

SINCE 1962



YOUNG-HWA

INDUSTRIAL ELECTRIC CO.,LTD.

A.S.S (MODEL NO. : YHASS)

- AUTOMATIC SECTIONALIZING SWITCH
- 25.8kV, 200A, OIL INSULATED
- EXTERNAL(INTERNAL) POWER SUPPLY TYPE



- MAINTENANCE FREE & EASY INSTALLATION
- LONGER DURABILITY UNDER ANY CLIMATE

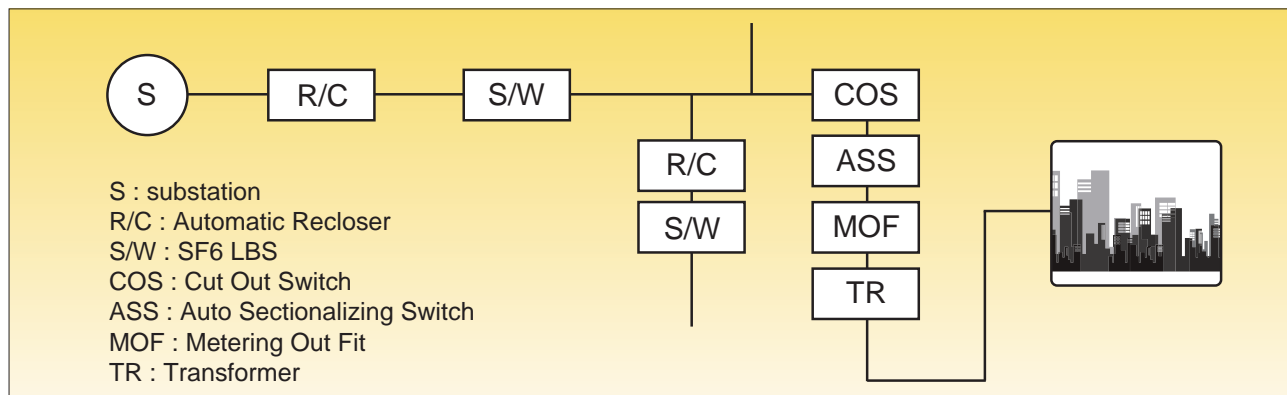
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A.S.S is installed by the diverging point of load capacity 4,000kVA and below (if special load 2,000kVA) at 22.9kV-Y line 3 phase distribution system or by customer's branch point of utilities distribution line.

ASS prevents defect expansion and minimizes damage by immediate and exact block or open of defect section, with cooperation of RECLOSER and/or CIRCUIT BREAKER on network line in front of customer branch point, when overloaded or fault current occurs.

It may block up 900A load current which means it can be utilized as LOAD BREAK SWITCH. Manual close can be done during breakage, thus defect condition can be easily checked after repair.



■ FUNCTION AND FEATURE

ASS performs overload protection in cooperation with Recloser and/or Circuit Breaker. When fault current is over than maximum overload locking current(800A), the switch operates and removes the faults safely and immediately after removing faults in advance by Recloser.

1. Overload and Fault Current Protection

Instant breaking function operates for overload and fault current below 800A.

Open is restrained for fault current over 800A and it opens in no voltage condition in advance to other protectors' reclosing.

2. Malfunction Prevention by Inrush Current

Delay time of inrush current can be set up as either 0.5 sec or 1 sec.

3. Over Current Locking Function

Over current locking function (800A 10%) protects the Switch from breakage over rated breaking current (900A), and removes the breakage.

4. Convenient Function Setting

Minimum operating current is registered automatically by built-in program according to selection of push button switch within controller, thus if customer's load capacity increases, it can be easily re-set.

5. Remote Control Function (Optional)

Remote control function is available by extension from 8P receptacle controller.
(Cable length 5m-optional)

6. Indicator and Motion Counter

Indicator of contacts location let users to easily notice open condition from outside.

Motion counter indicates motion frequency and can be checked easily from outside.

7. Power for control is DC 24V and uses built-in power-secure equipment, thus exterior control power is not required. (Exterior Power type is optional)

8. Connection terminal is clamp type and able to connect to Cu or Al cable of 22mm ~160mm. 22mm ~38mm earth terminal is combined.

