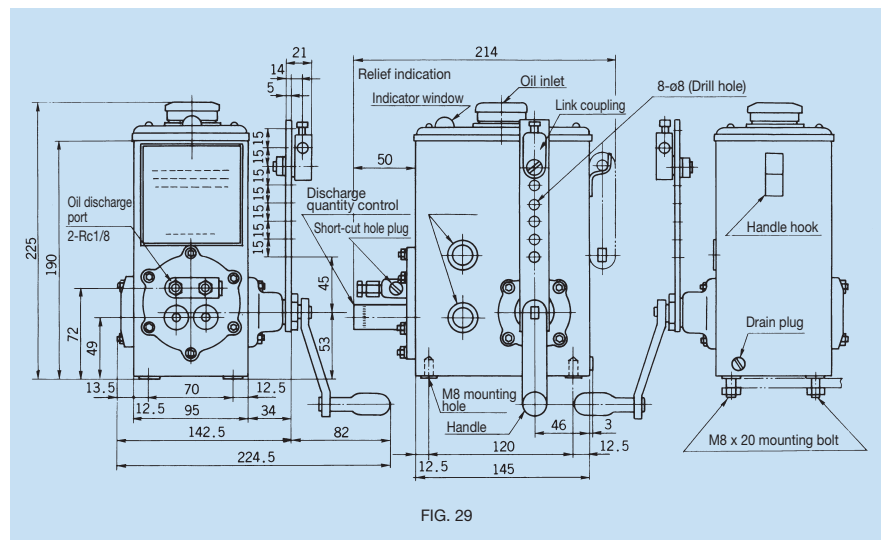
- The reservoir capacity enclosed in parentheses is an effective capacity.
- In case of 1port discharge, to remove a steel ball in plug. (see page 9)
- The handle position of SKA-722R and SKA-722L is left-right reversal.

Piping



Can be changed to have only one discharge port.

SKA-722R



Distributors

Small-Space Compact Distributor

Single-end line type distributor

- Do not block the discharge port of the distributor with the plug. (If done, the whole system may malfunction.)
- When using oil. Please do oil flushing beforehand.

Table 12 Physical Characteristics of BU-R Type Distributors

Product code	Model	No. of ports	Discharge quantity	Material	Operating pressure	Net weight
Grease						
RK620500	BU-4R	4	0.3cm ³ /stroke	ADC	Max. 14.7 MPa (Oil 5.9 MPa)	Approx. 0.42 kg
RK620600	BU-6R	6				Approx. 0.42 kg
RK620700	BU-8R	8				Approx. 0.41 kg
RK620800	BU-12R	12				Approx. 0.55 kg

Table 13 Physical Characteristics of BU-M Type Distributors

Product code	Model	No. of ports	Discharge quantity	Material	Operating pressure	Net weight
Grease						
RK649100	BU-4M	4	0.3cm ³ /stroke	ADC	Max. 14.7 MPa (Oil 5.9 MPa)	Approx. 0.48 kg
RK649200	BU-6M	6				Approx. 0.48 kg
RK649300	BU-8M	8				Approx. 0.47 kg
RK649400	BU-12M	12				Approx. 0.61 kg

Principle of Operation

Operation of the BU-8R distributor (See FIG.30 and FIG.31.)

The compressed grease from the supply port pushes down the piston No.1 at its top. This causes the grease in the lower part of the cylinder to go out from the discharge port (6). When the piston No.1 goes down, it closes the oblique hole interconnecting to the upper part of the piston No.2 and simultaneously opens the oblique hole interconnecting to the lower part of the piston No.2. The discharge port (3) interconnects to the upper part of the piston No.2 through an oblique hole. The compressed grease pushes up the piston No.2 at its bottom. This causes the grease in the upper part of the cylinder to go out from the discharge port (3). When the piston No.2 goes up (when the indicating rod goes up), it closes the oblique hole interconnecting to the lower part of the piston No.3 and simultaneously opens the oblique hole interconnecting to the upper part of the piston No.3. The compressed grease pushes down the piston No.3 at its top.

This causes the grease in the lower part of the cylinder to go out from the discharge port (8). When the piston No.3 goes down, it closes the oblique hole interconnecting to the upper part of the piston No.4 and simultaneously opens the oblique hole interconnecting to the upper part of the piston No.4. The discharge port (1) interconnects to the upper part of the piston No.4 through an oblique hole.

The compressed grease pushes up the piston No.4 at its bottom. This causes the grease in the upper part of the cylinder to go out from the discharge port (1). With this, a half cycle of lubrication is completed. (See FIG.31.) Next, this half cycle is reversed to complete the whole lubrication cycle. At the end of the whole lubrication cycle, the pistons are positioned as shown in FIG.30. (Basically BU-8R, BU-4R, BU-6R, and BU-12R behave similarly.)

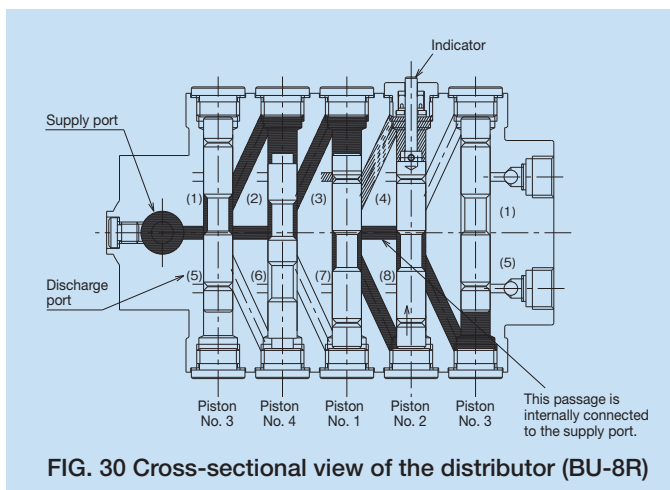


FIG. 30 Cross-sectional view of the distributor (BU-8R)

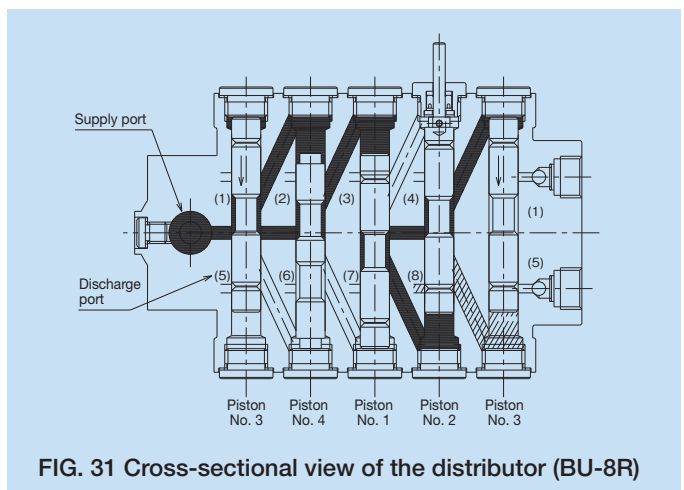


FIG. 31 Cross-sectional view of the distributor (BU-8R)

Distributors (BU-R type)

