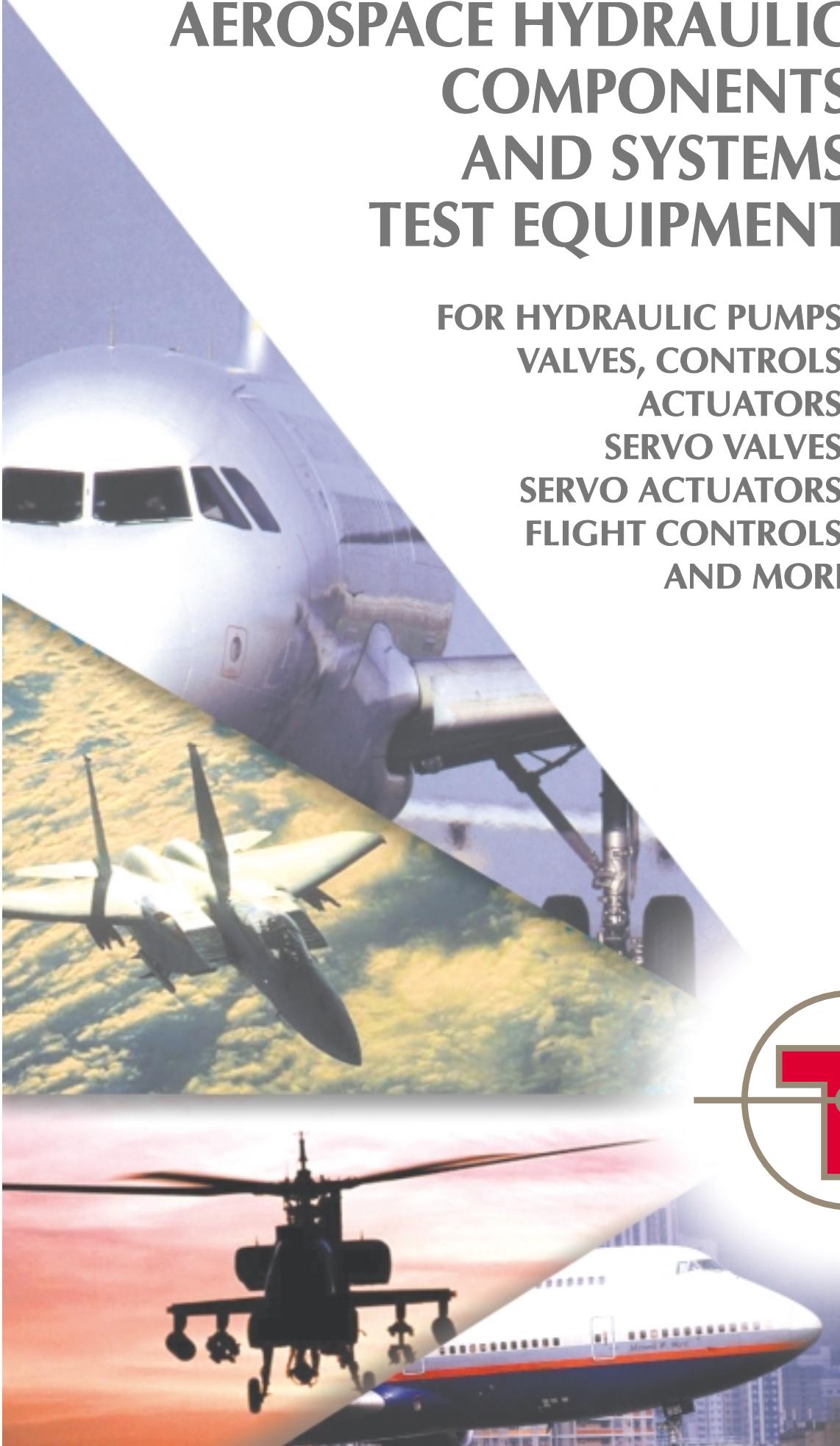


AEROSPACE HYDRAULIC COMPONENTS AND SYSTEMS TEST EQUIPMENT

FOR HYDRAULIC PUMPS,
VALVES, CONTROLS,
ACTUATORS,
SERVO VALVES,
SERVO ACTUATORS,
FLIGHT CONTROLS,
AND MORE





APPLICATION

Testek designs and manufactures test stands and custom hydraulic test equipment to suit the function of your hydraulic shop and the aircraft fleet to be supported. In most cases, universal test stands are the best solution to testing requirements, with test stand resources selected to cover the fleet of units to be tested. In most cases, the test stand(s) can be built to accommodate your expected future fleet, also. Adapters/Test Programs can be individually supplied with the test stand or later, as shop expansion plans are implemented.