9. In daily use, mechanical manual close and open, electrical close and open can be easily operated

■ RATING & SPECIFICATION (Environmental -25℃~40℃, Below 1,000m)

| ITEM | | RATING |
|--|---------------------|--------------------------------------|
| Nominal Voltage | | 22.9kV |
| Rated Voltage | | 25.8kV |
| Rated Current | | 200A |
| Rated Frequency | | 50/60Hz |
| Rated Short-time Current(rms) | Instantaneous(Asym) | 15kA |
| | 1Sec(Sym) | 10kA |
| | 10Sec(Sym) | 3.5kA |
| Rated Short Circuit Making Current(Asym) | | 15kA |
| Rated Breaking Current | | 900A |
| Rated Power Frequency Withstand Voltage | Dry | 60kV/1min |
| | Wet | 50kV/10sec |
| Lightning Impulse Withstand Voltage(1.2x50 _{μs}) | | 150kV |
| Max. Overload Locking Current | | 800A±10% |
| Minimum Operating Current | Phase | 5,10,20,30,50,70,100,140,200A,Block |
| | Ground | 2,5,5,10,15,25,35,50,70,100A,By-pass |
| Restraint Time for Inrush Current(at 200A) | | 0.5sec,1sec ±10% |
| No-load Switching Capacity | | 1,000/2,000 times |
| Active Load Switching Capacity(at 299A) | | 200times |
| Insulating Material | | Insulation Oil(without P.C.B) |
| Weight(Switch) | | 140kg |

■ TRIP TIME TABLE

In case 150%, 300% or 600% of the minimum operating current is running, it operates as below

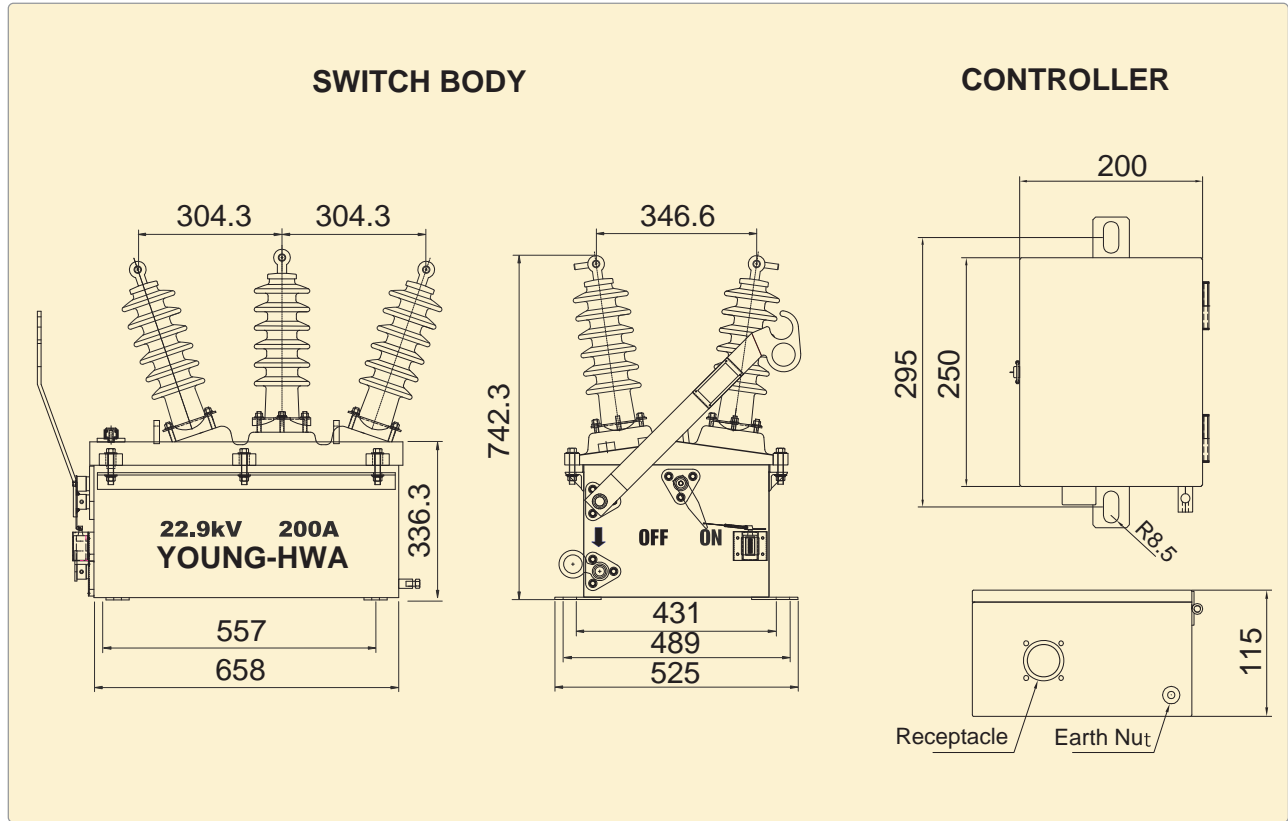
| Overload Current | | 150% | 300% | 600% |
|------------------|----------------|-------------|-------------|-------------|
| Time | Phase Current | 2.90sec±10% | 0.64sec±10% | 0.21sec±10% |
| | Ground Current | 6.0sec±10% | 1.6sec±10% | 0.7sec±10% |

