TYE Series Computer Control Hydraulic Servo Control Compression Testing Machine

Applications:

This series compression testing machine is mainly designed for compression and bending test of building material items, such as concrete cube, cement specimen and component, etc, also used for compression performance test of rubber pad and top forge test of metal. With new design idea and advanced technology, this series have more advantages in appearance, operation & applications. It is ideal test equipment for quality control at industry & mineral enterprises, educational teaching in high schools, and technology searching at scientific institutes.

Standards:

It is conformed to ASTM E4, ASTM C139, ISO7500-1, EN10002-2, BS 1610, DIN51220, C1231 –AASHTO T22 -NF P18-411 -UNE 83304, 7242 etc.

Applicable Specimens:

Extensive ranges for **Cubic sample**: 100mm, 150mm, 200mm and more; **Cylindrical sample** dia. 150x300mm, dia. 100x200mm, dia. 200x400mm or others as per customer required.

Specifications:

Model	TYE-2000	TYE-3000
Max. Load (kN)	2000	3000
Load measuring range	4-100% of F.S.	
Load accuracy	±1.0%	±1.0%
Constant loading rate	1-99kN/s (can be adjusted)	
Displacement reading error	5μ(can be customized)	5μ(can be customized)
Back to zero relative error	±0.5%	±0.5%
Relative resolution	0.5%	0.5%
Test space adjusting mode	By dual action actuator	By dual action actuator
Upper compression platen (mm)	Φ300mm	340x340
Lower compression platen (mm)	Φ300mm	365x365
Distance between two platens(mm)	320	340
Distance between columns	290x200	365x365
Actuator stroke(mm)	300	400
Max. rising speed of piston	60mm/min	60mm/min
Max. returning speed of piston	100mm/min	100mm/min
Power supply	3-phase, 380/400V, 2.2kW	3-phase, 380/400V, 7.5 kW
Weight (kg)	1800	2800
Overall dimension for load frame & hydraulic power pack (mm)	475x500x1430 760x600x1025	720x720x1700 710x510x1315

Features of each part:

Load frame:

Load frame consists of upper crosshead, four columns, upper & lower platen, safety cover, load cell, piston, oil cylinder, pressure transducer and safety limit switches. It features as following,

- Four columns structure provides the higher stiffness of load frame;
- Upper compression platen is with ball seat assembly;
- **Testing space is adjusted by piston** up to 340mm instead of by single lead screw or adjustable blocks;
- Both load cell & pressure transducer available configured with this machine can measure the test load with higher accuracy;
- **Double action actuator with 300/400mm stroke**, piston rising speed is 60mm/min, while piston return speed is 100mm/min; however, the piston return mode for traditional machine depends on gravity of piston with slow speed & high cost.
- High accuracy encoder with resolution of 0.01mm; options
- Failure detection function;
- Safety covers is mounted around the columns to protect the operator, the front gate is with interlock switch to prevent machine operation when gate is open.
- Stroke protection: When the ram arrives at the upper limited position,

limited switch will work to stop the motor of oil pump.

Hydraulic power pack unit

Hydraulic power pack unit consists of electrical cabinet, operating buttons for power supply & piston moving upwards & downwards, oil pump, servo valves, oil tanks etc. it features as following,

- Electrical elements are connected with 24V low voltage control according to CE requirements;
- Imported Japanese gearing oil pump with low noise, stable pressure and long work life;
- High accuracy servo valve assembly guarantees the running of machine stable under servo control;
- Computer mounted on the side of hydraulic power pack and monitor placed on the top make the machine compact & save the occupied space.

