

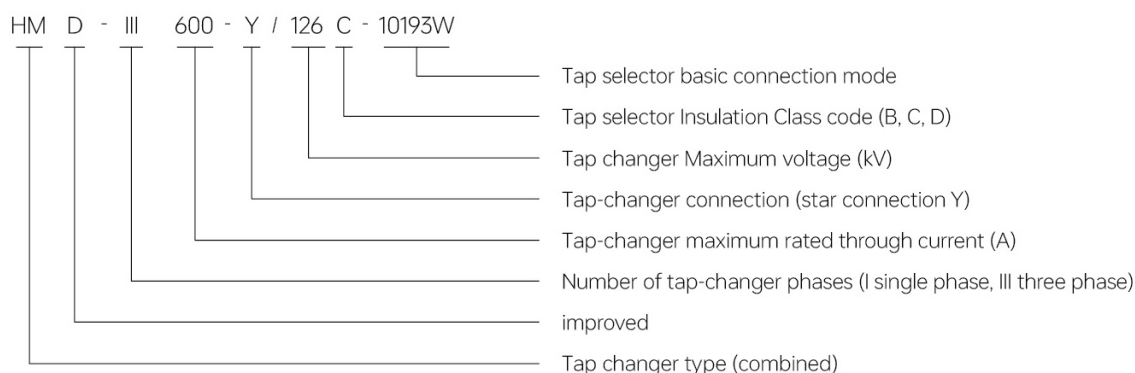
HMD combined on-load tap-changer

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1. HMD model description

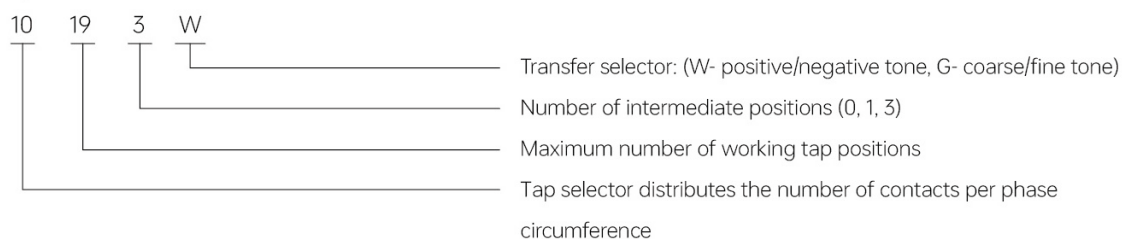
1.1 Model representation

HMD on-load tap-changer is available in a variety of models and specifications depending on the combination of phase number, maximum rated passing current, maximum voltage, tap-selector insulation class and connection mode. The meanings of parameters in the model are described as follows:



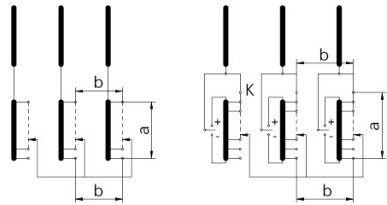
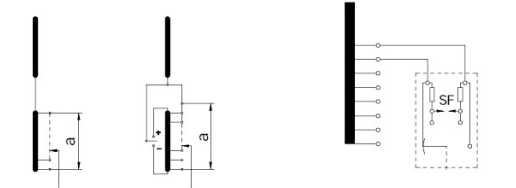
1.2 Basic connection method of tap selector

Tap selectors are available in a variety of sizes according to the voltage regulation range of the transformer and the connection mode of the windings. The specification of the tap selector consists of the tap selector distributing the number of contacts, the number of operating positions, the number of intermediate positions and the conversion selector. In the basic connection mode, the meanings of parameters are described as follows:

