1. FBT/FBF, FET/FEF 35 SERIES

1-1 Out line

The new FBT/FBF, FET/FEF 35 series changed from 30 series are equipped with micro-computer control system (SICOS 50) and it enables overall control of both travel, hydraulics and safety monitors. Also it performs centralized supervision and control for the whole truck, thus improving safety and work efficiency, as well as saving energy.

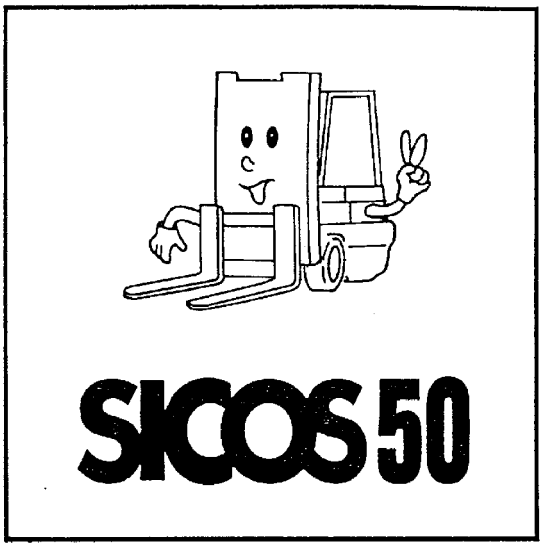


Fig. 1-1

1-2 Feature

Following function is newly introduced with FBT/FBF, FET/FEF 35 series as an option.

- Hydraulic chopper (option)
- Regenerative braking (option)

In addition to these, as standard function,

- Safety monitor and self-diagnosis function by the LCD display
  (A symbol flashes and possible defective part is displayed.)
- Self-diagnosis history memory
- I/O checks

are displayed on the LCD display on the indicator panel.
They provide accurate and quick fault-finding.