Control parts:

- Load cell measures the testing load: the load cell is installed between the lower platen and piston to measure the test load on specimen directly. The accuracy of the load cell is within 1‰. It ensures the accuracy of testing results on installation structure and parts performance.
- Photoelectric encoder measures the displacement of piston: It is draw-wire photoelectric encoder with features like easy installation and maintenance, direct measure and high measure accuracy. The measure accuracy is 0.01mm.
- Full digital PCI card specialized for testing machine is the data conversion and signal transmission device between the control unit and the computer. The analog signal of the load cell is converted to digital signal by the analog digital converter in the PCI card, and then the digital signal is transferred to the computer for data processing. The digital signal of the photoelectric encoder is multiplied by four times of the original digital amount by the PCI card.
- Both computer with software and digital controller can be available to control machine. Please see more details as **Annex-1 for digital controller and Annex-2 for software**
- Servo control: close loop strain and stress control, curves of load vs. Displacement, Load vs. time, displacement vs. time; actual load rate in real time; displacement control: 0.001mm/s to 1mm/s; once specimen parameter setting, press "start" to complete the test.

Safety devices:

- Safety covers is mounted around the columns to protect the operator, the front gate is with interlock switch to prevent machine operation when gate is open.
- Stroke protection: When the ram arrives at the upper limited position, the motor of oil pump will stop.
- Overload protection: When the testing load is over 2%-5% of Max. Load, the system will unload.

## Annex-1 Digital Controller Features: (options)

1. Integrated dual-channel strain measurement precision amplifier
2. Dual sensors and dual extensometers
3. The control automatically the sub-file indication resolution: 0.05% FS.
4. The largest full scale measuring force 100kN~3000kN (configurable), program-controlled 4-speed, 1% indicated value accuracy, peak hold.
5. Displacement measured by Encoder
6. LCD monitor show the curves
7. Real load and peak load display
8. Network communication interface to PC
9. Test data store
10. Three channels: one channel is for load, another is for displacement, the third channel is for flexure test

## Annex-2 Software Instruction

Features of TE Measuring & Control software

TE software refers to the software characteristics of the top manufacturers of testing machine in the world and proposals of various testing requirements from the end users, and combines all the advantages of former versions of software with lots of new features. Optimized software structure makes the testing operation easy, convenient and powerful. **Main interface** is as following,
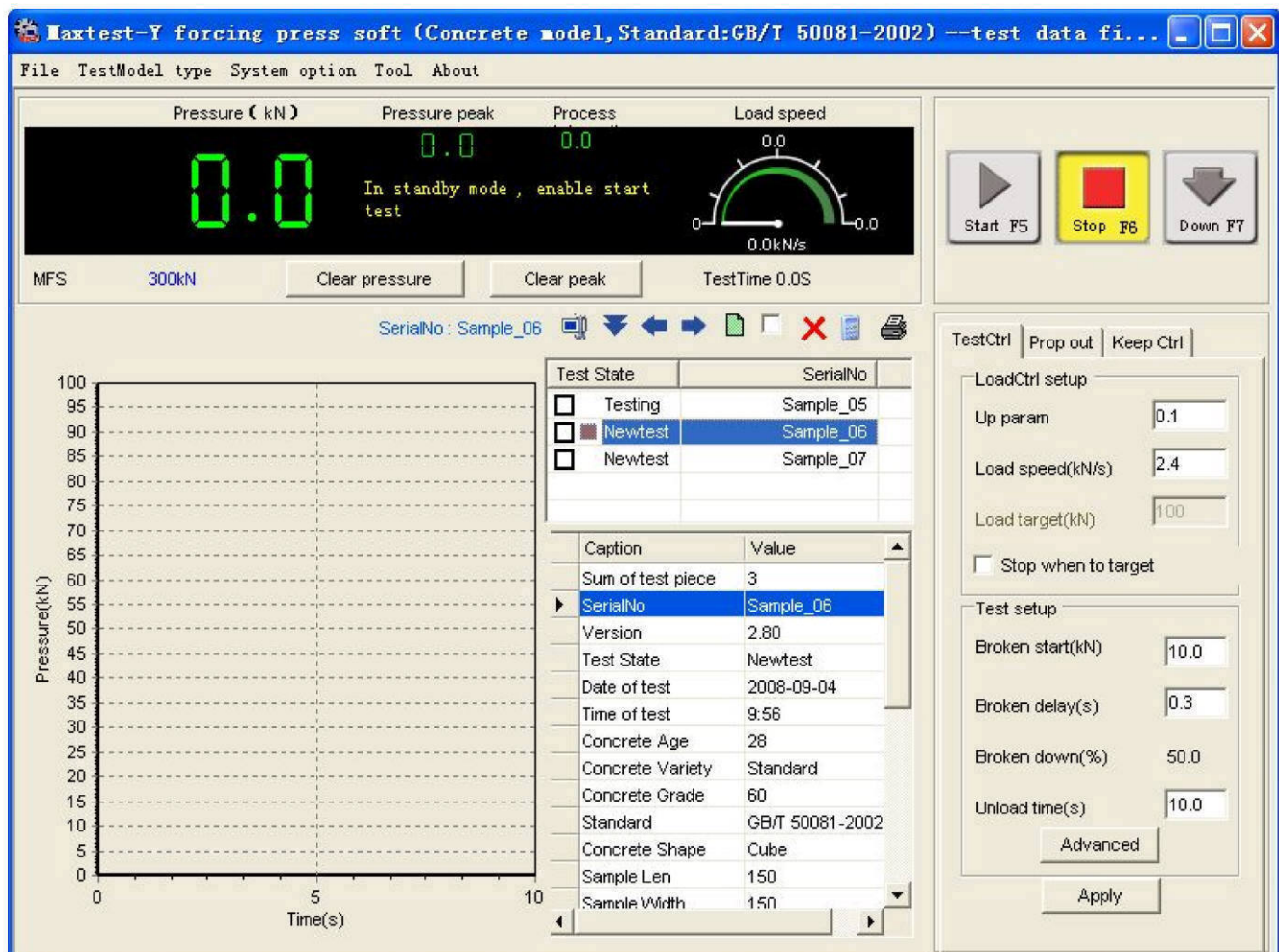
Some more functions:

Choose the test model & related Standard according to different tests
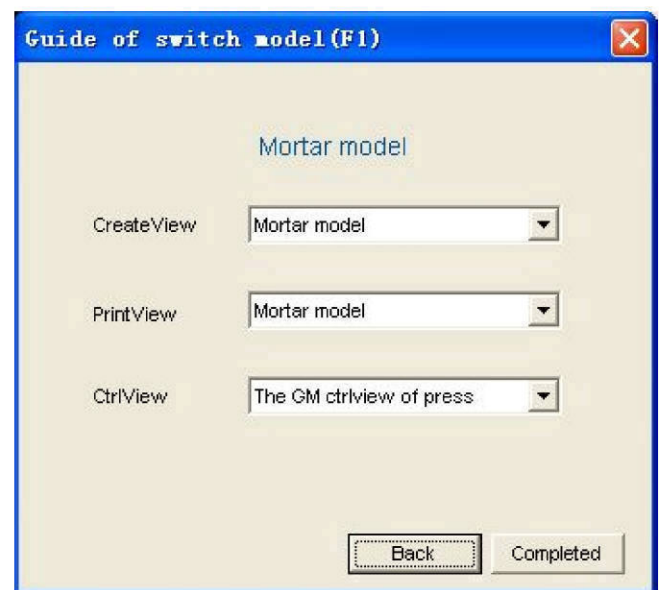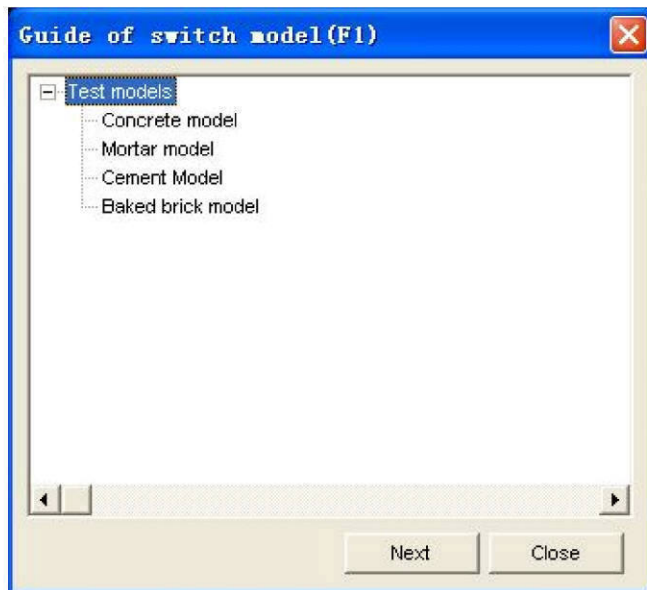
Digital indicators