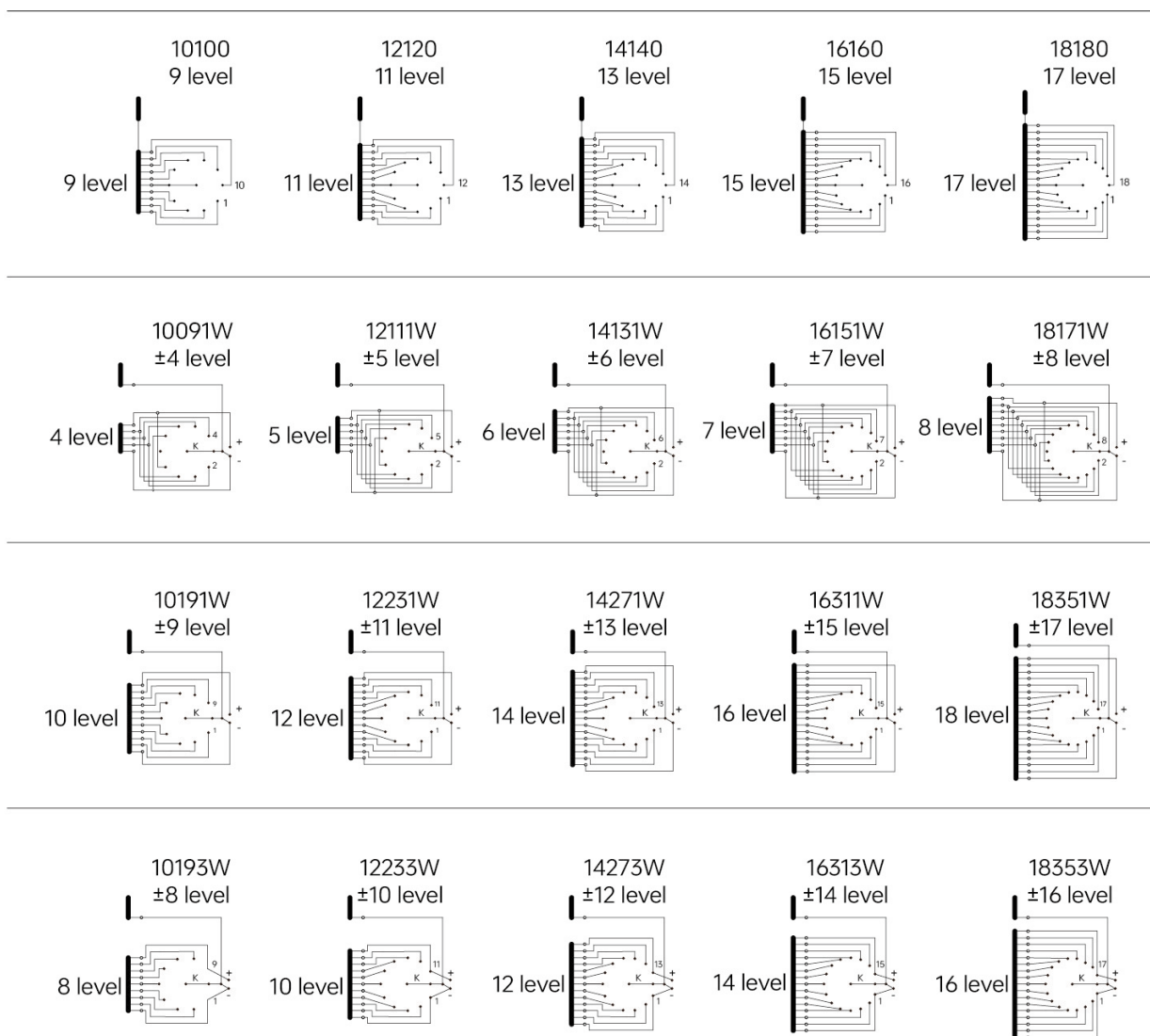


2. HMD internal insulation level

insulation distance symbol	Tap selector Type B		Tap selector type C		Tap selector type D	
	kV 1.2/50 μ s	kV 50Hz1min	kV 1.2/50 μ s	kV 50Hz1min	kV 1.2/50 μ s	kV 50Hz1min
a	265	50	350	82	490	105
b	265	50	350	82	490	146
C1	485	143	545	178	590	208
C2	495	150	550	182	590	225
d	265	50	350	82	490	105

Insulation distance of each part of the voltage regulator coil	
III500、III600、III800、III1000	I500、I600、I800、I1200、I1500
 Linear key flipflop	 Linear key flipflop The interstage insulation level a_0 with spark gap SF is: 5Hz 1min 20kV和1.2/50μs 90kV

3. Basic wiring diagram of HMD



4. HMD technical parameters

item	Classification feature		Ⅲ 500	Ⅲ 600	Ⅲ 800	Ⅲ 1000	I 500	I 600	I 800	I 1200	I 1500
1	Maximum rated passing current (A)		500	600	800	1000	500	600	800	1200	1500
2	Rated frequency (Hz)		50 or 60								
3	Number of phases and connection mode		Three-phase Y connects to the center point				Single-phase arbitrary connection mode				
4	Maximum grading voltage (V)		3300								
5	Rated capacity (kVA)		1400	1500	2250	3000	1400	1500	2640	3100	3500
6	Withstand short circuit Ability (kA)	Thermal stability (3s RMS)	8	8	12	15	8	8	16	24	24
		Dynamic stability	20	20	30	37.5	20	20	40	60	60
7	Number of working positions		Linear keys 7, 10, 12, 14, 16, 18, 24 Positive and negative adjustment ±3~± 17								
8	Tap off Off insulation level (kV)	Rated voltage	35		66		110		150		220
		Maximum operating voltage	40.5		72.5		126		170		252
		Power frequency test voltage (1min)	85		140		230		325		460
		Impulse test voltage (1.2/50)	200		350		550		750		1050
9	Tap selector		According to the insulation level is divided into 4 sizes: number A, B, C, D								
10	Mechanical life		No less than a million times								
11	Electrical life		No less than 200,000 times								
12	Toggle Switch Oil chamber	Working pressure	3×10 ⁴ Pa								
		Sealing performance	6×10 ⁴ Pa 24h no leakage								
		Overpressure protection	Rupture cap (4~5)×10 ⁴ Pa								
		Protective relay	QJ4-25 Set oil speed 1.0m/s±10%								
13	Oil discharge (L)		about 190~270								
14	Oil charge (L)		about 125~190								
15	Weight (Kg)		about 240~350								
16	Equipped with electric mechanism		HED-200								

Note: 1. The stage capacity is equal to the product of the stage voltage and the load current, and the rated stage capacity is the maximum continuously allowed stage capacity.