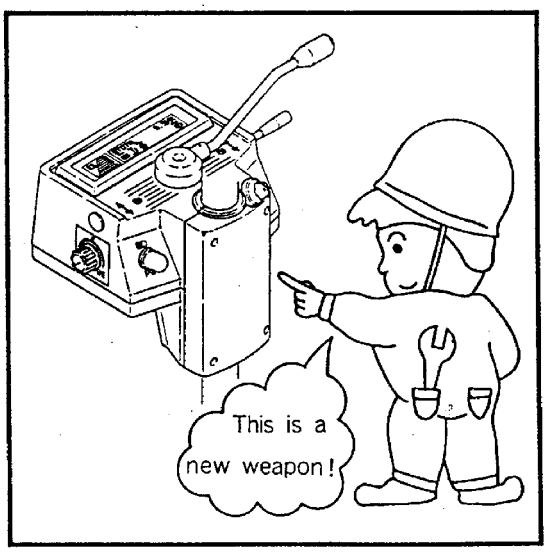


Fig. 1-2

1-3 Layout of components

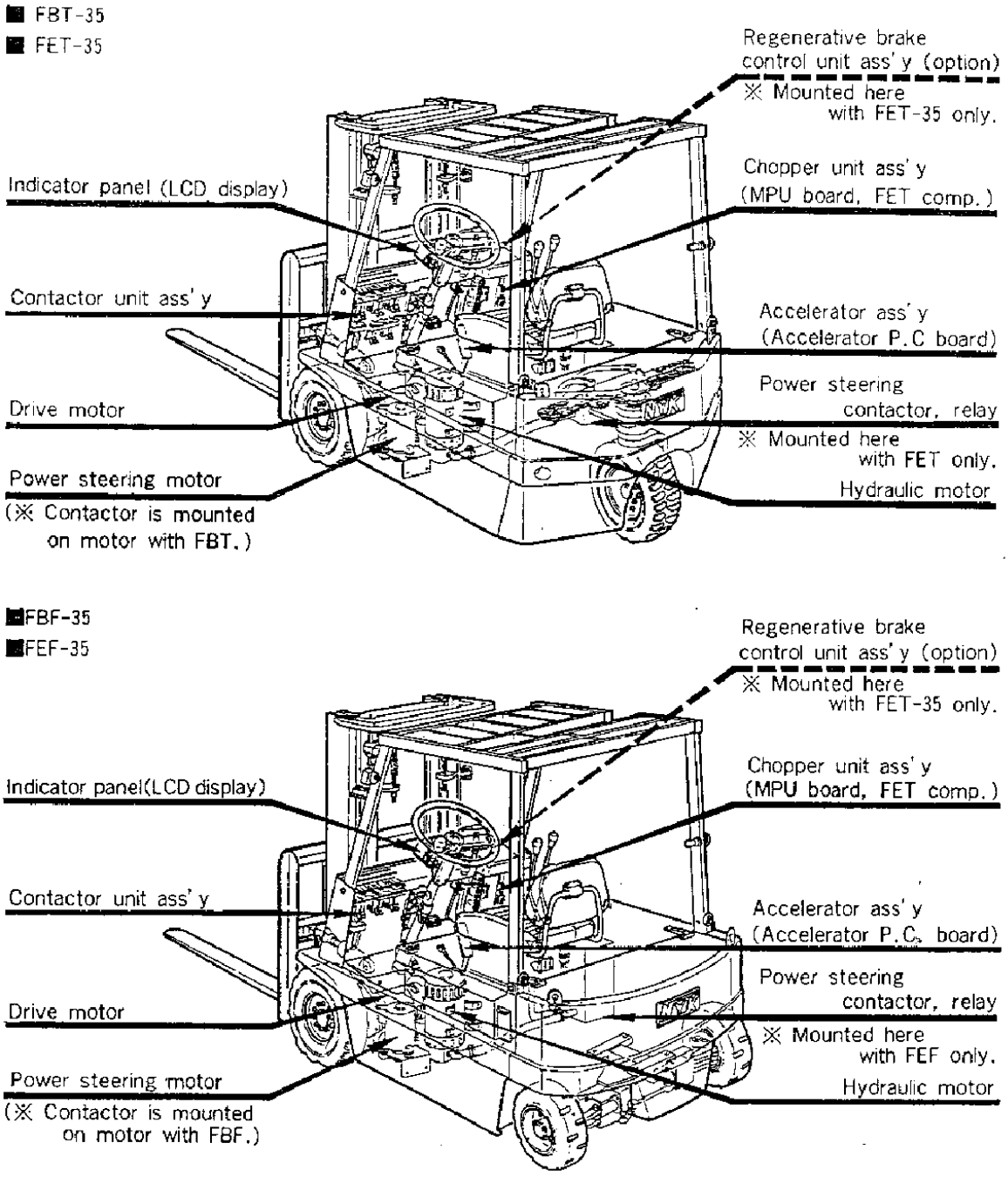


Fig. 1-3

CONTENTS

FBT/FBF

FET/FEF

2. HOW TO ADJUST SICOS 50

When replacing MPU board or current sensor, or when necessary, adjust SICOS 50 by four potentiometers and eight rotary switches on the MPU board.

Before adjustment.

- All the parts are in normal condition.
- Micro-computer system is normal, and truck speed can be controlled.
- Energy-saving switch shall be set at "P" position.
- Specific gravity of battery electrolyte is more than 1.26 (20°C)

Confirm above condition, and **be sure to disconnect the battery plug for safety when selecting rotary switch and potentiometer on the MPU board.**

