

EA-5* Type Instruction Manual of Electric Control Panel


Introduction

To use this equipment safely, some basic knowledge on electricity, wiring, etc. and some knowledge on this equipment (to the level certified in your company) are required.


Improper use may cause accidents. To prevent such accident, thoroughly read and understand this instruction manual and drawings (model drawings, circuit diagrams) before starting operation, control and maintenance.


Please handle this equipment properly in order to keep its good condition for a long period of time and to perform safe operation and maintenance.

 **WARNING:** This indicates the possibility of danger resulting in death or serious injury in case the equipment is used improperly.


 **CAUTION:** This indicates the possibility of serious or light injury or otherwise physical damage is assumed in case that the equipment is misused.


1. Cautions for operation

 **WARNING** 1. To avoid danger, do not open the door of the control panel or the covers of other equipment while operating.
Always keep the door closed except when performing maintenance and inspection.

 **CAUTION** 2. Do not touch the working part of the equipment during remote operation, as it is dangerous.

2. Cautions for maintenance and inspection

 **WARNING** 1. Never fail to disconnect the main power of the distribution board to prevent electric shock when at inspecting and maintaining the equipment.

 **WARNING** 2. There may be different power sources used for this equipment. Check sufficiently beforehand that all the power sources are disconnected.

1. General description

The control panel is used to control motor driven grease pump automatically. The pump automatically starts up after presetting downtime, when the oil feed is completed, it automatically stops.

Depending on error cause, the error indicator lamp lights up and the pump stops.

2. Operation

2.1 Setting of timer

System timer (2G)

Set the planed interval time of lubrication.

Signal timer (62G)

Set the calculated pump operating time + α (α : 2 to 5 min.)

2.2 Operation of motor driven grease pump

① Turn no-fuse breaker (8G) and circuit protector (8C, 8S) on.

Signal lamp for "POWER SOURCE" (30GA) Light up

Signal lamp for "RESTING" (30GS) Light up

System timer (2G) Start counting

② By timing up of system timer (2G), pump starts running.

Signal lamp for "DRIVING" (30GB) Light up

Signal timer (62G) Start counting

System timer (2G) Reset

Signal lamp for "RESTING" (30GS) Light out

③ Before time is up of signal timer (62G) ; in normal condition ; lubrication of all points are completed, pressure switch (33G) attached to the pump is operated and the pump is stopped.

Signal lamp for "RESTING" (30GS) Light up

System timer (2G) Start counting

Signal timer (62G) Reset

Signal lamp for "DRIVING" (30GB) Light out

④ Hereafter, the same operation is repeated.

- ⑤ In case of driving the pump in downtime, press push-button switch for "OPTIONAL DRIVE" (3-88G).

| | |
|----------------------------------|----------------|
| Signal lamp for "DRIVING" (30GB) | Light up |
| Signal timer (62G) | Start counting |
| System timer (2G) | Reset |
| Signal lamp for "RESTING" (30GS) | Light out |

3. Troubles

There are three kinds of error ; "Oil feed time extension" , "Tank empty" , "Overload operation" . In these cases, each error indicator lamp lights up by each cause and the pump stops automatically.

- Signal lamp for "LEAKAGE" (30GF1) lights up

This is a case that lubrication is not completed within preset time and signal timer (62G) is ON.

Cause : Leakage of piping, malfunctions of reversing valve, insufficient pump delivery and etc.

- Signal lamp for "TANK EMPTY" (30GF2) lights up

There is no lubricant left in the tank. Replenish tank with grease.

- Signal lamp for "OVER LOAD" (30GF3) lights up

This is a case that thermal relay (49G) is ON.

Cause : Seizure of motor, single phase running and etc.

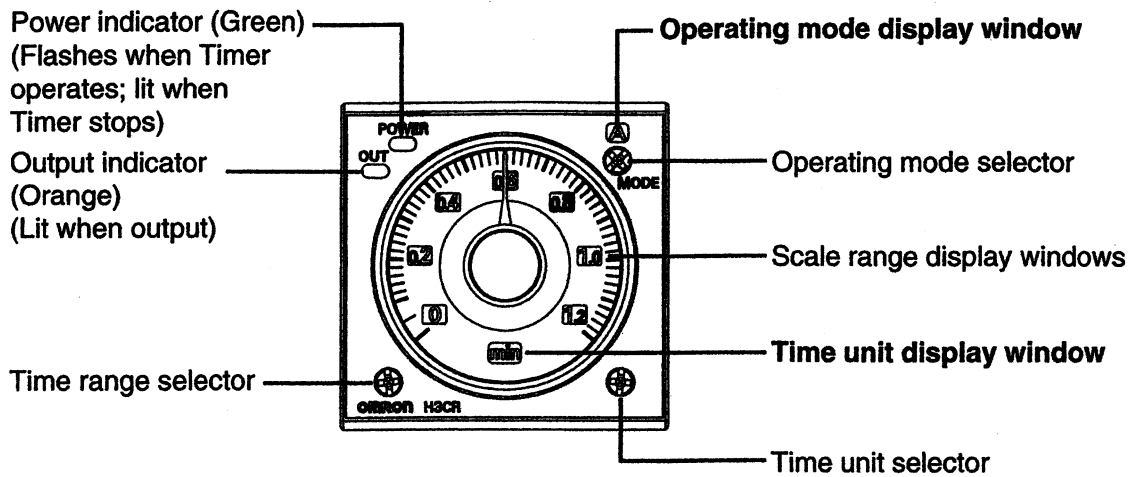
After checking and repairing each error cause, press the push-button switch for "RESET" (3-30GF) and confirm the error indicator lamp goes off.