BU-4R

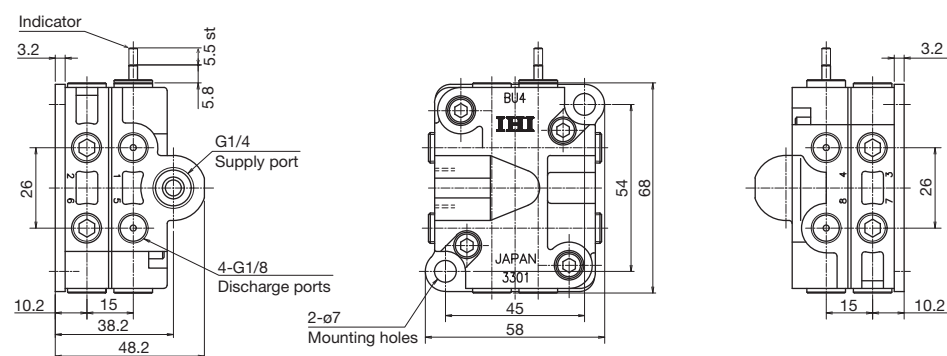


FIG. 32

BU-6R

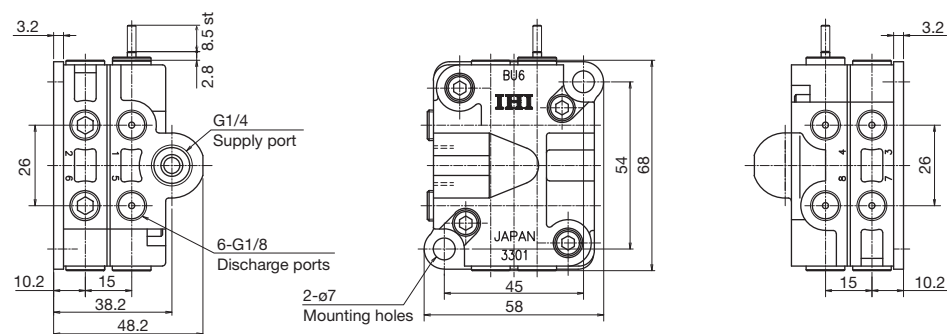


FIG. 33

BU-8R

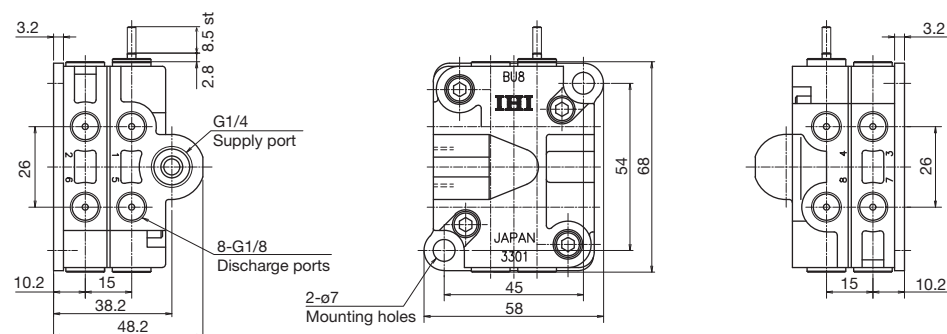


FIG. 34

BU-12R

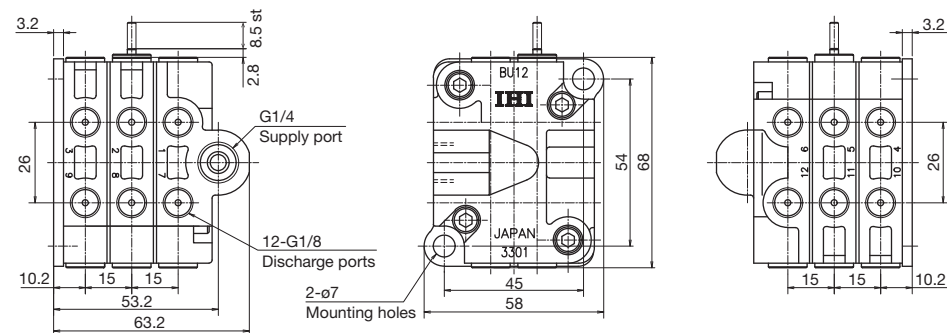


FIG. 35

Distributors (BU-M type)

- Distributors with microswitch

BU-4M

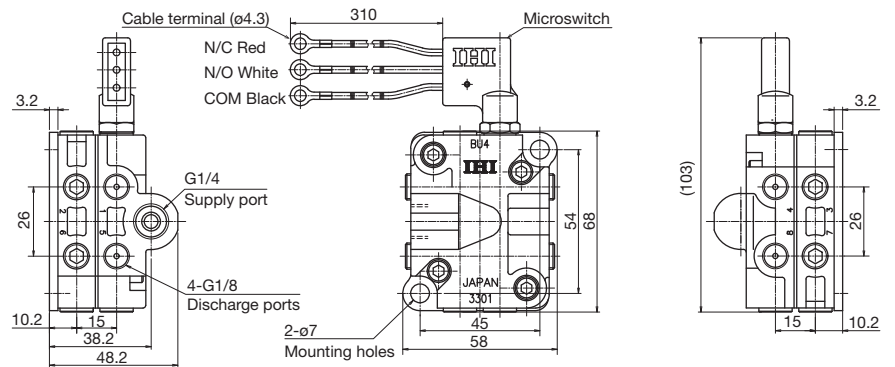


FIG. 36

BU-6M

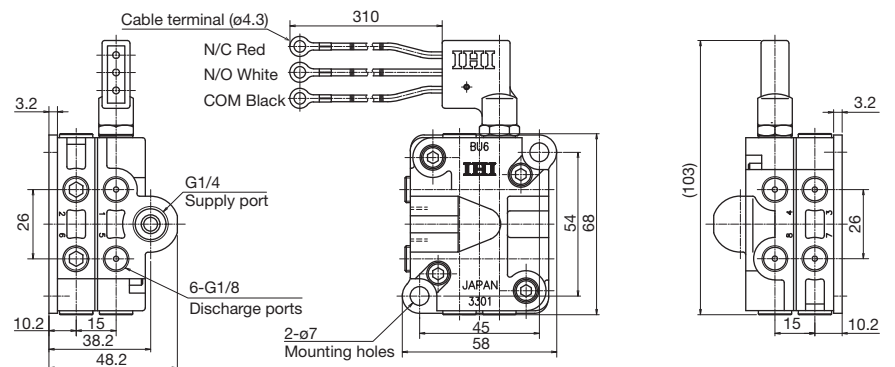


FIG. 37

BU-8M

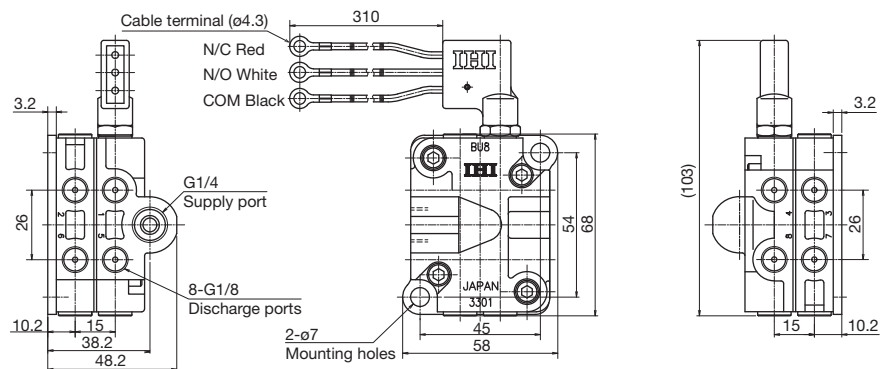


FIG. 38

BU-12M

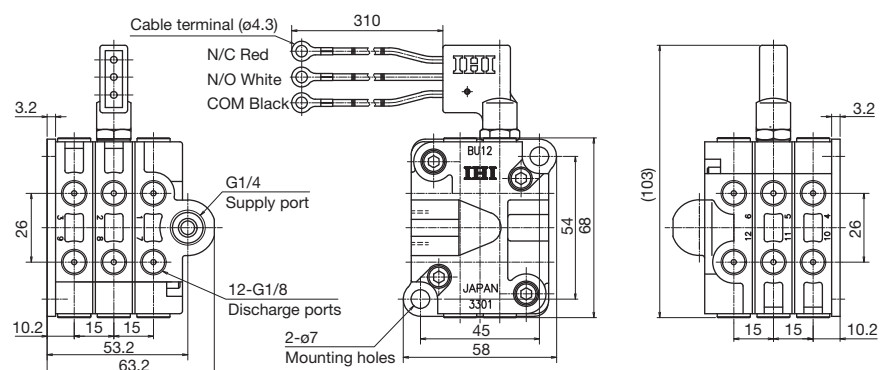
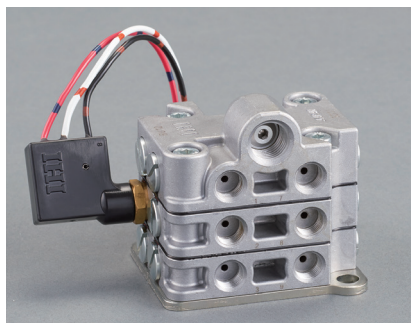


FIG. 39

Distributors (BMU type)

- A master distributor is a combination of an BMU type distributor and an M type distributor.
- A combination type distributor has a model name of BMUM- □R(□-□) or BMUM- □M(□-□).
- When using oil, please do oil flushing beforehand.

Table 14 Physical Characteristics of BMU-R Type Distributors

Product code	Type	No. of discharge ports	Discharge port Nos.	Discharge capacity cm ³	Weight
RK653100	BMU-4R	4	1·5	M*	Approx. 0.42 kg
			4·8	0.3	
RK653200	BMU-6R	6	1·5	M*	Approx. 0.42 kg
			3·4·7·8	0.3	
RK653300	BMU-8R	8	2·6	M*	Approx. 0.41 kg
			1·3·4·5·7·8	0.3	
RK653400	BMU-12R	12	3·9	M*	Approx. 0.55 kg
			1·2·4·5·6·7·8·10·11·12	0.3	

Notes: (1) M* means Discharge capacity of M distributor. (2) Grease line pressure: Max 14.7 MPa.

