



TYPE SYJ(X,T)ZZ

OIL-IMMERSED ON-LOAD TAP CHANGER

HM0.154.531



SHANGHAI HUAMING POWER EQUIPMENT CO., LTD.

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1. General

Type SYJ(X,T)ZZ (hereinafter referred to as OLTC) is an in-tank mounting on-load tap changer, it applies resistance transition principle. The OLTC is a selector switch type with an oil compartment to separate OLTC oil from transformer oil. There is a motor drive mechanism in the top of OLTC and the motor is controlled by HMK-35D controller. The OLTC has the advantages of simple structure and easy maintenance.

The basic connection of the OLTC is shown as below figure 1.

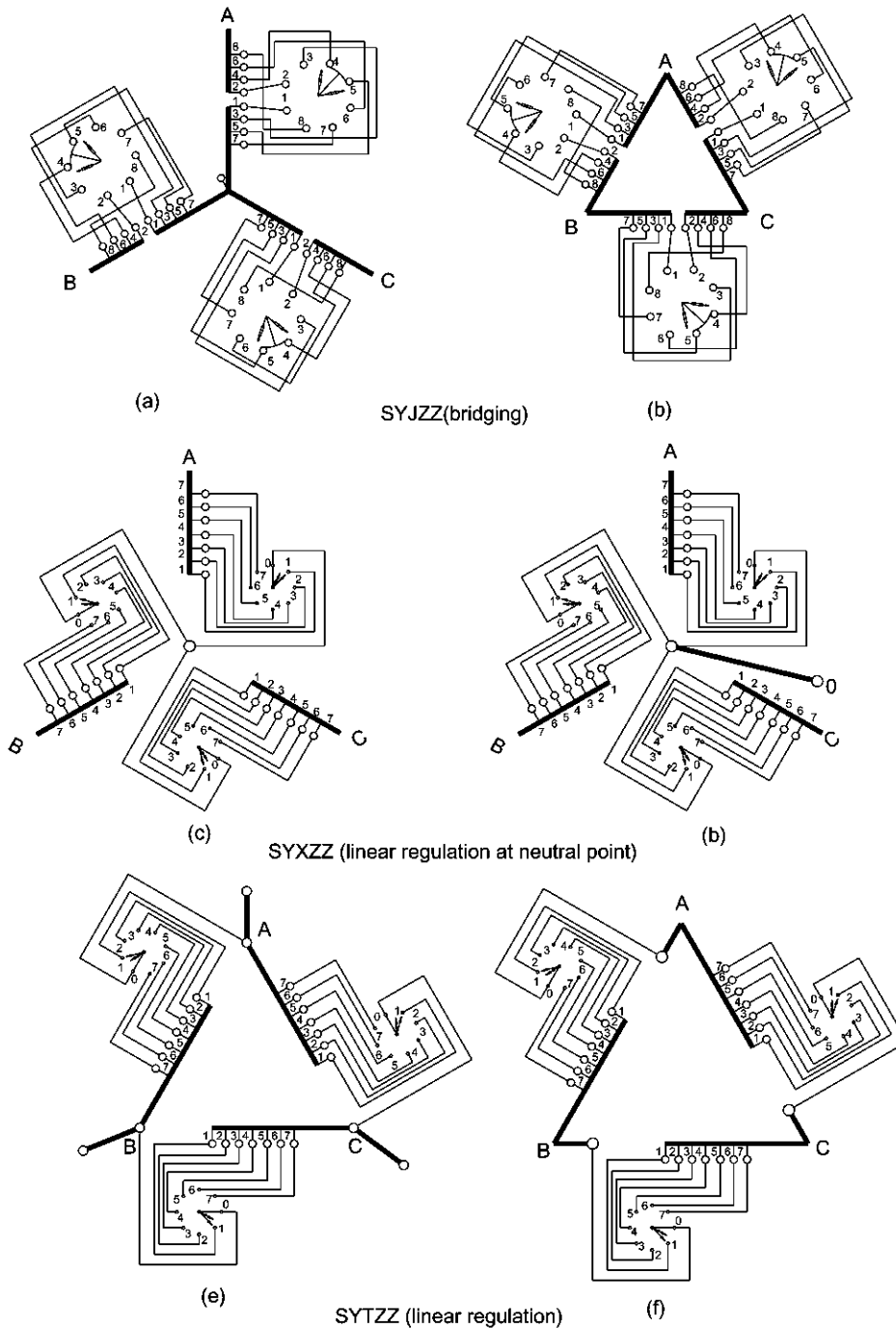


Fig.1 SYJZZ/SYXZZ/SYTZZ OLTC Basic Connection Diagram

2. Technical Specification

SYJ(X,T)ZZ is designed and produced according to IEC-60214-1(2003), the main specification is shown by Table 1.

Table 1 SYJ(X,T)ZZ Series OLTC Technical Specification

Item	OLTC models		SYXZZ-35/200-□	SYJZZ-35/200- □	SYTZZ-35/200-□		
1	Max rated through-current (A)		200				
2	Rated frequency (Hz)		50 or 60				
3	Number of phase		3				
4	Connection application		Y neutral point	Y or D middle-bridging	Y or D Linear regulation		
5	Short-circuit current test (kA)	Thermal (3 secs)	4				
		Dynamic (peak value)	10				
6	Max. rated step voltage (V)		600				
7	Max. operating positions		10	9	10		
8	Insulation (kV)	To ground	Rated voltage		35		
			Highest voltage for equipment Um		40.5		
			Rated separate source AC withstand voltage (50Hz,1min)		85		
			Rated lightning impulse withstand voltage (1.2/50µs)		200		
		Between phases	Rated separate source AC withstand voltage (50Hz,1min)		35	85	85
			Rated lightning impulse withstand voltage (1.2/50µs)		75	200	200
		Across the tap winding	Rated separate source AC withstand voltage (50Hz,1min)		45		
			Rated lightning impulse withstand voltage (1.2/50µs)		105		
		Between adjacent taps	Rated separate source AC withstand voltage (50Hz,1min)		10		
			Rated lightning impulse withstand voltage (1.2/50µs)		30		
9	Mechanical life		Not less than 500,000 operations				
10	Electrical life		Not less than 50,000 operations				
11	Oil compartment	Operating pressure		0.03MPa			
		Test pressure		0.06MPa, without any leakage for 24 hours			
		Over pressure protection		bursting cap bursts at 300kPa ± 20% overpressure			
		Protection relay		Setting oil flow speed 1.0m/s ± 10%			
12	Weight (approx. kg)		150				
13	Equipped with AVR		HMK-35D				

3. Model explanation

Designation of the model

SYJ(X,T)ZZ OLTC specifications depend on number of phase, value of max. rated through current and rated voltage of equipment, as well as connection mode etc., the designation of OLTC contains above mentioned parameters as shown below:

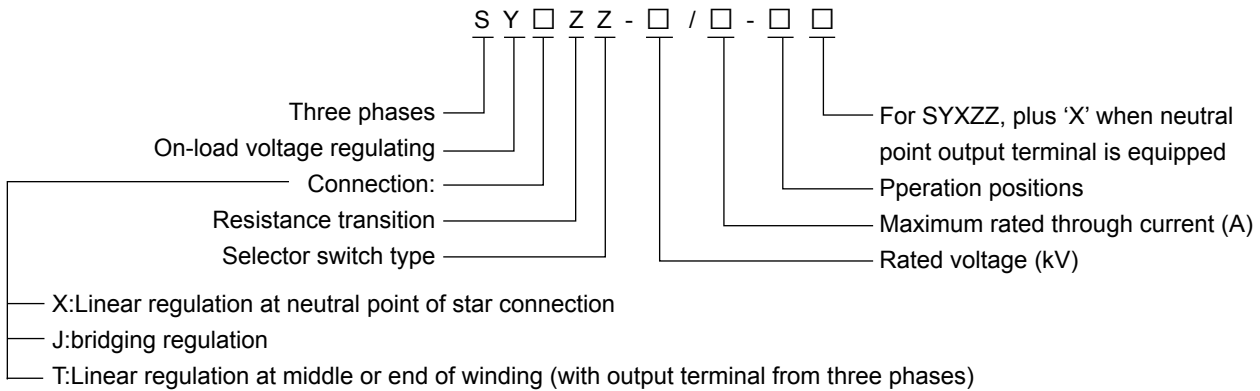


Fig. 2 SYJ(X,T)ZZ OLTC Model Explanation

For example: SYXZZ-35/200-7 means three phase, regulation at neutral point, rated voltage 35kV, maximum rated through current 200A, resistance transition selector switch and with 7 operation positions.

4. Operation condition

- 4.1 Service ambient air temperature range of tap changer is $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$, Relative humidity is less than 85%.
- 4.2 Service temperature range of the tap changer in oil is $-25^{\circ}\text{C} \sim +100^{\circ}\text{C}$.
- 4.3 Vertical inclination of OLTC should not be over 2% when it is mounted onto the transformer.
- 4.4.OLTC should be operated in the place without heavy dusty and any corrosive or explosive gas.

5. Automatic voltage regulator

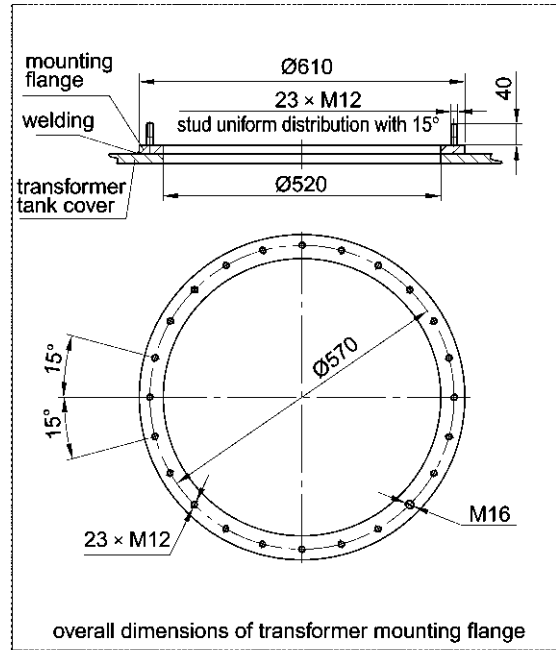
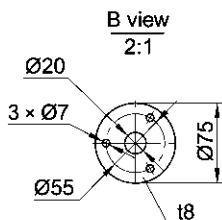
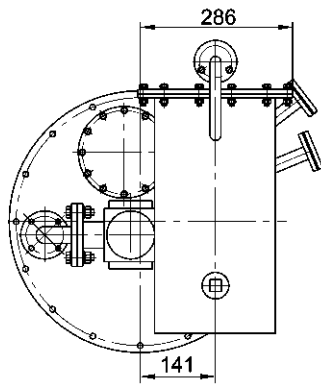
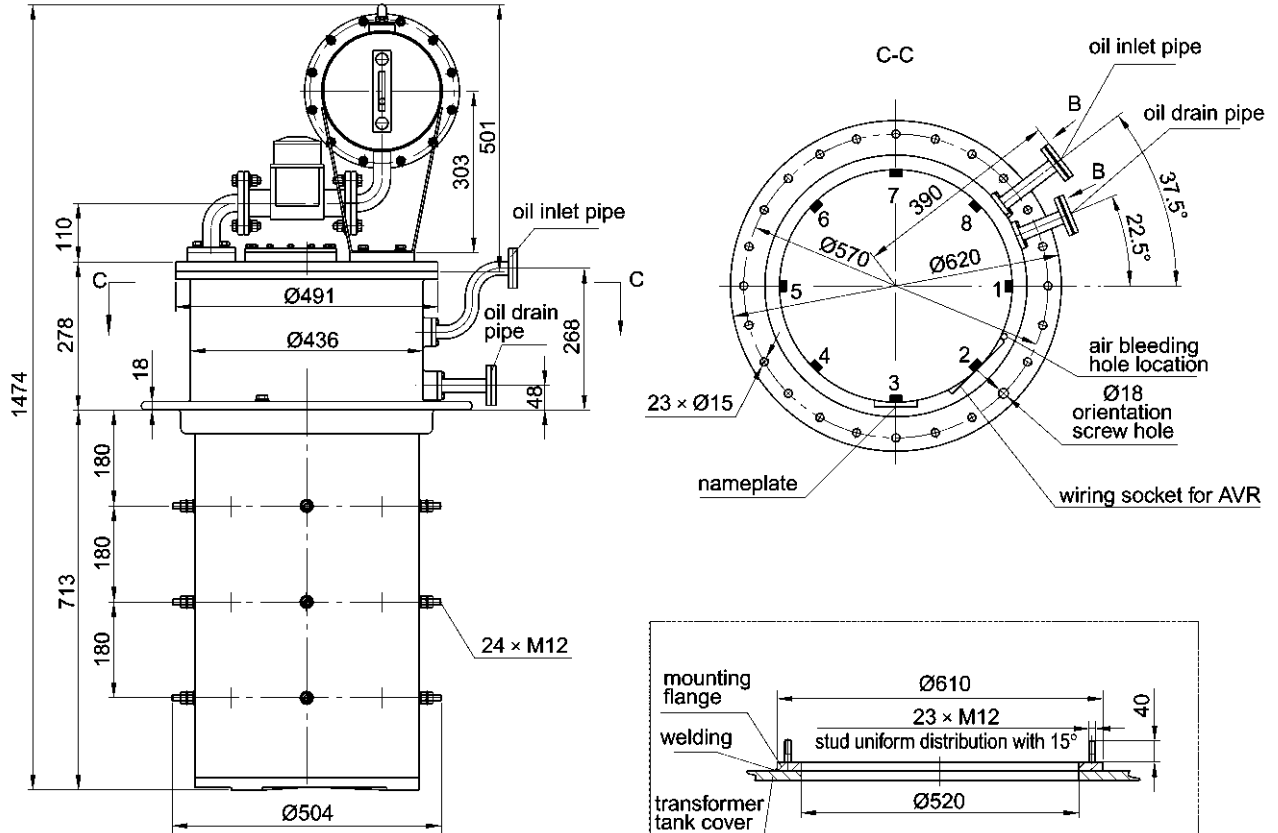
SYJ(X,T)ZZ OLTC is equipped with automatic voltage regulator HMK-35D, please refer to appendix for HMK-35D automatic voltage regulator circuit diagram.