■ PHASE & GROUND CURRENT SETTING TABLE

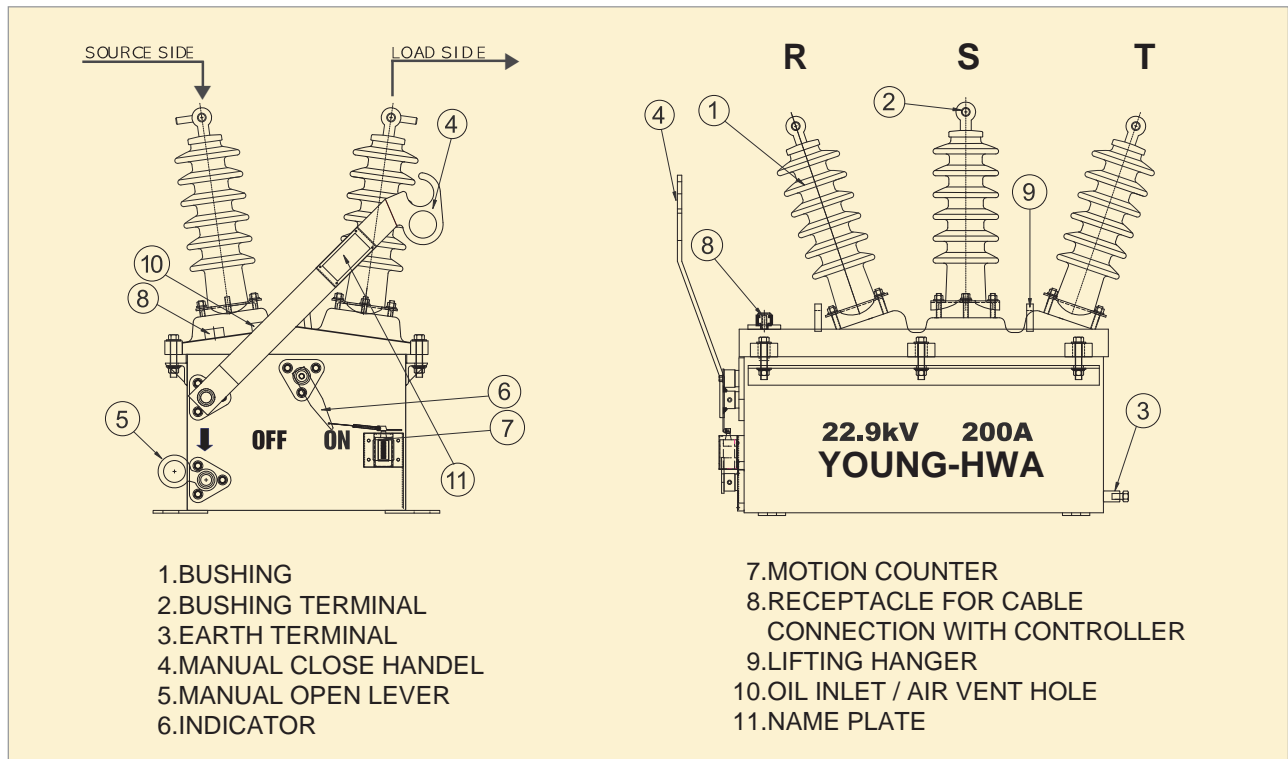
| Transformer Capacity(kVA) | Phase Current select Tap(A) | Ground Current select Tap(A) | Phase Current Value(A) | Ground Current Value (A) |
|---------------------------|-----------------------------|------------------------------|------------------------|--------------------------|
| 0~50 | 5 | 2.5 | 0~3.8 | 0~1.9 |
| 50~100 | 10 | 5 | 3.8~7.5 | 1.9~3.8 |
| 100~250 | 20 | 10 | 7.5~18.8 | 3.8~9.4 |
| 250~350 | 30 | 15 | 18.8~26.3 | 9.4~13.2 |
| 350~600 | 50 | 25 | 26.3~45 | 13.2~22.5 |
| 600~900 | 70 | 35 | 45~68 | 22.5~34 |
| 900~1000 | 100 | 50 | 68~75 | 34~37.5 |
| 1000~1500 | 140 | 70 | 75~113 | 37.5~56.5 |
| 1500~2000 | 200 | 100 | 113~150 | 56.5~75 |