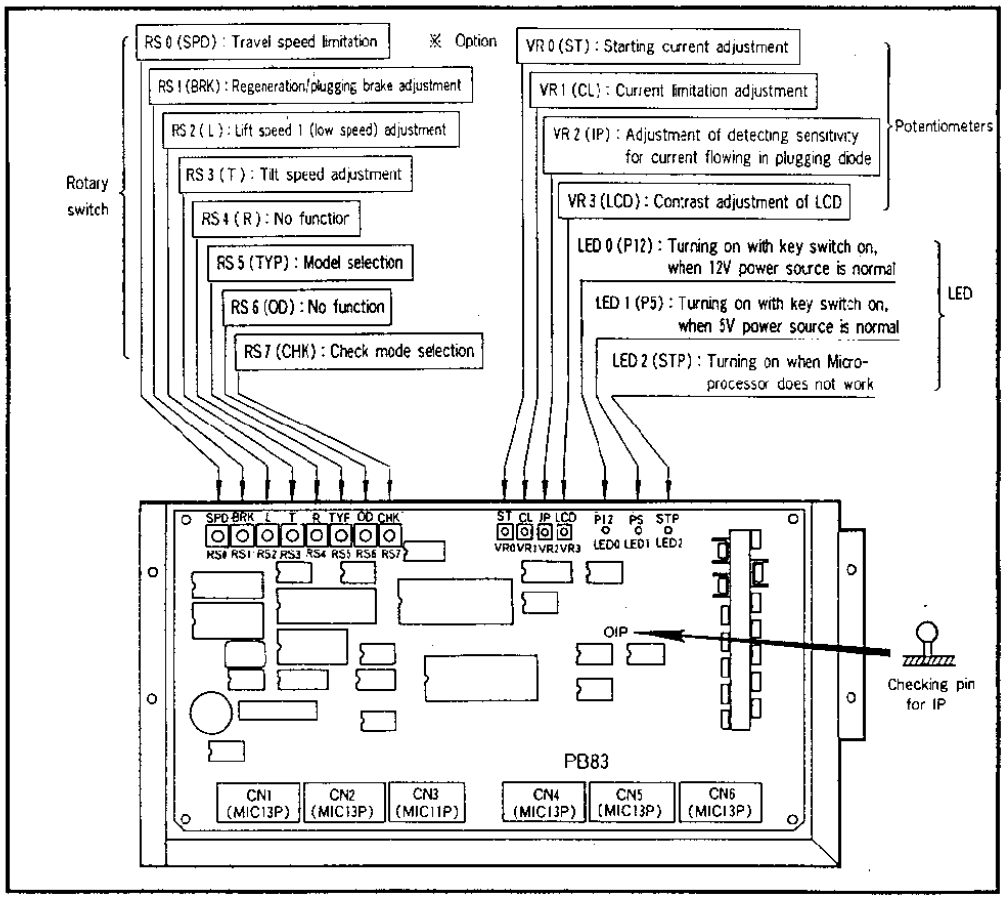


Fig. 2-1 Rotary switches and Potentiometers on MPU board

2-1 Adjustment by potentiometers

1. VR0 (ST) : Starting current adjustment

The "VR0" potentiometer adjusts starting current. (Refer to next page for adjusting method.)
Turning it clockwise increases starting current.

※ Be sure to confirm current limitation after adjusting starting current.
If it is not within specified range, adjust it and confirm starting current again.

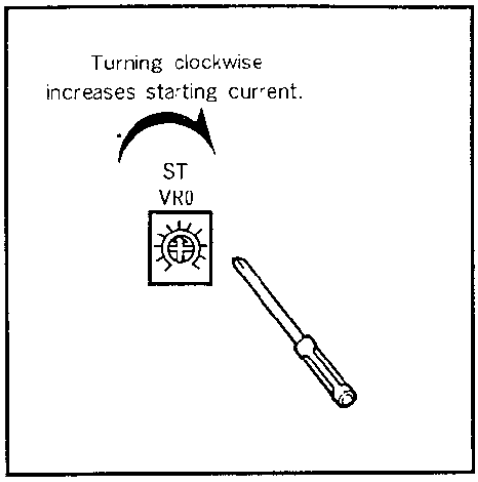


Fig. 2-2 Starting current adjustment (VR0)

2. VR1 (CL) : Current limitation adjustment

"VR1" adjusts the drive motor current limitation.
Turning it clockwise increases current limitation.

< Measurement and adjustment of current limit >

1) Place the forks against a wall so that the forklift will not move.

2) Set the energy-saving switch to "P" position.

3) Remove the front cover of right side and prepare 500A DC ammeter and set the ammeter to lead wire from "AA" or "NC" terminal of the current sensor.

4) Turn on the key switch (K.S. —ON) and set the directional switch to forward position and then set the rear wheel straight by steering. (Steering microswitch—OFF)

5) Operate the accelerator lever all the way down, and read off the maximum current within 2 seconds.
Repeat this procedure 2 or 3 times, and adjust the current to within specified range.