Testek hydraulic test stands are applicable to:

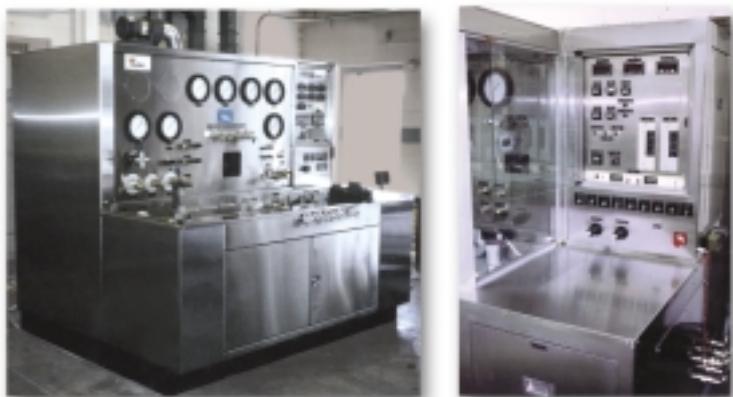
- Airline shops for overhaul and return to service tests
- OEM production test equipment – high productivity through automation
- OEM overhaul and repair stations
- Military depot, intermediate, and organization level testing
- OEM and airframe manufacturer developmental test and system integration/simulation/certification
- Third party repair and overhaul stations

MAJOR FEATURES

Testek hydraulic component test stands are designed to maximize flexibility in application and adaptation. All commonly available fluids, including phosphate-ester (Skydrol®) types, can be designed to be accommodated. Stainless steel cabinets are available to enhance durability and appearance. For some applications, one test stand may be designed to test pumps, motors, valves, servos, and actuators. Larger hydraulic shops may dedicate a specialized test stand for hydraulic pumps and motors, and a second test stand specialized for servo valves and actuators. Even larger shops may elect to have a central storage and pumping utility with manifold connections to several peripheral test stands of various types. Testek designs and builds the equipment to fit your shop's productivity and scale of operation. Within this broad hydraulic test capability, Testek utilizes expandable, modular designs wherever possible. This assures that our test systems make maximum use of proven successful components and subsystems. Much of the quality and reliability of your test equipment depends upon the expertise and experience of Testek engineers. Collectively, Testek engineers provide many decades of experience. No amount of effort or experimentation can replace those years of experience in providing test equipment you can rely upon for long life, production and profitability.

MANUAL OR COMPUTER-AIDED

Testek provides a choice of manual or computer-aided hydraulic test stands. For simple, and/or low-cost installations, manual test equipment may provide the maximum benefit – especially for highly specialized or low production needs. Testek manual hydraulic test stands are designed with the same care and attention to detail as more sophisticated test stands – with accuracy, durability, ease of operation, maintenance and calibration as key goals. Testek data acquisition can be added to collect and show test results – essentially a 'hybrid' manual/digital test stand solution. Testek has manufactured hundreds of manual hydraulic component test stands over the past three decades.



*There really is no Testek hydraulic test stand which we can call 'standard.' Each Testek test stand is designed to fit the needs and physical requirements of the individual customer. Within those limits, Testek uses proven components and subsystems to achieve high reliability. Computer-aided test stands feature the acclaimed **TestEx™** software.*





MANUAL AND COMPUTER AIDED ACTUATOR TEST STANDS

When desired, computer-aided testing adds a level of operator friendliness, productivity and speed to complex test requirements. Computer-aided test stands are also a good test tool for components requiring long run-in periods. Testek computer-aided test stands allow continuous monitoring of test part and test stand parameters. If any parameter moves into a range where safe operation is at risk, the test stand will warn the operator or shut down, preserving all test parameters. Computer-aided test is also a benefit to operators. New test stand operators require less training and experience to correctly and safely perform useful computer-aided testing.

Testek has been producing computer-aided hydraulic test stands for over two decades. Using the highest rated **TESTEX™** self documenting test programs, Testek hydraulic component test stands can run in the operator's choice of four operational modes:

- **Fully Automatic** – test stand runs the entire component test automatically, printing and storing test results, monitoring safe test conditions, and stopping only on out-of-tolerance results or fault detection
- **Semi-Automatic** – same as fully automatic, except test stand runs operator selected test paragraphs, accumulating test results, and monitoring safe test conditions
- **Manual** – test stand is under operator control for each test sequence and test parameter. Default setpoints can be OEM specified test circumstances, if desired
- **Primitive Manual** – test stand can be operated without the test computer system – indispensable for diagnosing computer/test stand faults and for troubleshooting

EQUIVALENCY AND TEST CORRELATION

The Testek hydraulic component test stands – especially computer-aided test stands – can simplify test equipment equivalency and test data correlation with OEM overhaul test specifications. **TESTEX** test programs are user printable spreadsheets, with simple English language test process listings. All setpoints and test data are in the same units as the OEM recommended test procedure. The test programs – and therefore the test process – fully conform to the OEM test procedure and can easily be read by shop personnel to verify equivalency and correlation to OEM manuals, Technical Orders, NAVAIRS, etc.

