

OPERATION MANUAL

Flame-proof type Shutter operator

MODEL : US-1000W(d) THREE-PHASE 380~480V

This operation manual describes only matters related to the operator. As for handling in a whole shutter system. Please refer to instructions given by the shutter manufacturer.

- (1) This product is flame-proof type shutter operator to install the place where explosive gas exists.
- (2) The explosion-proof performance of this product is symbolized d2G4 in JIS (equal to ExdII BT4 in IEC) Check the classification of explosively hazardous area before installation

① ATTENTION OF SECURITY

There are "WARNING" and "CAUTION" to be separated by degree of harm and damage.

WARNING : If the system is wrongly set up or handled, death or serious injury may result.

- (1) In positioning the motor-driven operator properly, carefully read the catalogue.
- (2) The shutter operator is specifically designed for motor-driven shutters. Never use the shutter operator for any other applications.
- (3) Setting up the shutter operator includes works to be done by a well-skilled, qualified electrician. Only such qualified person shall install the shutter operator.
 - Otherwise the operator may not work normally, and the shutter may damage, then an injury may result.
- (4) Use angle brackets which have enough strength to support shutter weight and fix them in position on the structural members, referring to the shutter layout (installation drawing).
 - As the angle brackets bear all shutter weight, an injury may result by damaged shutter if it is not tightly fixed.
- (5) Fix the bed support in position on the structural members, referring to the shutter layout (installation drawing).
 - Otherwise the operator may not work normally, and an injury may result by damaged shutter as the case maybe.
- (6) Install the shutter operator in a place not exposed to rain and any other water.
 - Otherwise a fire or an electrical shock may result.
- (7) Be sure to ground the shutter operator.
 - Otherwise a fire or an electrical shock may result.
- (8) Do not disassemble nor temper with the shutter operator. Nor attach any extra components than our specified options.
 - Otherwise an injury may result by abnormal operation.
- (9) Before opening and closing the shutter, make sure there is nobody and no obstacle around.

Be sure to instruct the person in charge of the shutter operator to keep this is in mind.

Otherwise an injury may result by being caught in the shutter.

CAUTION : If the system is wrongly set up or handled, personal injury or property damage may result.

- (1) Be sure to keep the supply voltage within the shutter operator's specified range.
 - Otherwise the operator may damage, and then it may cause a fire or an electrical shock.
- (2) Make sure the shutter's weight and size are within the limit of the door's applicable ratings.
 - Otherwise the operator may not work normally, and the shutter may damage, then an injury may result.
- (3) Before using the manual short-link handchain, make sure the shutter is not moving and never use the pushbutton switches.

Be sure to instruct the person in charge of the shutter operator to keep this is in mind.

Otherwise the manual short-link handchain will be pulled into the operator, then the operator may result in damage.