- Phase minimum operating current value(in case of 22.9kVline); [Transformer capacity or contracted capacity(kVA)/√3X22.9(kV)]x2~3 times]
- Ground minimum operating current value=Phase min. operating current value/2
- Block:trip restraint tap for phase current.
- By-pass:trip restraint tap for ground current.

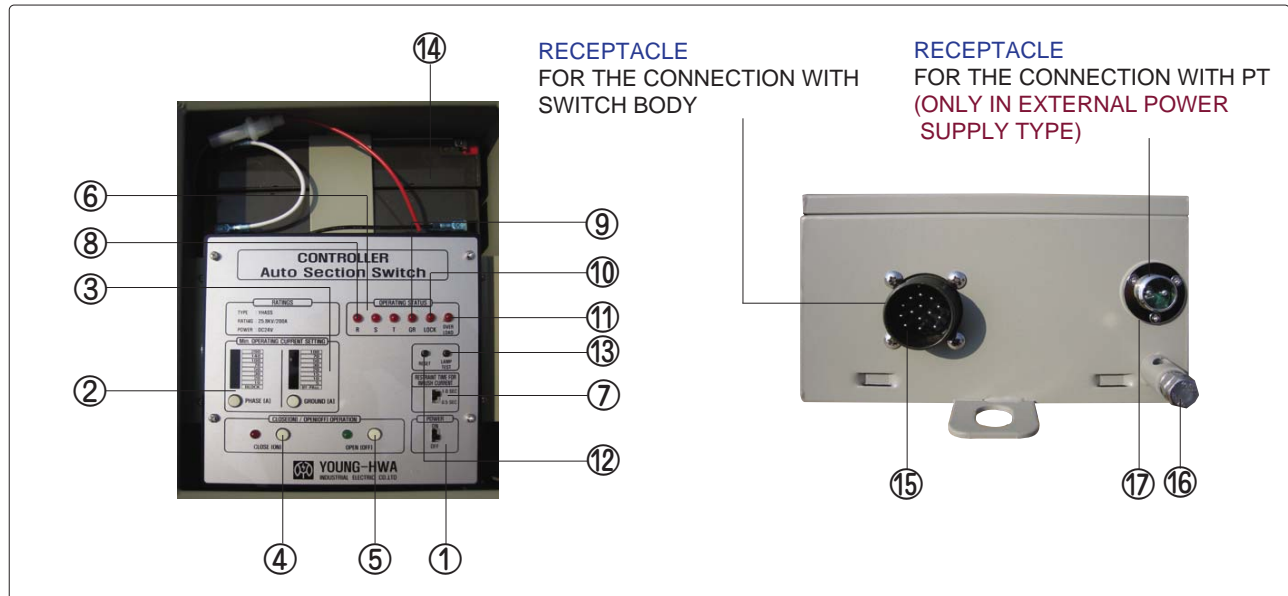
■ OUTLINE DRAWING & DIMENSION



■ EACH PART NAME (SWITCH BODY)



