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PLC and Hydraulic Trainer(High Pressure and Dual Pump System)

PN:0401010060

PLC and Hydraulic Trainer(High Pressure and Dual Pump System) Features

PLC and Hydraulic Trainer(High Pressure and Dual Pump System) Features is a professional hydraulic circuit experiments,hydraulic application experiments and hydraulic curriculum design platform.It is designed for training and assessment of subjects such as hydraulic drive,PLC control technology in colleges and vocational schools with a variety of hydraulic components modules and programmable controller module.It can meet the teaching of the hydraulic disciplines for teaching and training of:

- 1,The composition of hydraulic transmission system.
- 2,The basic hydraulic circuit experiments
- 2,Perference test experiments of common hydraulic components(optional)
- 3,PLC electrical control experiment:machine-electric-hydraulic integrated control experiments.

PLC and Hydraulic Trainer(High Pressure and Dual Pump System) Performance

- 1,The training panel is designed as T-slot and all hydraulic components use rapid joint which can inserted for easy operation.

2,All hydraulic components and valves are used industrial grade physical components and valves with pressure up to 7MPa,and when beyond this value, pressure automatic relief.

3,The hydraulic modules are all independent modules with spring pins plate,which can be assembled easily into a variety of hydraulic circuits on the T-slot panel.

4,The quick couplings are used for hydraulic circuits connection and the electrical control circuit use training connecting wires with protective function.The students can build circuits under the guidance of instruction books or design their own system circuits.The hydraulic components in this trainer is complete for designing more complex applications circuits.Various circuits design and constitution up to 90 kinds of experiments.

5,The hydraulic circuit can be electrical controlled independently by relay unit or by PLC.It highlights the advantages of PLC control by comparison of this two control modes to make students have a better understanding of PLC.

6,Dual-pump system of quantitative vane pump and variable vane pump

8,With current leakage protection, when earth leakage current exceeds 30mA,the power will cut off.The electric control use DC 24V with over-current protection to prevent damage under malfunction.

PLC and Hydraulic Trainer(High Pressure and Dual Pump System)

Typical Training Contents

Part A.Hydraulic Circuit

1.Pressure control circuits

1.1 Pressure regulated circuit

1.1.1 One-stage pressure regulated circuit

1.1.2 Two-stage pressure regulated circuit

1.1.3 Three-stage pressure regulated circuit

1.1.4 One-stage pressure regulated circuit from remote port

1.1.5 Two-stage pressure regulated circuit from remote port

1.1.6 Dual-pressure circuit

1.2 Pressure reducing circuit

1.2.1 One-stage pressure reducing circuit

1.2.2 Two-stage pressure reducing circuit

1.3 Pressure holding circuit

1.3.1 Pressure holding circuit by reversing valve

1.3.2 Pressure holding circuit by one-way valve

1.3.3 Pressure holding circuit by pilot check valve

1.4 Pressure relief circuit(Pressure-venting circuit)

1.4.1 Reversing circuit by two position two-way valve

1.4.2 Reversing circuit by two position two-way valve

1.4.3 Pressure relief circuit by three position four-way reversing valve(M-type,mid position function)

1.4.5 Pressure relief circuit by three position four-way reversing valve(H-type,mid position function)

1.4.6 Solenoid valve control double pump oil supply pressure relief circuit

1.4.7 Pressure control double pump oil supply pressure relief circuit

1.5 Balancing circuit

1.5.1 Balancing circuit by sequence valve

1.5.2 Balancing circuit pilot sequence valve

1.5.3 Balancing and pressure holding circuit

1.5.4 Balancing circuit by pilot check valve,One-way throttle valve circuit

1.5.5 Balancing circuit by pilot check valve and one-way throttle valve

1.6 Buffer circuit

1.6.1 Buffer circuit by speed regulated valve

1.6.2 Buffer circuit by pressure relief valve/overflow valve

2. Speed control circuits

2.1 Throttle speed regulated circuit

2.1.1 Oil-inlet throttle speed regulated circuit by throttle valve

2.1.2 Oil-return throttle speed regulated circuit by throttle valve

- 2.1.3 By-pass throttle speed regulated circuit by throttle valve
- 2.1.4 Oil-inlet throttle speed regulated circuit by speed regulated circuit
- 2.1.5 By-pass throttle speed regulated circuit by speed regulated valve
- 2.1.6 Oil-return throttle speed regulated circuit by speed regulated valve
- 2.1.7 Bidirectional/Two-way oil-inlet throttle speed regulated circuit by one-way throttle valve
- 2.1.8 Bidirectional/Two-way oil-inlet throttle speed regulated circuit by one-way throttle valve
- 2.1.9 Bidirectional/Two-way oil-inlet throttle speed regulated circuit by one-way throttle valve
- 2.1.10 Bidirectional/Two-way oil-return throttle speed regulated circuit by two-way throttle valve
- 2.1.11 Oil-inlet throttle speed regulated circuit of back Pressure Valve