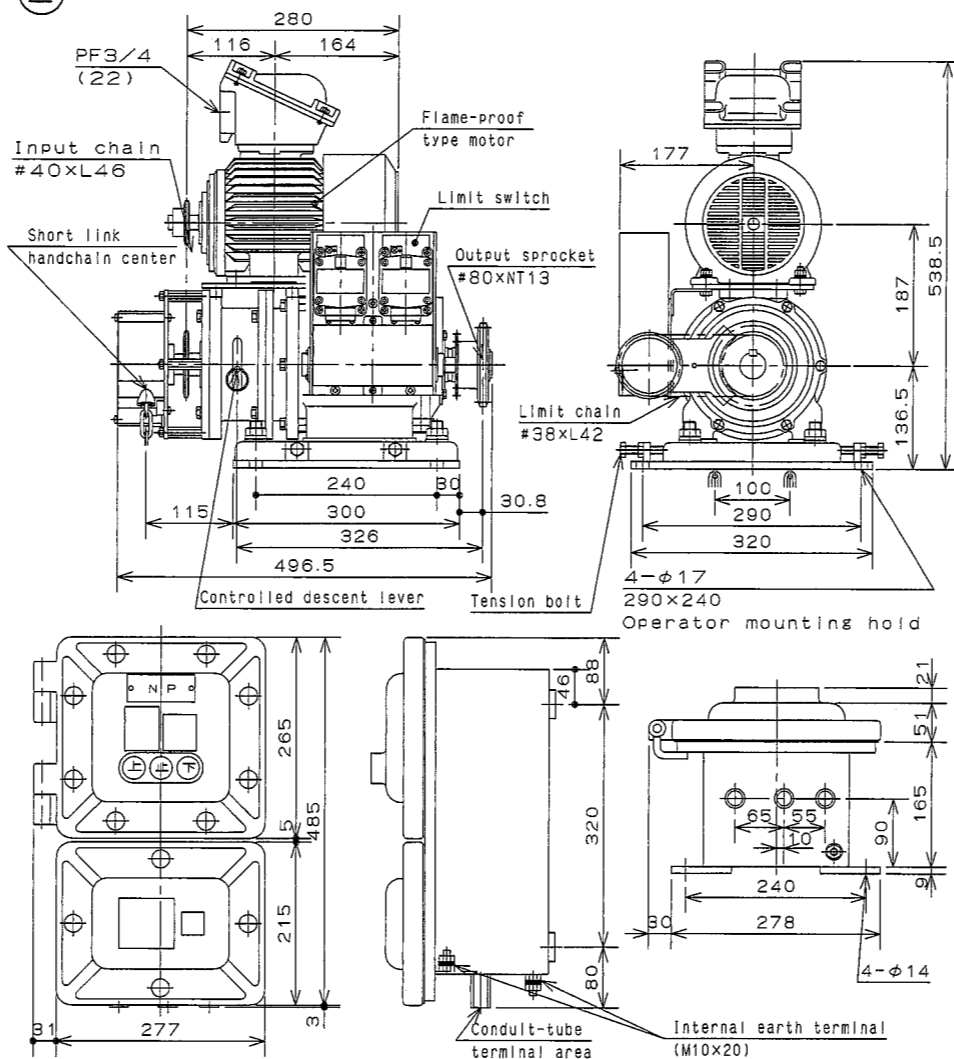
- (4) Before using the gravity fall lever, make sure the shutter is not moving and never use the pushbutton switches.

Be sure to instruct the person in charge of the shutter operator to keep this is in mind.

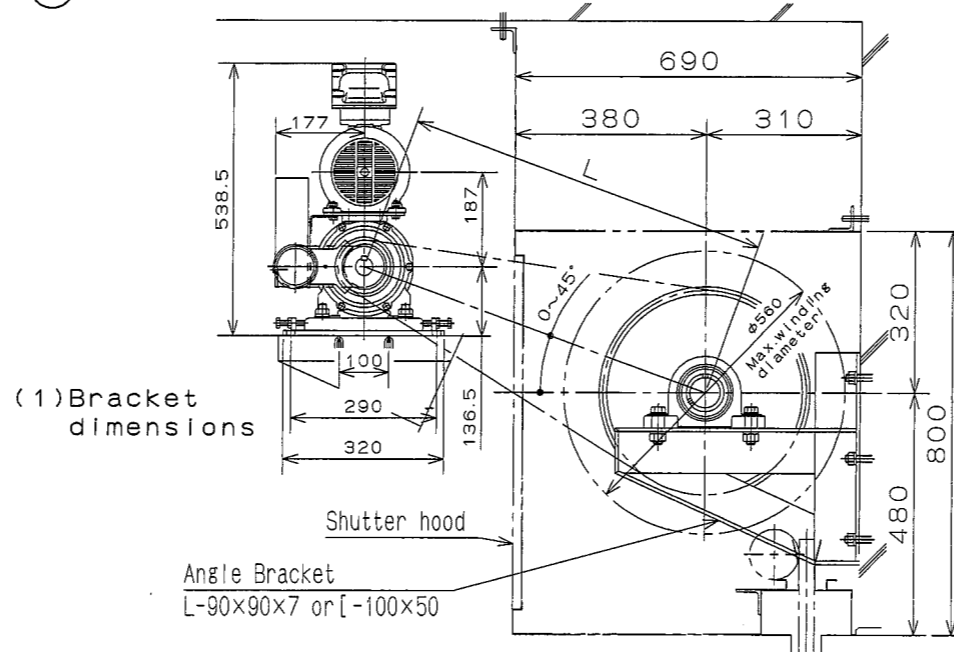
Otherwise the operator may not work normally, then the shutter may damage.