※ Be sure to check starting current after adjusting current limitation.
If starting current is not within specified range, adjust it and check current limitation again.

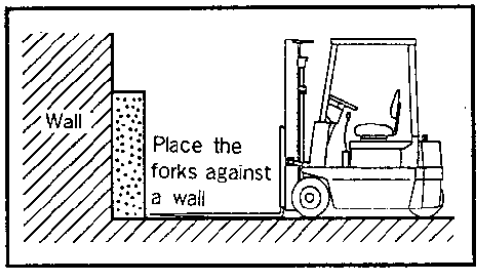


Fig. 2-3 Placing forklift against wall

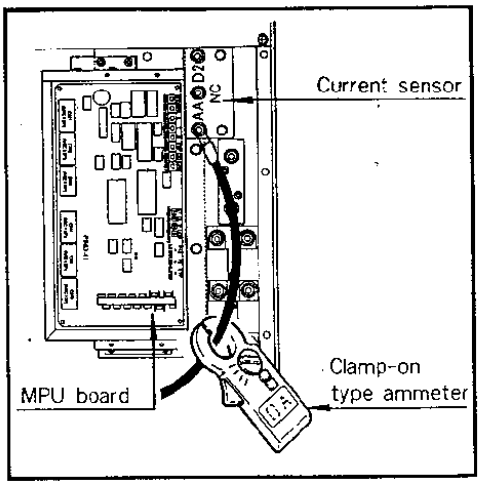


Fig. 2-4 Setting ammeter

[Note]

- Disconnect the battery plug when turning the VR1 with a screw driver, to prevent from a short-circuit on the MPU board.
- If you operate the accelerator lever fully for more than 3 seconds, automatic torque increase will function and current limitation measurement will be impossible. Perform measurement within 2 seconds each time.
- If the rear wheel is steered by more than 70° (steering microswitch—ON), current limitation is decreased. Be sure to set the rear wheel straight. (Only FET/FEF)

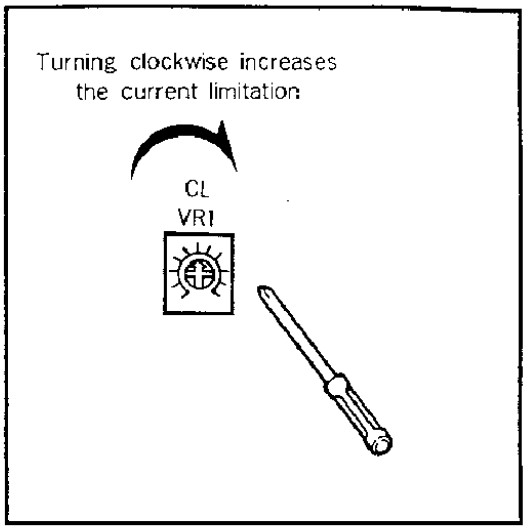


Fig. 2-5 Adjusting current limitation

Table2-1 Current limitation

Unit : A

Model	Starting current	Current limitation
FBT/FBF10P	40±5 (35~45)	275±15 (260~290)
FBT/FBF13P/15P/18P	45±5 (40~50)	330±15 (315~345)
FET/FEF10C/13C	45±5 (40~50)	300±15 (285~315)
FET/FEF15C/18C	60±5 (55~65)	385±15 (370~400)

3. VR2 (IP) :Adjustment of detecting sensitivity for current flowing in the plugging diode.

"VR2" adjusts detecting sensitivity for current flowing in the plugging diode.
Normally, VR2 is pre-adjusted at shipment from the factory, so, further adjustment shoud be unnecessary.
However, when replacing the MPU board or current sensor, adjustment is necessary.

〈 Checking and adjustment 〉

1) Turn off the key-switch.

2) Disconnect the battery plug.