2. The selection of single-phase tap-changer with three-phase tap-changer contacts in parallel should consider transformer line state shunt, HMD I 800 two-way shunt, HMD I 1200, I 1500 three-way shunt.

3. The voltage regulation series can be designed according to the user's needs within the range of working positions in the table above.

5. HMD outline size drawing

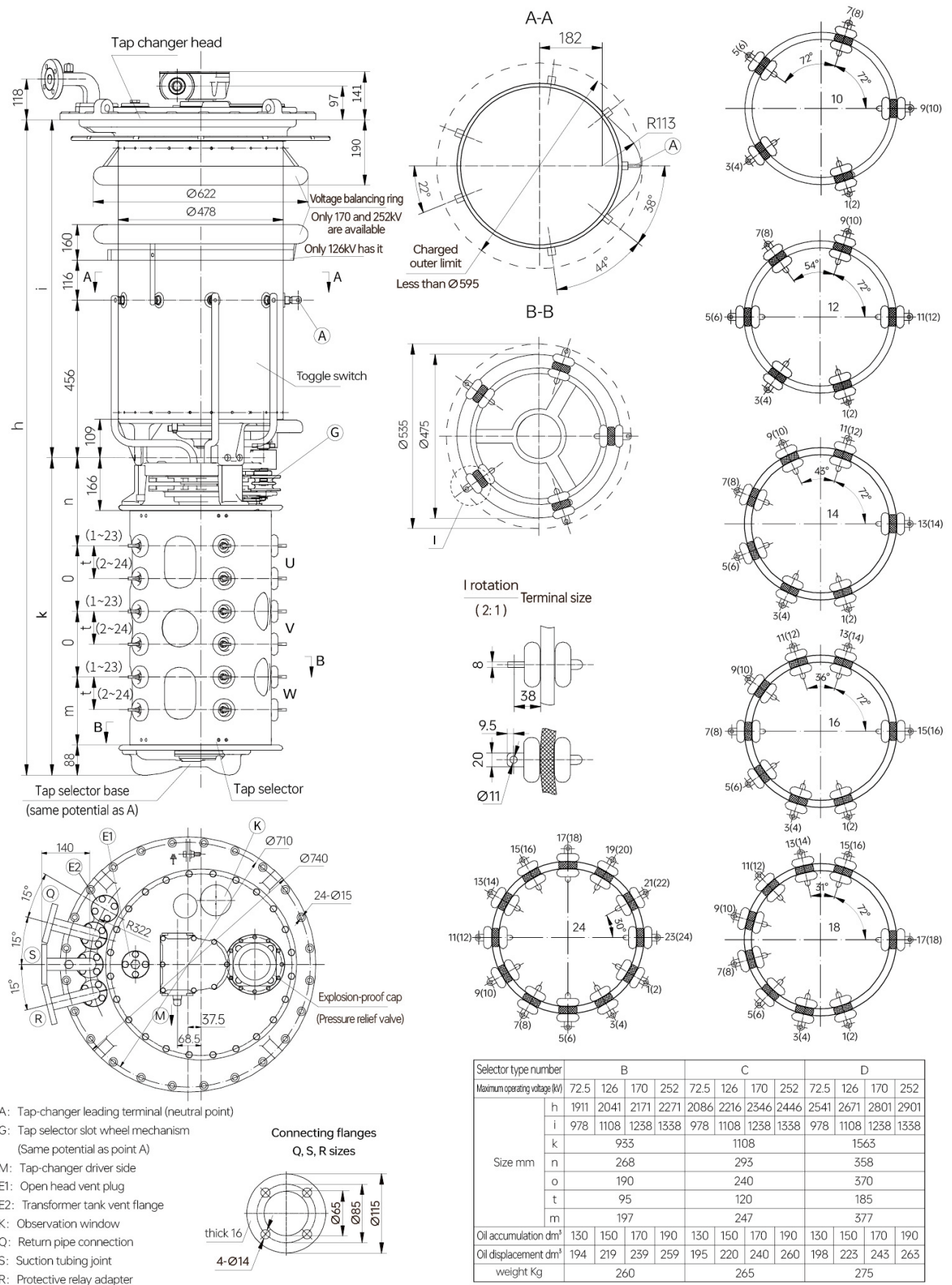
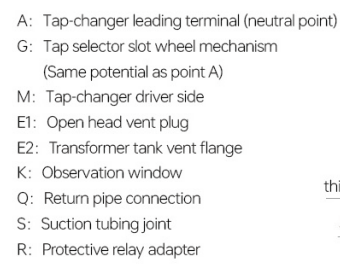
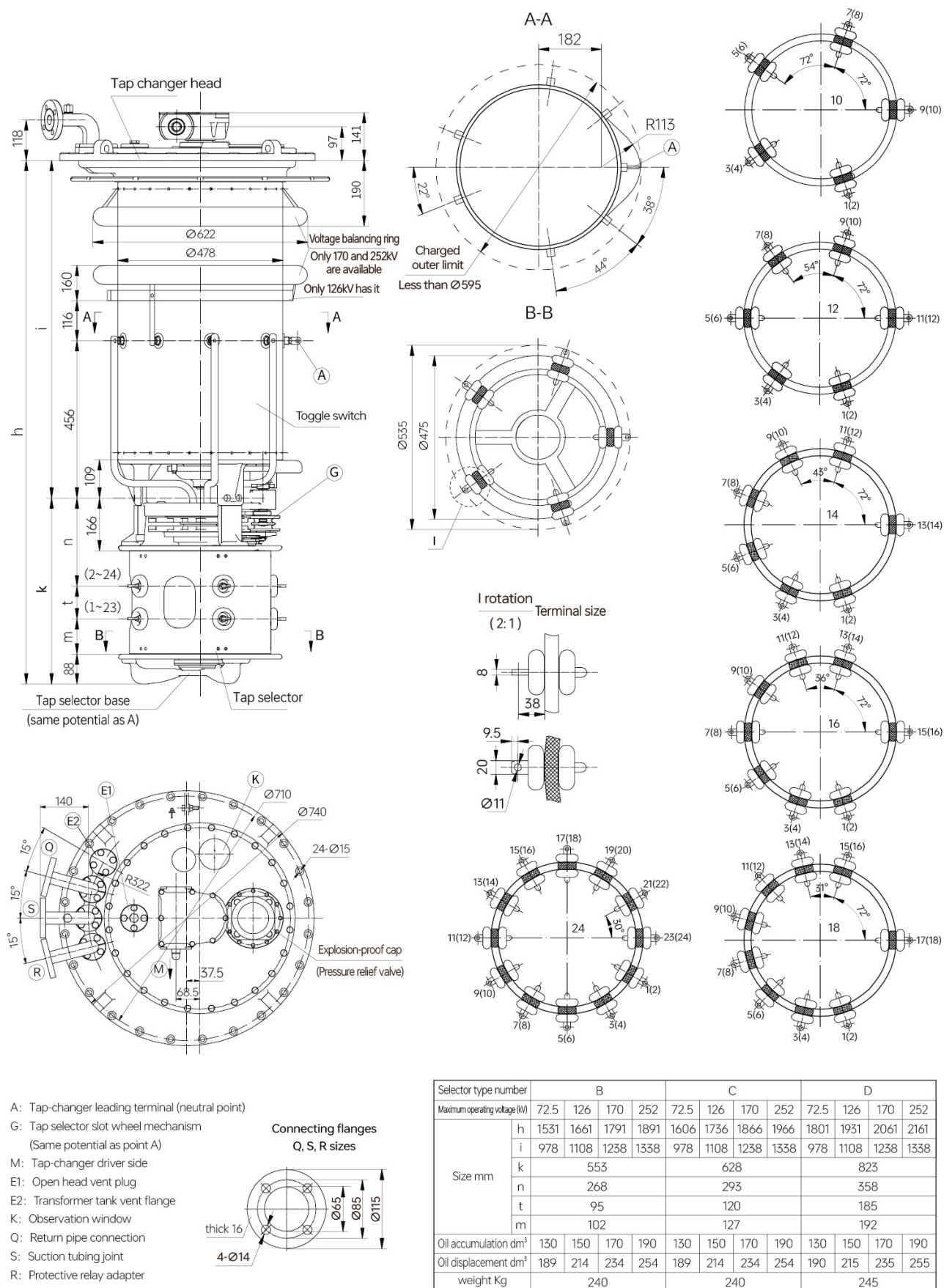