- (5) Make proper limit switch settings. And be sure to check the stop position.
- (6) Inspect the shutter operator periodically. If anything unusual is found, repair or replace. For periodic checks, keep the number of times or period for inspection given in the INSPECTION clause on this operation manual.

② PARTS DETAILS OF OPERATOR



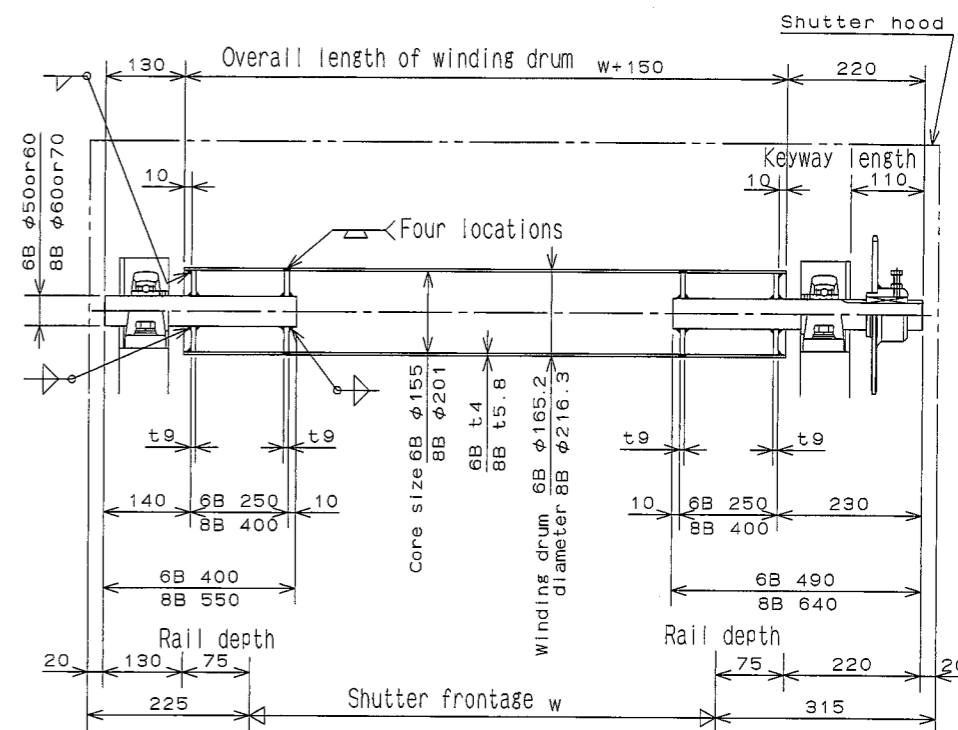
③ REFERENCE OF INSTALLATION



- *The shutter hood dimensions are for the maximum winding diameter of 380 mm. The dimensions in parentheses are referred to in the case of 440 mm diameter.
- *The operator must be installed within the region of 45 degree from the central horizon in the winding drum.

(2) Winding drum dimensions

Manufacture the winding drum in accordance with the undermentioned drawing. If the rail depth is not 75 mm, change the winding drum dimensions (W+150) in accordance with the rail depth.



④ PACKAGE CONTENTS

The detail of each package is shown below.