6. Special design

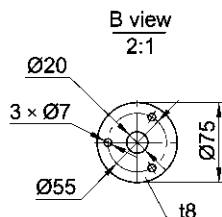
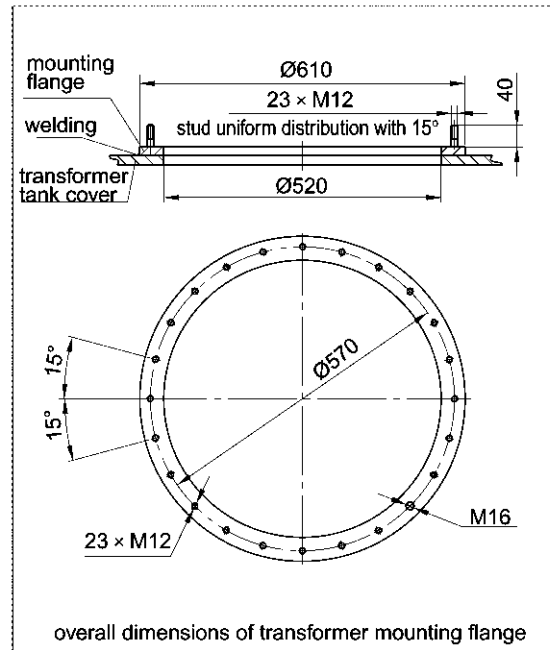
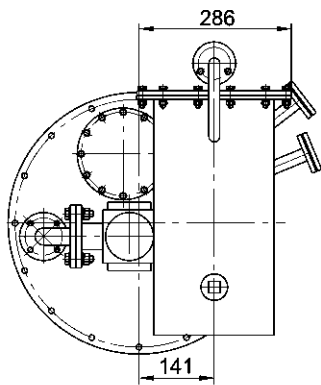
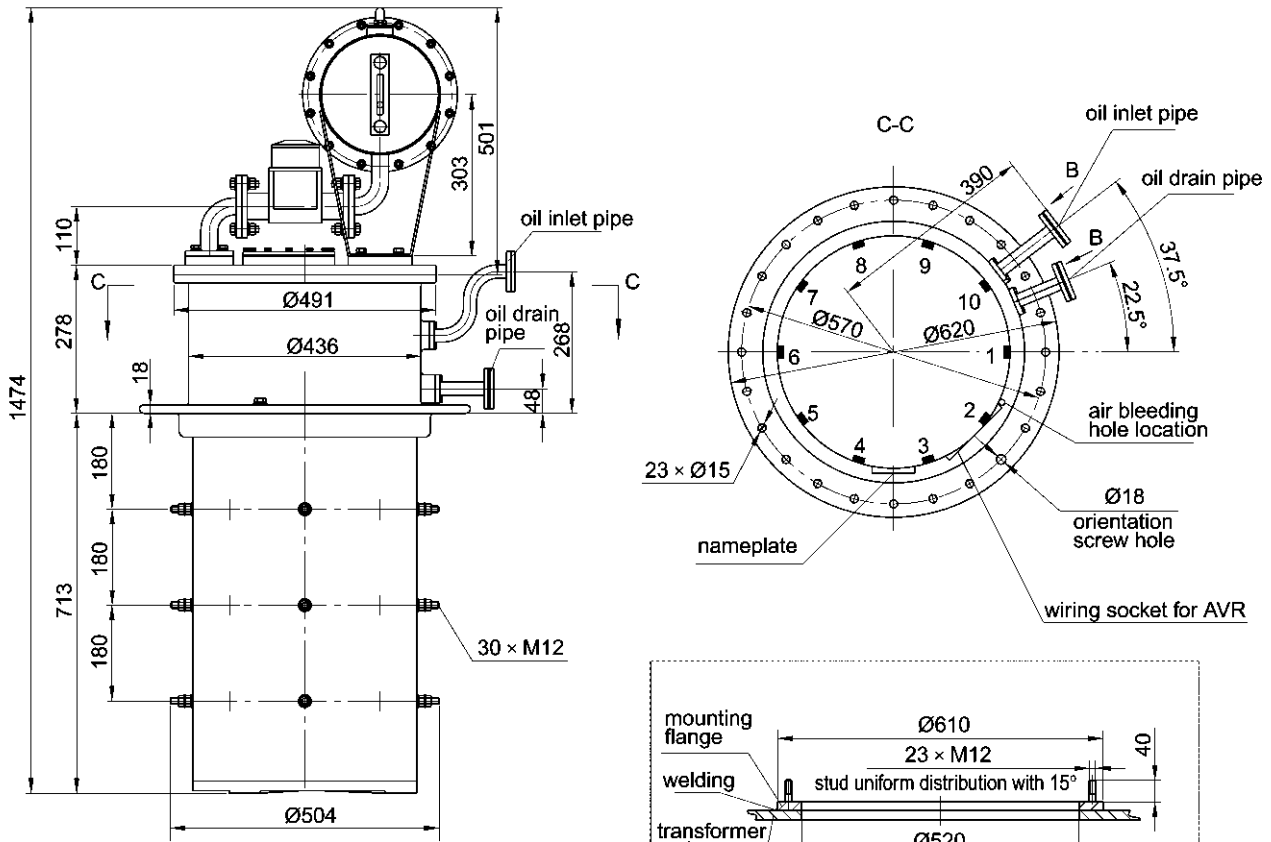
Special design will be provided according to the requirements of the customer. The OLTC can be equipped with the temperature sensor for cold region application and a manual operation mechanism with DC power supply to HMK-35D AVR for position display during installation.

