

EHPS

Electrohydraulic Power Servo

Applications

The Electrohydraulic Power Servo (EHPS) is a fully integrated three-stage servo valve designed to drive low-pressure steam turbine control valve cylinders. The EHPS, in conjunction with a new or already installed steam valve cylinder, provides the linear actuation force to operate steam turbine control valves or valve racks. This servo can be configured to drive single or double acting actuators, and to use the system's turbine lube oil supply, or a separate oil source (5.5–17.2 bar, 80–250 psi).

This servo is ideal for retrofits where it is desired to upgrade the turbine control and hydraulic system but keep the expensive steam valve power cylinder. In retrofit applications the EHPS can directly replace the existing steam valve power cylinder operating system. This saves costly repairs to existing servos and eliminates difficulties in obtaining spare parts for obsolete equipment.

The EHPS product is available in following configurations:

- EHPS—single coil, single oil source input
- EHPS—dual coil, single oil source input
- EHPS—single coil, separate torque motor & final stage oil source inputs
- EHPS—dual coil, separate torque motor & final stage oil source inputs

EHPS models that have separate torque motor and final stage oil source inputs allow users to reduce their unit filtration volume requirements by only filtering the oil supply to the EHPS torque motor.

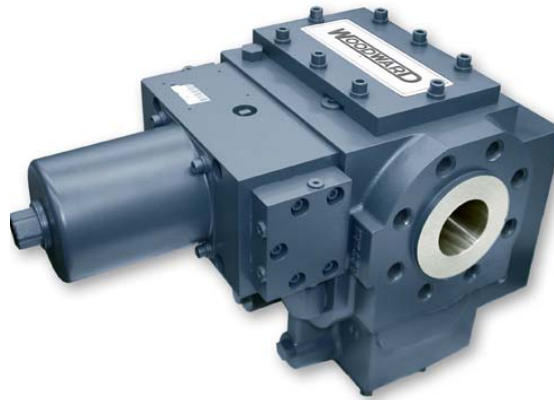
Description

The Electrohydraulic Power Servo is a three-stage servo valve used in conjunction with a customer-supplied power cylinder to provide very accurate and responsive power cylinder control. The EHPS's staged design allows for accurate power cylinder position control (accurate EHPS flow control), with the flow capacity to meet required cylinder response times (slew rates). The EHPS's stages are as follows:

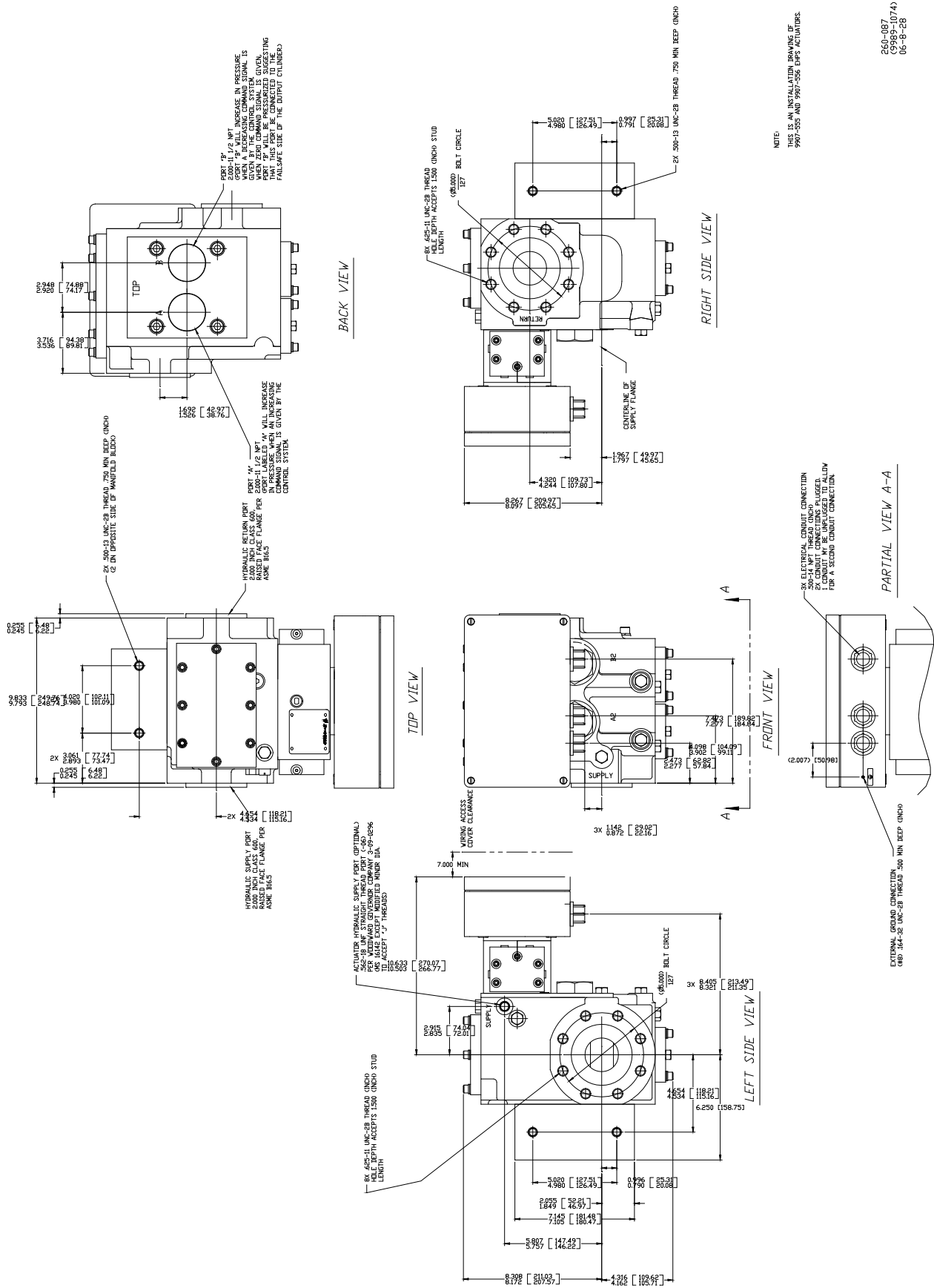
- Stage 1—a torque-motor servo valve
- Stage 2—a spool/amplification stage with feedback to the first stage
- Stage 3—a spool/amplification stage with feedback to the second-stage

