ALPHA Testing Systems

24 Trowley Rise, Abbots Langley
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Servo-Hydraulic Retrofit Systems

DN retrofit systems allow servo-hydraulic testing machine users to benefit from the power and flexibility of the easy to use DN software and electronic package without the need to purchase a new machine. Most servo-hydraulic machines are suitable for conversion, but a survey is normally required before a quotation can be confirmed.

The package normally replaces the existing machine electronics, and requires the frame, load-cell, stroke transducer, actuator, servo valve and hydraulic power unit to be in good order. Many of these items can however, be replaced or refurbished upon request.

The DN Controller is designed to satisfy a wide range of servo-hydraulic component and material testing requirements. The test system is controlled entirely from a computer, with the control electronics being located in a proprietary interface card within the computer.

The system is suitable for many testing applications, including quality control, fatigue testing, component design verification, impact testing and crack propagation.

The software supplied is extremely versatile and easy to use, allowing powerful test programs to be created to suit each individual application. Software facilities include graph-plotting, calculation of static and dynamic sample properties, pass / fail indication, batch testing, SPC and report generation.

Equipment Supplied

Compact Controller Interface
A full-length, ISA compatible, interface board that is installed in the control computer.

Control Console
A small desktop console which carries the "Drive On / Drive Off" switches, which are used to activate the machine isolation valve(s) fitted to the actuator / machine manifold.

Provision for signal monitoring points and auxiliary input monitoring are provided.

Signal Connection Box
This is an interconnection unit, complete with cable connection to the compact controller interface. The box is usually mounted on the test machine, actuator manifold or in close proximity to the test machine and provides a local connection point for:

- Load cell
- Stroke Transducer
- Extensometer
- Servo Valve
- Solenoid isolation valve
- Emergency Stop
- Machine mounted control switches
- Fault sensors
- Connections to hydraulic power unit
- Two auxiliary channels (or configured for cold-junction sensors i.e. Thermocouples)
- 24 Volt power supply for solenoid valves (a connection to local mains is required)

Software
Control and Analysis Software (See separate data sheet)

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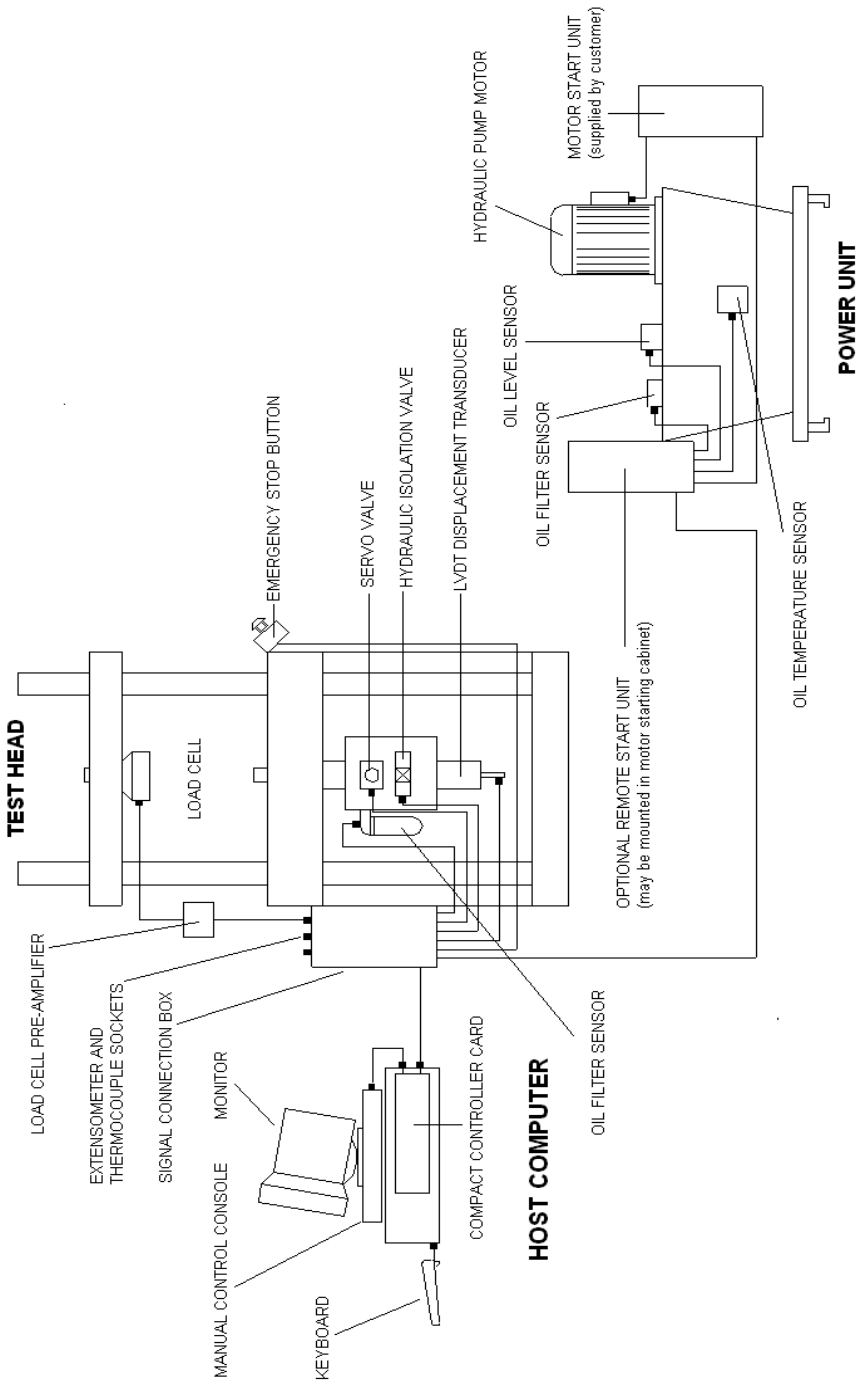
Schematic Diagram of the Retrofit System



