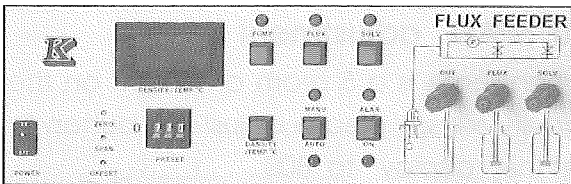


# Advantages

The welding-assistant controller, Model. KA950, KA960, is the kind of controller that uses ratiocontrol method, and is capable of supplying solution and liquid automatically so as to maintain the density of the welding-assistant. It helps you in obtaining high-quality welding and in saving of labor cost.

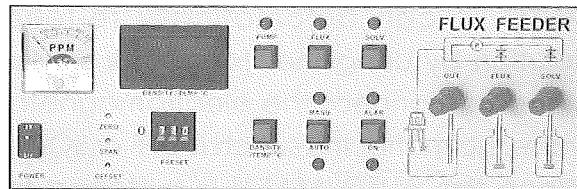
- Automatic refill solution in a ratiocontrolling manner to achieve high precision control.

(Figer 1)



- Digital display of specific gravity and setting by push buttons.
- Flux level controlling by automatically supplement flux, solution to maintain the setting value of specific gravity.
- The detecting monitor indicates the life span of the welding-assistant. It also helps in understanding the right time of replacing the welding-assistant so enhance product quality.

(Figer 2)



## KA950 Specification of the feeder

range of specific gravity	0.78~0.900
Precision	±0.002
Range of measurement temp	0~50 °C
Ambient temp	0~40 °C
Controlling manner	by time ratio
Power	220 V, 50/60 Hz
Fuse	2A
Dimension	370x300x130 mm/m

## KA960 Specification of the feeder

range of specific gravity	0.78~0.900
Precision	±0.002
Range of measurement temp	0~50 °C
Life metter	0~500ppm
Ambient temp	0~40 °C
Controlling manner	by time ratio
Power	220 V, 50/60 Hz
Fuse	2A
Dimension	370x300x130 mm/m

# Panel Description

## 1. Power switch

Switch on or off the power of the machine .

## 2. AUTO / MANU switch (MANU is pre-set at power off )

When switching to MANU, we can use PUMP - FLUX - SOLV switch to independently control the pumping of feeder or solution and the cleaning of pipes . When switching to AUTO, it can

automatically control the liquid level by level electrodes and refill necessary ratio of the solution and flux by comparing the specific gravity sensor signal and preset value . In AUTO mode, the switches of PUMP, FLUX, and SOLV will be disabled .

## 3. FLUX / OFF switch and indicator (normally at OFF)

When the AUTO/MANU is switched to

AUTO, it can automatically re-feed flux by using the level electrodes to connect the electromagnetic valve, no matter this switch is OFF or FLUX.

When the AUTO/MANU is switched to MANU, then this switch can allow the user manually to control the on/off of the electromagnetic valve and refill the flux in conjunction with the PUMP switch. The indicator light above this switch can show the status of this switch.

#### **4. SOLV/OFF switch and indicator - (normally at OFF)**

When the AUTO/MANU is switched to AUTO, it can automatically re-feed solution by using the feedback sensor signal to connect the electromagnetic valve, no matter this switch is OFF or SOLV. When the AUTO/MANU is switched to MANU, then this switch can allow manually to control the on/off of the electromagnetic valve and refill the flux in conjunction with the PUMP switch, The indicator light above this switch can show the status of this switch.

#### **5. PUMP/OFF switch and indicator (normally at OFF)**

Some as the SOLV and FLUX switches, it work automatically at AUTO, and the switch allows manually control the adding of flux or solution in conjunction with the switches of FLUX and SOLV at MANU mode.

#### **6. ALAR / OFF switch**

When the liquid level is too low and the refilling of flux or solution is needed, if there is no fill-up action for 4~5 minutes, then there will be alarm and indicator light. This phenomenon represent the need to refill flux or solution.

#### **7. TEMP / DENS switch**

When switched to TEMP, the LED indicator

will display. The inside flux temperature. When at DENS, it will display the inside flux specific gravity.

#### **8. Numerical button**

The setting range of specific gravity is 0.78~0.9. For example, if the specific gravity value needs to be set as 0.825, then push buttons " - " or " + " to set to 825.

