

Yancheng Cyber Oilfield Equipment Co.,Ltd.

CONIROL SYSTEM FOR SURFACE MOUNTED BLOWOUT PREVENTER (BOP) STACKS

PRINCIPLE DESCRIPTION

A special equipment which is used to control BOP, hydraulic choke and kill lines, and indispensable equipment for blowout prevention during drilling or rebuilding well in oil and natural gas industry. The BOP Control Systems are all strictly designed, manufactured and inspected in accordance with China National Standard SY/T5053.2 & API Spec.16D. Type selection, proper installation, connection and maintenance of control system must depend on OPERATION MANUAL

The system is equipped with two pump groups. Electric pump with different flow rate, and pneumatic or manual pump which ensure the system to work normally in case of power failure. The design of accumulator unit meets the requirement of closing all BOP stacks and opening hydraulic valve. If any accumulator fails to work, the total liquid loss will not exceed 25%. we can offer the accumulator with ASME or CE mark that complies with the requirements of API Spec.16D in request of customers' special requirements. The pressure of annular preventer circuit in control system may be adjusted by pneumatic regulator, It characters reverse adjusting. In case of sudden failure of air supply, the pressure can be reset to the preset value automatically. The control manifold of the remote control panel is equipped with an orifice as an inlet of the pressure source. For example. the spare nitrogen system offered by us provides emergent auxiliary energy. If the accumulator of the pump can not provide the control manifold with enough power fluid, the spare nitrogen system may be used to provide high pressure air to close the preventer. The spare nitrogen system may provide emergency air supply for the driller's panel and the auxiliary remote panel.

The system can be equipped with an alarm device. It monitors the accumulator pressure, air supply pressure and the liquid level in the oil reservoir. When the above parameters exceed the alarm limits, the audible and visual signal will appear immediately.

The auxiliary remote panel and wireless auxiliary remote panel can be equipped with to monitor the remote control panel. The auxiliary control panel is connected to the remote control panel with air hose bundle or cable. Therefore, the system can be operated and monitored from both driller's panel and auxiliary remote panel. Wireless auxiliary remote panel, which communicates with remote control panel by wireless signal, also can be supplied. It can improve the safety of drilling.

The system can be equipped with electric heating device of oil reservoir and air hose bundle. The system can also be equipped with a metal enclosure with explosion-proof electrical heater, explosion-proof air-conditioner and steam line in the skid.