7. Appendices

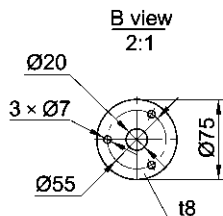
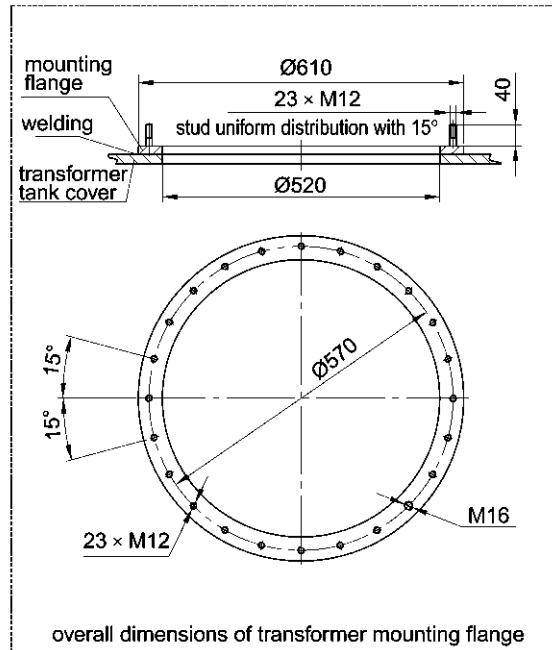
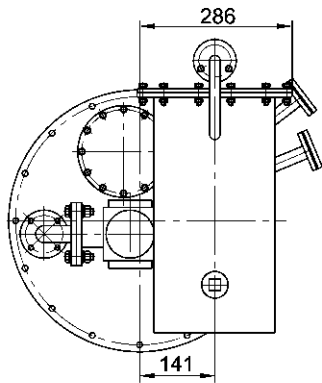
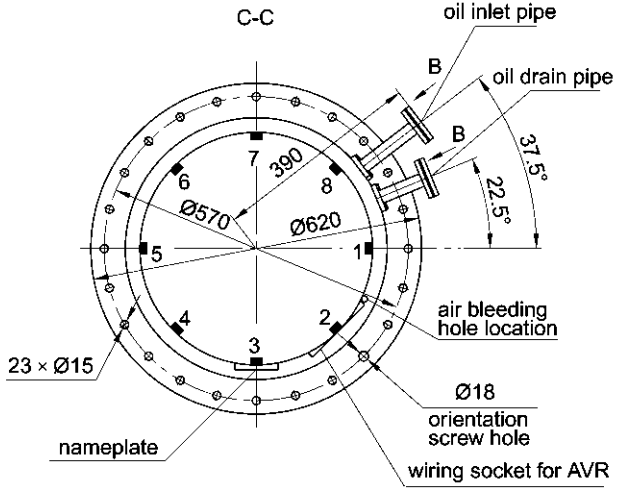
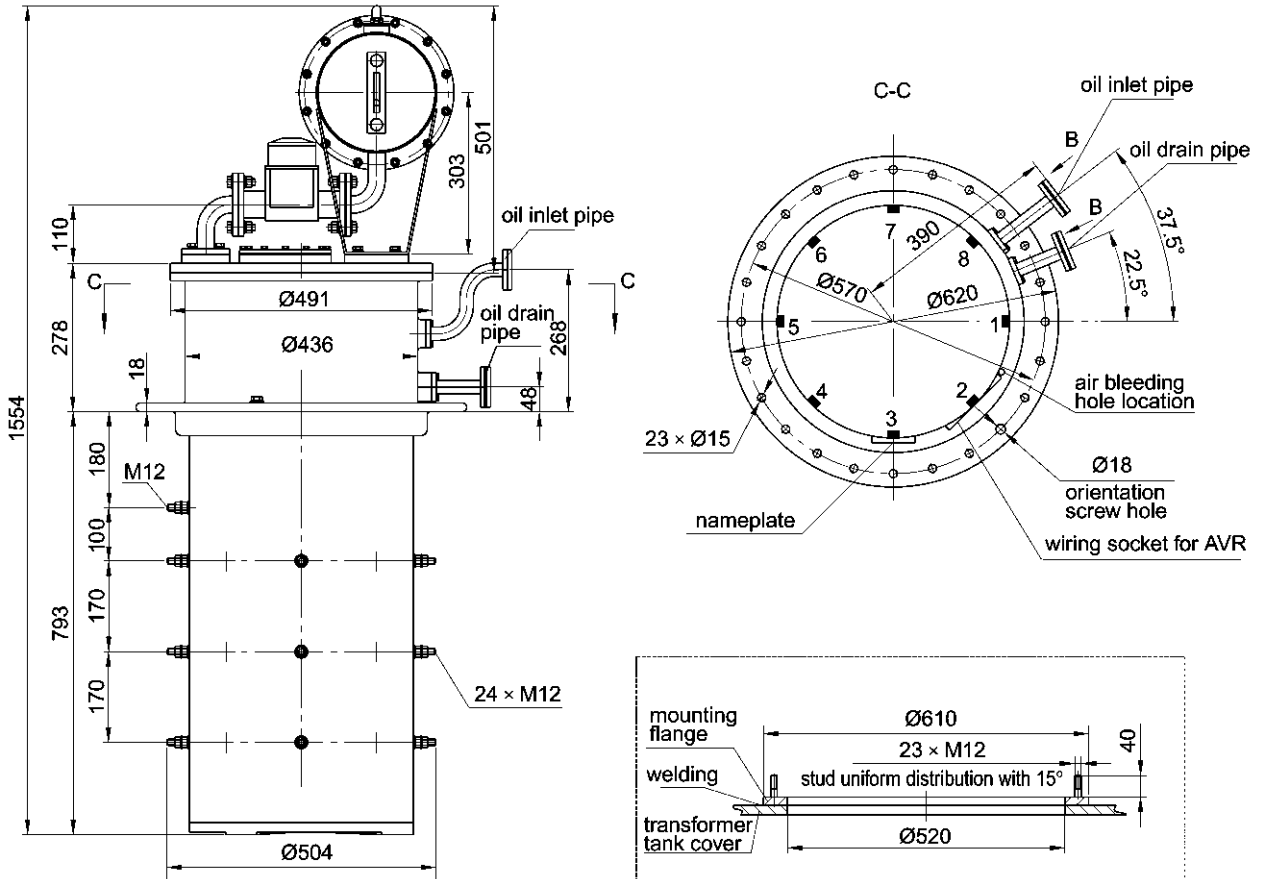
Appendix 1 SYJZZ-35/200-7, SYXZZ-35/200-7, and SYXZZ-35/200-8 Overall Dimensions