This Testek hydraulic test system for a large airline shop consists of a small servo valve stand, large servo/actuator stand, and the computer test control and data acquisition system. Hydraulic pumps and motors are tested elsewhere in this customer's shop.





BOTH COMMERCIAL AND MILITARY AIRCRAFT COMPONENTS SUPPORTED

Testek has substantial experience with military as well as commercial airline aircraft components and systems. Hydraulic stands and cells can be optimized for your shop's specific work needs and future requirements. In some cases, a mix of military and commercial components are to be supported. Testek hydraulic test facilities are custom designed to efficiently provide all of these test needs.

FAST CHANGEOVER OF TEST PARTS

Typically, much valuable time can be saved by providing universal test stands with "quick change" adapter parts. In some cases, Testek can provide adapter carts and/or assemblies to allow the simultaneous setup of one part, testing of another, and disconnection of a previously tested part – all at the same time. This can save hours of production time and labor every day.

LET TESTEK PROPOSE THE EXACT SOLUTION FOR YOUR NEEDS

To allow us to propose a solution for your specific needs, please provide the following information:

1. Aircraft models to be supported, and all component part numbers
2. Present hydraulic oil supply parameters and existing uses
3. Available space limitations and entrance size limits
4. Method of operation – manual, computer-aided fully automatic, semi-automatic, etc.
5. Special preferences for test cell, self contained test stand, etc.
6. Existing test equipment, including adapter types, you may wish to retain
7. Estimated date of service of the new test equipment
8. Other pertinent details and requirements

Testek will respond with a proposal and, if desired, a presentation of the proposal at your site. We can provide various options and estimated costs to allow you to make your engineering and purchasing decision..



With the addition of this Testek control and data acquisition console, test stands such as shown below can be automated and extended to test the most sophisticated servo hydraulics.

APPROVALS AND RECOMMENDATIONS

Testek hydraulic component test stands and test cells are in regular, daily service at approved repair stations and military repair/overhaul facilities, worldwide. As a result, we have successfully tested components by many of the OEMs in the world. Testek will provide user references related to your particular needs upon request. These references will include, wherever possible, names and contact information for existing users of similar equipment.

Testek will work with your shop people to achieve the correct correlation of test data with manufacturer test specifications, assuring you of useful, correct test results that correlate with the OEM specifications.



This Testek hydraulic test stand tests a wide variety of major hydraulic accessories on various commercial aircraft. Using an aircraft pump, it is able to test valves, servo valves, actuators and servo actuators.





STATE OF THE ART

Whether manual or computer-aided, Testek hydraulic component test stands are state-of-the-art in every way. We utilize only the most modern, tested transducing and metering equipment to measure pressures, flows, leakage, etc. In computer-aided systems, using our acclaimed **TESTEX™** test executive software, we have systems in the field that can simultaneously measure up to 96 parameters while simultaneously maintaining over 20 PID control loops – this in addition to a virtually unlimited number of digital control channels. This provides more than sufficient capacity to test the most sophisticated servo actuator, flight control, etc., without difficulty. To simplify the solution, all of these channels reside in a single computer, not relying on multiple outboard controllers. The result is an elegant, long life, manageable solution to hydraulic component test needs.

Computer-aided test stands normally incorporate chart recording and test report printing as a part of the **TESTEX** control program solution. Old fashioned X-Y plotters, pen and ink recorders, etc. are replaced by the state-of-the-art digital printers provided by **TESTEX**. The **TESTEX** computer can be networked to other Testek test stands and/or a central management computer, if desired, to manage software updates and monitor test data (SPC) records. Larger installations can also use **TESTEX** to anticipate central hydraulic oil pumping requirements.

Manual test stands are designed for ease of calibration, with facilities for inserting calibration standards, flowmeters, etc. without complex and time consuming effort. Most computer-aided test stands have built-in computer-aided calibration programs to step through the calibration process, and to simplify the work of the calibrating technician. Computer-aided test stands also are provided with a built-in self test, which checks most of the test stand resources to be certain they are functioning correctly.