Figure 1 HMD III 500/600/800/1000 linear modulation

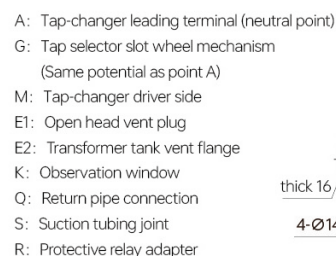


05



Selector type number		B				C				D			
Maximum operating voltage (kV)		72.5	126	170	252	72.5	126	170	252	72.5	126	170	252
Size mm	h	1531	1661	1791	1891	1606	1736	1866	1966	1801	1931	2061	2161
	i	978	1108	1238	1338	978	1108	1238	1338	978	1108	1238	1338
	k	553				628				823			
	n	268				293				358			
	t	95				120				185			
	m	102				127				192			
Oil accumulation dm³		130	150	170	190	130	150	170	190	130	150	170	190
Oil displacement dm³		189	214	234	254	189	214	234	254	190	215	235	255
weight Kg		240				240				245			

Figure 3 HMD I500/600 linear tone



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Selector type number		B				C				D			
Maximum operating voltage (kV)		72.5	126	170	252	72.5	126	170	252	72.5	126	170	252
Size mm	h	1531	1661	1791	1891	1606	1736	1866	1966	1801	1931	2061	2161
	i	978	1108	1238	1338	978	1108	1238	1338	978	1108	1238	1338
	k	553				628				823			
	n	268				293				358			
	t	95				120				185			
	m	102				127				192			
	q	160				184				250			
	p	403				478				673			
Oil accumulation dm ³		130	150	170	190	130	150	170	190	130	150	170	190
Oil displacement dm ³		191	216	236	256	192	217	237	257	193	218	238	258
weight Kg		250				255				260			