Table 15 Physical Characteristics of BMU-M Type Distributors (with a microswitch)

Product code	Type	No. of discharge ports	Discharge port Nos.	Discharge capacity cm ³	Weight
RK653500	BMU-4M	4	1·5	M*	Approx. 0.48 kg
			4·8	0.3	
RK653600	BMU-6M	6	1·5	M*	Approx. 0.48 kg
			3·4·7·8	0.3	
RK653700	BMU-8M	8	2·6	M*	Approx. 0.47 kg
			1·3·4·5·7·8	0.3	
RK653800	BMU-12M	12	3·9	M*	Approx. 0.61 kg
			1·2·4·5·6·7·8·10·11·12	0.3	

Notes: (1) M* means Discharge capacity of M distributor. (2) Grease line pressure: Max 14.7 MPa (3) Material: ADC

Table 16 Physical Characteristics of M Type Distributors

Product code	Type	No. of discharge ports	Discharge port Nos.	Discharge capacity cm ³	Weight
RK667100	M (0-10**)	2	M2·M4	0.3***	Approx. 0.28 kg
RK667200	M (0-15**)	2	M2·M4	0.3***	Approx. 0.28 kg
RK667300	M (0-20**)	2	M2·M4	0.3***	Approx. 0.28 kg
RK667400	M (0-30**)	2	M2·M4	0.3***	Approx. 0.28 kg
RK667600	M (15**-15)	4	M1·M3	1.5	Approx. 0.38 kg
			M2·M4	0.3***	
RK667700	M (20**-20)	4	M1·M3	2	Approx. 0.38 kg
			M2·M4	0.3***	
RK667800	M (30**-30)	4	M1·M3	3	Approx. 0.38 kg
			M2·M4	0.3***	

Notes: (1) ** marks indicate the capacity of an BMU type distributor discharge port.

(2) *** marks indicate the piston stroke discharge capacity of an BMU type distributor.

(3) M (□-□)

size of No. 6 piston
size of No. 5 piston
(see FIG.56 & 57)

0: w/o piston 20:2cm³/st
10:1cm³/st 30:3cm³/st
15:1.5cm³/st

(4) Applicable pressure values for grease: max. 14.7MPa

(5) Material, body: Die-cast aluminum

(6) Accessories: Hexagonal socket head bolts M6 (x2) and O-rings P4 (x4), for connection to the BMU type distributor

Distributors (BMUM type)

- This type of distributor is a combination of an BMU type distributor and an M type distributor.
- BMU and M type distributors are delivered separately.
- The BMU and M type distributors are easily combined by two bolts (attached to the M-type distributor).
- When using oil, Please do oil flushing beforehand.

BMUM-4,6,8R (0-□)

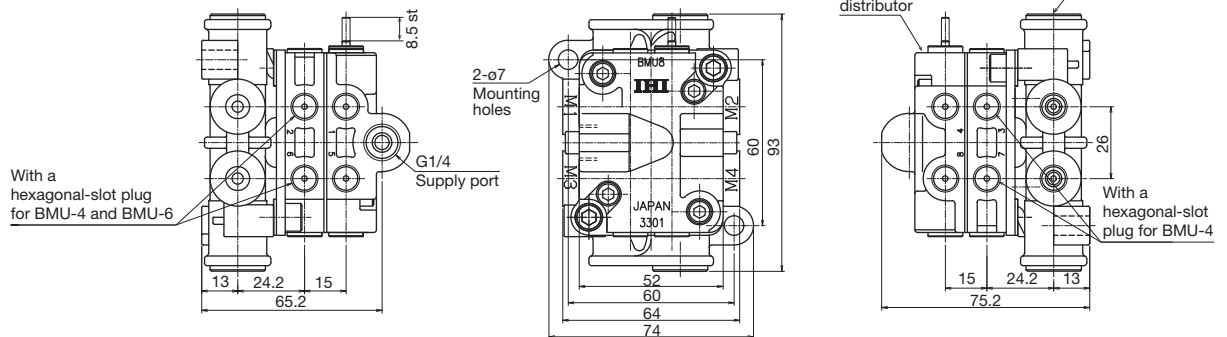


FIG. 40

BMUM-12R (0-□)

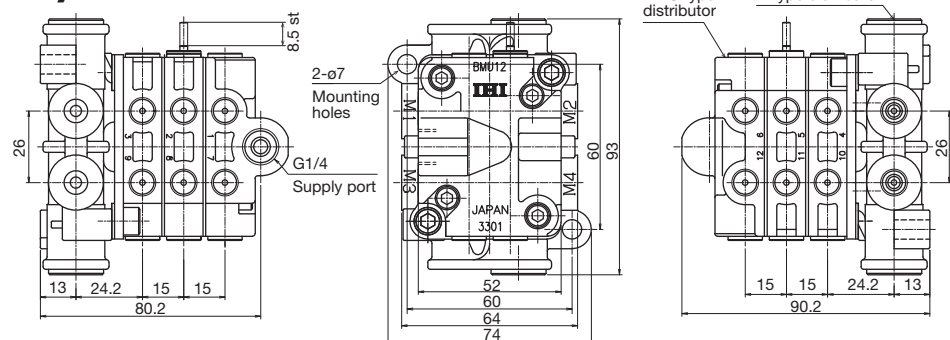


FIG. 41

BMUM-4,6,8R (□-□)

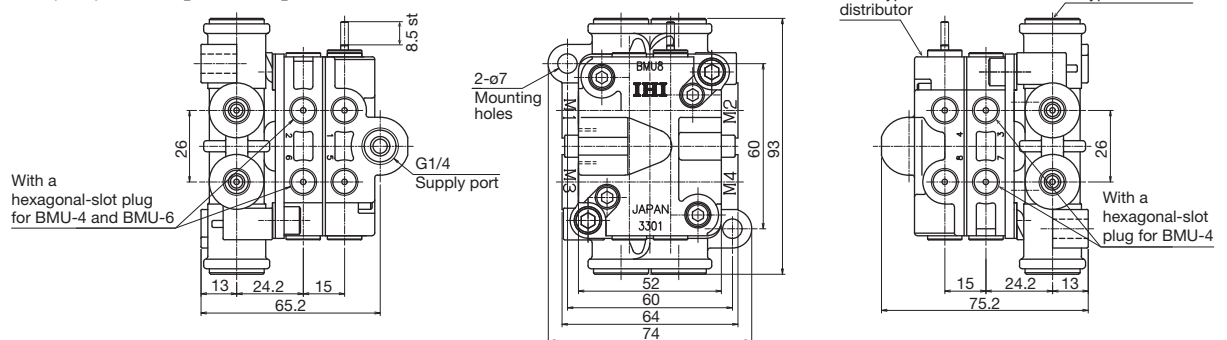


FIG. 42

BMUM-12R (□-□)

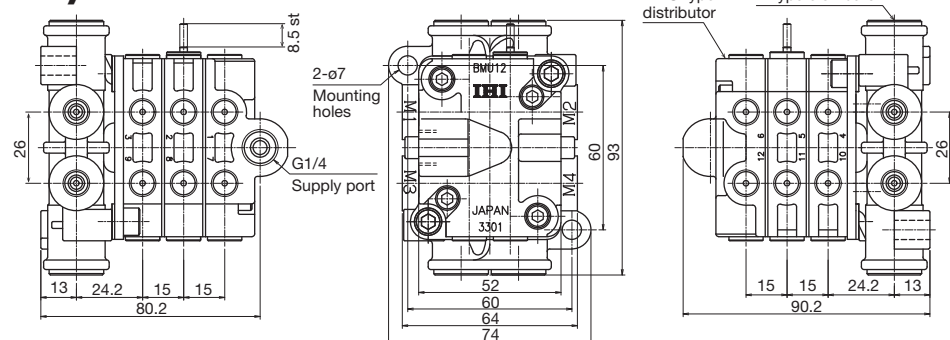
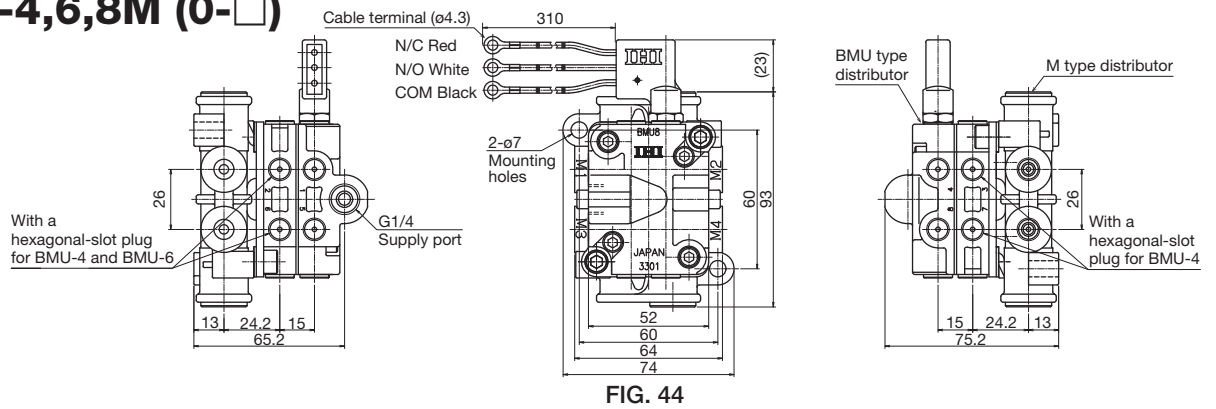