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MAIN SPECIFICATIONS FOR BOP CONTROL SYSTEM

序号 Item	型号 Type	井口配置				井筒容积			油箱有效容积 Volume of Oil Reservoir (L)	泵配置			电机功率 Motor Power (kw)	系统工作压力 Nominal Pressure (Mpa)	外形尺寸 Size (mm)
		环形 Annular (个)	闸板 Rams (个)	放喷 Choke line (个)	备用 Spare (个)	总容积 Total Volume (L)	标称可用液量 Nominal Useful Volume (L)	排列方式 Installation		电动油泵 Electric Pump (L/min)	气动油泵 Pneumatic Pump (ml/stroke)	手动油泵 Hand Pump (ml/冲)			
1	FK50-2		1	1		25 × 2	25	rear 后置	160	3.5		11	1.5	21	1500 × 1400 × 2300
2	FK75-2		1		1	25 × 3	37.5	rear 后置	170	12		11	5.5	21	1836 × 1190 × 2023
3	FK125-2		1		1	25 × 5	62.5	rear 后置	320	18		11	7.5	21	2719 × 1530 × 2340
4	FK125-3		1	1	1	25 × 5	62.5	rear 后置	320	18		11	7.5	21	2719 × 1530 × 2340
5	FK150-2		1		1	25 × 6	75	rear 后置	320	24	90		11	21	2500 × 1900 × 2340
6	FK160-3	1	1		1	40 × 4	80	rear 后置	400	24	90		11	21	2500 × 1730 × 2340
7	FK240-3	1	1	1		40 × 6	120	rear 后置	440	24	90		11	21	3000 × 1900 × 2340
8	FK240-5		3	1	1	40 × 6	120	rear 后置	630	24		11	11	21	3000 × 2000 × 2200
9	FKQ100-2	1			1	25 × 4	50	rear 后置	300	18	90		7.5	21	3060 × 1910 × 2340
10	FKQ120-3		1	1	1	63 × 2	63	rear 后置	320	18	60		7.5	21	3060 × 1910 × 2340
11	FKQ125-2		1	1		25 × 5	62.5	rear 后置	320	24		11	11	21	2719 × 1530 × 2340
12	FKQ125-3		1	1	1	25 × 5	62.5	rear 后置	320	24		11	11	21	2719 × 1530 × 2340
13	FKQ150-3	1	1		1	25 × 6	75	rear 后置	450	18	90		7.5	21	3060 × 1910 × 2340
14	FKQ240-3	1	1		1	40 × 6	120	rear 后置	560	24	175		11	21	3920 × 2230 × 2610
15	FKQ240-4	1	2		1	40 × 6	120	rear 后置	630	24	90		11	21	3400 × 2150 × 2400
16	FKQ240-4	1	2		1	40 × 6	120	rear 后置	560	24	175		11	21	3920 × 2230 × 2610
17	FKQ320-3	1	2			40 × 8	160	rear 后置	630	24	90		11	21	3400 × 2150 × 2400
18	FKQ320-4	1	2		1	40 × 8	160	rear 后置	650	24	90		11	21	3400 × 2150 × 2400
19	FKQ320-4	1	2		1	40 × 8	160	side 侧置	650	24	90		11	21	4100 × 2150 × 2400
20	FKQ320-5	1	2	1	1	40 × 8	160	rear 后置	650	24	90		11	21	3400 × 2150 × 2540
21	FKQ320-5	1	2	1	1	40 × 8	160	side 侧置	650	24	90		11	21	4100 × 2150 × 2540
22	FKQ400-5	1	2	1	1	40 × 10	200	rear 后置	890	32	90 × 2		15	21	3145 × 2150 × 2540
23	FKQ400-6	1	3	1	1	40 × 10	200	rear 后置	890	32	90 × 2		15	21	4300 × 2150 × 2540
24	FKQ480-5	1	2	1	1	40 × 12	240	rear 后置	890	32	90 × 2		15	21	3900 × 2150 × 2540
25	FKQ480-6	1	2	1	2	40 × 12	240	side 侧置	890	32	90 × 2		15	21	4300 × 2150 × 2540
26	FKQ560-6	1	3	1	1	40 × 14	280	rear 后置	1050	42	90 × 2		18.5	21	3900 × 1950 × 2250
27	FKQ560-6	1	3	1	2	40 × 14	280	side 侧置	1050	42	90 × 2		18.5	21	5300 × 2150 × 2640
28	FKQ640-4	1	2		1	40 × 16	320	rear 后置	1320	42 × 1	175 × 2		18.5	21	4060 × 1950 × 2340
29	FKQ640-5	1	3		1	40 × 16	320	rear 后置	1300	42	175 × 2		18.5	21	3900 × 1950 × 2250
30	FKQ640-6	1	3	1	1	40 × 16	320	rear 后置	1300	42	175 × 2		18.5	21	3900 × 1950 × 2250
33	FKQ640-6	1	3	1	1	40 × 16	320	side 侧置	1300	42	175 × 2		18.5	21	5000 × 2360 × 2640
32	FKQ640-7	1	3	2	1	40 × 16	320	side 侧置	1500	42	175 × 2		18.5	21	5420 × 2360 × 2640
33	FKQ720-4	1	2		1	40 × 18	360	rear 后置	1350	42	90 × 2		18.5	21	4000 × 1950 × 2250
34	FKQ720-6	1	3	1	1	40 × 18	360	side 侧置	1500	42	90 × 2		18.5	21	5700 × 2360 × 2640
35	FKQ720-7	1	3	2	2	40 × 18	360	side 侧置	1500	42	175 × 2		18.5	21	5900 × 2360 × 2640