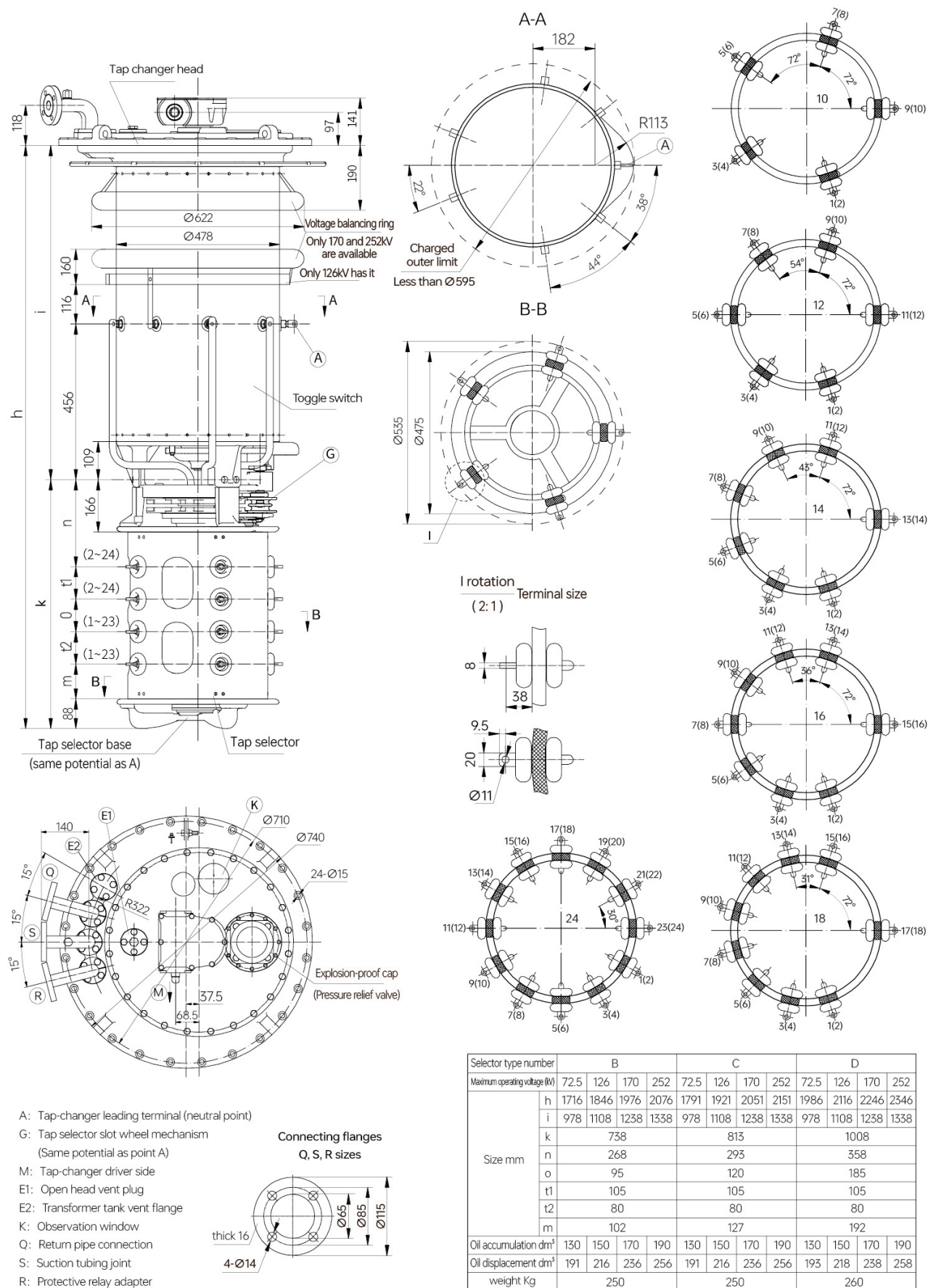


Figure 5 HMD 1800 linear tone

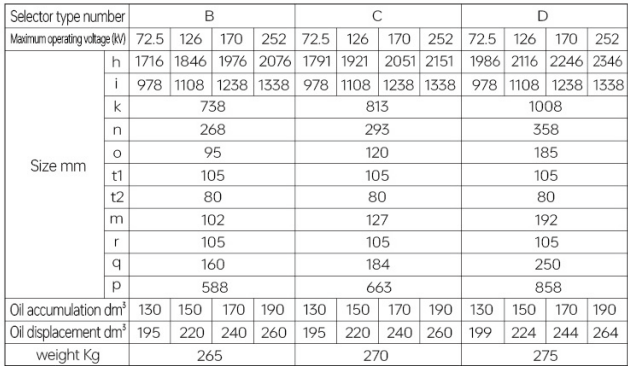


Figure 6 HMD 1800 positive and negative tones