4. Instruction manual for timer H3CR

● Changing of time spec.

Time unit is indicated as "sec, ×10s, min, ×10m, hrs, ×10h" in display window on lower center of setting dial and is changed by Time unit selector on lower right.

Scale range is indicated as "1. 2, 3, 12, 30" in display window on center right of setting dial and is changed by Time range selector on lower left.



● Setting time by setting dial

■ Time spec.

| Time unit | | Scale range | | | | | |
|-----------|--------------------|-------------|------------|------------|------------|------------|------------|
| | | sec (sec) | ×10s (sec) | min (min) | ×10m (min) | hrs (hrs) | ×10h (hrs) |
| 1. 2 | Time range setting | 0. 05~1. 2 | 1. 2~12 | 0. 12~1. 2 | 1. 2~12 | 0. 12~1. 2 | 1. 2~12 |
| 3 | | 0. 3~3 | 3~30 | 0. 3~3 | 3~30 | 0. 3~3 | 3~30 |
| 12 | | 1. 2~12 | 12~120 | 1. 2~12 | 12~120 | 1. 2~12 | 12~120 |
| 30 | | 3~30 | 30~300 | 3~30 | 30~300 | 3~30 | 30~300 |

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INSTRUCTION MANUAL
OF
ELECTRIC CONTROL PANEL
EK-3*

Introduction

To use this equipment safely, some basic knowledge on electricity, wiring, etc. and some knowledge on this equipment (to the level certified in your company) are required.

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WARNING: This indicates the possibility of danger resulting in death or serious injury in case the equipment is used improperly.



CAUTION: This indicates the possibility of serious or light injury or otherwise physical damage is assumed in case that the equipment is misused.

1. Cautions for operation



WARNING 1. To avoid danger, do not open the door of the control panel or the covers of other equipment while operating. Always keep the door closed except when performing maintenance and inspection.



CAUTION 2. Do not touch the working part of the equipment during remote operation, as it is dangerous.

2. Cautions for maintenance and inspection



WARNING 1. Never fail to disconnect the main power of the distribution board to prevent electric shock when at inspecting and maintaining the equipment.



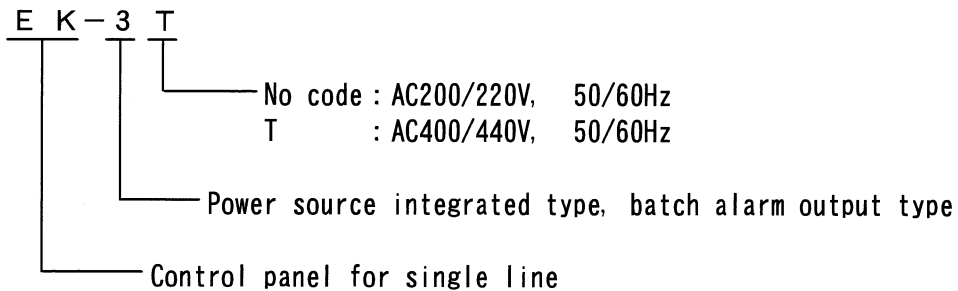
WARNING 2. There may be different power sources used for this equipment. Check sufficiently beforehand that all the power sources are disconnected.

■ Outline

This is a control panel for single line system (single pipe, progressive system) used together with AKA - 108 motor driven grease pump.

By using AKA-108 and MX and M type distributing valve together, inexpensive and efficient automatic oil feed system is achieved, and thus contributes to efficient operation of mechanical equipment.

■ Model



■ Characteristics of the electric control panel

This control panel has two functions: operation and alarm.

① Operation

The pump automatically starts up by the system timer. When the oil feed is completed, it automatically stops. In addition, you can manually operate during automatic operation, whenever it is necessary.

② Alarm

In the following cases, an alarm sent out and the error indicator lamp (batch display) lights up and the pump stops simultaneously.