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Optional Equipment

Remote Start Module

This module is supplied complete with cable connections to the signal connection box and provides all necessary equipment to allow the control system to start and stop the hydraulic pump from the keyboard or test program.
Further connection facilities are provided to allow the control system to read fault sensors (where fitted) on the power pack. The remote start module is normally mounted on or near the power pack and a connection to the local mains supply may be required.

Solenoid Isolation Valve

This will be required when the original equipment does not have one fitted. The installation price will include all necessary manifolds, brackets, system flushing, and replacement filter but not replacement oil.

Note: The solenoid isolation valve is an essential safety feature of software based control system. Either the customer or a DN engineer must fit the valve.

Computer

The computer is essential to the system and is not included in the upgrade price. The computer can be provided or supplied by the customer.
Note: Computer specification available on request.

Peripherals

Printers and temperature controllers are quoted according to customer requirements.

Logic inputs and outputs

A separate interface card may be fitted to the computer to allow communication with other devices such as PLC controllers, automatic handling and semi-automatic test systems. The card provides opto-isolated 8 logic inputs and 8 logic outputs for 24 Volt (5V available on request). Additional cards may also be fitted for more I/O, high-speed signal, DAQ, analogue control outputs and encoder transducers.

Site Work

A detailed survey will be carried out to determine the amount of work required to complete the upgrade. This in some instances may require equipment to be sent to our factory, in either case a quotation will be provided for the work required.

Compact Servo-Controller Specification

Maximum test frequency:		500Hz (extendable to 1000Hz on request)
Maximum Amplitude:		The maximum amplitude at any frequency is inversely proportional to the frequency, and depends on the capacity of the hydraulic power supply.
Waveforms:		Sine, square, triangular, saw-tooth and aperiodic
Test Modes:		Displacement control, load and extensometer control, asymmetric waveforms in load or displacement control; suitable for samples which exhibit highly non-linear characteristics under load control.
Safety and fault system:		Software interlock with manual enable for solenoid isolation valves, Light curtain protection of operator (optional), 2-hand start (optional), Fault detection with on screen diagnostics.
Sample Monitoring:		Sample characteristics may be calculated in real time, and the test program modified in the light of the results, allowing, for example, the interruption of the test on impending sample failure.
Input:	Load Cell	AC excitation, suitable for strain gauge load cells
	Stroke Transducer	LVDT or half bridge
	Extensometer	AC, suitable for LVDT or strain gauge sensors
	Thermocouple	J or K type
	Auxiliary Channel	DC, ± 10V full scale

Note: Two auxiliary channels are available. Either or both may be configured for DC input (external signal conditioning) or thermocouples.

Sampling Resolution:	16 Bit (1:65,536 of full scale)
Sampling Rate:	Data sampling is simultaneous on load and displacement. The actual sampling rate is chosen to suit the test (10KHz in typical dynamic test applications up to 25 KHz max.).
Output:	Direct drive to either mechanical feedback or electrical feedback servo valves, 24-bit resolution (1:16,000,000).
Multi-axis System:	Used for testing components in 2, 3 or 4 dimensions.