2.2 Fast-speed movement circuit

- 2.2.1 Differential connection fast-speed movement circuit by one-way valve
- 2.2.2 Differential connection fast-speed movement circuit by two position and three-way solenoid directional valve

2.3 Speed shift circuit

- 2.3.1 Speed shift between fast and slow circuit
- 2.3.2 Oil-inlet control speed shift circuit
- 2.3.3 Oil-return control speed shift circuit
- 2.3.4 Bidirectional/Two-way speed shift circuit
- 2.3.5 Speed shift circuit by series speed regulated valve
- 2.3.6 Speed shift circuit by parallel regulated valve
- 2.3.7 Fast and slow speed connection circuit by travel valve
- 2.3.8 Differential connection by two position and two-way solenoid valve
- 2.3.9 Differential connection by two position and three-way solenoid valve
- 2.3.10 Oil-return control speed shift circuit by parallel regulated valve

3. Directional control circuit

3.1 Reversing circuit

3.1.1 Continuous reciprocating motion circuit by two position and four-way solenoid valve

3.1.2 Continuous reciprocating motion circuit by three position and four-way solenoid valve

3.2 Lock circuit

3.2.1 Lock circuit by one-way valve

3.2.2 Lock circuit by pilot check valve

3.2.3 Pressure relief circuit by three position four-way solenoid reversing valve(O-type,mid position function)

3.2.4 Pressure relief circuit by three position four-way solenoid reversing valve(M-type,mid position function)

4. Multi cylinders control action circuit

4.1 Sequence action circuit

4.1.1 Sequence action circuit by single sequential valve

4.1.2 Sequence action circuit by dual sequential valve

4.1.3 Sequence action circuit by travel switch/limit switch

4.1.4 Sequence action circuit by pressure relay

4.1.5 Sequence action circuit by joint sequence valve and travel switch/limit switch

4.1.6 Sequence action circuit by joint sequence valve and travel switch/limit switch

4.2 Synchronization action control circuit

4.2.1 Oil-out throttle synchronization circuit speed regulated valve

4.2.2 Oil-out throttle synchronization circuit speed regulated valve

4.2.3 Oil-inlet throttle bidirectional/two-way synchronization circuit

4.2.4 oil-return throttle bidirectional/two-way synchronization circuit

Part B.PLC electrical control experiment: machine - electric - hydraulic integrated control experiment.

1.PLC programming instructions and ladder programming

2.Learn and use PLC programming software

3.Communication of PLC and computer

4.PLC application and optimization solutions in the hydraulic transmission system.

Part C Performance test experiments for common hydraulic components(Optional)

1. Static performance experiment for pressure relief valve/overflow valve;
2. Characteristic test experiment for throttle valve;
3. Characteristic test experiment for speed regulated valve;
4. Performance experiment for throttle speed regulated circuit;
5. The hydraulic pump performance test;

Part D.Performance experiment for throttle speed regulated circuit(Optional)

- 1.Speed-load characteristics of oil-inlet throttle speed regulated circuit by throttle valve
- 2.Speed-load characteristics of by-pass throttle speed regulated circuit by throttle valve
- 3.Speed-load characteristics of oil-inlet throttle speed regulated circuit by speed regulated circuit

Part E.Three-dimensional dynamic simulating and control experiments of hydraulic circuit(Optional)

- 1,Configuration dynamic simulation and control software
- 2,PLC programming and debugging software
- 3,Dynamic simulating and control experiments of hydraulic circuit
- 4,Configuration monitoring basic hydraulic circuits experiment

PLC and Hydraulic Trainer(High Pressure and Dual Pump System) The Main Technical Parameters

