

Hydraulic Amplifier

Electrically Controlled

Applications

The electrically controlled hydraulic amplifier is a pilot operated, linear servo actuator used in conjunction with the Woodward 2301, 500 Series or NetCon[®] electronic controls. The amplifier contains a Woodward EG-3P actuator which converts the electric control signal to a rotary output which controls the servo output position taken by the amplifier. The amplifier is capable of operating the control mechanisms for steam turbines or large engines which require relatively large forces and work capacity beyond that of the actuators normally used with 2301, 500 Series, and NetCon controls.

Features

Two models of this type amplifier are available. The large 7.25 inch (184 mm) and the smaller 5.25 inch (133 mm) models are basically the same except for the diameter of their servo pistons. The 7.25 inch model is capable of developing about twice the force and over double the work capacity of the 5.25 inch model under the same operating conditions. Either size amplifier may operate as single-acting or differential (double-acting). The single-acting is pressure actuated in the increase fuel direction and spring loaded in the decrease fuel direction. Pressure oil moves the differential servo in both increase and decrease directions. The differential amplifier normally has a light return spring to ensure closing the valve during shutdown.

When supply oil pressure is low at start-up, the force available in a differential amplifier may not be sufficient to move the servo to the increase position. An optional transfer valve may be installed to temporarily convert the differential amplifier to a single-acting operation, resulting in more output force on start-up. As oil pressure increases, this transfer valve unseats and re-establishes differential operation.

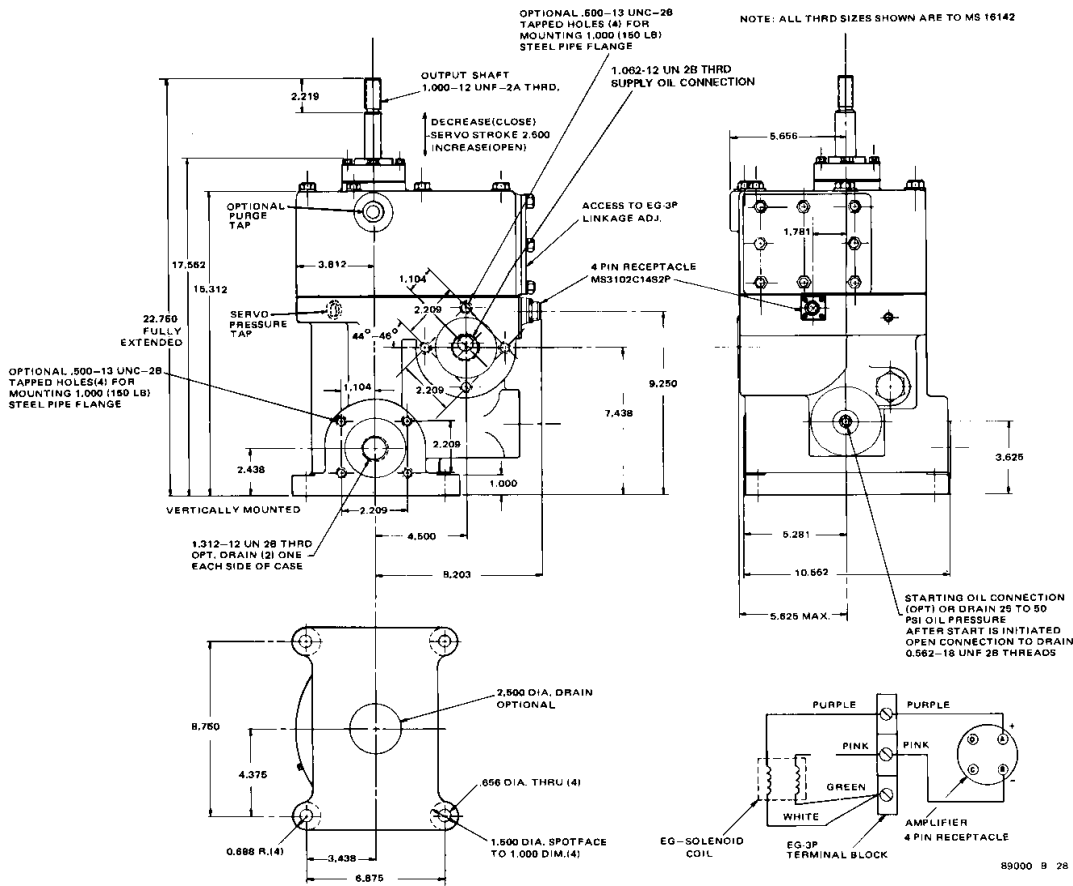
The EG-3P actuator is an integral part of this amplifier with factory installed hydraulic and electrical connections. The actuator is equipped with an oil motor for rotating the pilot valve bushing to reduce static friction. An internal orifice is supplied for regulating the oil flow to the motor. The actuator also has a maximum stop adjustment to limit the output shaft position, thereby limiting the stroke of the amplifier servo.