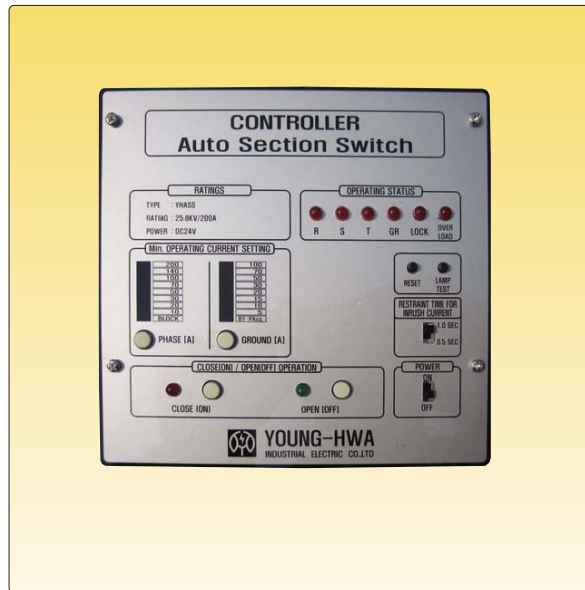
■ EACH PART NAME (CONTROLLER)



1. **Power Switch** : On / Off
2. **Phase Minimum Operating Current Set up Switch(Phase)** :
Adjust according to transformer capacity and load current. 5~200A, Block.
3. **Ground Minimum Operating Current Set up Switch(Ground)** :
50% value of phase minimum operating current is recommended. 2.5~100A, By-pass.
4. **Close button switch & lamp(Close)** :
Press the button to close and wait for 5 seconds for operation. Red LED will lighten on.
5. **Open button switch & lamp(Open)** :
Press the button to open after close, and green LED will lighten on.
6. **Monitor(Current)** : It shows the current on the indicator.
Maximum load among R,S,T are automatically selected and shown.
7. **Select switch of Restraint Time for Inrush Current(Restraint time for Inrush Current)** :
In case of reclosing, restraint Time for inrush current can be set as either 0.5 sec or 1 sec. Normally we set in 1 second
8. **Phase Indicating Lamp (R,S,T)** :
The LED lightens when short circuit or overload more than phase minimum operating current happens. It lightens in divided according to each phase, thus easy to find out fault cause and restoration method.
9. **Ground Indicating Lamp (GR)** : It lightens on in case earth fault more than set up value of ground minimum operating current happens.
10. **Lock Current Indicating Lamp(LOCK)** :
It lightens on in case the lock happens due to current flow over lock current.
11. **Overload Indicating Lamp(OVERLOAD)** :
It lightens on in case the switch opens due to current flow over 10% of set min.operating current either phase or ground.
12. **Reset Button(RESET)** :
If the switch is opened due to fault, it shows the fault condition. Check the condition and reset.
13. **Lamp Test Button(Lamp Test)** : To check all lamps & LED, press this button
14. **Battery** :
The battery (DC 12V/2AhX2) is maintenance-free air-tight type and charged by built-in power.
15. **RECEPTACLE FOR CABLE CONNECTION WITH CONTROLLER**
It is structured with 14 pins to electro driving.
16. **Earth Terminal**
17. **RECEPTACLE FOR CABLE CONNECTION WITH PT**
(ONLY IN EXTERNAL POWER SUPPLY TYPE)

9. **Ground Indicating Lamp (GR)** : It lightens on

■ CONTROLLER SET-UP METHOD



1. Set up Minimum Operating Current

Minimum operating current can be easily set up by push button switch. Lock current is fixed at 800A from the factory, thus regardless set up value, it doesn't directly break more than 800A.