- ◆ **Clear pressure** and **Clear peak:** Reset the pressure and the pressure peak.
- ◆ **Pressure:** Show the current load of the machine.
- ◆ **Pressure peak:** Maximum load of the process.
- ◆ **Process:** Show the test state.
- ◆ **Load speed:** Show the current load loaded speed.
- ◆ **MFS:** The maximum of the measuring range.
- ◆ **Test time:** Show the current test run time.

Data & Test curve Show:
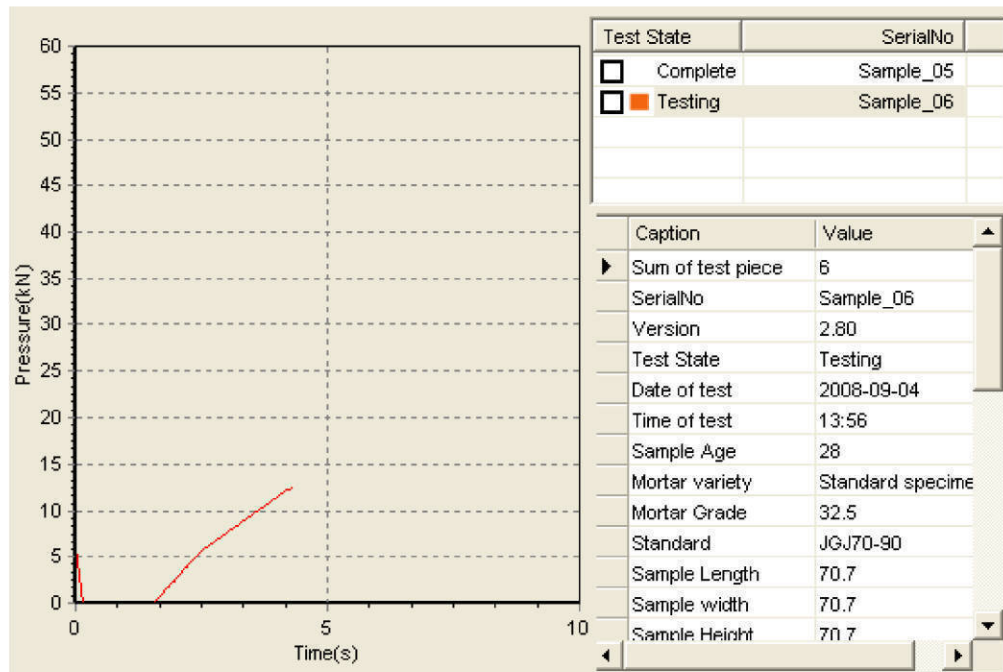
The **curve area** will show the current load-time curve in the testing test, as well it will show the result by the complete test.

The **data details** show the test detail, such as the sum of the test piece, the date of the test etc.

Control type

TestCtrl: This is the default control model.