FIG. 43

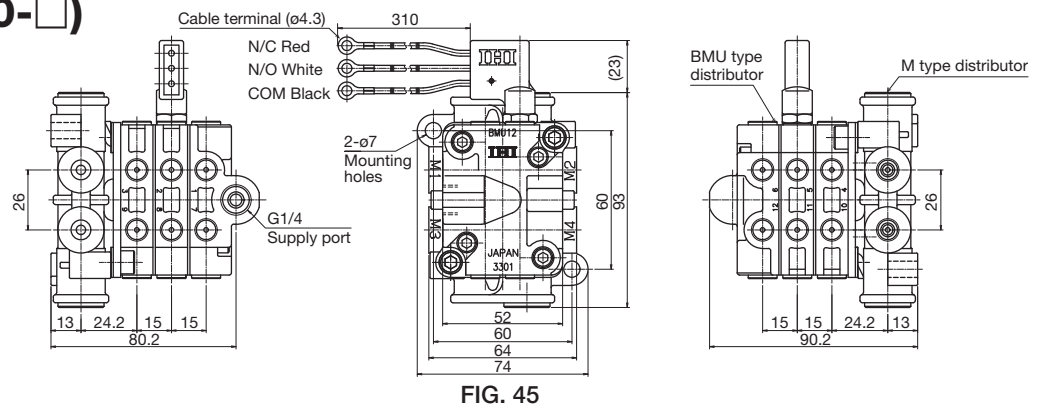
Distributors (BMUM type)

- Distributor with a microswitch
- This type of distributor is a combination of an BMU type distributor and an M type distributor.

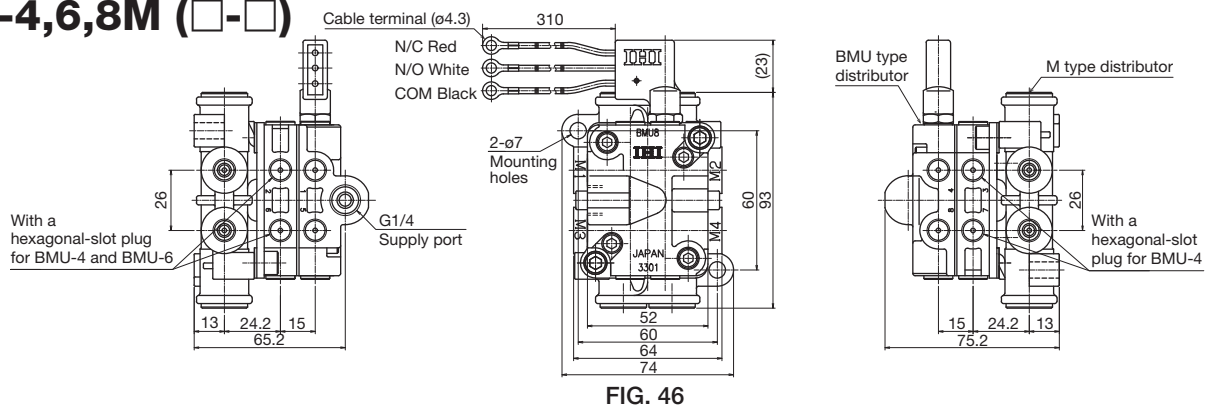
BMUM-4,6,8M (0-□)



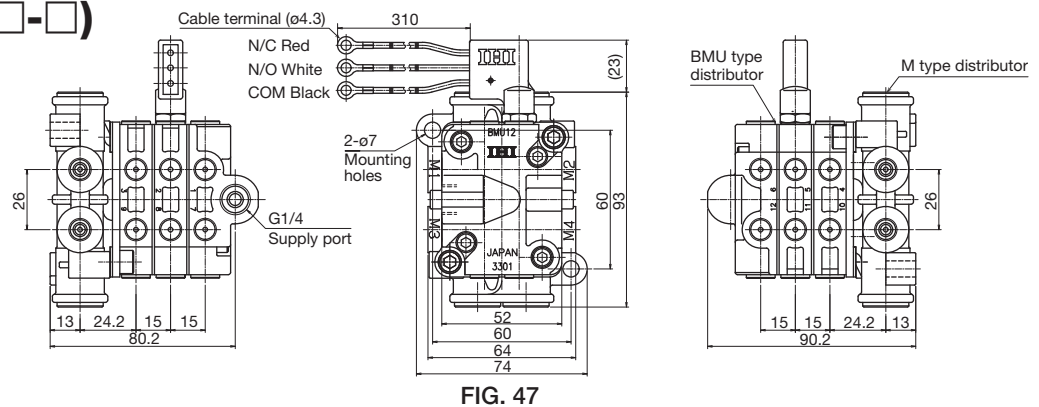
BMUM-12M (0-□)



BMUM-4,6,8M (□-□)



BMUM-12M (□-□)



Distributors (BMU-R type)

- This type of distributor is always used together with an M type distributor.
- This type of distributor cannot be used singly.