MAIN SPECIFICATIONS FOR BOP CONTROL SYSTEM

序号 Item	型号 Type	井口配置				井筒规格			油箱有效容积 Volume of Oil Reservoir (L)	泵配置			电机功率 Motor Power (kw)	系统工作压力 Nominal Pressure (MPa)	外形尺寸 Size (mm)
		环形 Annular (个)	闸板 Rams (个)	放喷 Choke line (个)	备用 Spare (个)	总容积 Total Volume (L)	标称可用液量 Nominal Useful Volume (L)	排列方式 Installation		电动油泵 Electric Pump (L/min)	气动油泵 Pneumatic Pump (ml/stroke)	手动油泵 Hand Pump (ml/冲)			
36	FKQ800-6	1	3	1	1	40×20	400	side 侧置	1500	42	175×2		18.5	21	5300×1780×2250 5400×2478×2640
37	KQ800-7	1	3	2	1	40×20	400	side 侧置	1500	42	175×2		18.5	21	5900×2360×2640 5900×2478×2640
38	FKQ800-8	1	3	2	2	40×20	400	side 侧置	1730	42	175×2		18.5	21	5900×2360×2640 5900×2478×2640
39	FKQ840-8	1	3	2	2	40×21	420	side 侧置	1730	42	175×2		18.5	21	5900×2478×2640
40	FKQ960-6	1	3	1	1	57×17	480	side 侧置	1730	52	175×3		22	21	5700×2478×2640
41	FKQ960-7	1	3	2	1	57×17	480	side 侧置	1730	52	175×3		22	21	6000×2478×2640
42	FKQ960-8	1	3	2	2	57×17	480	side 侧置	1850	52	175×3		22	21	6500×2478×2640
43	FKQ960-10	1	3	2	4	57×17	480	side 侧置	1900	52	175×3		22	21	7500×2478×2640
44	FKQ1200-8	1	3	2	2	63×20	630	side 侧置	2000	42×2	175×3		18.5×2	21	7900×2478×2640
45	FKQ1200-9	1	3	2	3	63×20	630	side 侧置	2000	42×2	175×3		18.5×2	21	6000×2150×2500
46	FKQ1200-10	1	3	2	4	63×20	630	side 侧置	2000	42×2	175×3		18.5×2	21	7500×2478×2640
47	FKQ1280-7	1	3	2	1	80×16	640	side 侧置	2000	42×2	175×3		18.5×2	21	7400×2150×2400
48	FKQ1280-8	1	3	2	2	80×16	640	side 侧置	2000	42×2	175×3		18.5×2	21	7700×2478×2640
49	FKQ1280-9	1	3	2	3	80×16	640	side 侧置	2000	42×2	175×3		18.5×2	21	7700×2478×2640
50	FKQ1280-10	1	3	2	4	80×16	640	side 侧置	2000	42×2	175×3		18.5×2	21	7700×2478×2640
51	FKQ1440-10	1	4	4	1	80×18	720	side 侧置	2300	42×2	175×3		18.5×2	21	8860×2558×2700
52	FKQ1600-7	1	3	2	1	80×20	800	side 侧置	2500	42×2	175×3		18.5×2	21	7200×2478×2640
53	FKQ1600-8	1	3	2	2	80×20	800	side 侧置	2500	42×2	175×3		18.5×2	21	7200×2478×2640
54	FKQ1600-9	1	3	2	3	80×20	800	side 侧置	2500	42×2	175×3		18.5×2	21	7200×2478×2640
55	FKQ1800-14	1	5	6	2	63×30	645	rear 后置	2660	42×2	175×3		18.5×2	21	8500×2478×2640
56	FKDQ320-5	1	2	1	1	40×8	160	side 侧置	650	24	175		11	21	3960×2230×2340
57	FKDQ480-5	1	2	1	1	40×12	240	rear 后置	890	32	175×2		15	21	4460×2440×2610
58	FKDQ630-7	1	3	2	1	63×10	315	rear 后置	1250	32			15	21	3400×1650×1900
59	FKDQ640-6	1	3	1	1	40×16	320	side 侧置	1300	42	175×2		18.5	21	3900×2150×2250
60	FKDQ640-7	1	3	2	1	40×16	320	rear 后置	1300	42	175×2		18.5	21	4500×2150×2250
61	FKDQ720-6	1	3	1	1	40×18	360	side 侧置	1500	42	175×2		18.5	21	5460×2230×2360
62	FKDQ800-7	1	3	2	1	40×20	400	side 侧置	1500	32×2	175×2		15×2	21	5700×2150×2310
63	FKDQ800-8	1	3	2	2	40×20	400	side 侧置	1500	42	175×2		18.5	21	6200×2478×2610
64	FKDQ840-8	1	3	2	2	40×21	420	side 侧置	1500	42	175×2		18.5	21	6200×2478×2610
65	FKDQ1200-15	2	5	5	3	63×20	630	rear 后置	2500	42×2	175×4		22×2	21	8500×2150×2200
66	FKDQ1280-8	1	4	2	1	40×32	640	rear 后置	2600	42×2	175×3		18.5×2	21	5400×2230×2340
67	FKDQ1800-11	1	4	4	2	63×30	645	rear 后置	2880	42×2	175×3		18.5×2	21	7160×2150×2200
68	FKWDQ800-7	1	3	2	1	40×20	400	side 侧置	1500	42	175×2		18.5	21	5860×2558×2610
69	FKWDQ1280-7	1	3	2	1	80×16	640	side 侧置	2600	42×2	175×3		18.5×2	21	7560×2558×2610
70	FKDY640-6	1	3	1	1	40×16	320	side 侧置	1300	42	175×2		18.5	21	5000×2360×2560