- ✧ **Up param:** Set the speed before to load (the test machine touch the sample). The real speed is about the value*12(mm/min).
- ✧ **Load speed (kN/s):** The speed of the load to load.
- ✧ **Load target:** The test will stop when the load achieve the set target. This only work when you select the **Stop when to target**.
- ✧ **Broken start (KN):** Only if the load excess the value set, the program start to check whether the sample has broken or not.
- ✧ **Broken delay (s):** When the condition when the sample broken achieved, if in this time the load go up, the program consider it is a false broken; else it is true.
- ✧ **Broken down (%):** When the load is lower than the maximum percentage, the program treats it as has broken.

TestCtrl

LoadCtrl setup

Up param `0.1`

Load speed(kN/s) `2.4`

Load target(kN) `100`

☐ Stop when to target

Test setup

Broken start(kN) `10.0`

Broken delay(s) `0.3`

Broken down(%) 50

Unload time(s) `10.0`

[Advanced]

[Apply]

Keep Ctrl

Keep setup

Step count `6`   [Apply]

Keep step	Keep val(kN)
■ Step1	50
■ Step2	100
■ Step3	150
■ Step4	200
■ Step5	250
■ Step6	300

Modify value `50`   [Apply]

Keep mode

Load speed `2.4`

Up param `0.1`   [Apply]

Keep target   `0.0`

System program   (F2)

System param(F2)

Control setup | Test setup

LoadCtrl param

Prop `2`

Integral `0.4`

Sliding `3`

Overload(%) : `2`

[OK]   [ESC]

System param(F2)

Control setup | Test setup

Baisc option

○ Pressure> `0.1` kN , start record

● Record start when test start

Frequency setup

Record Freq(Hz) ◄ `20` ►

Led freq(Hz) ◄ `5` ►

Introductions:1.the higher fT of record, the more cpu utilization and larger file .2.the higher ft of led, the led fresh faster.3.when the value is 0,the Freq is highest.

[OK]   [ESC]

Analyze and print view:

Analyze and print

☑ ndex
☑ Sample_05

Template

Cement Report.pmf | Browser

Page set | Preview | Print

☑ Only show the selected

☑ ndex	Broken ...	Compre...	试验
☑ ▮ Sample1	8.8	1.8	Roun
☑ ▮ Sample2	80.6	16.1	Rema
☑ ▮ Sample3	82.5	16.5	Rema
☑ ▮ Sample4	75.0	15.0	Rema
☑ ▮ Sample5	87.2	17.4	Roun
☑ ▮ Sample6	86.4	17.3	Rema

Test Result

Compress strength16.2MPa

X : Time ▼   Y : Load

Close

Template for test report can be edited by customer

Report edit(ctrl+Enter to over the edit)

File Page Typeset DataSet Help

L-border 1 | Backcolo | L-color | Fill col | ☐ Fill | Chiller | X=415,Y=268 | Sum 1P, Num 1P

Attribute | Choose | his

AS 2047-1999

New Report Template

Deflection	
Air	
Water	
Ultimate	

Data vision

0

```
Testing Condition
Test state information




Type of ultimate strength
CtrlLoad of ultimate strength test
At step 1:CtrlLoad of incremental test
At step 2:CtrlLoad of incremental test
At step 3:CtrlLoad of incremental test
At step 4:CtrlLoad of incremental test
At step 5:CtrlLoad of incremental test
record-Load at positive ultimate strength
record-Load at negative ultimate strength
The positive ultimate strength test is completed or not
The negative ultimate strength test is completed or not
The observation-record of positive ultimate strength test
The observation-record of negative ultimate strength test
Window area
At step 1:ctrlload of deflection test
At step 2:ctrlload of deflection test
At step 3:ctrlload of deflection test
At step 4:CtrlLoad of deflection test
Positive deflection test is or isn't completed
Negative deflection test is or isn't completed
At step 1:keepload of positive deflection test
At step 1:dispA of positive deflection test
At step 1:dispB of positive deflection test
At step 1:dispC of positive deflection test
At step 1:deflection of positive deflection test
```

Ok   Cancel