BMU-4R

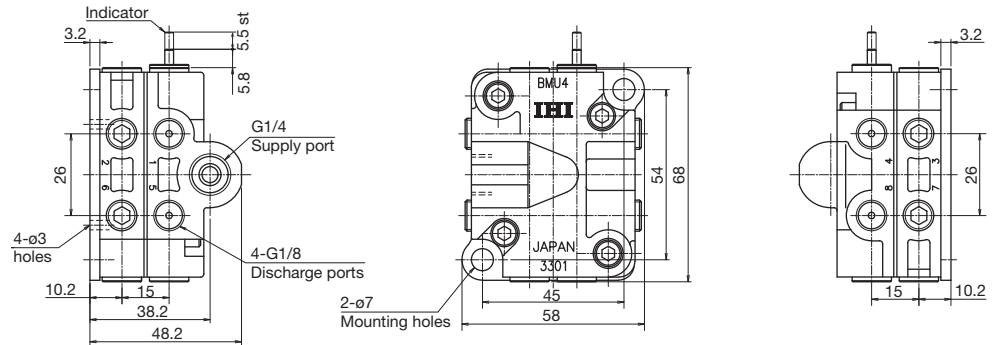


FIG. 48

BMU-6R

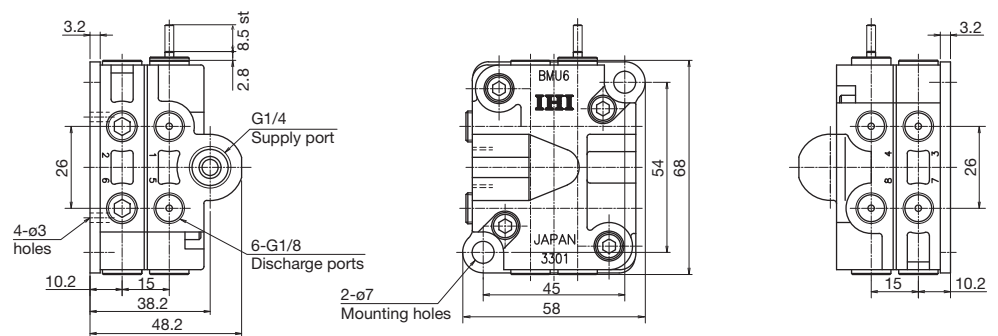


FIG. 49

BMU-8R

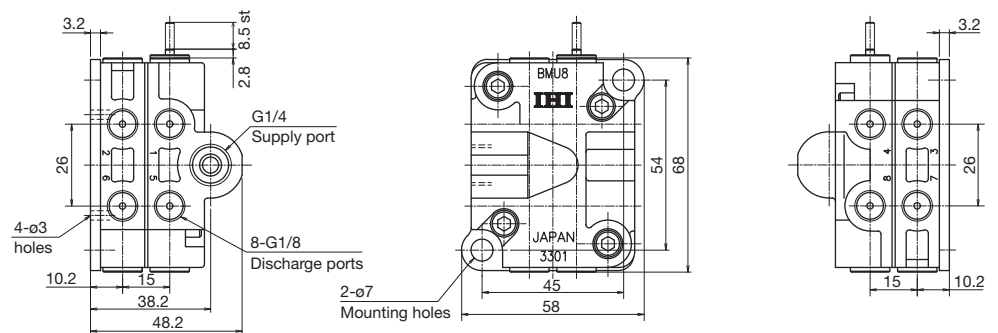


FIG. 50

BMU-12R

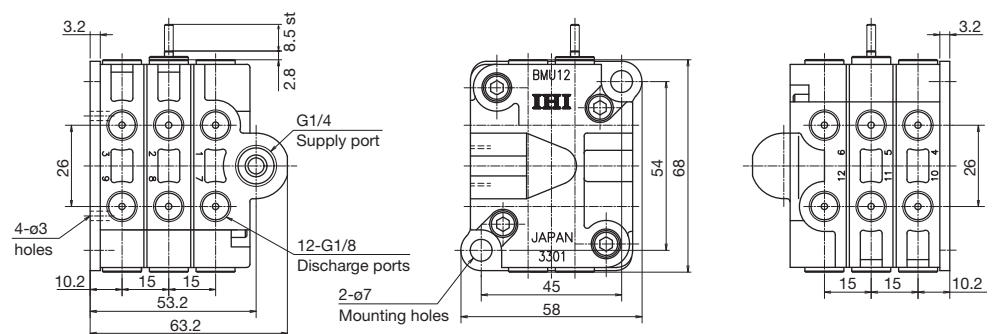


FIG. 51

Distributors (BMU-M type)

- This type of distributor is equipped with a microswitch and always used together with an M type distributor.
- This type of distributor cannot be used singly.

BMU-4M

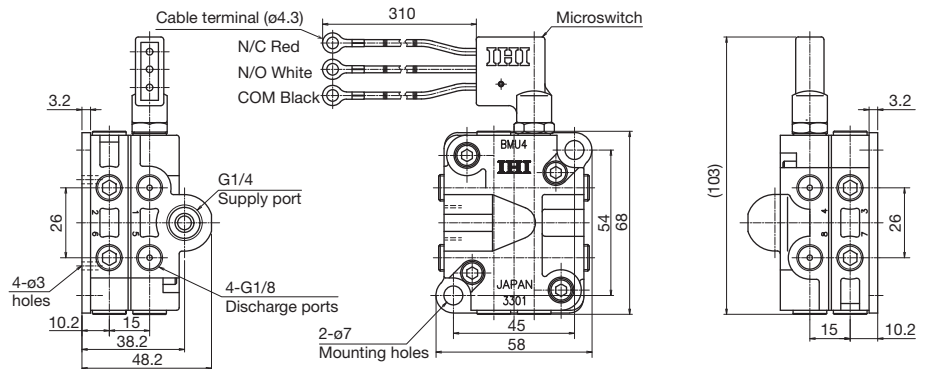


FIG. 52

BMU-6M

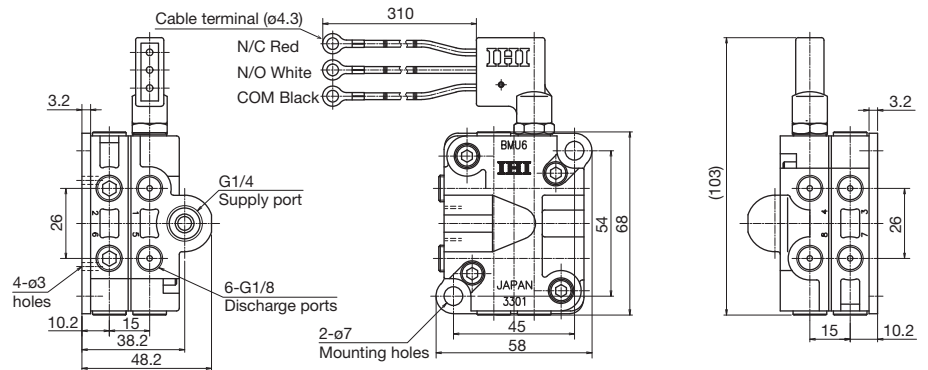


FIG. 53

BMU-8M

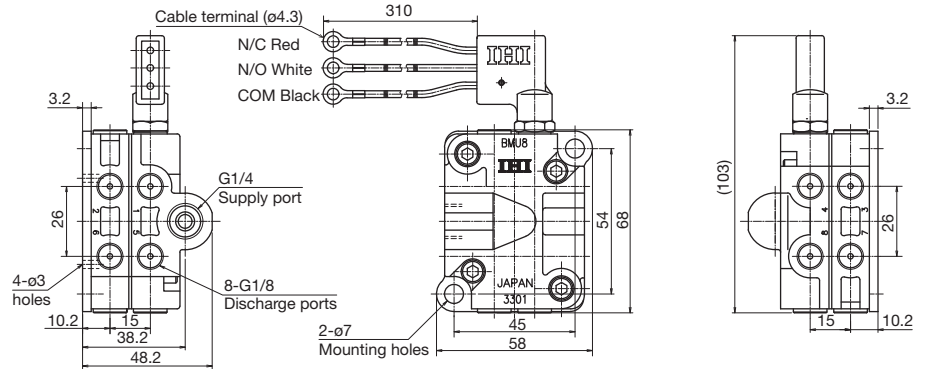


FIG. 54

BMU-12M

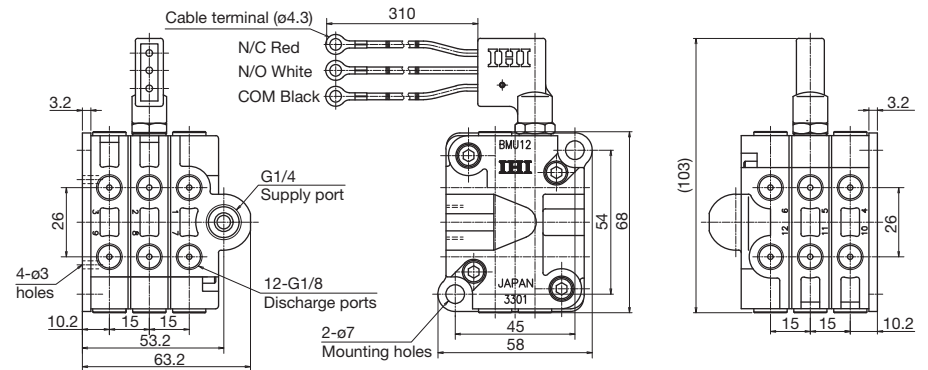


FIG. 55

Distributors (M type)

- This type of distributor is always used together with an BMU type distributor.
- This type of distributor cannot be used singly.
- See Table 14 to Table 16 for relationships between discharge ports and discharge capacities.

M (0-□)

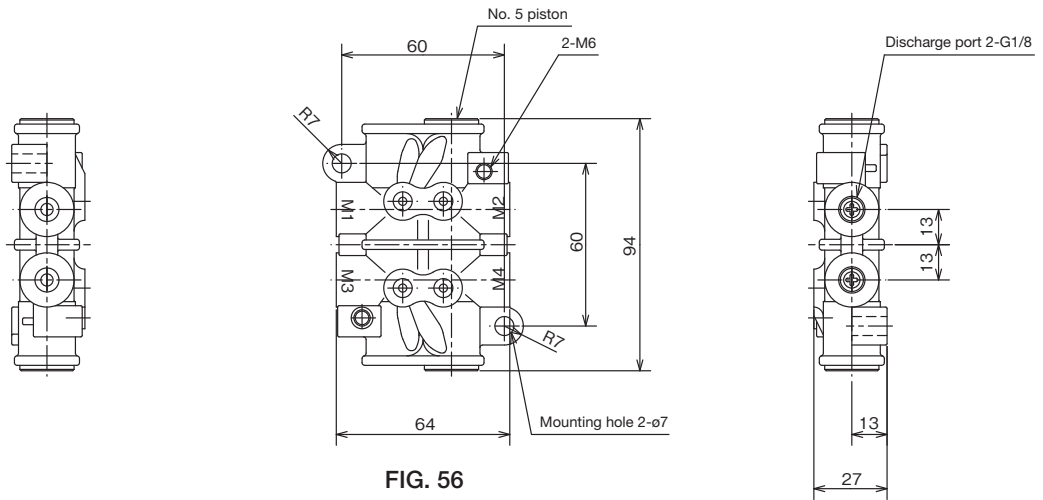


FIG. 56

M (□-□)