1. "Oil feed time extension"

The operating time of the lubricating system was extended because:

- a. The pump is sucking air.
- b. The safety valve is open for some reason.
- c. The lubricant is leaking out from the pipe or the distributing valve.
- d. Malfunction of the distributing valve cycle switch.
- e. The pump is badly worn out since it was used for a long time.

2. "Tank empty"

There is no lubricant left in the tank since:

3. "Overload operation"

Overload operation occurred due to:

- a. The motor overloaded.
- b. The motor rotating in open phase.

4. "High pressure error"

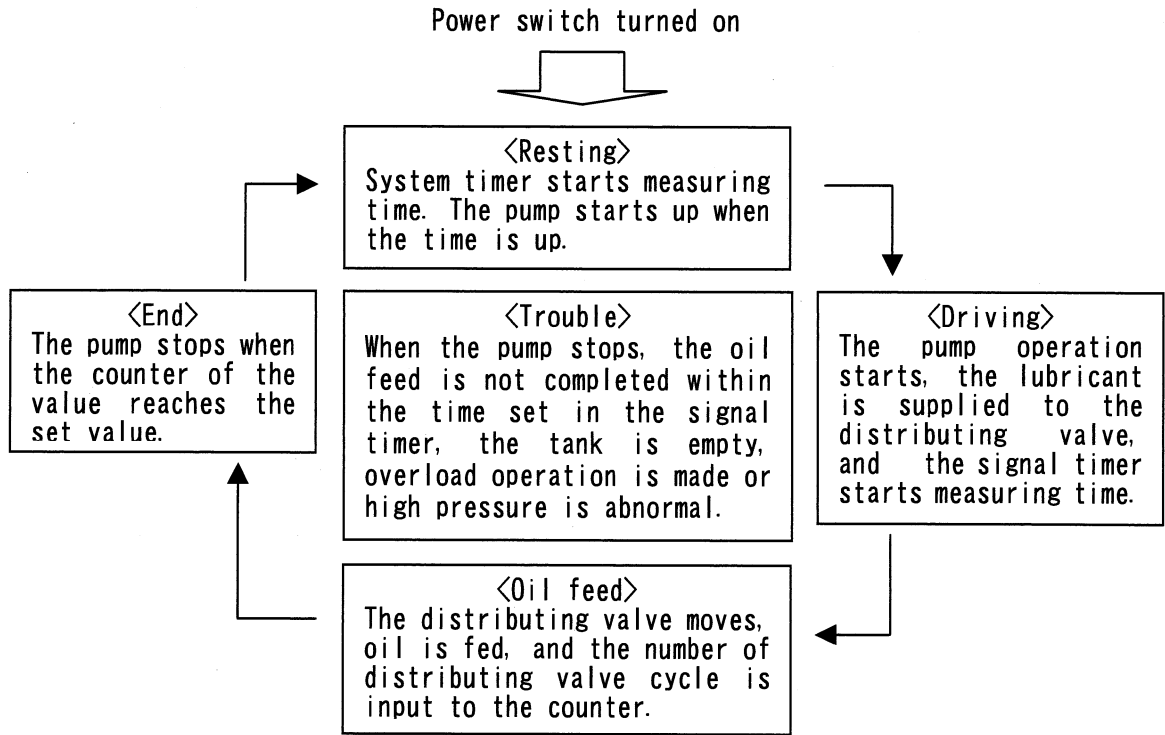
The pump pressure is abnormally high when:

- a. The distributing valve is blocked.
- b. The pipe is blocked.