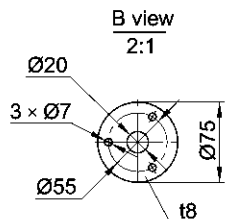
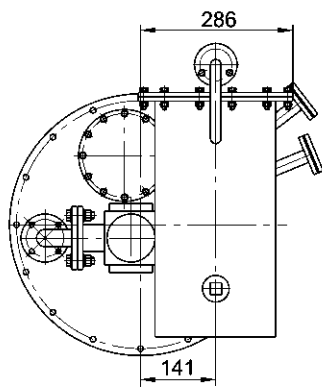
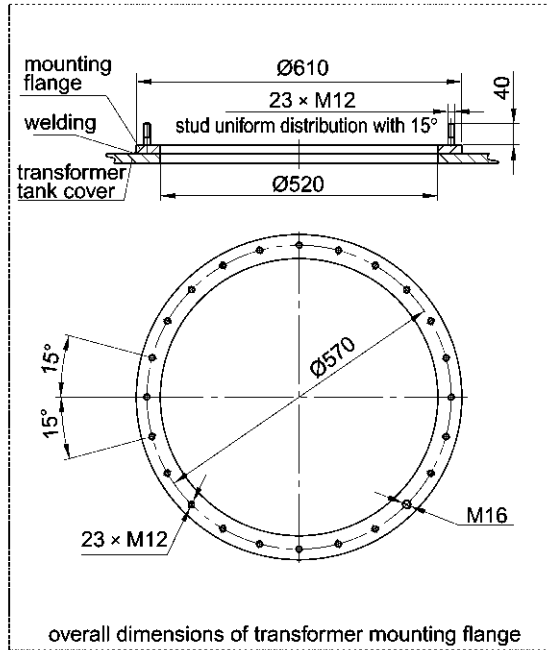
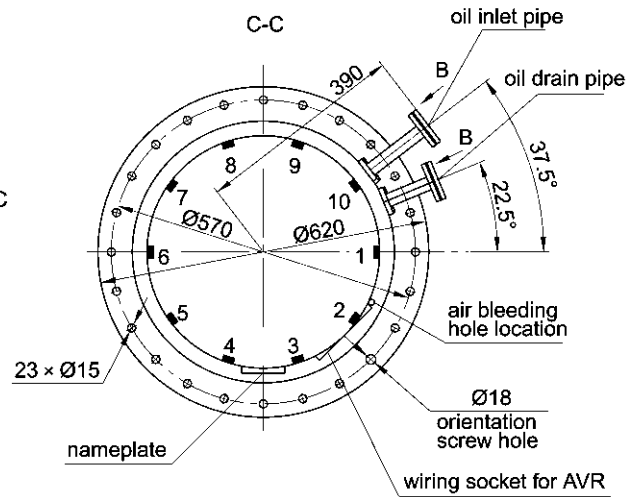
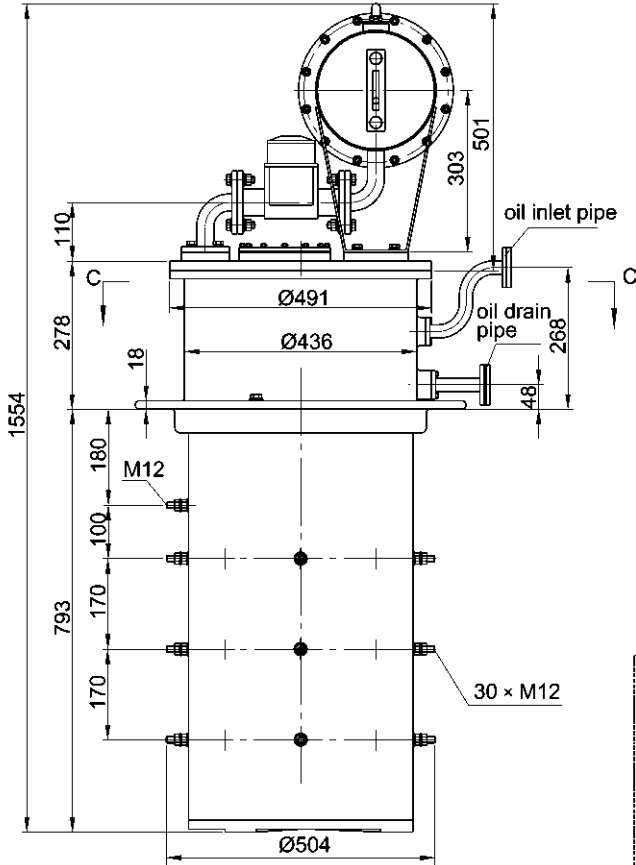
Appendix 2 SYJZZ-35/200-9, SYXZZ-35/200-9, and SYXZZ-35/200-10 Overall Dimensions