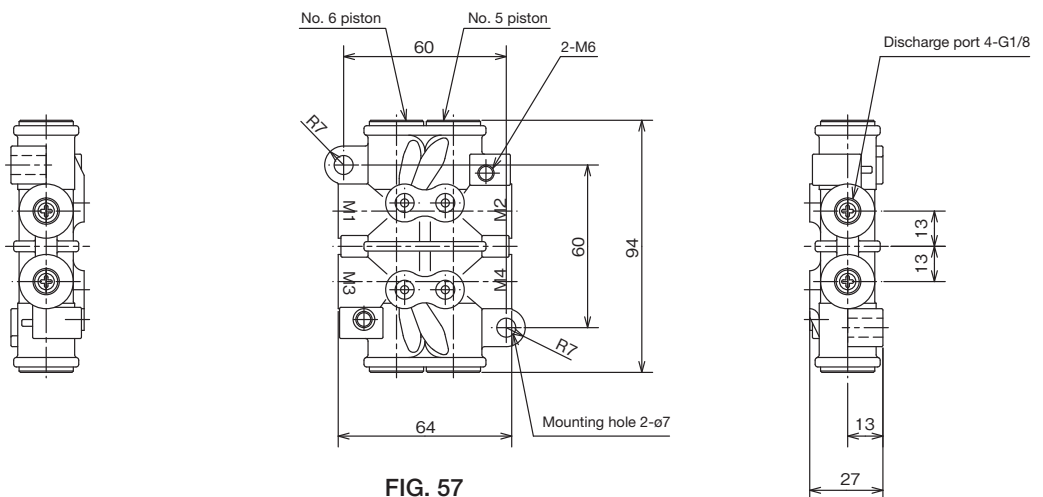


FIG. 57

Inlets and discharge ports

Inlet

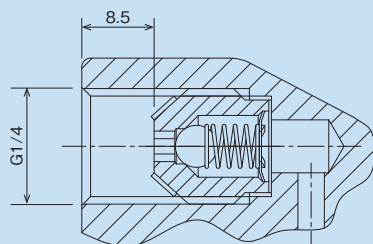


FIG. 58

Discharge port

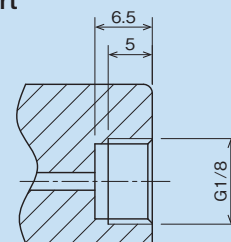


FIG. 59

Lubrication Pattern

There are 56 combinations of BMU, M and BU type distributors. Select the combination system that most suits your requirements, including the number of ports and the location of distribution. For selection of the number of ports and the types of distributors, see Tables 18 to 22. For the combinations as in these tables, the amount of grease or oil is the same (0.3 cm³/st).

1

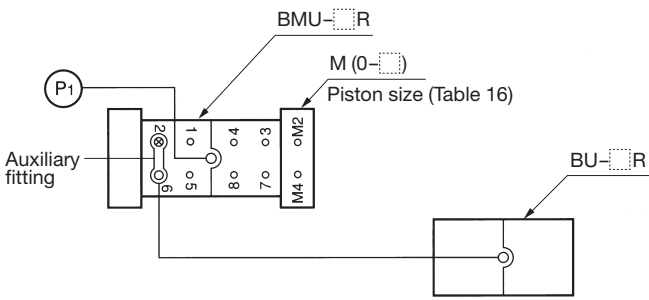


FIG. 60

Lubrication pattern	No. of supply ports	No. of Distributors														
		M				BMU				BU						
		0 5 10	0 5 15	0 5 20	0 5 30	15 5 15	20 5 20	30 5 30	4 R	6 R	8 R	12 R	4 R	6 R	8 R	12 R
1	8	1							1				1			
	10	1								1			1			
	10	1							1					1		
	12	1								1		1				
	12	1								1				1		
	12	1							1						1	
	12	1														1
	14	1								1				1		
	14	1							1						1	
	16	1									1	1				
	16	1								1					1	
	16		1						1							1
	18		1							1						1
	20		1									1			1	
	20		1								1					1
	24		1									1				1

Table 18

2

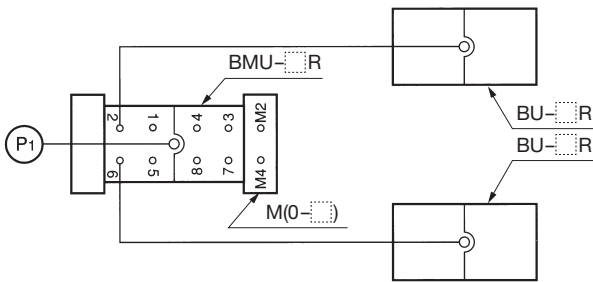


FIG. 61

Lubrication pattern	No. of supply ports	No. of Distributors														
		M				BMU				BU						
		0 5 10	0 5 15	0 5 20	0 5 30	15 5 15	20 5 20	30 5 30	4 R	6 R	8 R	12 R	4 R	6 R	8 R	12 R
1	12	1							1				2			
	14	1								1		2				
	16	1									1	2				
	16		1						1					2		
	18		1							1				2		
	20	1										1	2			
	20		1								1			2		
	20			1					1						2	
	22			1						1					2	
	24			1								1		2		
	24			1							1				2	
	28			1								1			2	

Table 19

3

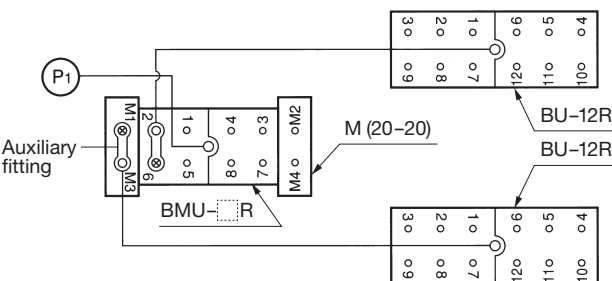


FIG. 62

Lubrication pattern	No. of supply ports	No. of Distributors														
		M				BMU				BU						
		0 5 10	0 5 15	0 5 20	0 5 30	15 5 15	20 5 20	30 5 30	4 R	6 R	8 R	12 R	4 R	6 R	8 R	12 R
1	28							1	1							2
	30							1		1						2
	32							1			1					2
	36							1				1				2

Table 20

4

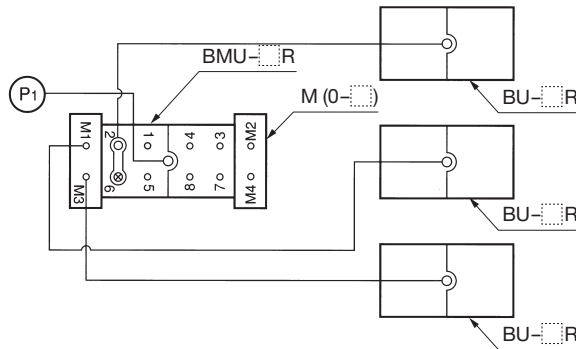


FIG. 63

Lubrication pattern	No. of supply ports	No. of Distributors															
		M						BMU				BU					
		0 10	0 15	0 20	0 30	15 15	20 20	30 30	4 R	6 R	8 R	12 R	4 R	6 R	8 R	12 R	
1	20					1			1				2		1		
	22					1				1			2		1		
	24					1					1		2		1		
	28					1						1	2		1		
	28						1		1					2		1	
	30						1			1				2		1	
	32						1				1			2		1	
	36						1					1		2		1	

Table 21

5

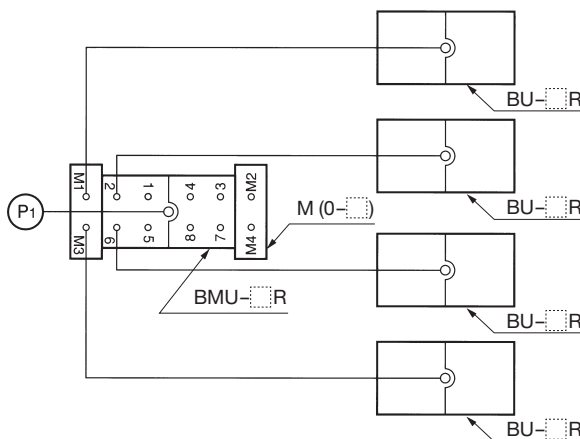


FIG. 64

Lubrication pattern	No. of supply ports	No. of Distributors															
		M							BMU				BU				
		0 5 10	0 5 15	0 5 20	0 5 30	15 5 15	20 5 20	30 5 30	4 R	6 R	8 R	12 R	4 R	6 R	8 R	12 R	
1	20					1			1				4				
	22					1				1			4				
	24					1					1		4				
	28					1						1	4				
	28						1		1					4			
	30						1			1				4			
	32						1				1			4			
	36						1					1		4			
	36							1	1						4		
	38							1		1					4		
	40							1				1			4		
	44							1					1		4		
	52							1	1							4	
	54							1		1						4	
	56							1			1					4	
	60							1				1				4	