The amplifier has two adjustments used for matching the level and range of the servo with that of the actuator output shaft.

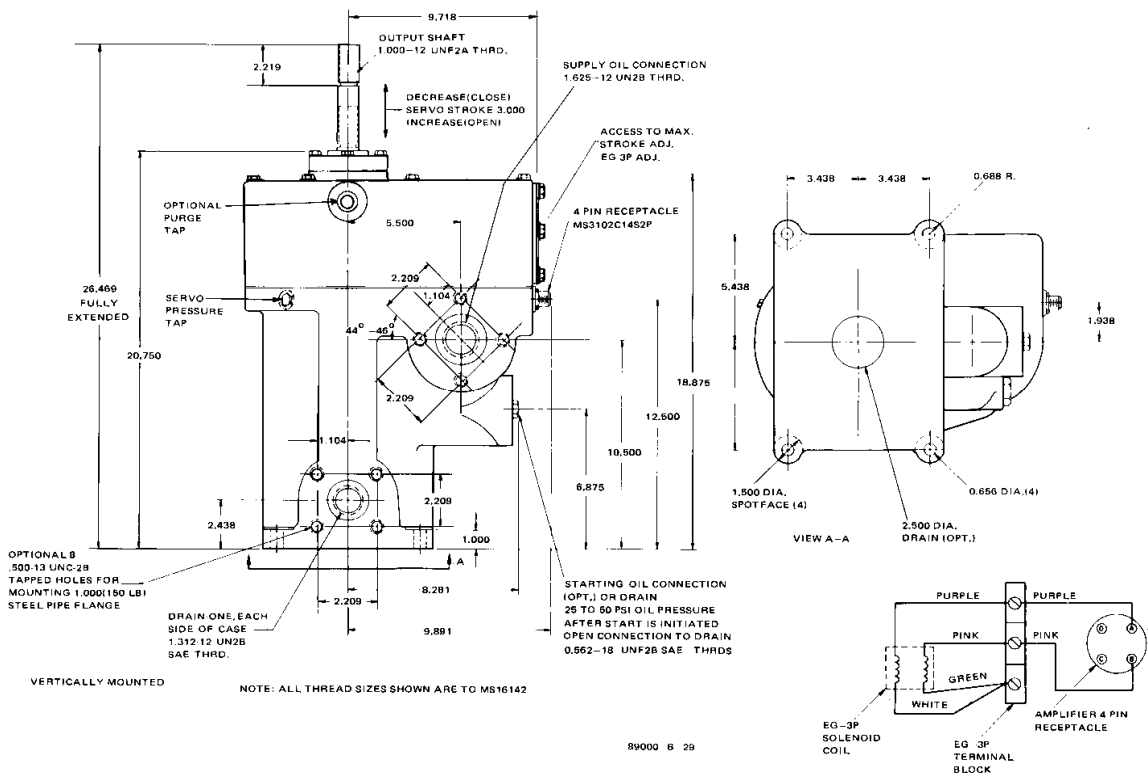
An additional option is a port for starting oil which provides a means of opening the fuel or steam valve prior to start-up. In all applications where starting oil is required, a three-way valve (not supplied by Woodward) must be connected to the starting oil port.