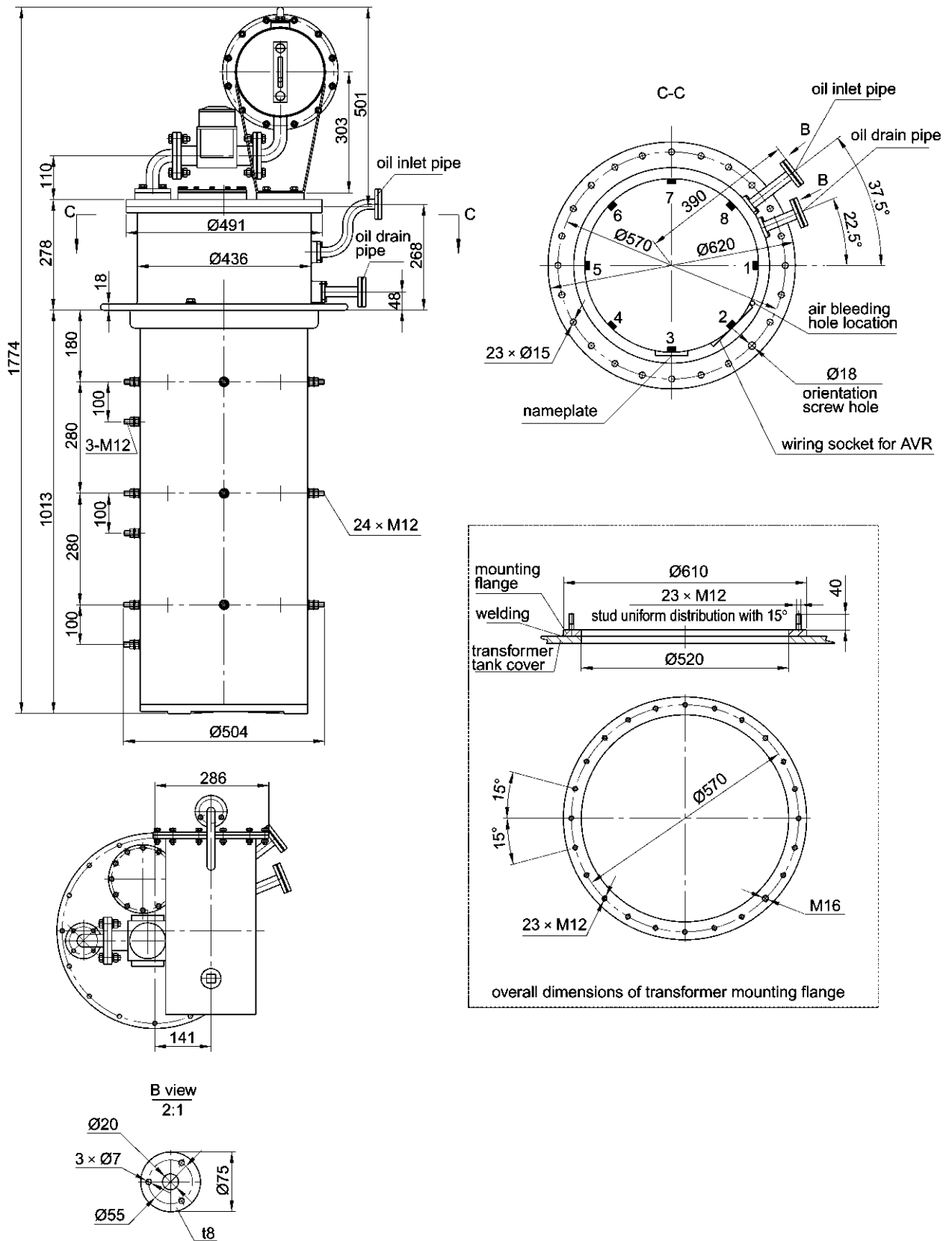


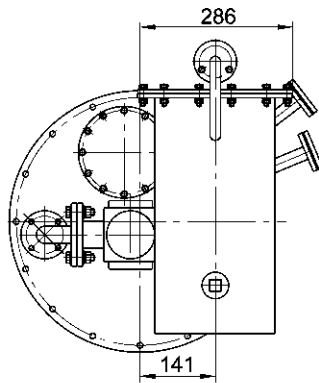
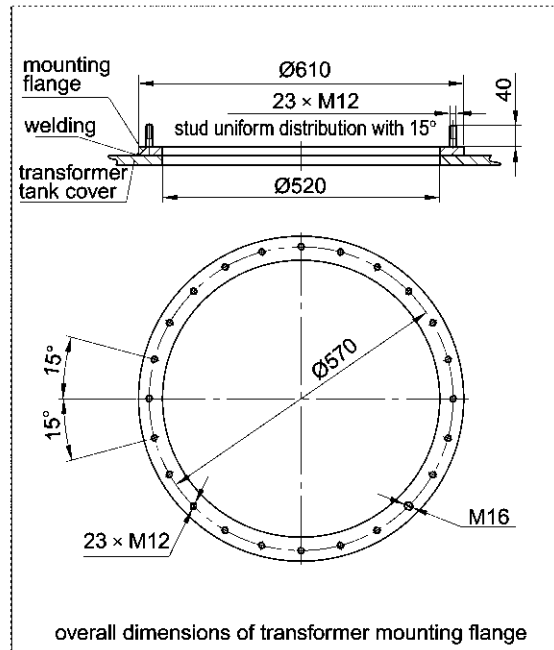
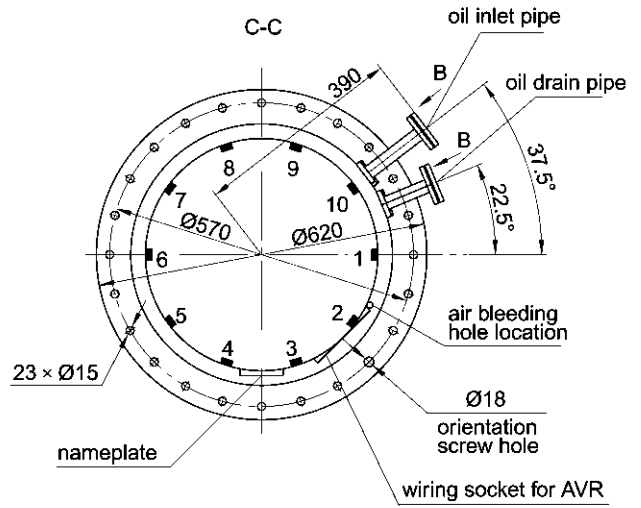
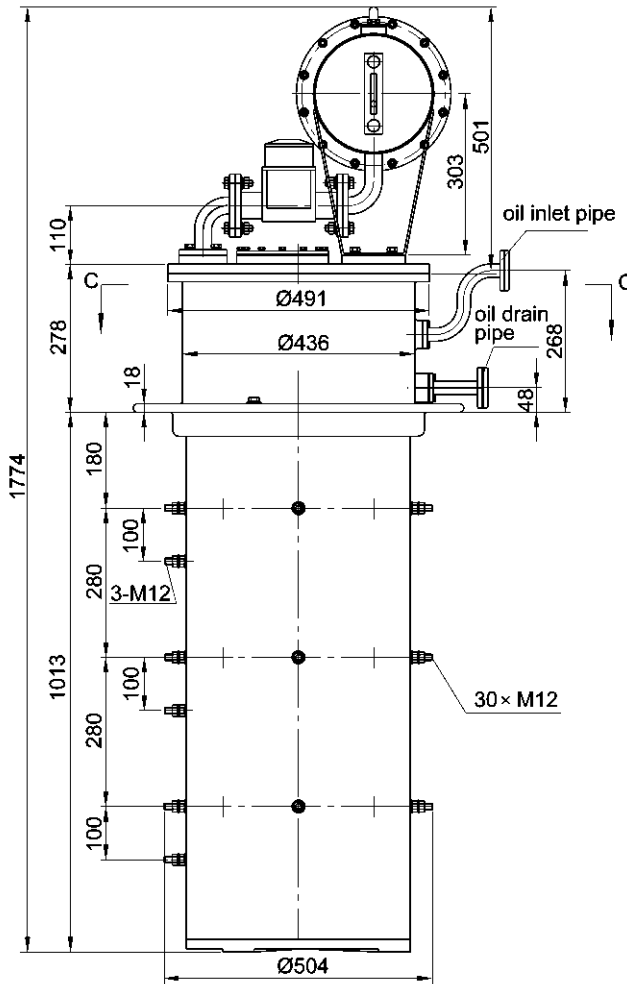
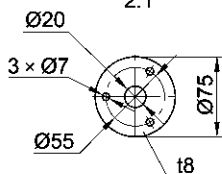
Appendix 3 SYXZZ-35/200-7X and SYXZZ-35/200-8X Overall Dimensions



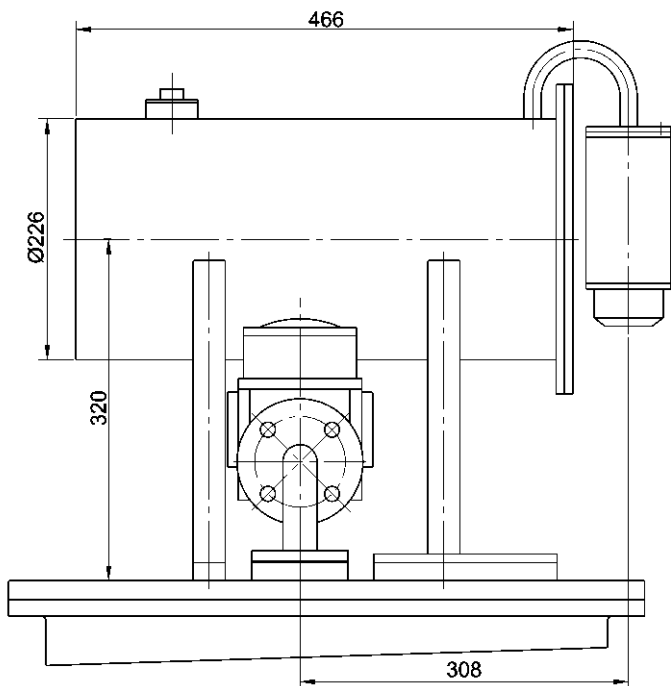
Appendix 4 SYXZZ-35/200-9X and SYXZZ-35/200-10X overall dimensions (with neutral point output terminal)



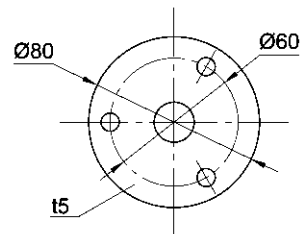
Appendix 5 SYTZZ-35/200-7 and SYTZZ-35/200-8 overall dimensions