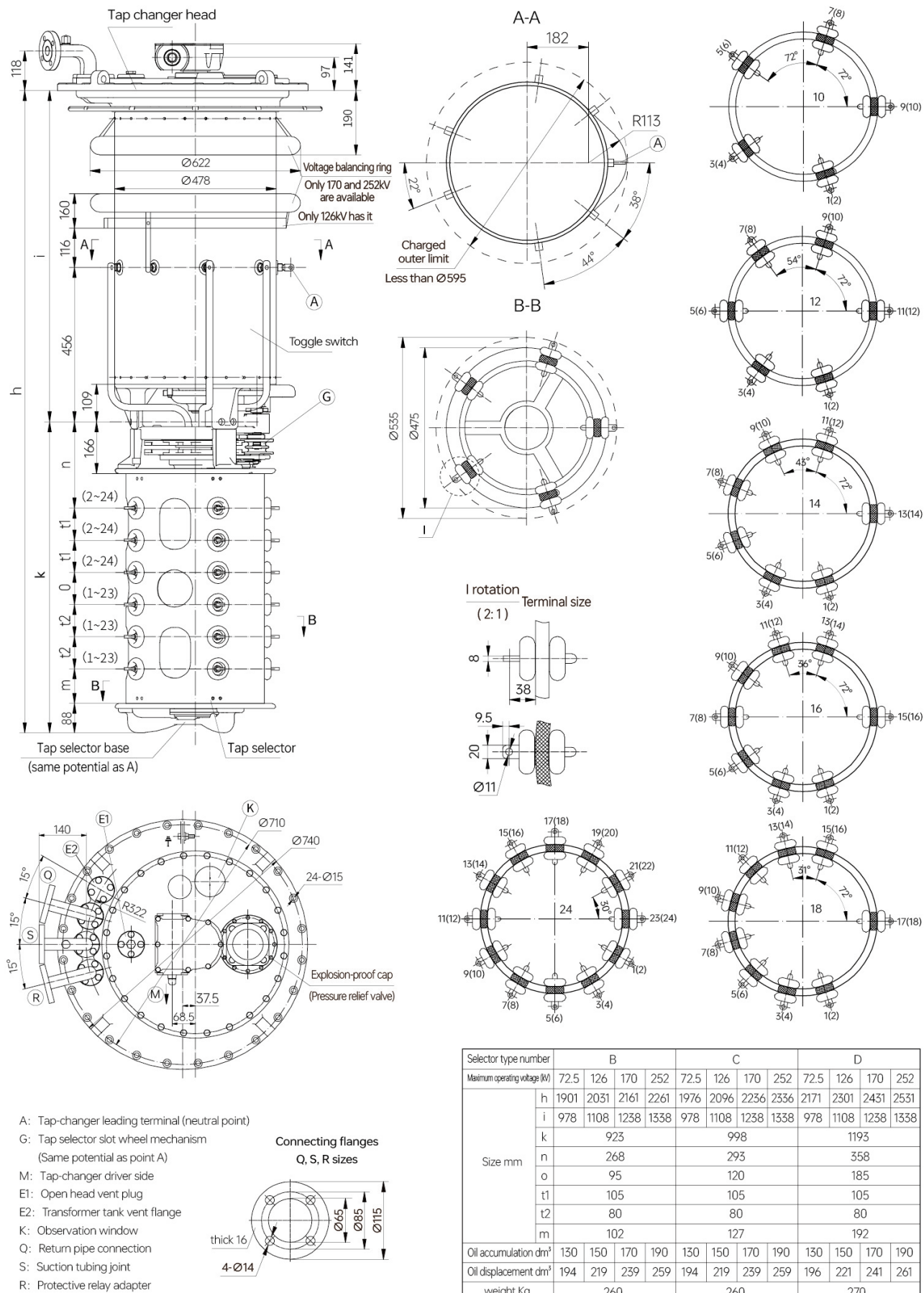


Figure 7 HMD I1200/1500 linear tone

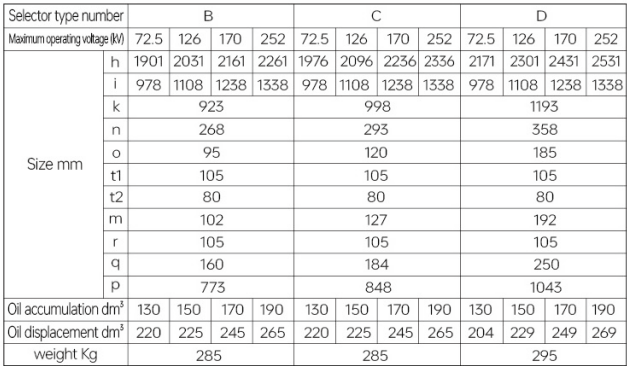
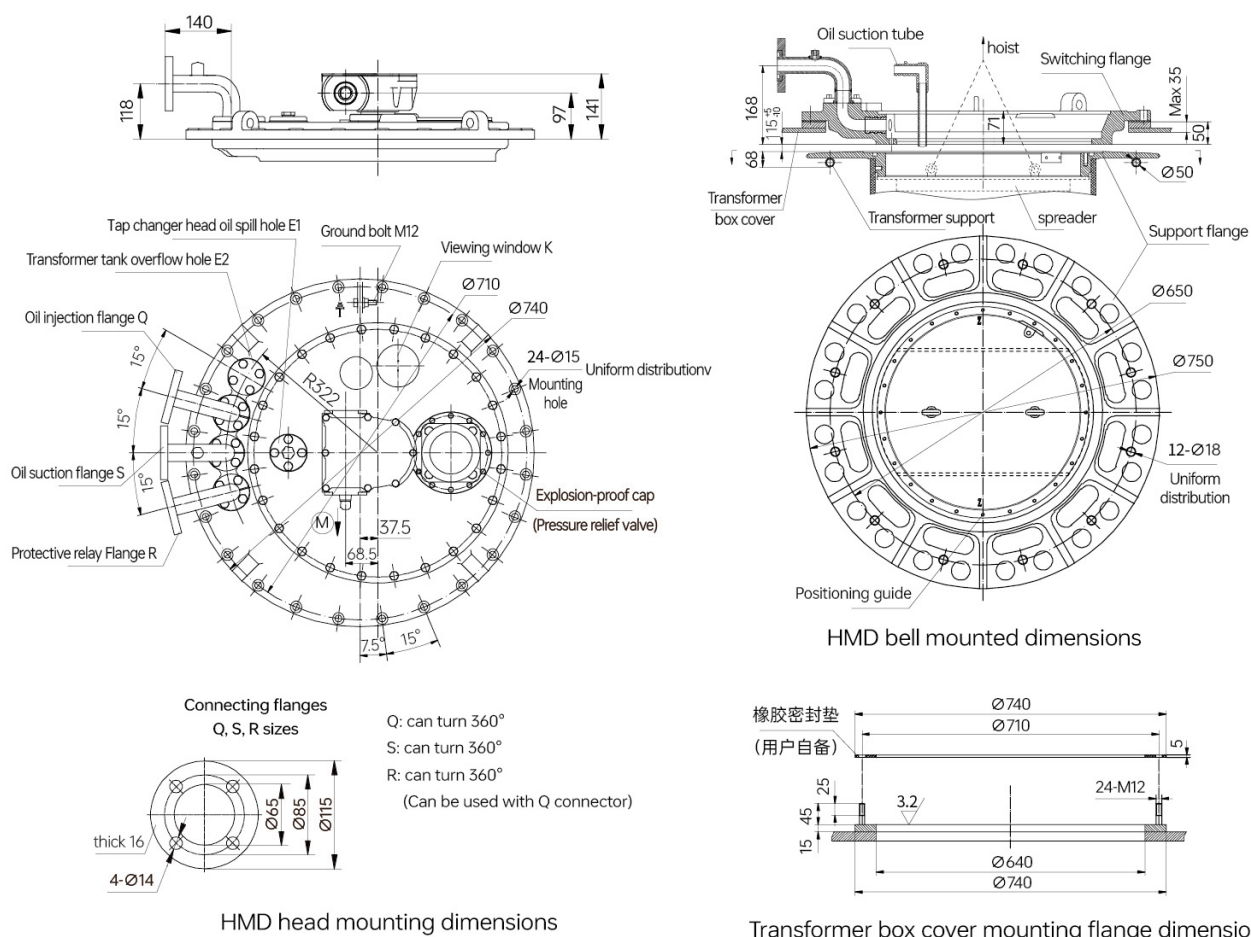