Be sure any damage did not occur in transit, or any shortage was not found in the package.

(1) Operator package

- Power operator (incl. Limit switch) . . . × 1
- Controlled descent cord : 4m(with handgrip) . . . × 1
- Tension bolt set (hexagon head bolts M10xL50, hexagon nuts M10) . . . × 4
- Handle(for only handle-operated type) . . . × 1

(2) Control panel package

- Control panel(with Mounting bolts) . . . × 1

(3) Piping equipment package

- Relay terminal box . . . × 1
- Accessories . . . × 1 set
- Connection nipple . . . × 1 set
- Flexible fitting . . . × 1 set
- Sealing fitting . . . × 1 set
- Union coupling . . . × 2

(4) Drum sprocket package

- Drum sprocket #80-T50 . . . × 1

(5) Roller chain package

- Roller chain(#80-50 links, 2.3 m long), with joint link and offset link . . . × 1

(6) Operation manual

- . . . × 1

⑤ INSTALLATION OF POWER OPERATOR

(1) BEFORE INSTALLATION OF POWER OPERATOR

Fix the angle brackets tightly, which have enough strength to support all weight. In a suitable position on the structural members.

▲WARNING

If the angle brackets are not fixed tightly, an injury may result by damaged shutter because these bear a whole shutter weight.

Fix the drum sprocket in a suitable position on the drum shaft, referring to the shutter layout (installation drawing).

Fix the bed support in a suitable position on the structural members, referring to the shutter layout (installation drawing).

▲CAUTION

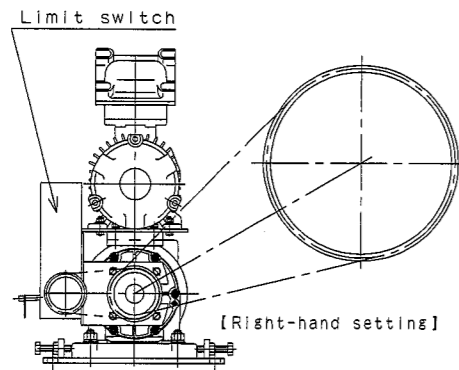
If the fixed position was incorrect, the operator may not work normally, and an injury may result by damaged shutter as the case may be.

(2) CHECKING OF RIGHT/LEFT-HAND INSTALLATION

This operator is designed exclusively for right-hand installation.

Use the operator in right-hand installation only.

If the operator is installed wrongly in left-hand, limit switch cannot be operated due to winding barrel.



(3) INSTALLATION OF POWER OPERATOR

Install the power operator in the following procedure.

- Fix the power operator on bed support.
- Mount roller chain on output sprocket and drum sprocket.
Then adjust the operator position so that roller chain has approximately 2% slack on center-to-center distance (L).
Tighten up the hexagon nuts with wrench on an average and securely.
- Remove wire from bound short-link handchain to enable manual operation.

▲CAUTION

Be sure to install the operator horizontally.
- Motor chain might be interfered and damaged if the operator is installed vertically (on wall) or reversely (on ceiling).

(4) CHECK

Make sure of the following matters after finally setting up operator.