FUNCTION FOR BOP CONTROL SYSTEM

序号 Item	型号 Type	环形 压力 控制 Annular	电动 泵 Electric Pump	气动 油泵 Pneumatic Pump	手动 油泵 Hand Pump	双电 动泵 Dual Pump	报警 装置 Alarm System	氮气 备用 系统 Backup Nitrogen System	保护房 Protection House	加热 装置 Heating Equipment	空调 Air Condi- tioner	液压油 加热 Oil Heater	司钻 控制 台 Driller's Panel	辅助 司钻 台 Auxiliary Panel	管排 架及 管线 Pipe Rack	防提 安全 装置 Anti-lifting Device
1	FK50-2		●		●				●	○						
2	FK75-2		●		●				●	○		○				
3	FK125-2		●		●				●	○		○				
4	FK125-3		●		●				●	○		○				
5	FK150-2		●		●				●	○		○				
6	FK160-3	●	●	●												
7	FK240-3	●	●	●					●	○		○				
8	FK240-5		●		●		○		●	○	○	○			○	○
9	FKQ100-2	●	●	●			○		●	○	○	○	●		○	○
10	FKQ120-3		●	●			○		●	○	○	○	●		○	○
11	FKQ125-2		●		●				●	○		○	●			○
12	FKQ125-3		●		●				●	○		○	●			○
13	FKQ150-3	●	●	●			○		●	○	○	○	●		○	○
14	FKQ240-3	●	●	●			○		●	○	○	○	●		○	○
15	FKQ240-4	●	●	●			○		●	○	○	○	●		○	○
16	FKQ240-4	●	●	●			○		●	○	○	○	●		○	○
17	FKQ320-3	●	●	●			○		●	○		○	○			
18	FKQ320-4	●	●	●			○		●	○		○	●		○	○
19	FKQ320-4	●	●	●			○		●	○		○	●		○	○
20	FKQ320-5	●	●	●			○		●	○		○	●	○	○	○
21	FKQ320-5	●	●	●			○		●	○		○	●	○	○	○
22	FKQ400-5	●	●	●			○		●	○		○	●	○	○	○
23	FKQ400-6	●	●	●			○		●	○		○	●	○	○	○
24	FKQ480-5	●	●	●			○		●	○		○	●	○	○	○
25	FKQ480-6	●	●	●			○		●	○		○	●	○	○	○
26	FKQ560-6	●	●	●			○	○	●	○		○	●	○	○	○
27	FKQ560-6	●	●	●			○	○	●	○		○	●	○	○	○
28	FKQ640-4	●	●	●			○	○	●	○	○	○	●		○	○
29	FKQ640-5	●	●	●			○	○	●	○		○	●	○	○	○
30	FKQ640-6	●	●	●			○	○	●	○		○	●	○	○	○
31	FKQ640-6	●	●	●			○	○	●	○		○	●	○	○	○
32	FKQ640-7	●	●	●			○	○	●	○	○	○	●	○	○	○
33	FKQ720-4	●	●	●			○	○	●	○	○	○	●	○	○	○
34	FKQ720-6	●	●	●			○	○	●	○	○	○	●	○	○	○
35	FKQ720-7	●	●	●			○	○	●	○	○	○	●	○	○	○
36	FKQ800-6	●	●	●			○	○	●	○	○	○	●	○	○	○
37	FKQ800-7	●	●	●			○	○	●	○	○	○	●	○	○	○

