

HA14M

DATA SHEET

Model

- ✓ **Mechanical Input, Single Acting (Spring Loaded) Servo**
- ✓ **Mechanical Input, Double Acting (Differential) Servo**

Application

- ➔ HA 14M Hydraulic Amplifier provides the force to operate the control valve of steam turbines or fuel control linkages of large reciprocating engines.
- ➔ The mechanically controlled HA 14M Amplifier is a pilot operated linear servo actuator, which interfaces with the actuator/governor output shaft via a mechanical linkage.



Key features

Optimum transient & steady state response

Minimal overshoot

Shock resistant cast iron casing

Billet power piston & output shaft

Output shaft support bush (oil fed)

Wear preventative coating for extended service life

Input

- Shaft: 0.500" diam. – 36 serrations x 27mm (1.062") long
- Angle travel: 30 degrees available for maximum output, CCW to increase
- Actuator interface: Compatible with StG 16 to StG 40 range of all-electric actuators (linkage not supplied)
- Minimum torque required:

Supply pressure	Minimum torque
345 kPa (50 psi)	1.36 Nm
690 kPa (100 psi)	2.03 Nm
1725 kPa (250 psi)	4.07 Nm
3450 kPa (500 psi)	8.14 Nm

Output

- Piston size: 133.4 mm (5.25") diameter
- Maximum stroke: 63.5 mm +/- 0.76 mm (2.50" +/- 0.03")
- Rod size: 38.1 mm (1.5") diam. width 1.00" – 12 UNF thread
- Maximum stalling force (lbs.) in increase direction:
 - Single-Acting Servo**
 - $20.2P - (F1 + KX)$
 - P = supply pressure
 - F1 = spring preload
 - K = spring scale
 - X = amplifier stroke
 - Double-Acting Servo**
 - 9.6P
 - where P = supply pressure
- Maximum side load on output shaft: 170 kg (375 lbs.)

Control quality

- Time constant: Around 0.025 seconds
- Hysteresis: Within 1.0 %

Construction

- Cover: Cast aluminium
- Case: Cast ductile iron
- Output rod: Hardened and ground steel
- Mass/weight: 75 kg (165 lbs.)

Mounting

- Attitude: Vertical or horizontal with pilot valve above servo
- Mounting bolts: 0.625 diameter (4)