The EHPS is designed to control power cylinders with bore diameter sizes in the range of 100–255 mm (4–10 inches) and servo stroke lengths in the range of 50–305 mm (2–12 inches).

The EHPS's torque motor accepts a 0–200 mA current signal from an external servo controller (not included) and is calibrated for a null current of 100 mA (used to center the unit's internal pilot valve). An electronic servo position controller like Woodward's Servo Position Controller (SPC) must be used in conjunction with the EHPS to control the user's cylinder, valve, or valve rack. The servo position controller accepts a valve position feedback signal and outputs a position demand signal to the EHPS to perform closed loop control of the unit servo.



- Positions steam turbine valve cylinder
- Connects to double or single acting actuators
- Compatible with variable bore and stroke cylinders
- Applicable in new or retrofit applications
- Operates on a wide range of oil supply pressures
- Single or dual coil models available
- Replaces existing pilot valve assemblies
- Can use existing turbine lube oil supply
- Models are available with listings for North American Hazardous Locations



Typical EHPs Outline Drawing (Dual Coil version shown)

Specifications

Mechanical

Weight:	68 kg (150 pounds)
Hydraulic Supply Oil Port:	2" ANSI Class 600 RF flange connection
Hydraulic Drain Port:	2" ANSI Class 600 RF flange connection
Output Cylinder Ports A & B:	2" NPT connection
Hydraulic Supply for the SV-12:	SAE (-6) port connection
Operating Temperature Range:	-29 to +93 °C (-20 to +200 °F) fluid temperature
Mounting:	Any attitude, although vertical mounting is recommended due to the weight of the EHPS. Adequate support must be provided if the unit is not mounted vertically.
	Mounted by servo port manifold (back of servo)

Hydraulic Supply Requirements

Hydraulic Source:	Prime mover lubricating system or external independent supply
Fluid Types:	Mineral or synthetic based oils may be used. Contact Woodward for specific oil recommendations.
Recommended Viscosity:	0.6 to 400 centistokes
Specific Gravity:	0.6 to 1.0
Required Filtration:	10 µm nominal, 25 µm absolute
Supply Pressure:	552 kPa minimum to 1724 kPa maximum limit (80 psi minimum to 250 psi maximum limit)
Return Pressure:	Maximum 10% of Supply Pressure

Hydraulic Flow Requirements:

Supply Pressure	Steady State Flow	Maximum Transient Flow
552 kPa (80 psig)	7.6 L/min (2.0 US gal/min)	378 L/min (100 US gal/min)
1724 kPa (250 psig)	11.4 L/min (3.0 US gal/min)	662 L/min (175 US gal/min)

Electrical Supply Requirements

The EHPS is an integrating actuator without feedback. The EHPS application requires an external feedback device along with a suitable control system like the Woodward SPC product.