FUNCTION FOR BOP CONTROL SYSTEM

序号 Item	型号 Type	环形 压力 控制 Annular	电动 泵 Electric Pump	气动 油泵 Pneumatic Pump	手动 油泵 Hand Pump	双电 动泵 Dual Pump	报警 装置 Alarm System	氮气 备用 系统 Backup Nitrogen System	保护房 Protection House	加热 装置 Heating Equipment	空调 Air Conditioner	液压油 加热 Oil Heater	司钻 控制台 Driller's Panel	辅助 司钻台 Auxiliary Panel	管排 架及 管线 Pipe Rack	防提 安全 装置 Anti-lifting Device
38	FKQ800-8	●	●	●			○	○	●	○	○	○	○	○	○	○
39	FKQ840-8	●	●	●			○	○	●	○	○	○	○	○	○	○
40	FKQ960-6	●	●	●			○	○	●	○	○	○	○	○	○	○
41	FKQ960-7	●	●	●			○	○	●	○	○	○	○	○	○	○
42	FKQ960-8	●	●	●			○	○	●	○	○	○	○	○	○	○
43	FKQ960-10	●	●	●			○	○	●	○	○	○	○	○	○	○
44	FKQ1200-8	●	●	●		●	○	○	●	○	○	○	○	○	○	○
45	FKQ1200-9	●	●	●		●	○	○	●	○	○	○	○	○	○	○
46	FKQ1200-10	●	●	●		●	○	○	●	○	○	○	○	○	○	○
47	FKQ1280-7	●	●	●		●	○	○	●	○	○	○	○	○	○	○
48	FKQ1280-8	●	●	●		●	○	○	●	○	○	○	○	○	○	○
49	FKQ1280-9	●	●	●		●	○	○	●	○	○	○	○	○	○	○
50	FKQ1280-10	●	●	●		●	○	○	●	○	○	○	○	○	○	○
51	FKQ1440-10	●	●	●		●	●	○	●	○	○	○	○	○	○	○
52	FKQ1600-7	●	●	●		●	○	○	●	○	○	○	○	○	○	○
53	FKQ1600-8	●	●	●		●	○	○	●	○	○	○	○	○	○	○
54	FKQ1600-9	●	●	●		●	○	○	●	○	○	○	○	○	○	○
55	FKQ1800-14	●	●	●		●	○	○	●	○	○	○	○	○	○	○
56	FKDQ320-5	●	●	●			●	○	●	○	○	○	○	○	○	○
57	FKDQ480-5	●	●	●			●	○	●	●	○	●	●	○	○	○
58	FKDQ630-7	●	●			●	●	●				●	○	○	○	○
59	FKDQ640-6	●	●	●			●	○				●	○	○	○	○
60	FKDQ640-7	●	●	●			●	●				●	○	○	○	○
61	FKDQ720-6	●	●	●			●	○	●	○	○	○	○	○	○	○
62	FKDQ800-7	●	●	●			●	○	●	○	○	○	○	○	○	○
63	FKDQ800-8	●	●	●			●	○	●	○	○	○	○	○	○	○
64	FKDQ840-8	●	●	●			●	○	●	○	○	○	○	○	○	○
65	FKDQ1200-15	●	●	●		●	●	○				●	○	○	○	○
66	FKDQ1280-8	●	●	●		●	●	○	●	○	○	○	○	○	○	○
67	FKDQ1800-11	●	●	●		●	●	○				●	○	○	○	○
68	FKWDQ800-7	●	●	●			●	○	●	●	○	●	●	○	○	○
69	FKWDQ1280-7	●	●	●		●	●	○	●	○	○	○	○	○	○	○
70	FKDY640-6	●	●	●			●	○	●	○	○	○	○	○	○	○

Remarks:

1. Mark "●" in the table refers to standard components and mark "○" in the table refers to optional components.

Yancheng Cyber Oilfield Equipment Co.,Ltd.

2. Blank in the table means that it can be designed and manufactured in accordance with the customers special requirement.

3. Ant-lifting safety Device is specially designed for deep drilling, FT-I for one pipe ram preventer control system and FT-II for two pipe ram preventers control system.