Appendix 6 SYTZZ-35/200-9 and SYTZZ-35/200-10 overall dimensions

 B view
2:1


Appendix 7 Oil conservator overall dimensions



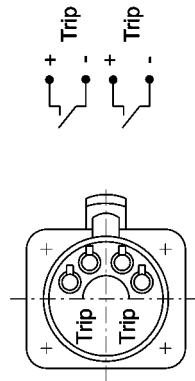
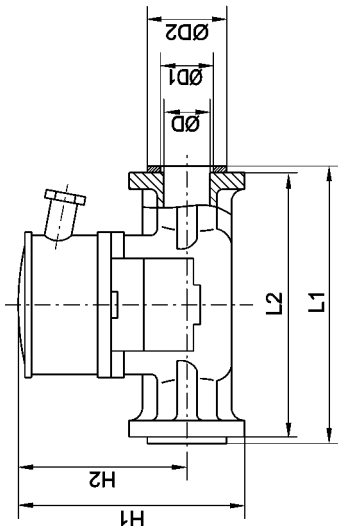
Installation dimension of dehumidifier



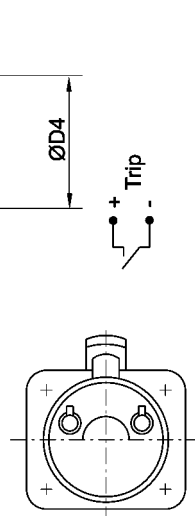
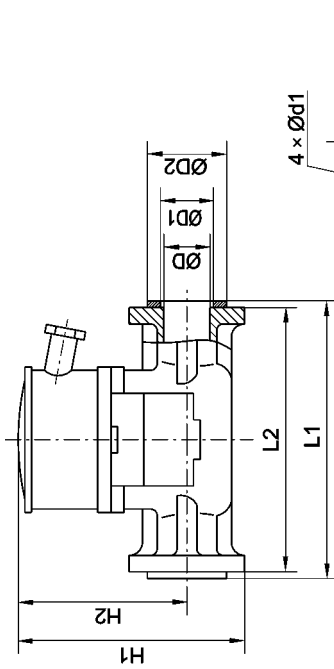
Appendix 8 Protective relay



Type QJ6-25 protective relay



Type QJ4G-25 protective relay

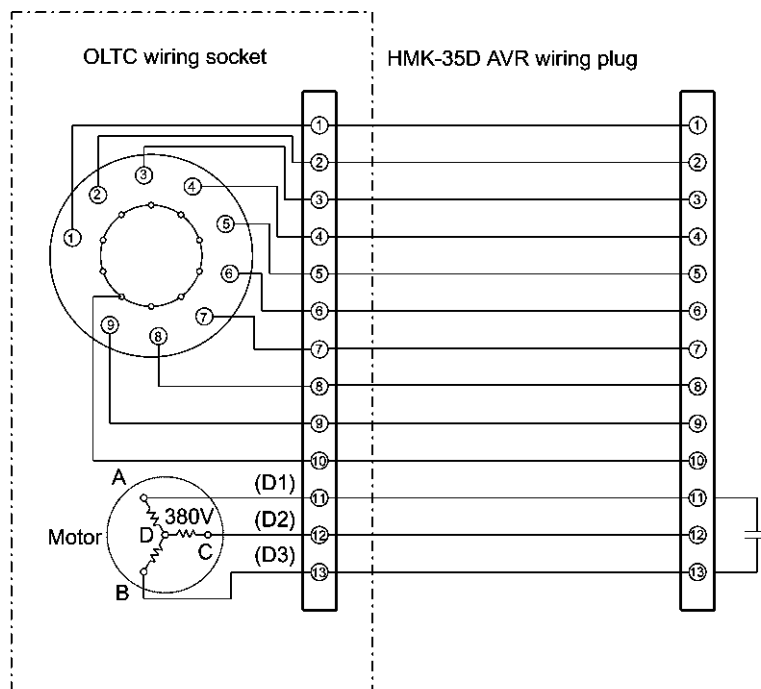


Model	D	D1	D2	D3	D4	d1	H1	H2	L1	L2	Remark
QJ4G-25	25	35	65	85	115	14	195	133	208	200	With one pair of trip signal
QJ6-25	25	35	65	85	115	14	215	153	208	200	With two pairs of trip signals