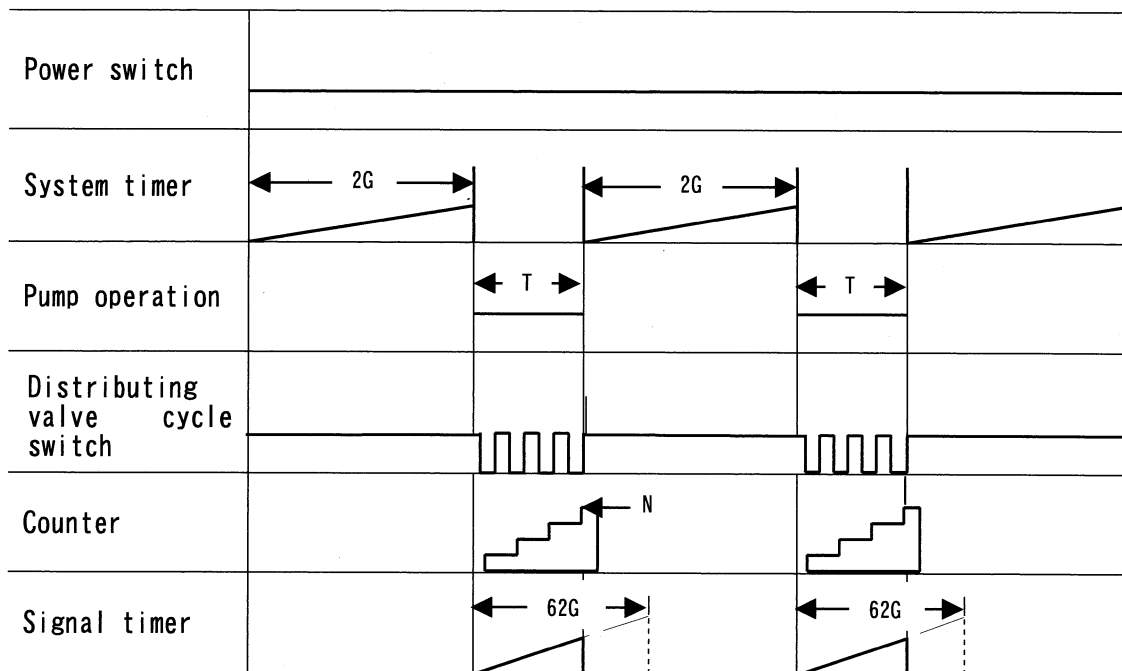
■ Movement

The movement of the automatic operation is outlined below.

● Movement flow



● Movement mode



2G: Time set for operation interval 62G: Time set for checking oil feed
T: Pump operation time N: Counter preset value

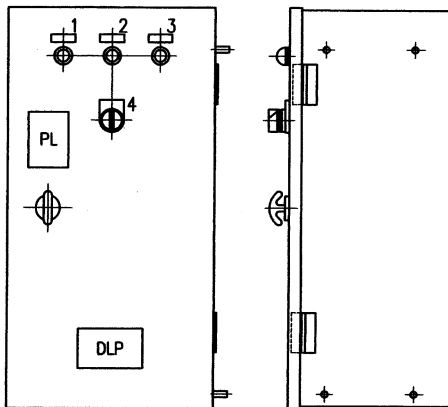
EK-3 type control panel

The figure below describes the AC200/220V type.

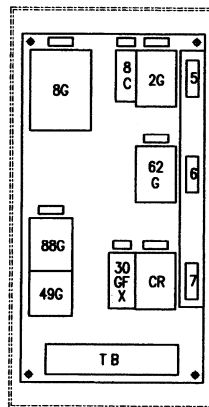
The AC400/440V type uses a built-in transformer to decrease the voltage to AC200/220V, and is used for controlling.