KEY POINTS OF BOP CONTROL SYSTEM SELECTION

To control BOP reliably and safely as well as prevent uncontrollable blowout, oil & natural gas industry standards SYT5053.2 and API Spec.16D should be followed when you choose and purchase a suitable product. Factors to be considered should at least be:

- a) Relationship between liquid volume required for closing BOP stacks and liquid volume available from the control system;
- b) Relationship between liquid volume used to close one annular BOP, open the hydraulically operated choke valve(s), and capacity of pump system;
- c) Environmental adaptation;
- d) Special requirements on off-shore drilling platform.

1. Options for Controlled objects and Useful Liquid Volume

Useful liquid volume from an accumulator group shall be 2 times greater than the required volume of closing BOP stacks.

2. Requirements for Control System Liquid Volume Used to Close an Annular BOP and Open Choke (Valves)

With the accumulators isolated from service and with one pump systems or one power system out of service, the remaining pump system(s) shall have the capacity to close one annular BOP and open choke valve(s) within two minutes.

3. Environmental Adaptation

Conventional OP control system is only suit for ambient temperature of -13°C ~ 50°C . When ambient temperature goes beyond, a house made of steel sheet and equipped with thermal insulation and temperature control should be used:

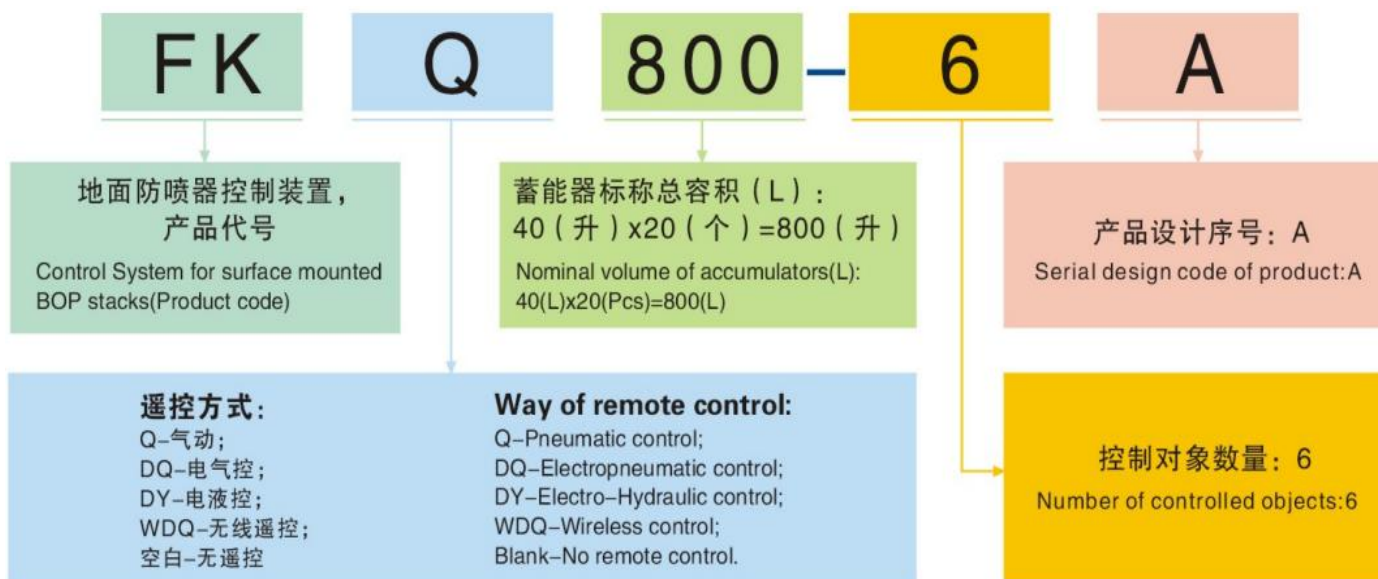
- a) A steel sheet house with thermal insulation and heating is suitable for ambient temperature above -40°C ;
- b) A steel sheet house with thermal insulation and cooling is suitable for ambient temperature below 60°C ;
- c) Hose bundle for remote control is suit for -40°C ~ -50°C . However, when ambient temperature goes below 0°C , dry compressed air must be used otherwise the hose would fail to work because of blocked due to moisture freezing.