Unit: mm

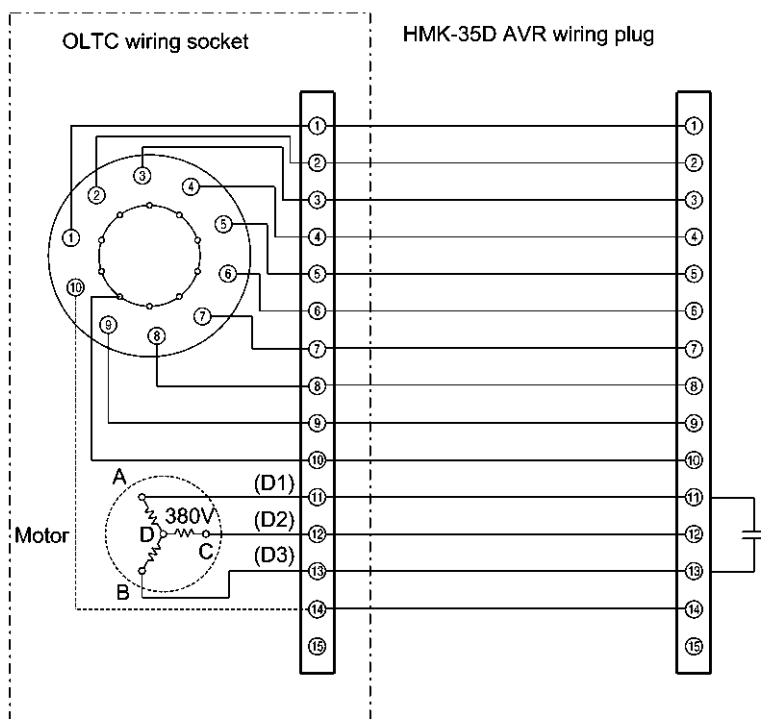
Unit: mm

Appendix 9 Electric connection diagram of OLTC and HMK-35D



(a) Operation positions up to 9

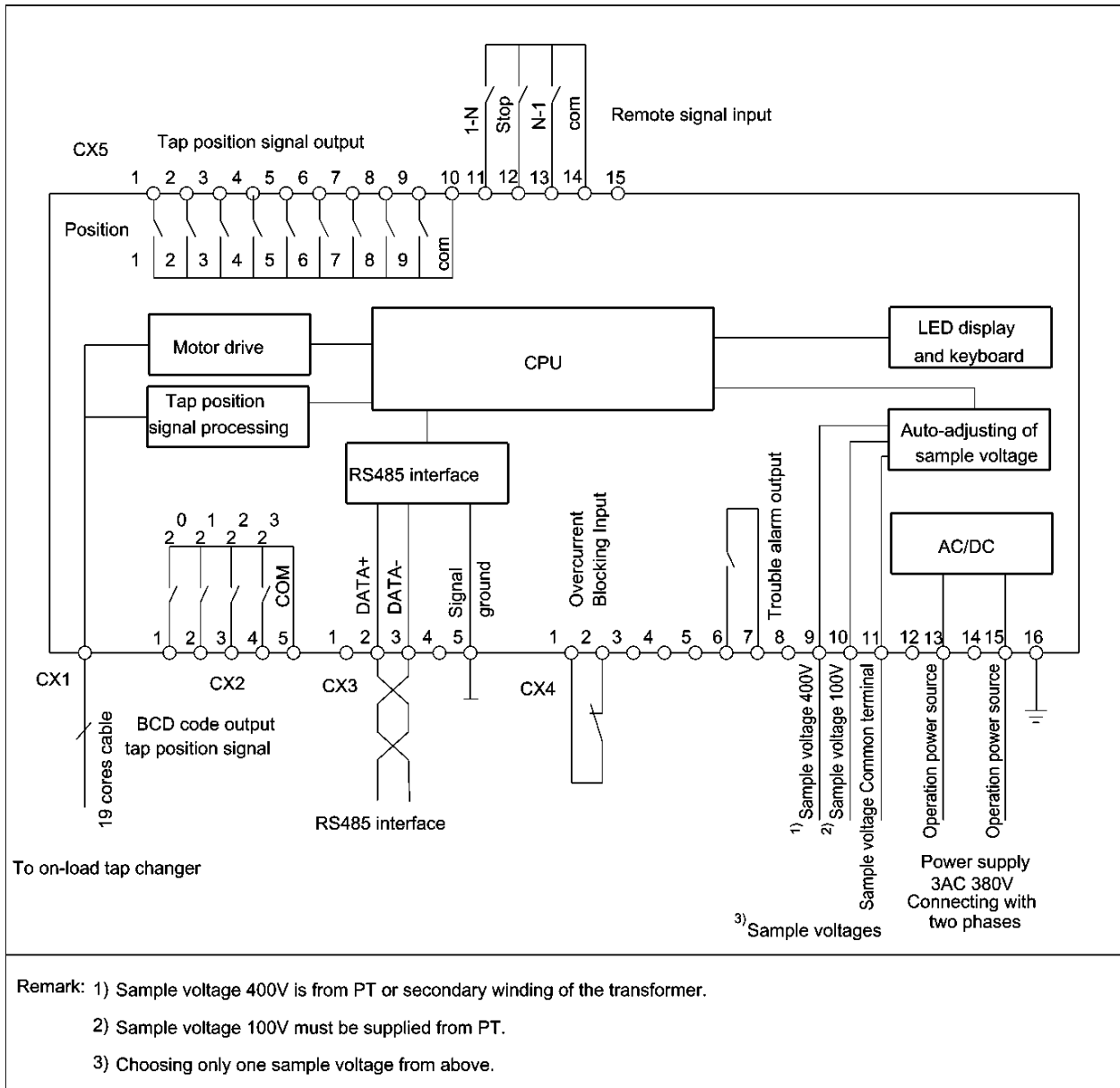
1. 1,2,3,4,5,6,7,8 and 9 are the position terminals and 10 is the common terminal.
2. 11 & 12 is for 1 → N, 12 & 13 is for N → 1



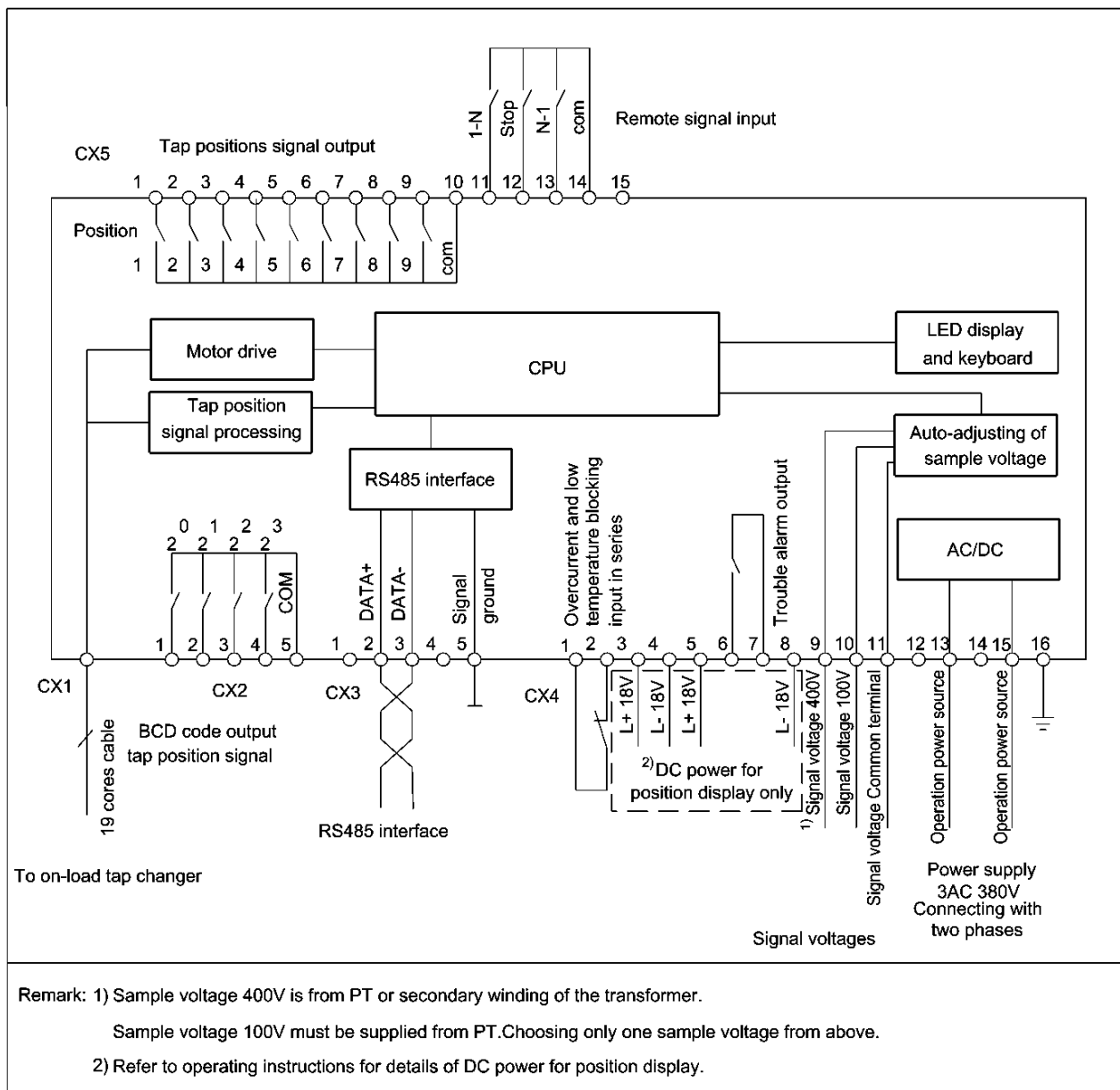
(b) 10 operation positions

1. 1,2,3,4,5,6,7,8,9 and 14 are the position terminals, and 10 is the common terminal.
2. 11 & 12 is for 1 → N, 12 & 13 is for N → 1

Appendix 10 HMK-35D AVR circuit diagram (standard design)



Appendix 11 HMK-35D AVR circuit diagram (with temperature sensor signal input and DC power supply input)



TYPE SY/JZZSY/JX/TJZZ OIL-IMMERSED ON-LOAD TAP CHANGER TECHNICAL DATA



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