#### **9. ZERO adjustment**

When there is no sensor ball hung on the gravity sensor (Null), please adjust this button to set the display to 900.

#### **10. SPAN adjustment**

When there is a 5 gram of weight on the gravity sensor, please adjust this button to set the display to 800.

#### **11. OFFSET adjustment**

When the difference between the gravity setting value and display value is too large, the offset can be adjusted with this button.

#### **12. Display**

A 3 1/2 LED indicator is used to display the specific gravity or temperature.

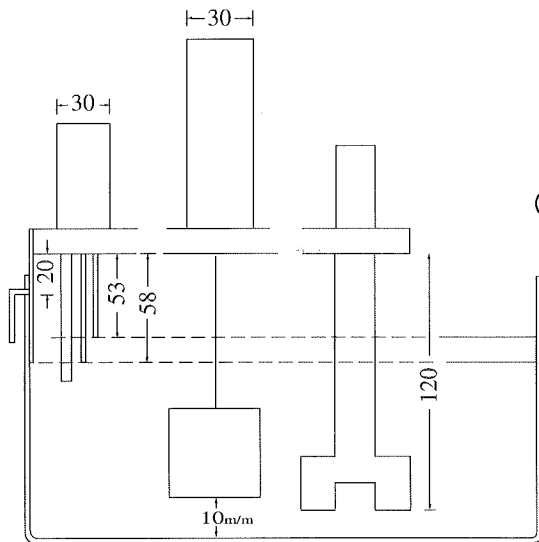
#### **13. Life Meter(K-2001)**

This meter indicates the condition and quality of the welding-assistant. The figure indicated on then meter can serve as a reference. User can set the unused welding-assistant figure as zero, and adjusts the button underneath the meter to show "O(zero)" Then, use the used-up welding-assistant as a new indicator and adjust the zero button at the bottom of the meter to certain PPM value, e.g, 400. When the new (unused) welding-assistant reaches this value, it should be used up and replaced.

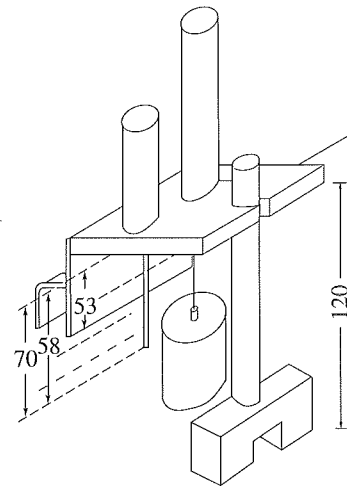
# Installation diagram of the sensor

## Notes:

1. The contact between the liquid level controlling electrode (the medium height electrode) and the liquid level should be maintained at 1 mm; the liquid level control of this system is based on this electrode. When fill up the flux for the first time, please be aware of the liquid level height.
2. When the liquid level reach the shorted electrode, the system will halt any feeding of flux or so lution to prevent overflow. It is not an malfunction.
3. The sensor ball should go into the solution vertical and avoid any contact with the surroundings.
4. While setting up the sensor, please hold the system vertical to keep the sensor function regularly. Please refer to figure 3.



(Figer 3)



## Functions of sensor:

### 1. Sensor of the specific gravity

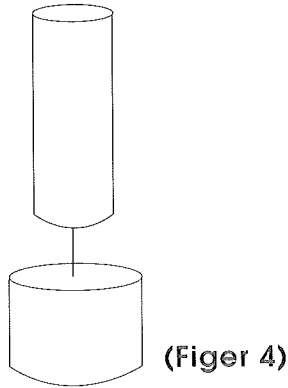
As in figure 4, it is a floating ball with fixed size and weight inside the flux. The weight of this ball varies with the specific gravity. The variation will be detected by the sensor, amplified, and transformed into gravity unit, then displayed. If there is no flux, please do not hang the float ball on the sensor to avoid the flexibility exhaustion (The sensitivity is 0~5 grams). Also please avoid any contact between the ball wire and the flux to prevent out of control.

### 2. Electrodes for liquid level and temperature

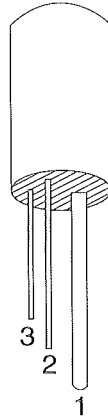
As in figure 5, pin 1 is the common electrode for both liquid level and temperature, pin 2 is for the liquid level of the flux (There will be no flux feeding if this electrode touch the liquid level.), and pin 3 is the controlling electrode of the solution (There will be no solution feeding if this electrode touch the liquid level; No more automatic specific gravity control. If further gravity adjustment is needed, please release some flux or elevate the position of this electrode.)