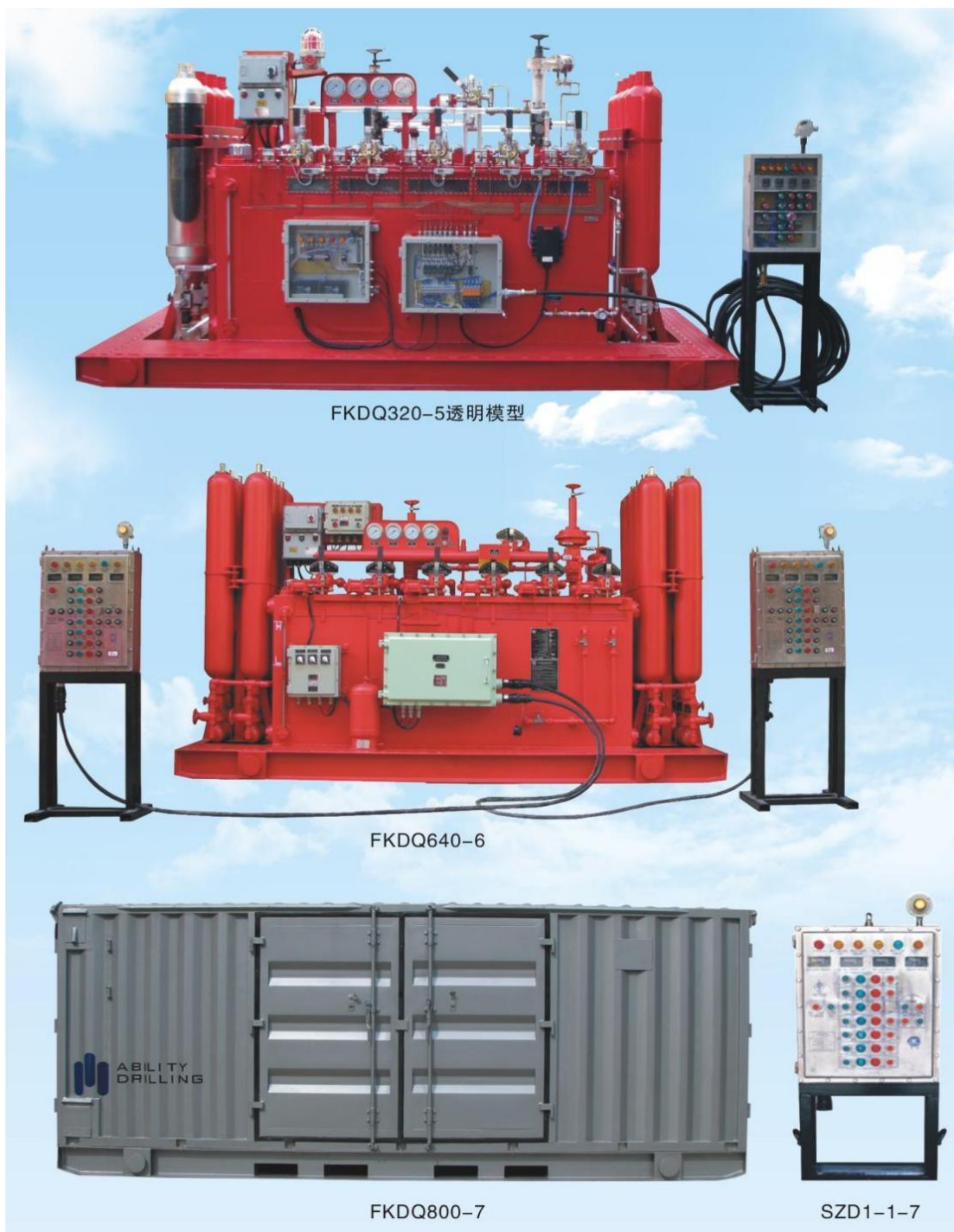
4. Special Requirement on Control System for Off-Shore Drilling Platform

According to Oil & natural gas industry standard, driller's panel for of-shore platform (without workover) shall be equipped with audible and visual alarms to indicate the conditions of:

- a) Low accumulator pressure;
- b) Low liquid level in oil reservoir;
- c) Low pressure of compressed air source;
- d) In addition, moisture proof, corrosion resistance should be considered seriously. And back-up power source in use (electric control series).