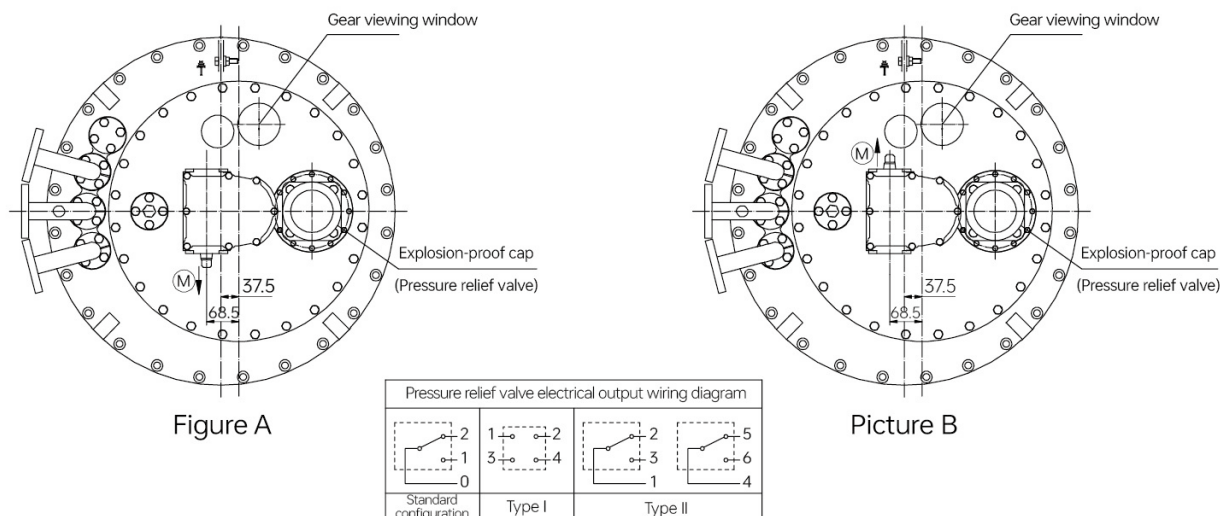
Figure 8 HMD I 1200/1500 flip flop

6. HMD installation dimension diagram



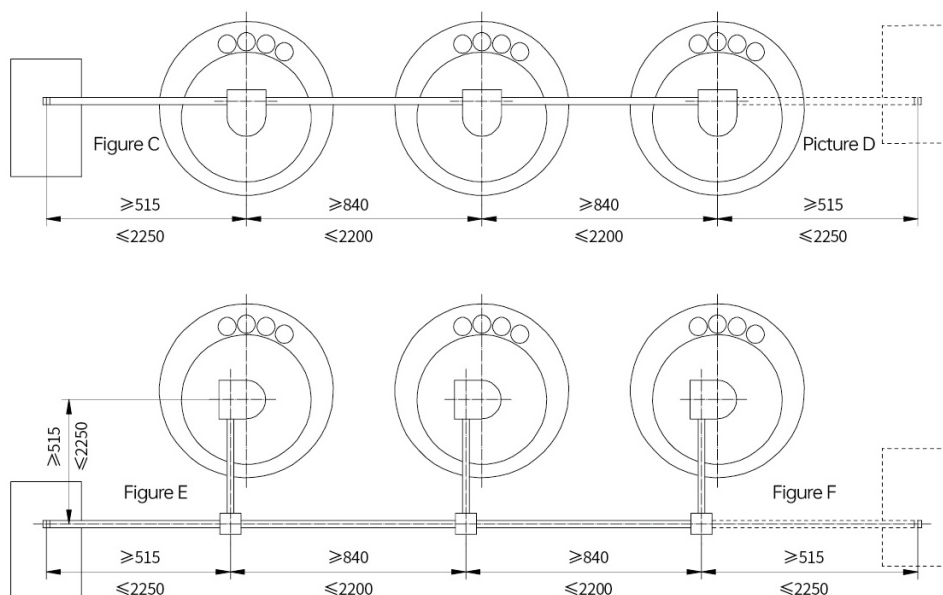
7. HMD head cover layout

In order to meet user requirements, when ordering the HMD switch head cover, please select the appropriate head cover layout, if the user does not choose to determine, then according to Figure A production. In case of special Angle, please give the solution supplier's confirmation when ordering.



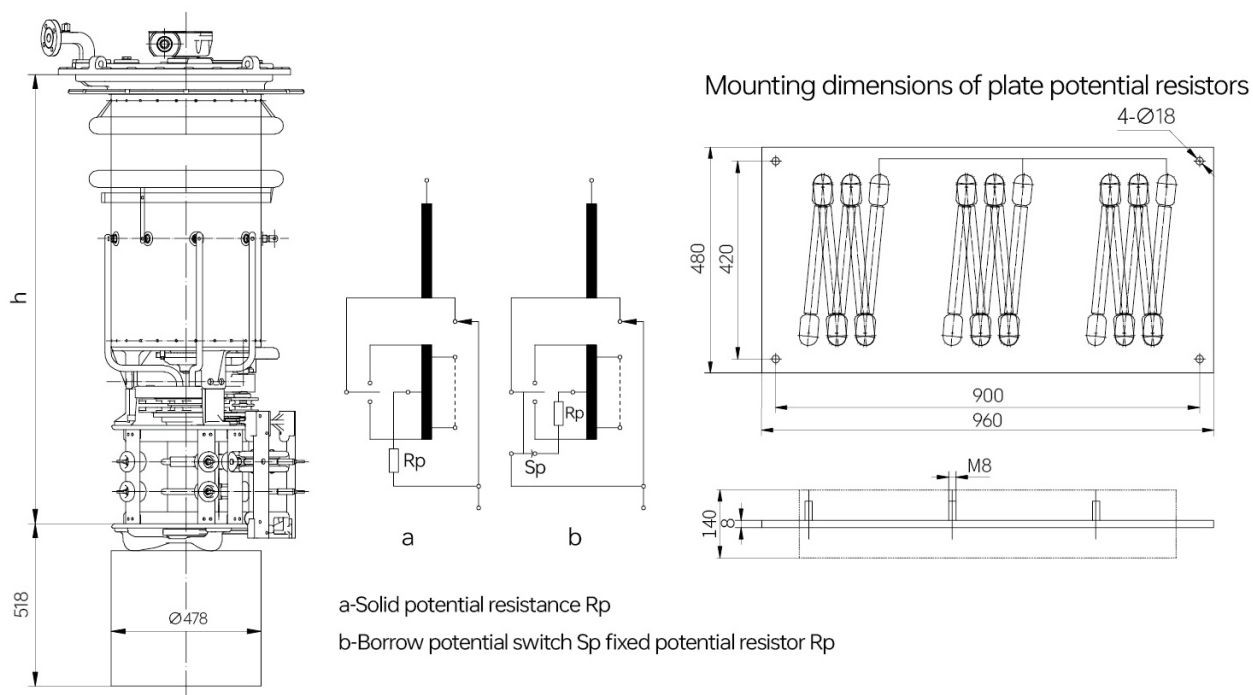
8. HMD three mechanical linkage layout

In order to facilitate the user's three mechanical linkage arrangement, HMD three mechanical linkage gives four schemes, such as Figure C, Figure D, Figure E and Figure F, for the user's reference. If there are other layout parties, as agreed by both parties.



8. HMD potential resistors and potential switches

The tap-changer winding is "suspended" when the tap-changer selector is in action. Because there is a coupling capacitor C between the main winding and the tap-winding, and a coupling capacitor C between the tap-winding and the box shell, the conversion selector generates spark discharge. In order to reduce the spark discharge gas, the potentiometric resistor is fixed or connected by a potentiometric resistor switch.



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