Table 22

6

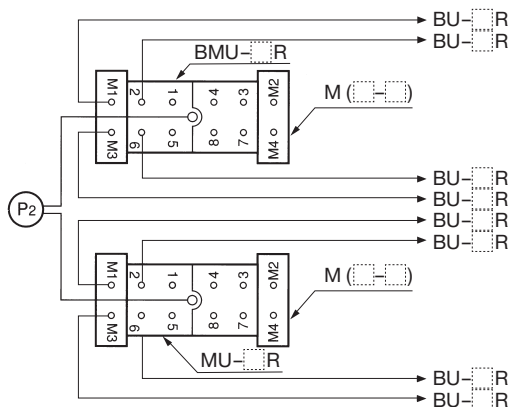


FIG. 65

Notes(1) In case of P2 lubricating pump, It can combine distributor of 2 system.

Notes(2) P2 lubricating pump is SK-521 or SKA-722 or SKA-244 (2 discharge ports type)

Grease Filling Unit – Grease Pack –

Use our Grease Pack to fill the reservoir of Auto Greastar with grease.

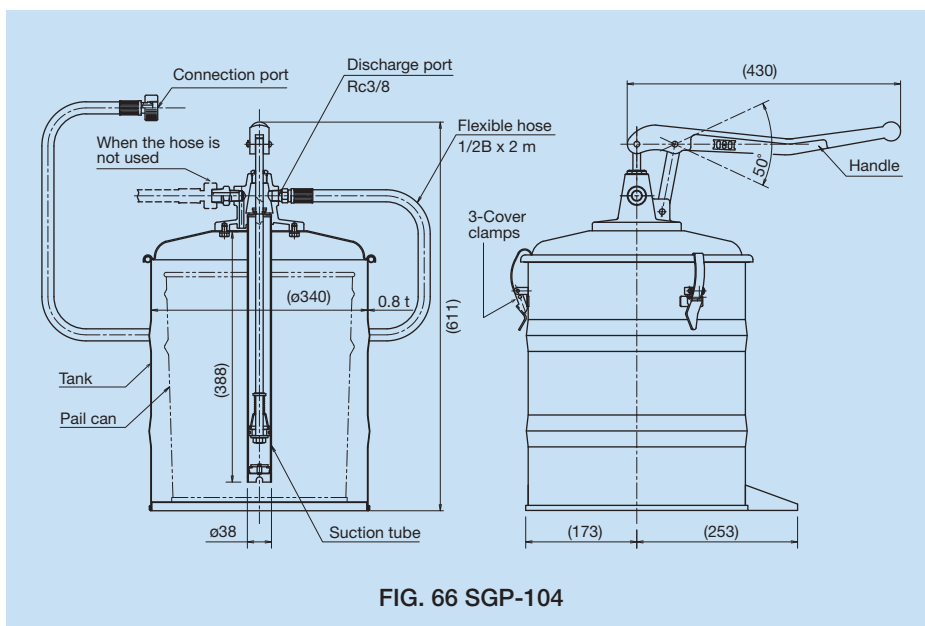
A grease pack is the Manually-operated filling pump to transfer grease (oil) to the reservoir for the lubricating pump. Store a commercially available pail can or a square can (capacity 20L) in the oil tank. Then by operating the handle up and down, grease is discharged.

A flexible hose is stored in the oil tank when delivering.
Take a hose out and connect to a discharge port to use.
This pump can transfer grease without exposing any part of
grease to the air, preventing immigration of dust into grease.

Table 17 Physical Characteristics of Grease Pack

Product code	Model	Discharge capacity	Discharge pressure	Hose length	Use	
					Grease pail	Reservoir capacity (Reference)
RK700100	SGP-104	40cm ³ /stroke	1 MPa	2.0m	16 kg pail	2 ℓ

Note: If you need to use our item in the special case, please ask us, our agent.



SGP-104

One-touch grease cartridge

This grease cartridge is designed for easy and quick mounting of a grease cartridge. You have only to remove the grease reservoir from the lubricating pump, fit the one-touch grease cartridge to the reservoir site, and screw it up.

Product code	Model	Capacity	Soap group
RK265100	One-touch grease L No.0	350 g	Lithium group

Unit of ordering: One carton (20 cartridges)

The one-touch grease cartridges are for SK-505BM, SKA-214, and SKA-244.

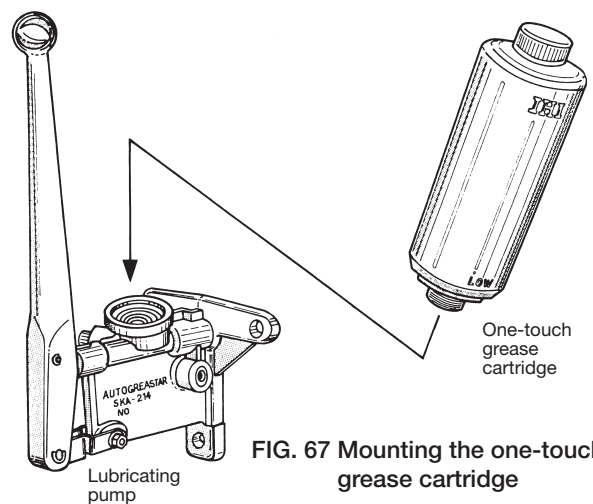


FIG. 67 Mounting the one-touch grease cartridge

Cartridge-type Grease Pump

SK-505BM-04-JH/SK-505BM-1-JH

Grease Pump for **Auto Greastar**

using accordion-type grease cartridge

- Grease can be set easily and quickly.
- Dust or air does not enter while filling grease.
- Your hands and clothes stay clean while replacing grease.
- The 1JH pump uses a large 1 l grease cartridge, which helps reduce the cost.
- The 1JH reservoir comes with an empty switch.



SK-505BM-04JH



SK-505BM-1-JH

Specifications

Pump name	Assembly model	Discharge pressure	Discharge capacity	Net weight
Motor-driven pump	SK-505BM-04JH	Maximum 14.7 MPa	13cm ³ /min. or more	1.8 kg
	SK-505BM-1JH		13cm ³ /min. or more	2.1 kg
Manually-operated pump	SKA-214-04JH		1cm ³ /st.	2.0 kg
	SKA-244-04JH		1cm ³ /st.	2.2 kg

Order

(The pump unit, reservoir, grease cartridge, and pump base are sold separately.)

► Grease pump

Product code	Pump name	Model
RK990700	Motor-driven pump	SK-505BM main unit
RK958400	Manually-operated pump	SKA-214 main unit
RK956600		SKA-244 main unit

► Reservoir

Product code	Model	Applicable grease cartridge
RK488500	T04JH	400 g
RK488700	T1JH	1 ℓ

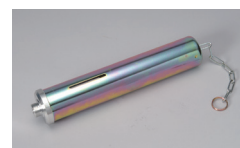
* The T1JH (1ℓ) type cannot be assembled with a manually-operated pump.

► 400 g grease cartridge

Use the IHI genuine grease for Auto Greastar.

Product code	Model	NLJI. No.
RK254100	G04J-L0	No.0

400 g x 20 cartridges/case (lithium-based)



T04JH



T1JH

These can also be used by replacing the reservoirs of existing grease pumps.