3) Fit a clip for IC to the check point of IP in

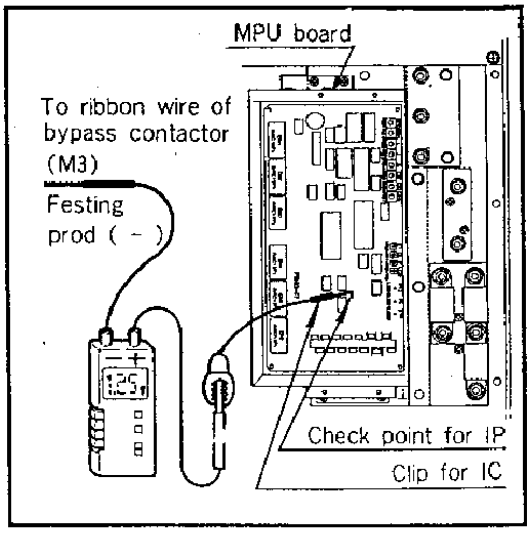


Fig. 2-6 Setting for adjusting IP voltage.

MPU board. (refer to page 3 for IP check pin.)

4) Prepare a digital type volt-ohm meter, and fit the positive prod to another end of the clip.
And remove the front hood of left side and then fit the negative prod to ribbon wire of the bypass contactor (M3). (See picture in Fig. 2-6)

5) Then connect the battery plug and turn on the key-switch

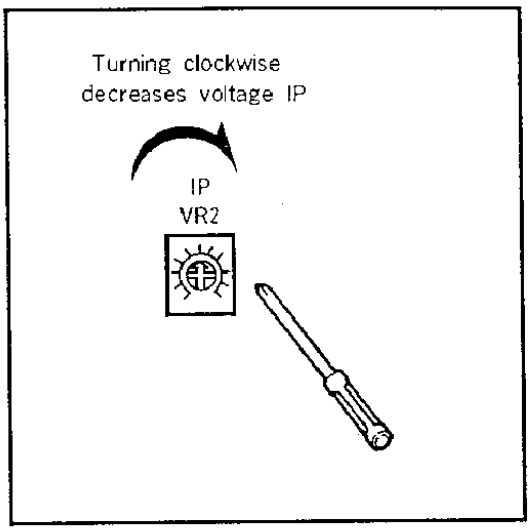
6) Check and adjust to insure that voltage is 1.25±0.01V (1.24~1.26)
Turning it clockwise decreases voltage IP

Unit : V

IP voltage	1.25±0.01 (1.24—1.26)

※ Adjust after measuring current limitation.

[Note]
Be careful not to cause a short-circuit in the MPU board when adjusting this.



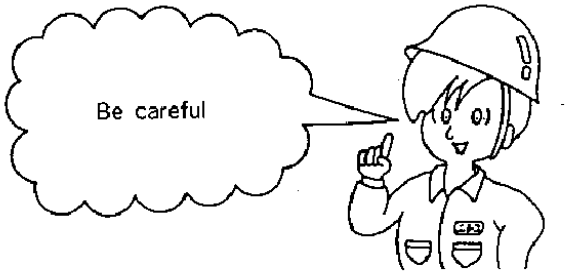


Fig. 2-7 Adjusting voltage IP

4. VR3 (LCD) : Contrast adjustment of LCD.

"VR3" adjusts LCD display contrast.
Adjust so that contrast is suitable for the operator.
Turning it clockwise lessens contrast.

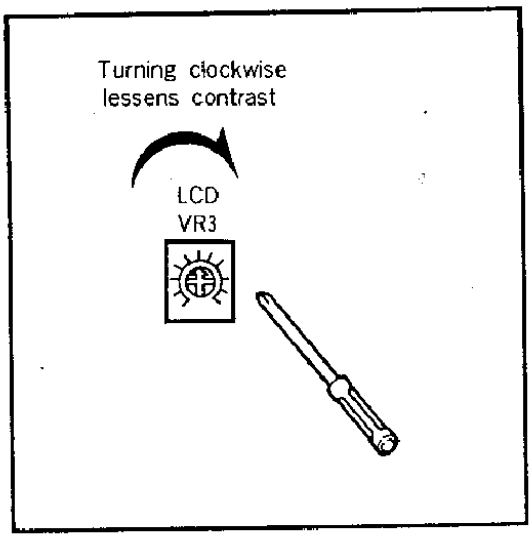


Fig. 2-8 Adjusting contrast of LCD