SIMPLE TO USE, DIFFICULT TO ABUSE

Manual test stands are designed with logical control and instrument layouts to simplify operation, and to allow intuitive operator control.

Computer-aided test stands are especially simple and easy to understand. Most test parameters are continuously monitored by the **TESTEX** safety system to notify the operator of any out-of-limits condition. The **TESTEX** safety system will stop the test, or even shut down the test stand, as appropriate, if an unsafe condition develops. Additionally, operators can be guided in making any needed manual setups or adjustments – including the display of diagrams and photos where appropriate to show the correct operator actions.

SAVES THOUSANDS ON INSTALLATION

Testek computer-aided test stands with remote control consoles can save thousands of dollars in installation wiring. Most instrumentation and control equipment is safely located in control cabinets within the test area. Thus, only the data display, keyboard, mouse, a minimum of manual controls, and emergency stop equipment need to be connected at the remote console.

Testek provides hybrid test systems, combining the customer's choice of manual and computer-aided test features. This Testek test stand provides manual setup and control of the test with computer-aided data acquisition, plotting, and recording.

The Testek software runs on conventional PC computers running Microsoft Windows. Operators quickly become adept and confident when using TestEx software, our acclaimed, friendly test executive.

Testek computer-aided test stands can be networked to assure the latest test procedures are installed, and for reporting on production testing to a central computer. Testek test programs and test reports are Excel compatible spreadsheets.



Testek is a recognized world leader in aerospace test equipment for the following components:

ELECTRICAL	FUEL	PNEUMATIC	HYDRAULIC	AVIONICS
IDG	Main Engine Fuel Controls	Air Cycle Machines	Flight Controls	GCU
AC & DC Generators	HMU	High/Low Temp. Valves	Servo Actuators	BPCU
CSD	Fuel Nozzles	High/Low Flow Valves	Servo Valves	ELCU
VSCF	Fuel Flow Transmitters	Fans	Pumps	APU-GCU
APU Generator	APU Fuel Controls	Waste, Dump Valves	Motors	ELMS
Electric Starter/Generator	Fuel Boost/Jettison Pumps	Engine Starters	Controls	ASCU
Variable Freq. Generators	Fuel Accessories	Air Motors, Actuators	Support & Supply Carts	PSEU
and Electro-Mechanical Rotary/Linear Actuators				

TESTEK SERVICE AND SUPPORT

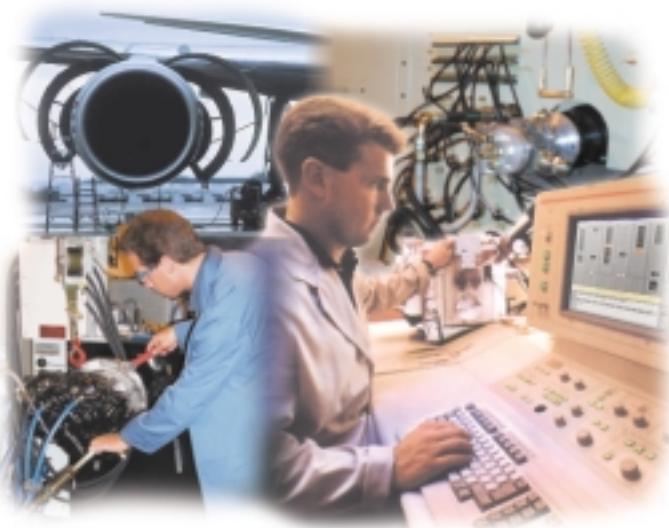
We service all of the equipment we have in the field, worldwide. Testek test equipment is in daily use on five continents. Our engineers and technicians are experienced in providing on site service, usually on 24-48 hour notice.

REPLACEMENT PARTS AND SPARES

Since 1969, Testek has designed test equipment for long term support. Quality, long life components and subsystems are employed to assure long term support. In most cases where parts have become obsolete, Testek engineers provide updated parts with assistance in making the substitution.

CUSTOMER RECOMMENDATIONS

Testek relies on customer recommendations for its increasing equipment sales. Most of our equipment is sold by "word of mouth" from one satisfied customer to another. In most cases, we can provide prospective buyers with a listing of existing users of similar equipment, including telephone or e-mail contacts.



CONTACT INFORMATION

Testek, Inc.
12271 Globe Road
Livonia, MI 48150 USA

Phone: (1) 734-591-2271 • Fax: (1) 734-591-3060 • e-mail: aerospace@testek.com • www.testek.com

Features and details are subject to change without notice.

Testek, TestEx, and e-Turbine drive are trademarks of Testek, Inc.
Windows and Excel are trademarks of Microsoft, Inc.