■ Appearance view

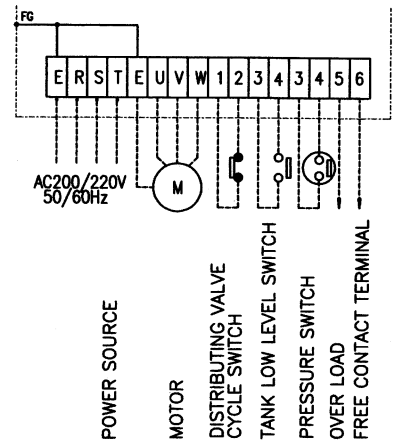
APPEARANCE VIEW



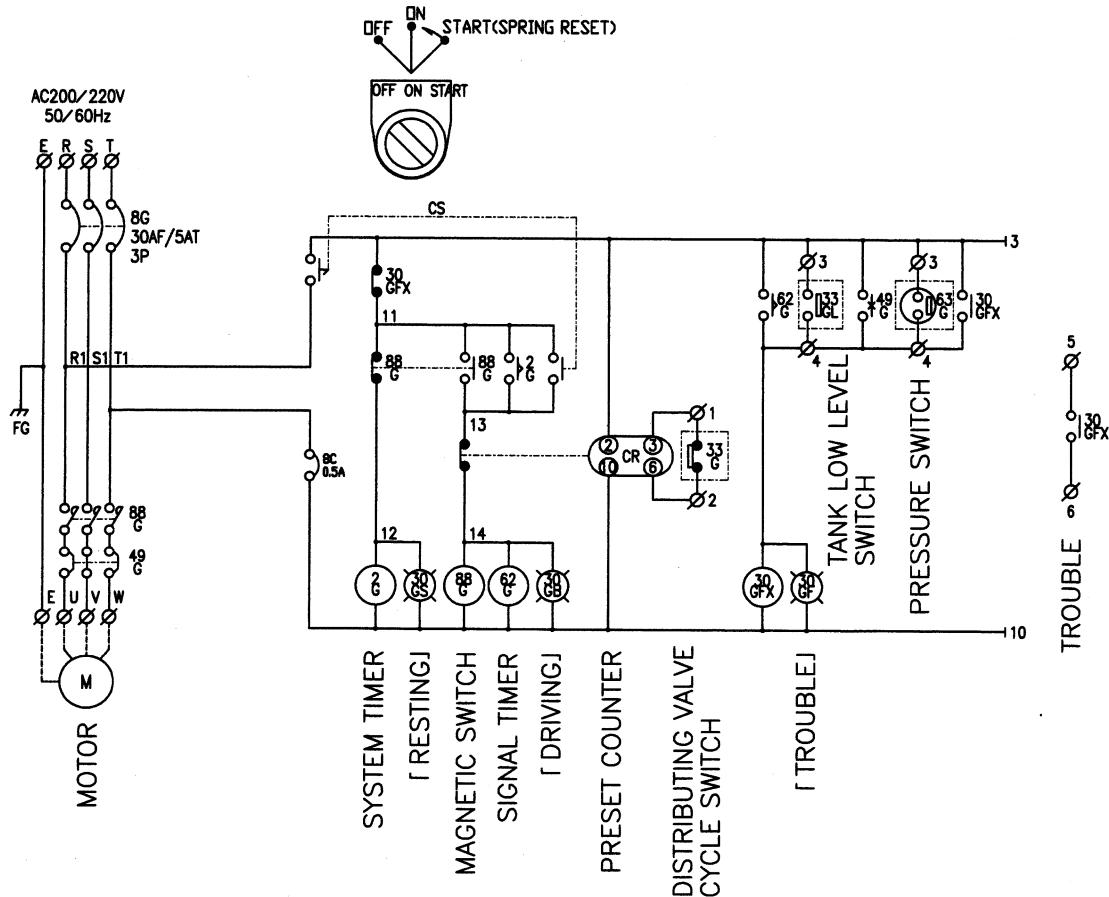
DISPOSITION DIAGRAM



WIRING DIAGRAM



■ Connection diagram



■ Operational description

1. Specification

The control panel controls AKA series motor driven pumps. After a given halt time, the pump starts operating. When oil feed is completed, it stops automatically. In addition, it also sends out an alarm for every failure.

The power source is AC 200 / 220 V ---- use EK-3 type

The power source is AC 400 / 440 V ---- use EK-3T type.

And in case that remote control is required, please consult us.

2. Operation

Set the signal timer (timer 62G for detecting the oil feed time extension) twice as much time as the calculated time of the pump operation until the oil feed is completed. It is safer to measure the actual pump operation time until completing the oil feed by following procedure: setting the timer to the maximum scale value, and operating the pump. Then, set the system timer (timer 2G for setting the operation interval) for the halt time, and input the power switch (circuit breaker 8G) inside the panel and the circuit protector for control (8C). When you turn on the control switch (CS) on the control panel door, the halt indicator 30 GS (green) lights up and the system timer 2G starts measuring time. After the pre set time, the system timer 2G turns on and the halt indicator 30 GS (green) goes off. The operation indicator 30 GS (red) lights up and the pump starts up. At the same time, the signal timer 62G also starts measuring time. However, in case of normal operation, the distributing valve completes the specified cycle before the signal timer 62G ends, and the output of the counter CR stops the pump. After the pump stops, the system timer 2G starts, and thus the halt and operation is repeated. When the control switch turned on, oil can be supplied manually, yet the system timer 2G will be reset. To stop the system, turn off the control switch.

3. Trouble

There are 4 kinds of alarm: "oil feed time extension", "tank empty", "overload operation", and "abnormal high pressure". In these cases, a batch alarm is sent out, the error indicator lamp (batch display) lights up, and the pump stops automatically. For "oil feed time extension," repair the leakage of pipe and malfunctioning pump. When "tank empty," replenish grease or oil. If "overload operation" occurs, remove the cause, and press the recovery lever of the thermal relay 49G. For "abnormal high pressure", repair the blocked distributing valve, pipe, bearing, and etc. and then restart.

Note: Always turn off the main power and the breaker of the control board at the time of inspection and repair.

■ Functional description of the operating instruments

| Operating instrument | | Application | Operation | Function |
|----------------------|-------------------|---------------------------------|---------------|--|
| Code | Name | | | |
| 8G | Circuit breaker | Main power | ON-OFF | ON-OFF of the main power |
| 8C | Circuit protector | Control circuit | ON-OFF | ON-OFF of the control circuit |
| CS | Control switch | Operation stop | Switchover | STOP, DRIVE, RUN |
| 2G | System timer | Operation interval | Variable | Sets the operation interval (300 hours max.) |
| 62G | Signal timer | Checking oil feed | Variable | Checks the oil feed time |
| CR | Preset counter | Setting the number of oil feeds | Key operation | Sets the distributing valve cycle number (9999 max.) |


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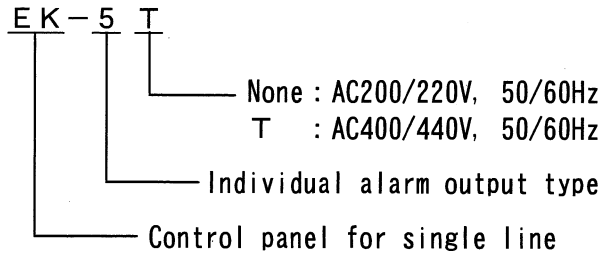
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■ Outline

This is a control panel for single line system (single pipe, progressive system) used together with AKA type motor driven grease pump.