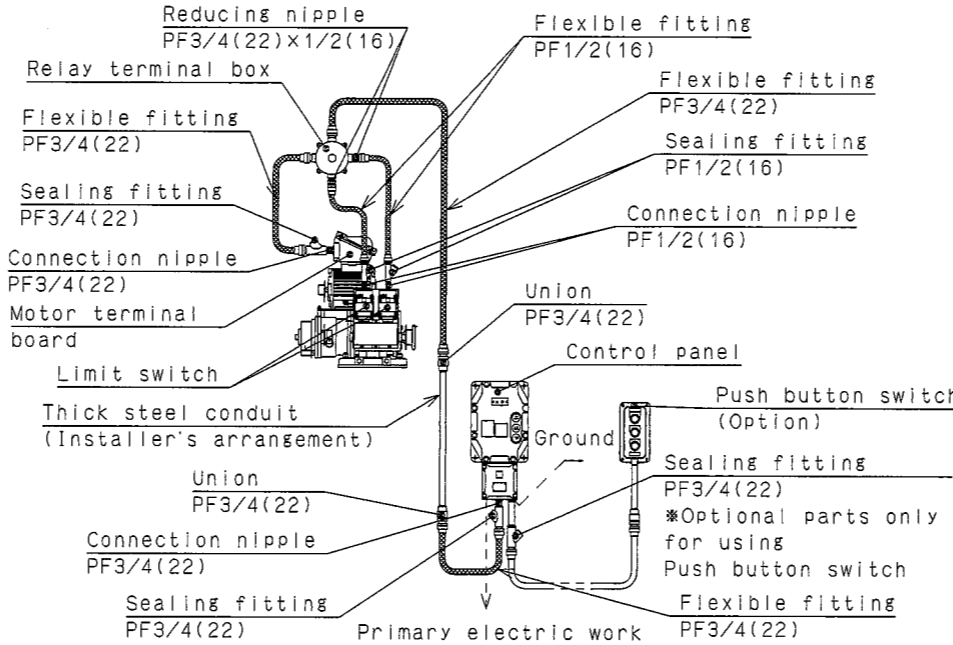
- Roller chain is mounted on output sprocket and drum sprocket, and each center can be aligned.
- 4 hexagon nuts are securely tightened up to fix the operator.
- When pulling short-link handchain being outside against slats, the sprocket and winding drum rotate toward roll-up direction.

▲WARNING

Be sure to check the above matters after finally setting up operator and any abnormality should be corrected.
· If shutter is used without the above checking or with any abnormality, it may result in falling down and serious accident.

⑥ PIPING

- Install the control panel out of explosively hazardous area as much as possible.
- Install the relay terminal box within a reach of flexible fittings.
- The connection part of thick steel conduit should be parallel pipe threads. Combine 5 screwthreads or more by securing locknut firmly.
- The connection of thickness steel conduit and flexible fitting should use union coupling.
- Connect primary electric work of control panel by thick steel conduit or flexible fitting with union coupling (3/4").
- In case of using external pushbutton switch, use union coupling (3/4") and flexible fitting for connection.
- Attach a dummy lid to each conduit-tube of control panel which is not used.



▲WARNING

Ask a qualified electric engineering technician/company to install piping work due to high difficulty.

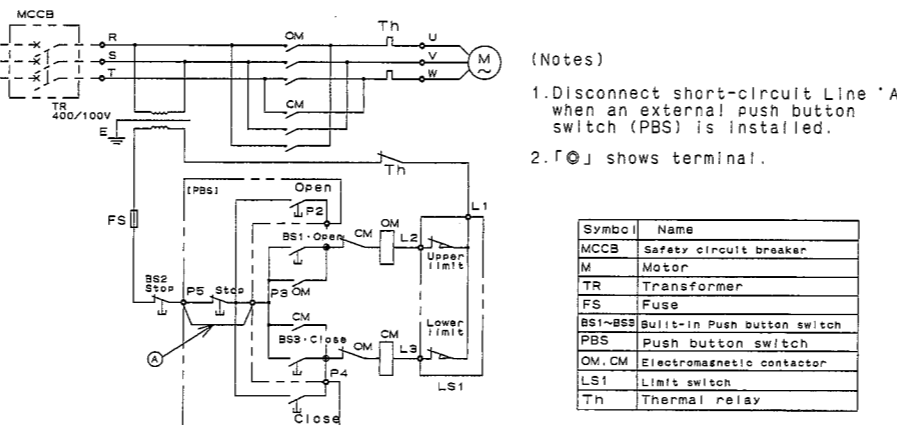
⑦ WIRING

▲WARNING

- At electric work, to avoid fire, electrical shock or abnormal operation, be sure to keep the following matters.
- Only qualified person shall do electric work.
- Electric work shall be done based on an internal wiring regulation of an electrical equipment engineering standard or the like in each region.
- Disconnect power supply before electric work.
- All leads shall be connected securely.
- Be sure of grounding work between control panel and operator using earth terminal of control panel.