Nos	Items	Specification	
1	Motor A	Rated power	2.2KW
		Power supply	AC380V
		Rated speed	1440r/min
2	Motor B	Rated power	1.5KW
		Power supply	AC380V
		Rated speed	1430r/Min
3	Variable vane pump	Displacement	6.7cc/rev
		Maximum pressure	7MPa
		Pressure range	3-7MPa
4	Quantitative gear pump	Displacement	7.8cc/rev
		Rated Pressure	7Mpa
5	Dimensions	L*W*H	1580×650×1820mm

PLC and Hydraulic Trainer(High Pressure and Dual Pump System) Configuration List

Nos	Items	Specification	Qty	Marks
1	Motor	2HP-4P	1	
2		3HP-4P	1	
3	Variable vane pump		1	
4	Gear pump		1	
5	Throttle valve		1	
6	Pilot oriented pressure relief valve/overflow valve		2	
7	Oil tank	60L	1	
8	Hydraulic station board		1	
9	Shockproof pressure gauge	0-10MPa 2.5 class	2	
10	Oil level gauge		1	
11	Oil suction filter		1	
12	Air filter		1	

Nos	Items	Specification	Qty	Marks
13				No supply
14	Hydraulic cylinder		2	
15	Three position and four-way solenoid directional/reversing valve		1	
16	Three position and four-way solenoid directional/reversing valve		1	
17	Two position and four-way solenoid directional/reversing valve		2	
18	Two position and three-way solenoid directional/reversing valve		1	
19	Three position and four-way manual directional/reversing valve		1	
20	Pilot oriented pressure relief valve/overflow valve		1	
21	Direct-acting pressure relief valve		1	
22	Pilot oriented sequence valve		2	
23	Pilot oriented pressure reducing valve		2	
24	Throttle valve		2	
25	Speed regulated valve		1	
26	Pilot check valve		2	
27	One-way valve		2	
28	Pressure Relay		1	
29	Flowmeter		1	
30	Motor tachometer		1	

Nos	Items	Specification	Qty	Marks
31	Stopwatch		1	
32	Power isolation sensor		1	
33	PLC		1	
34	PLC communication cable		1	
35	Temperature Controller		1	
36	Thermocouple		1	
37	Heating pipe		1	
38	Proximity Switch		4	
39	Intermediate relay	DC24V	9	
40	Contactor		3	
41	Three-phase leakage protection switch		2	
42	Single-pole circuit breaker		2	
43	Single-pole circuit breaker		2	
44	Emergency stop button		1	
45	Self-locking illuminated pushbutton	DC24V	11	
46	Switching power supply	24V	2	
47	Push button		9	
48	Quick plug and socket	2-core	16	
50	Electrical control module		1	
51	PLC programming software		1	
53	Force control circuit demos software		1	Optional
54	Force control circuit control software		1	Optional
55	Hydraulic components work simulation software		1	Optional

Nos	Items	Specification	Qty	Marks
56	Hydraulic components explosion software		1	Optional
57	test software		1	Optional
58			1	Optional
59			1	Optional
60			1	Optional
61	Experimental instructions		1	
64	Tee	M16×1.5	6	
65	Tee	M14×1.5	5	
66	Quick couplings(male)	M16×1.5	60	
67	Quick couplings(male)	M16×1.5	30	
68	High-pressure pipeline	M16×1.5	12	
69	Pressure gauge	0-10MPa 2.5 class	5	
70	Hydraulic valve manifold		16	
71	Top-cylinder experimental device	For throttle control experiments	1	
72	Adjustable wrench	10'	1	
73	Adjustable wrench	12'	1	
74	Allen wrench		1	
75	Open-end wrench	5-6		
76	Open-end wrench	8-10	1	
77	Open-end wrench	12-14	1	
78	Open-end wrench	17-19	1	
79	Phillips screwdriver	6'	1	
	Screwdriver		1	
80	Needle-nose plier		1	

Nos	Items	Specification	Qty	Marks
81	Tool box		1	
82	Dust cover		1	
83	Combination pad	φ10	7	
84	O-ring	φ16×2.4	18	
85	O-ring	φ14×2.4	8	
86	Quick couplings	M16×1.5	2	
87	Blocking wire	M10×1	4	
88	Teflon tape		1	
89	Self-locking pushbutton		2	
90	Signal light	Redφ10,DC24V	2	
91	Button switch	DC24V	2	
92	Pressure gauge	0-10MPa 2.5 class	1	
93	Training bench		1	

*Products and configuration list described herein are subject to changes without notice.

*Optionals above is available for orders above 40 sets.