1) Set up of Phase Minimum Operating Current

- Phase minimum operating current can be set up around 2 to 3 times of the maximum load current. For example, in case of 22.9kV,

$$\frac{\text{load capacity}(\text{contracted capacity}) (\text{kW})}{22.9(\text{kV}) \times \sqrt{3}} \times 2 \text{ to } 3 \text{ times}$$

= Phase Minimum Operating Current

- Set up Range and Method

It can be set as 5A, 10A, 20A, 30A, 50A, 70A, 100A, 140A, 200A or block.

Each press of push button switch moves one tap. When LED lightens on where you want, wait for 3 seconds for automatic set up. E.g.) To Set up as 20A, keep pressing the button until LED lightens on 20A.

Wait 3 seconds for automatic set up.

2) Set up of Ground Minimum Operating Current

- If 3 phases are not balanced uncommonly and ground minimum operating current is lower than the load current, there is high possibility of malfunction. Thus it shall be set normally as 50% of phase minimum operating current.

- Set up Range and Method

It can be set as 2.5A, 5A, 10A, 15A, 25A, 35A, 50A, 70A, 100A or by-pass.

Each press of push button switch moves one tap. The method is same as the Phase.

2. Restraint Switch for Inrush Current

To restrain the inrush current by initial power on, users shall select either 0.5 sec or 1 sec for operation.

MANUAL OPERATION & TEST

To close the switch manually, please pull down manual closing handle(red) on the right side of the main body, and to open, pull down the manual trip lever(green) on the left.
Repeat 4 to 5 times to check the condition of mechanical operation.

CAUTION

1. Excessive pulling may harm the handle & lever.
2. To close, please check the switch was opened certainly.
If reclose on the closed condition, it may harm the handle ass' 'y.

AUTOMATIC OPERATION & TEST

CONTROLLER

1. Please connect 14 pin cable for control to the main body and controller, and connect the power terminal of the battery in controller. (To prevent unnecessary discharge of the battery, the factory doesn't connect terminal. +: Red, -: Black)
2. Switch on the power
3. Please press Reset button certainly for the initial close.
4. Please operate either close or open button located in front of the controller, and check whether the operation of the main body is smooth or not, and the condition of controller.
5. Operation under normal load current : Control power is formed at CPU of the control circuit and always operates under readiness condition.
6. To minimize discharge of the battery, it automatically switches off in case of no operation within 5 minutes from the switch on. If the buttons are operated, it will be switch on, but will be again switched off automatically without any operation for 5 minutes.

BATTERY INSPECTION AND EXCHANGE

2 units of DC12V- 2.0Ah battery are in series and generates DC 24V.

Built-in Power supply within the main body charges battery automatically, thus additional electric power is not required. The battery is expendables and should be changed every 2~3 years.

INSPECTION ITEMS IN CASE OF BREAKAGE

| Breakage | Inspection Items | Remarks |
|---|---|---|
| Manual close function is not operated. | Check if operation indicator is already at closed position.Pull down manual open lever and check open, then manually close. | |
| Manual open function is not operated. | Check if operation indicator is already at opened position. | |
| Repeated Open | Check if minimum operating current is set in accordance with load current.If fault current | If fault current keeps flowing, repeated open mau occur |
| Autimatic open and close do not operate | -Check if battery terminal is properly inserted & connected. -Check if control cable is properly connected. -Check if battery is discharged. -Check if fuse in controller is cut down. | If battery voltage is lower than DC 24V, it takes 48hours to be charged again after connecting to the overhead network line.(however entirely discharged battery is needed to be exchanged) |