### 3. Life Meter

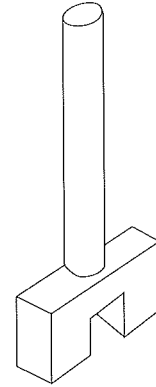
The shape of the meter is as diagram 6 indicates. The operation idea is to let light go through the welding-assistant, which will be received by the If the



(Figer 4)



(Figer 5)

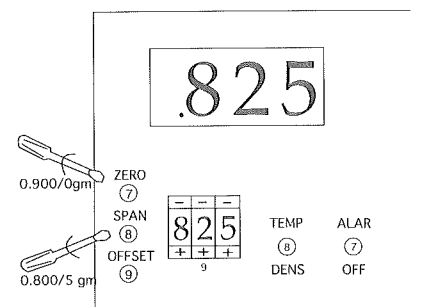


(Figer 6)

welding-assistant changes its color or has some impure substance, the signals received will be varied. PPM can also reflect the quality of the welding-assistant.

## Operation (Be sure the power is 220 volts)

- As in figure 3 , please fix the sensor position, connect the control wire to the back of controller and screw the nut to fasten. Connect the pipe inlet to the filer and fill in flux and solution, the lay the outlet onto the flux tank and keep some distance for observation .
- Pour in prepared flux to the flux tank till the longer electrode touch the liquid surface. For example, if the wanted gravity is 0.825, then the specific gravity of the prepared flux should be within 0.826 ~ 0.830 and setting the gravity at 0.825.  
**Note : The s pecific gravity of the prepared flux should not lower than the setting value , otherwise the diluent will not be added automatically .**
- Set all the switch of the gravity controller to OFF.
- Connect the power supply to a 220V source and the grounding to ensure the safety of the instrument and operator.
- Turn the power to ON .
- Wait for more than 5 minutes to allow machine warming up .
- Adjust the ZERO button gradually to have 0.900LED display, before the attachment of the floating ball. (CW is for increment, CCW is for decrement)
- Hang a 5 gram load on and adjust the SPAN gradually to have 0.800 .
- Repeat step 7, 8 for 2 ~ 3 times .
- Set the AUTO/MENU switch to AUTO .
- Let the automatic gravity controlling take over.



(Figer 7)

## Guide for the specific gravity adjustment

This instrument can reach high controlling precision due to the time-ratio controlling manner. In another word, when the difference between the setting and the practical values is small, the pumping time for flux and solution adding will get shorter. On contrary, if the difference is large, the demanding time will be longer.

Therefore, if the practical value is larger than the setting value at steady state, please adjust the OFFSET button to extend the time for solution adding. For example, if the setting is 0.820 and LED display is .823, then we can adjust the OFFSET clockwise for 1 circle and wait for

3~5 min. to let the diluent well mixed with the flux, and repeat again till the difference is gone. If the display value is small than .820, such as .817 which means there are too much of solution, then the adjustment button should be turned counter clockwise to shorten the time for adding more solution. The amount of adding solution may be judged from the light-up time of the PUMP, SOLV indication on the panel.

Since it takes some time for the flux and the diluent to get balanced, make sure wait for the diluent to vapor for some time to let the gravity value getting higher.

## Shutdown procedure

1. Switch the AUTO/MANU to MANU.
2. Turn off the power.
3. To turn it again, please switch on the power and wait for 5 min. to allow the instrument warm-up, then switch the AUTO/MANU to AUTO.

## Notes for maintenance

1. If it is going to idle for long time, the residual PUMP could accumulate inside the pipe due to the vaporization of the solution. Please use solution to clean up the pipe.
2. As figure 5, the connection of the metal and plastic parts of the liquid level controlling electrode should be clean of any residual flux to avoid any malfunction.
3. Check the outlet of the wire of the sensing ball regularly to prevent any stick on.
4. Please don't use the pumper of this instrument to pump anything except the solution of flux.
5. Please take off the floating ball for long term idle.
6. This instrument shall be placed at in an open and clean area.
7. If there is any outage, please notify the representative. Don't take off the circuit board or adjust by yourself.
8. Do not use the pump of this controller to take other solution which was not suitable for the flux.