By using with MX and M type distributing valve together, inexpensive and efficient automatic oil feed system is achieved, and thus contributes to efficient operation of mechanical equipment.

■ Model



■ Characteristics of the electric control panel

This control panel has two functions: operation and alarm.

(1) Operation

The pump automatically starts up by the system timer. When the oil feed is completed, it automatically stops. In addition, you can manually operate during automatic operation, whenever it is necessary.

(2) Alarm

In the following cases, an alarm sent out and the error indicator lamp lights up and the pump stops simultaneously.

1. "Oil feed time extension"

The operating time of the lubricating system was extended because:

- a. The pump is sucking air.
- b. The safety valve is open for some reason.
- c. The lubricant is leaking out from the pipe or the distributing valve.
- d. Malfunction of the distributing valve cycle switch.
- e. The pump is badly worn out since it was used for a long time.

2. "Tank empty"

There is no lubricant left in the tank since:

3. "Overload operation"

Overload operation occurred due to:

- a. The motor overloaded.
- b. The motor rotating in open phase.

4. "High pressure error"

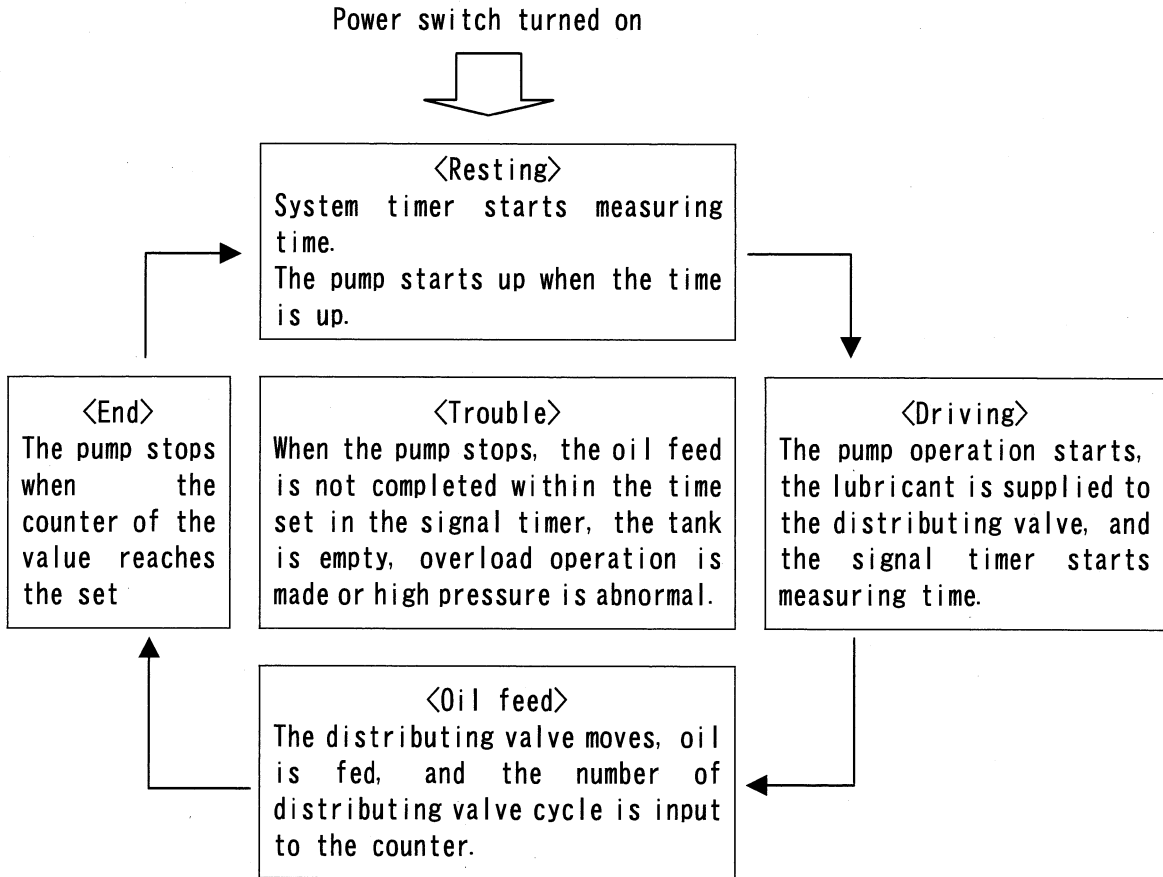
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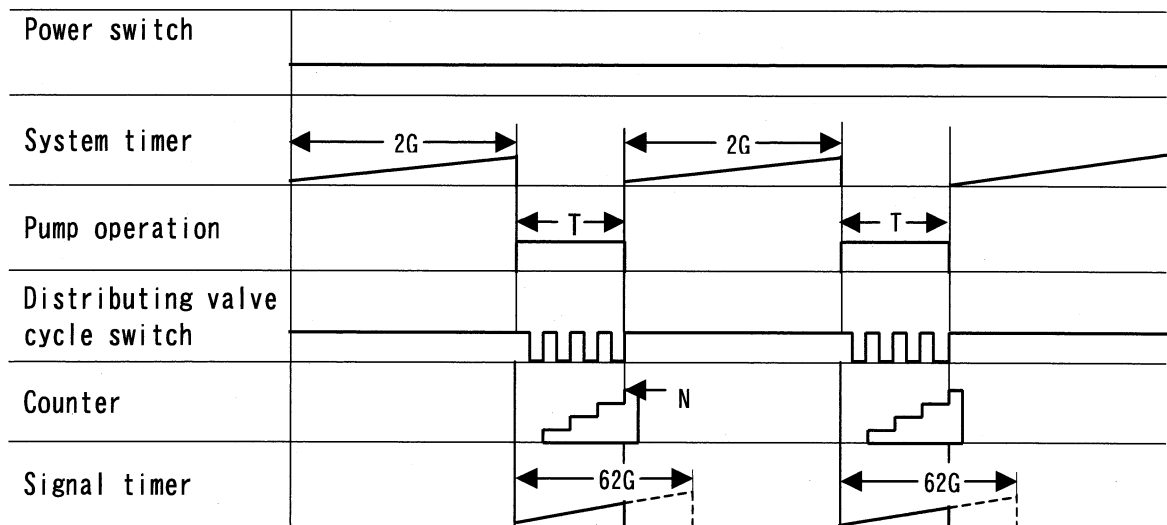
■ Movement