DANGER / CAUTION

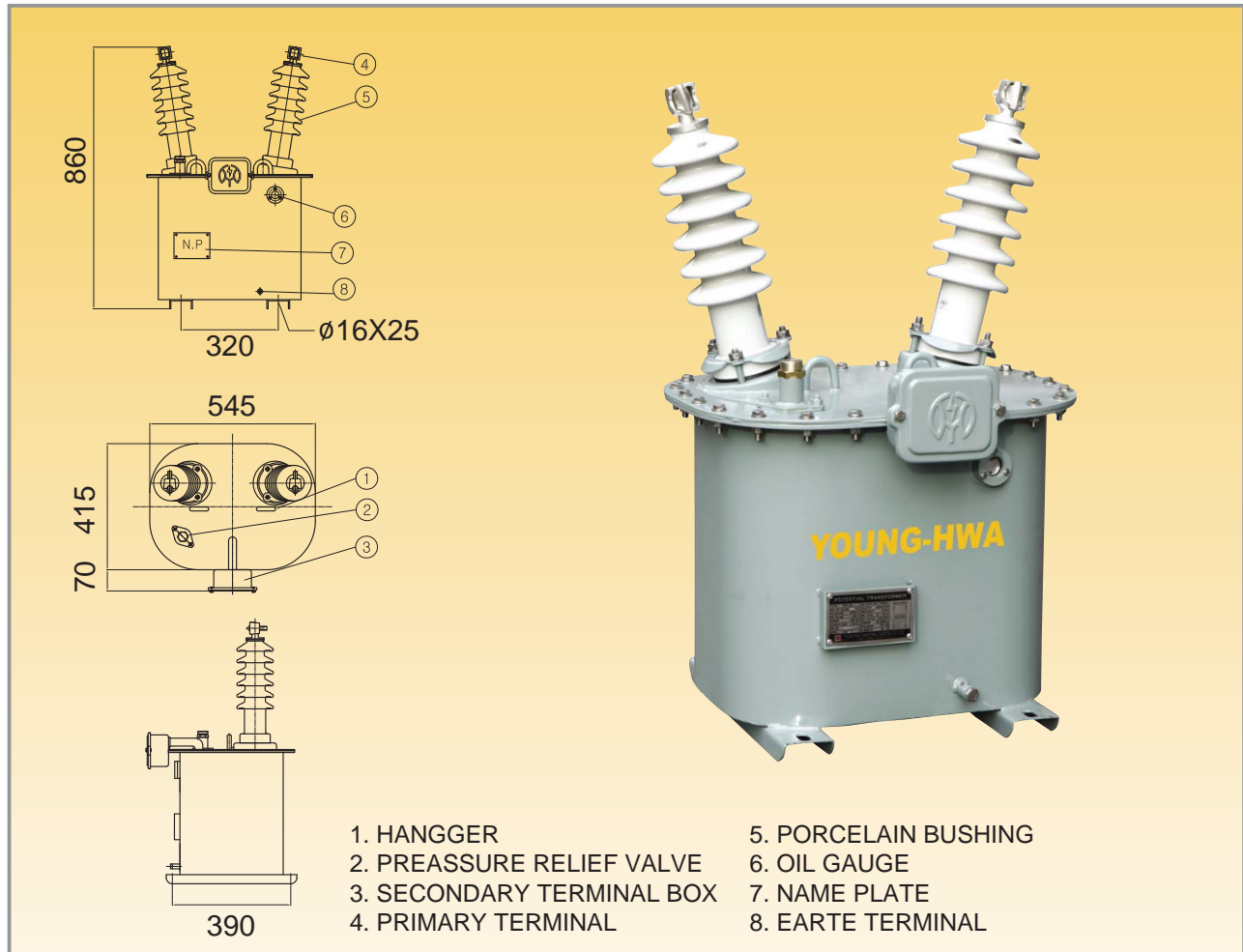
Inspection shall be performed by an expert engineer and confirm load side ground after power cut. When the switch is opened while in normal operation, ground shall be confirmed in advance to inspect load side line, because of the remaining voltage at load side (around 4,000V).

[If without ground, electric shock accident may occur]

VOLTAGE TRANSFORMER (P.T)

(MODEL NO. : YHP-20)

-USAGE : POWER SUPPLY TO A.S.S CONTROLLER
(only in EXTERNAL POWER SUPPLY TYPE)



SPECIFICATION :

- VOLTAGE RATIO : 20,000V/220V
- ACCURACY CLASS : 1.0CL
- BURDEN : 300VA
- VOLTAGE FACTOR : 1.2VN/CONTINUOUS
- FREQUENCY : 50Hz
- SPECIFICATION UPGRADE IS AVAILABLE BY REQUEST

EXCLUSIVE AGENT (IN TEHRAN/IRAN)

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