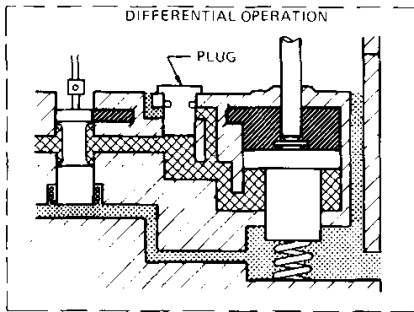
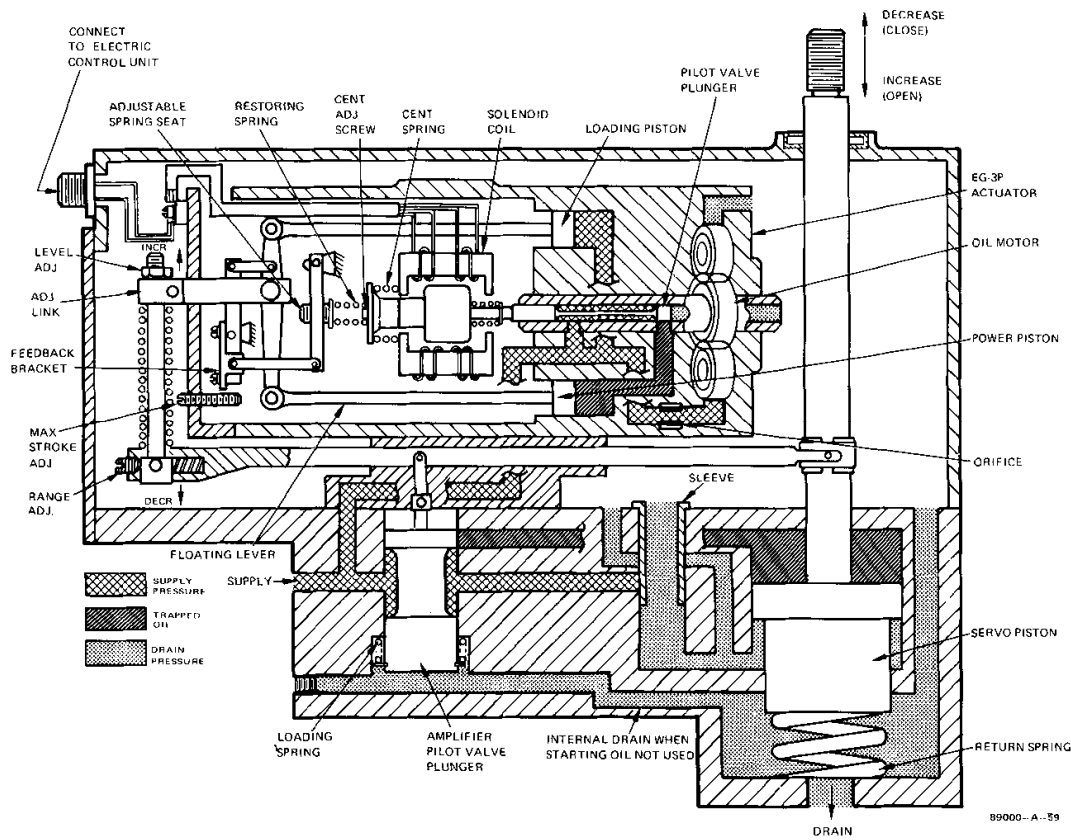
- High work output
- Rapid response
- Internal electric actuator
- Independent starting system
- Models are available with listings for US Hazardous Locations
- Models are available compliant with the applicable CE Directives: ATEX, Pressure Equipment, and Machinery



Typical Outline Drawing of 5.25-inch Hydraulic Amplifier



Typical Outline Drawing of 7.25-inch Hydraulic Amplifier
(Do not use for construction)



(Differential Plug)

Schematic Diagram of 5.25-inch Hydraulic Amplifier



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