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● Movement flow



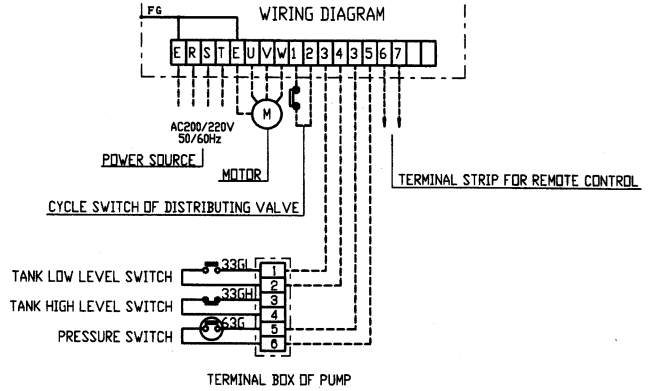
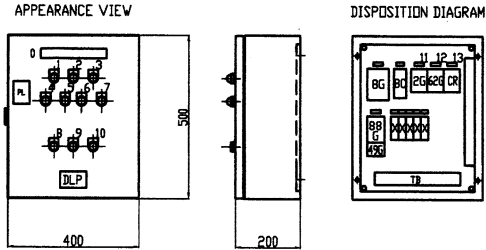
● Movement mode



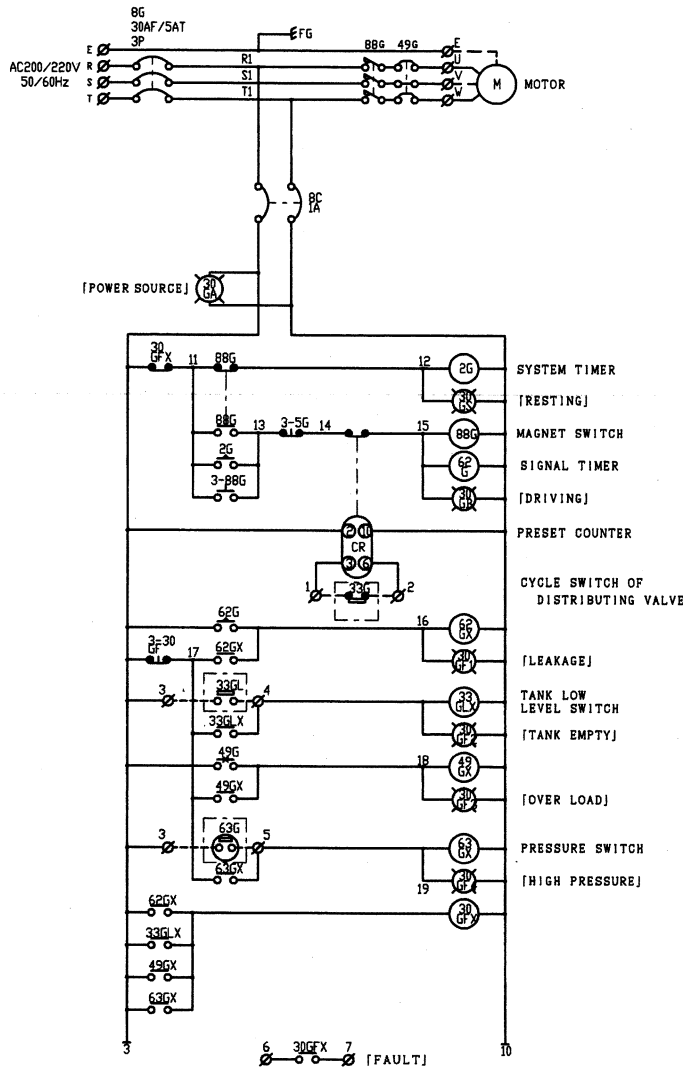
2G: Time set for operation interval 62G: Time set for checking oil feed
 T: Pump operation time N: Counter preset value