Hydraulic supply

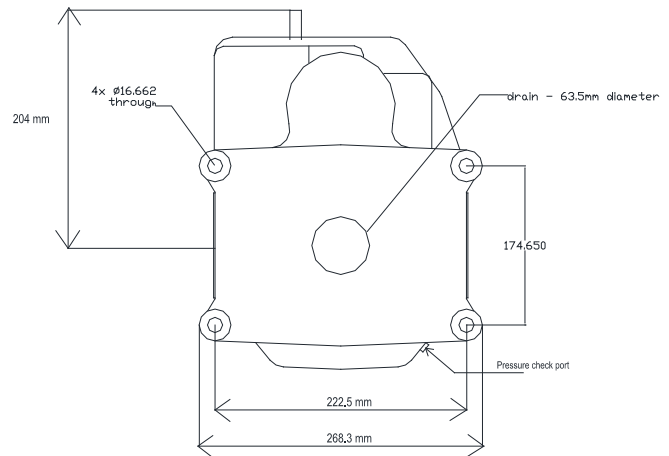
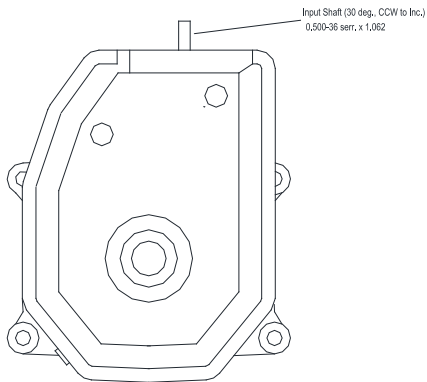
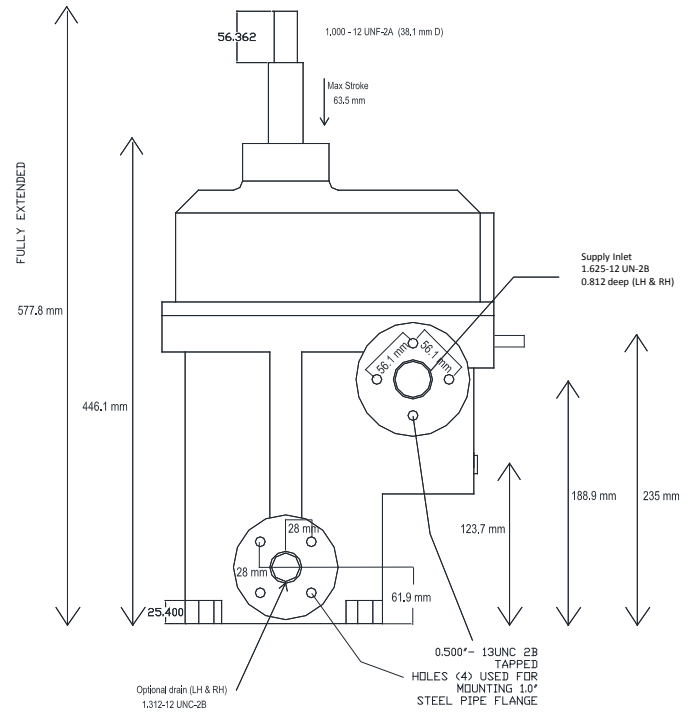
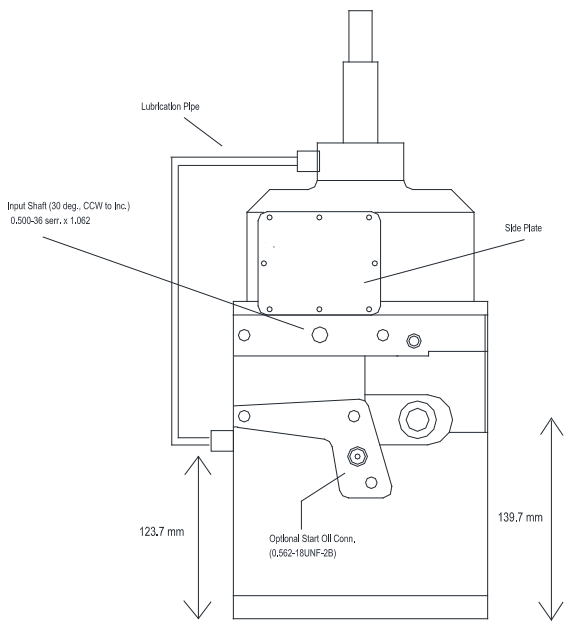
- Type: Petroleum based oils
- Source: Prime mover lubricating system or external supply
- Operating supply pressure: 345 to 3450 kPa (50 to 500 psi)
- Flow rate: 320 L/min (85 gpm) during speed transients (requires accumulator 7.6 L/min.); less than 11.4 L/min (3 gpm) at 3450 kPa (500 psi) steady state
- Supply filters: 40 microns
- Viscosity: Up to 20,000 SSU, but the normal performance is based on 50 to 2000 SSU
- Operating temperature: -30 to +120 °C

Hydraulic fittings

- Supply inlet: 1.625 – 12 UN 2B thread, 0.906 deep
- Drain: Internal drain through case bottom. Optional 1.3121 – 12 UN 2B thread, each side of case are both normally plugged
- Starting oil inlet: 0.562 – 18 UNF 2B thread. Inlet is normally plugged



HA14M Hydraulic Amplifier (mech. input) - dimensions & physical outline



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