► 1ℓ grease cartridge (lithium-based)

Use the IHI genuine grease for Auto Greastar

Product code (1 unit)	Model	Consistency
RK254500	G1J-L1	No.1

1ℓ x 15 cartridges/case

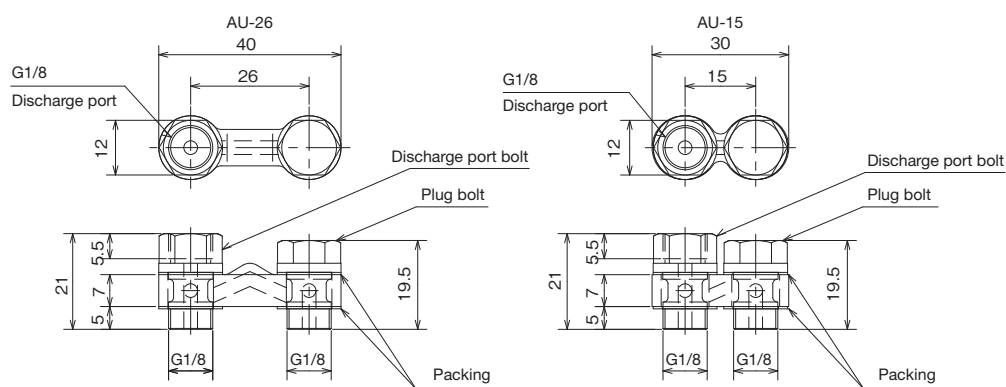


► Pump base (for SK-505BM-1 JH)

Product code	Model
RK488800	B505J

(This is required when mounting on the wall)

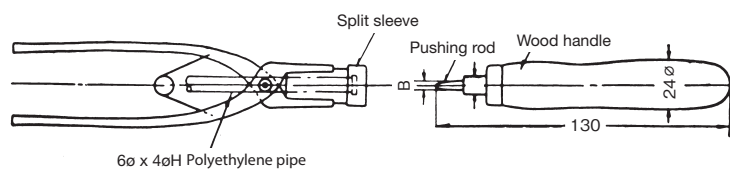
1 Auxiliary fixtures



Product code	Model
RK864401	AU-15
RK864404	AU-26

Operating pressure: 7 MPa

2 Pipe shaper

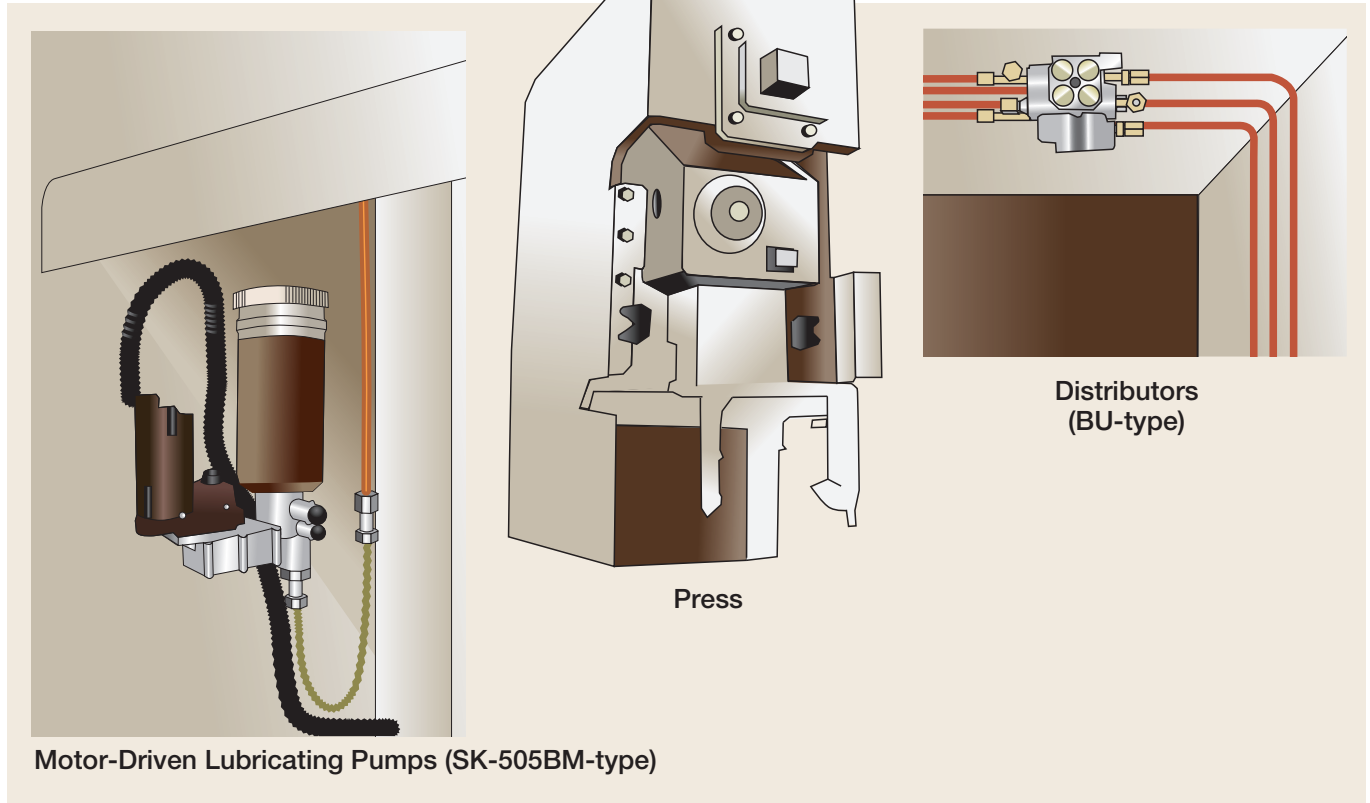


Product code	Model
RK880902	ø6 x ø4

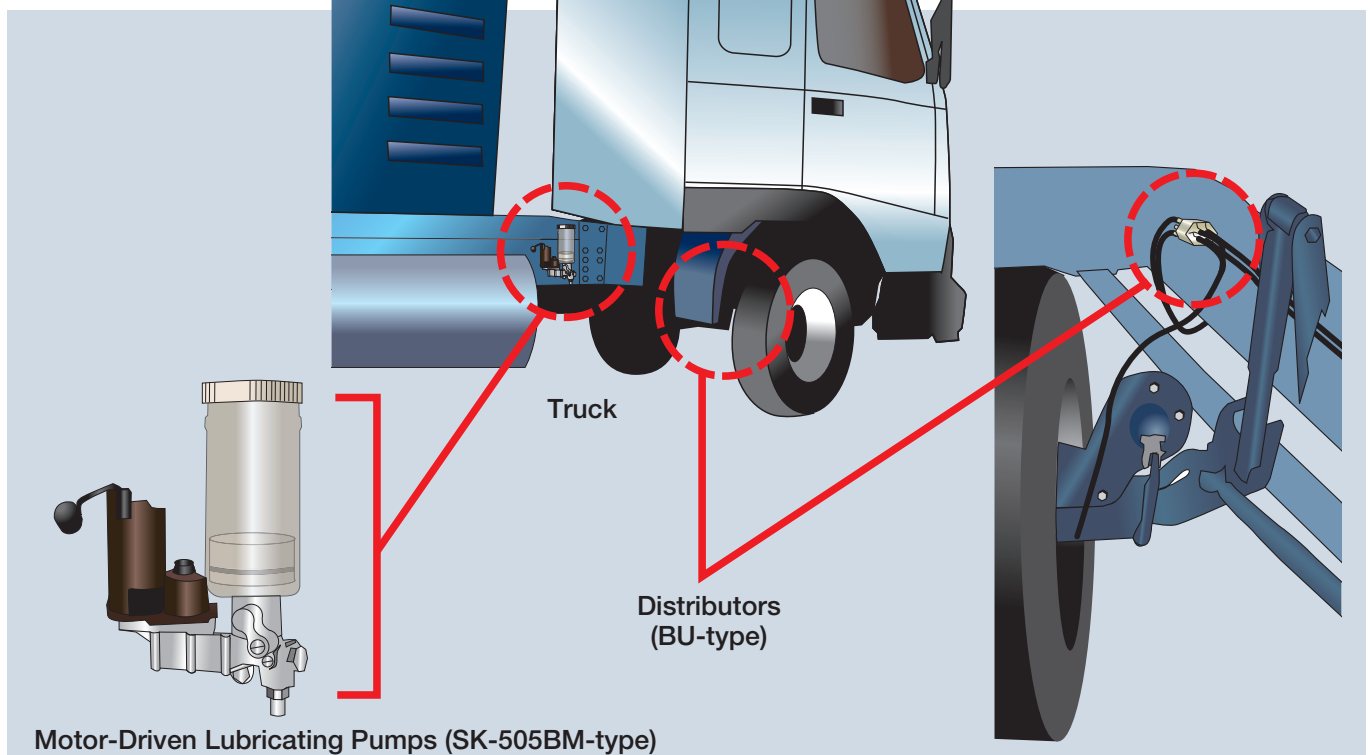
Note: Pipe shaper is used at the time of piping of polyethylene tube using SF, LF coupler.

Examples of Installation

- For Industry



- For Chassis



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The appearance and specifications in this catalog are subject to change without notice, for improvement



CAUTION

Read the instruction manual
carefully before operating

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