EK-5 type control panel

■ APPEARANCE VIEW



■ CONNECTION DIAGRAM



■ Operational description

1. Outline

The control panel controls AKA series motor driven pumps. After a given halt time, the pump starts operating. When oil feed is completed, it stops automatically. In addition, it also sends out an alarm for every failure.

The power source is AC 200 / 220 V ---- use EK-5 type

The power source is AC 400 / 440 V ---- use EK-5T type.

And in case that remote control is required, please consult us.

2. Operation preparation

Set the signal timer (timer 62G for detecting the oil feed time extension) twice as much time as the time of the pump operation.

It is safer to measure the actual pump operation time until completing the oil feed by following procedure: setting the timer to the maximum scale value, and operating the pump.

Then, set the system timer (timer 2G for setting the operation interval) for the halt time.

3. Operation

Input the power switch (circuit breaker 8G) .

Continuously, when you turn on the circuit protector for control (8C), "Signal lamp for power source" 30GA (white) lights up, "Signal lamp for resting" 30GS (green) lights up and the system timer 2G starts measuring time.

After the preset time, the system timer 2G turns on and "Signal lamp for resting" 30GS (green) goes off, "Signal lamp for driving" 30 GS (red) lights up and the pump starts up.

At the same time, the signal timer 62G also starts measuring time. However, in case of normal operation, the distributing valve completes the specified cycle before the signal timer 62G ends, and the output of the counter CR stops the pump. After the pump stops, along the setting of system timer 2G, the resting and operation is repeated.

If the specified cycle does not be completed within the preset time of signal timer 62G, the signal timer 62G turns on and raises the alarm of "Oil feed time extension".

If pressing the button switch for drive (3-88G), oil can be supplied freely, but the system timer 2G will be reset.

If pressing the button switch for optional stop (3-5G), the pump stops and lubrication is stopped.

At the same time, system timer 2G starts and automatic lubrication will be started after the presetting time of system timer 2G.

To stop the system, turn off the circuit protector (8C).

4. Trouble

There are 4 kinds of alarm: "Oil feed time extension", "Tank empty", "Overload operation", and "Abnormal high pressure". In these cases, each alarm is sent out, each error indicator lamp lights up by each cause, and the pump stops automatically.

Note : Return from trouble

Repair the leakage of pipe and malfunctioning pump. When "Tank empty," replenish grease or oil. If "Overload operation" occurs, remove the cause, and press the recovery lever of the thermal relay 49G. For "Abnormal high pressure", repair the blocked distributing valve, pipe, bearing, and etc. and once turn off the control switch (3-30GF), thus the error indicator lamp goes off and returns to resting condition as before.

■ Functional description of the operating instruments

| Operating instrument | | Application | Operation | Function |
|----------------------|---------------------|------------------------------|---------------|--|
| Code | Name | | | |
| 8G | Circuit breaker | Main power | ON-OFF | ON - OFF of the main power |
| 8C | Circuit protector | Control circuit | ON-OFF | ON - OFF of the control circuit |
| 3-88G | Press button switch | Optional drive | Pressing | Pump starts up by pressing |
| 3-5G | Press button switch | Optional stop | Pressing | Pump stops by pressing |
| 3-30GF | Press button switch | Reset | Pressing | Reset error indicator lamp by pressing |
| 2G | System timer | Operation interval | Variable | Set operation interval |
| 62G | Signal timer | Checking oil feed | Variable | Check oil feed time (300 hours max.) |
| CR | Preset counter | Setting numbers of oil feeds | Key operation | Set distributing valve cycle numbers (9999 max.) |