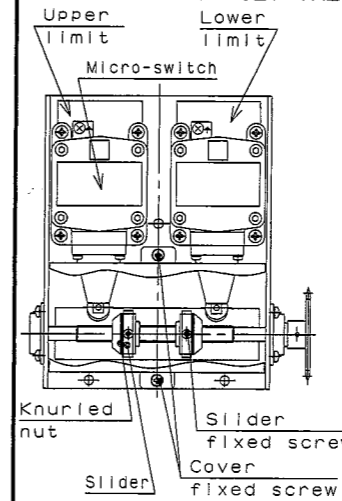
(1) CONNECTION DIAGRAM

- The following figure shows wiring connection for terminal of control panel.
- Install MCCB (safety circuit breaker) between power supply and terminal of control panel for connection.
- Replace U and V of motor lead wires to reverse rotation of motor.
- 「◎」 shows terminal on control panel.



⑧ ADJUSTMENT OF LIMIT SWITCH

HOW TO SET THE LIMIT SWITCHES



- 1) Remove the cover of limit switch.
- 2) Stop shutter at the position of upper/lower limit, and rotate knurled nut on slider for adjustment.
- 3) Rotate knurled nut until micro switch clicks, then stop rotation of nut and tighten the fixed screw to complete upper/lower limit setting.
- 4) Set the other limit switch by follow the steps from 2) to 3), and adjust the position both of upper/lower limit position.
- 5) Check the positions of both upper/lower-limit by limit switch after adjustment, and readjust the position in case of failure.
- 6) Fix the cover of limit switch after adjustment is completed.

⑨ OPERATION

▲WARNING

Be sure there is no obstacle on the closing line, in advance of operation. Do not enter on the closing line during shutter is running. Do not be away from the push button switch until open/close operation finishes. Be sure the shutter finally stops, because moving shutter can injure people.

(1) POWER OPERATION (WITH PUSH BUTTON SWITCHES)

For opening shutter, press 'OPEN' button and for closing shutter, press 'CLOSE' button until the shutter begins to move. The shutter automatically stops at the fully opening/closing position. For stopping shutter at a desired position, press 'STOP' button, and it stops at the position. For reversing a moving shutter, once press 'STOP' button, before pressing 'OPEN' button or 'CLOSE' button. Reverse operation is rejected while shutter is moving.

(2) MANUAL OPERATION

This operation is used for opening shutter in the case of power failure or the like.
· Open shutter hood to hang short-link handchain. Slowly pull short-link handchain being outside against slats, and shutter will open in proportion to pulling.

(3) CONTROLLED DESCENT OPERATION

This operation is used for closing shutter in the case of power failure or the like.
· Open shutter hood and pull the controlled descent cord, and shutter will close by its own gravity.
For stopping shutter, release the controlled descent cord.
Caution: The velocity of closing shutter by controlled descent will be twice as fast as that of closing by electrical operation.

⑩ CONFIRMATION

Confirm the next items after the installation is completed.

1. A shutter should open and close by the operation of the push button switch.
2. A shutter should stop at each positions of the upper and lower limit where it was set up with a limit switch.
3. A shutter should move up/down by hauling the handchain or turning the crankhandle in manual operation.
4. A shutter should move down when the controlled descent cord is pulled.

⑪ INSPECTION

The inspection must be carried out at the time when the operator reached to either the following number of times or period.

· 1000 OPEN/CLOSE · 6 MONTHS

Carry out inspection by checking the numbers of daily open/close operation times.

If you have any question, please contact the shutter installer/manufacturer below.

FOR CONTACT