MODEL ILLUSTRATION

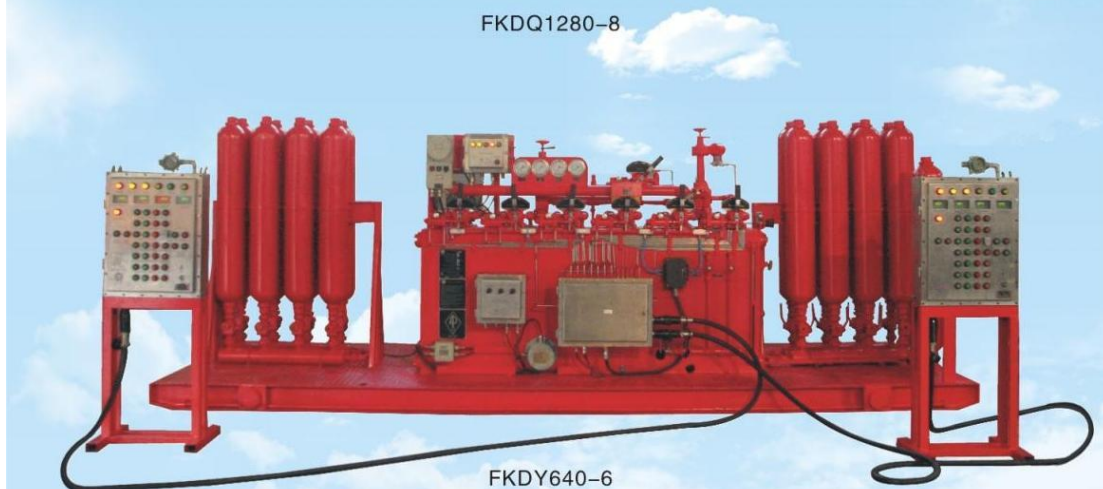




	
<p>FKDY640-6</p>	<p>人机界面触摸屏 Hmi Touch Screen</p>
	
<p>FKDQ800-8</p>	
<p>人机界面触摸屏 Hmi Touch Screen</p>	
	
<p>FKDQ840-8</p>	
<p>人机界面触摸屏 Hmi Touch Screen</p>	



FKDQ1280-8



FKDY640-6



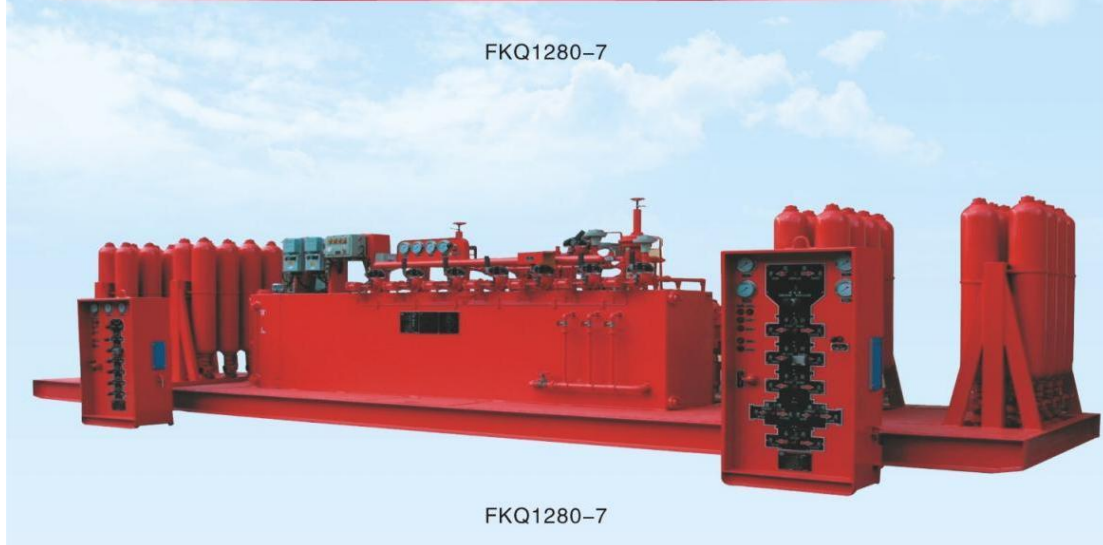
FKQ800-8



分体式/Separate FKQ960-8



FKQ1280-7



FKQ1280-7



FKQ1280-8



FKQ1200-9



FKQ1800-14