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### **Hydraulic Control and Performance Test Integrated Trainer**

**PN:0401010110**

#### **Hydraulic Control and Performance Test Integrated Trainer**

##### **Features**

Hydraulic Control and Performance Test Integrated Trainer is a professional hydraulic circuit experiments,hydraulic application experiments and hydraulic curriculum design platform.This trainer integrates fluid mechanics experiments, hydraulic components and system performance test, hydraulic circuit function verification experiments and training for hydraulic laboratory equipment.It is an idea trainer for colleges,universities and technical and engineering school experiments and training of hydraulic drive and control technology:

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

#### **Hydraulic Control and Performance Test Integrated Trainer**

##### **Typical Training Contents**

##### **Part A.Hydraulic Circuit Training**

##### **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 Balancing circuit**

- 1.4.1 Balancing circuit by sequence valve
- 1.4.2 Balancing circuit pilot sequence valve
- 1.4.3 Balancing and pressure holding circuit
- 1.4.5 Balancing circuit by pilot check valve and one-way throttle valve
- 1.4.6 Balancing circuit by pilot check valve, One-way throttle valve circuit

## **1.5 Pressure relief circuit(Pressure-venting circuit)**

- 1.5.1 Pressure relief circuit by travel valve
- 1.5.2 Reversing circuit by two position two-way valve
- 1.5.3 Pressure relief circuit by pilot oriented pressure relief valve/overflow valve
- 1.5.4 Pressure relief circuit by three position four-way reversing valve(M-type,mid position function)
- 1.5.5 Pressure relief circuit by three position four-way reversing valve(Y-type,mid position function)

## **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-return throttle speed regulated circuit by speed regulated valve

2.1.5 Oil-inlet throttle speed regulated circuit by speed regulated circuit

2.1.6 By-pass 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-return throttle speed regulated circuit by one-way throttle valve

2.1.9 Bidirectional/Two-way oil-inlet throttle speed regulated circuit by two-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 Fast and slow speed connection circuit by travel valve

2.3.2 Speed shift circuit by series speed regulated valve

2.3.3 Oil-inlet control speed shift circuit

2.3.4 Oil-return control speed shift circuit

2.3.5 Differential connection by two position and two-way solenoid valve

2.3.6 Differential connection by two position and three-way solenoid valve

2.3.7 Speed shift between fast and slow circuit

2.3.8 Speed shift circuit by parallel regulated valve

2.3.9 Oil-return control speed shift circuit by parallel regulated valve

2.3.10 Bidirectional/Two-way speed shift circuit

### **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 Lock circuit by three position four-way solenoid reversing valve(O-type,mid position function)

3.2.4 Lock 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 pressure relay

4.1.4 Sequence action circuit by travel switch/limit switch

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

4.1.6 Sequence action circuit by joint pressure relay and travel switch/limit switch

#### **4.2 Synchronization action control circuit**

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

4.2.2 Oil-return throttle bidirectional/two-way synchronization circuit

4.2.3 Oil-out throttle synchronization circuit speed regulated valve

4.2.4 Oil-inlet throttle synchronization circuit speed regulated valve

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

1.PLC programming instructions and ladder programming

2.Learn and use PLC programming software

3.Communication of PLC and computer

PLC application and optimization solutions in the hydraulic transmission system.

**Part C.Fluid Mechanics Experiments/Hydraulic resistance characteristics experiments(Optional)**

**Part D. Hydraulic components performance experiments(Optional)**

Static hydraulic pump characteristics experiments,

Relief valve static characteristics experiment

Flow control valve static characteristics experiment

**Part E.Hydraulic circuit performance experiment(Optional)**

1.Throttle speed control circuit performance experiment

## Hydraulic Control and Performance Test Integrated Trainer

### The Main Technical Parameters

| <b>Nos</b> | <b>Items</b>                 | <b>Specification</b> |                 |
|------------|------------------------------|----------------------|-----------------|
| 1          | Variable blade pump          | Rated power          | 1.5kw           |
|            |                              | Voltage              | 220v/50hz       |
|            |                              | Displacement         | 12L/min         |
|            |                              | Max Pressure         | 7Mpa            |
|            |                              | Rated speed          | 1380r/min       |
| 2          | Quantitative vane pump       | Rated power          | 2.2kw           |
|            |                              | Voltage              | 380v/50hz       |
|            |                              | Displacement         | 8ml/r           |
|            |                              | Rated speed          | 1440r/min       |
|            |                              | Pressure             | 7 MPa           |
| 3          | Fluid air cooling circulator | Rated power          | 38w             |
|            |                              | Voltage              | 220v            |
|            |                              | Displacement         | 20L/min         |
|            |                              | Pressure             | 1.4Mpa          |
| 4          | Cooling tank                 | volume               | 80L             |
| 5          | Dimensions                   | L*W*H                | 1570*840*1690mm |