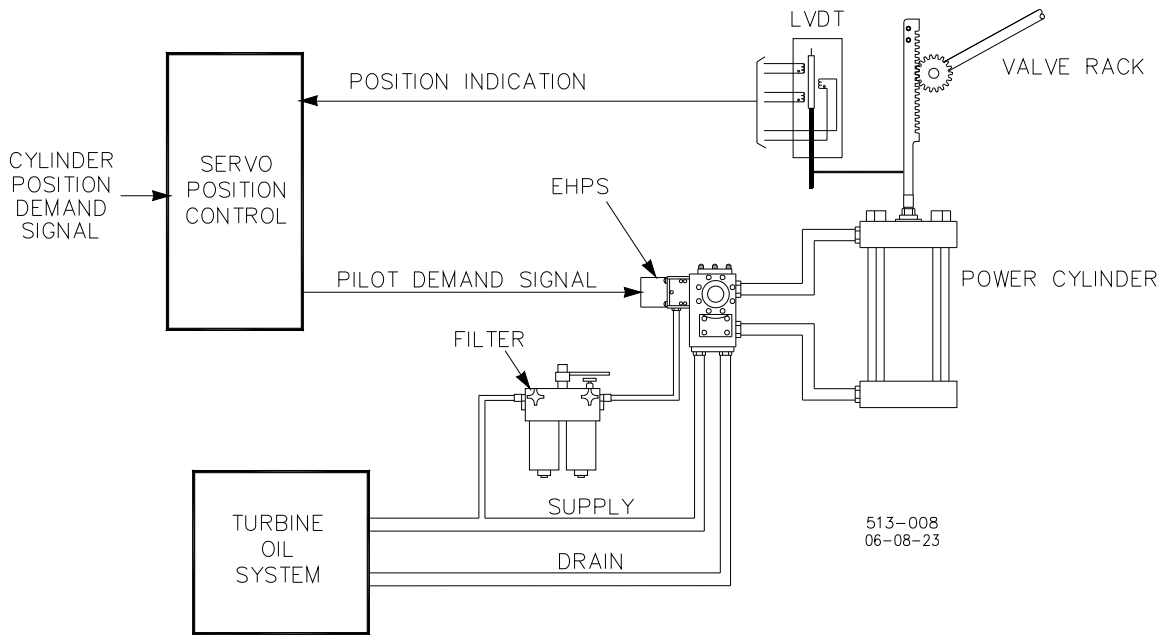
Electrical Input:	0–200 mA pilot valve demand signal with a 100 mA null current (pilot valve centered)
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Regulatory Compliance

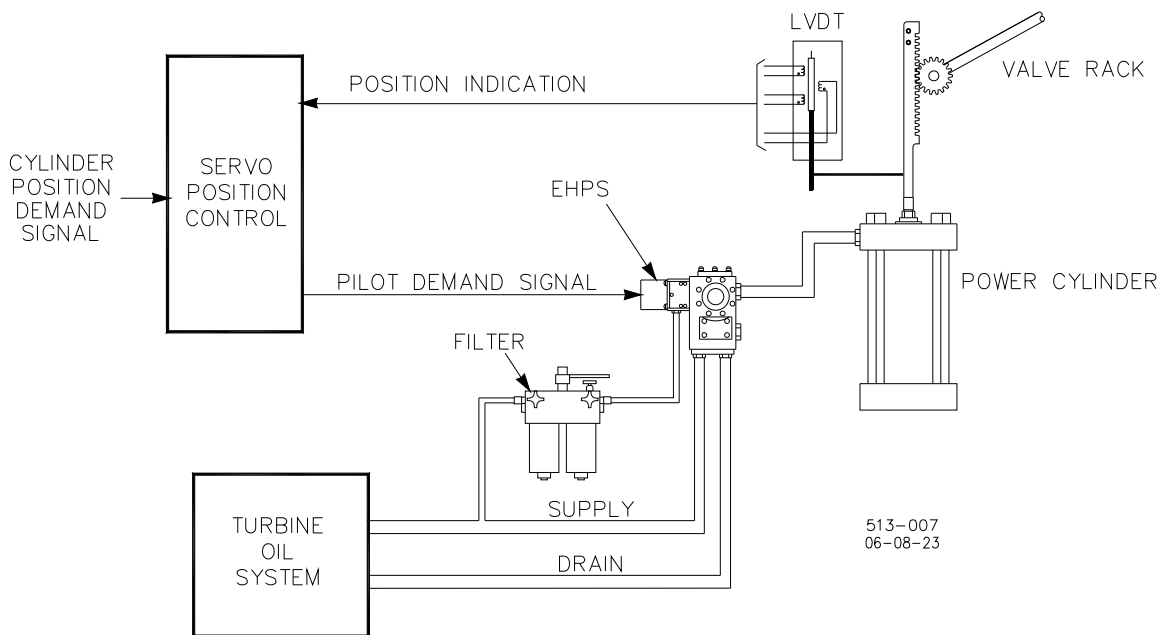
North American Compliance:

These listings are limited only to those units bearing the UL agency identification.

UL:	UL Listed for Class I, Division 2, Groups A, B, C, & D, T4 at 40 °C Ambient. For use in Canada and the United States.
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Typical EHPS Application—Double Acting Actuator



Typical EHPS Application—Single Acting Actuator



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