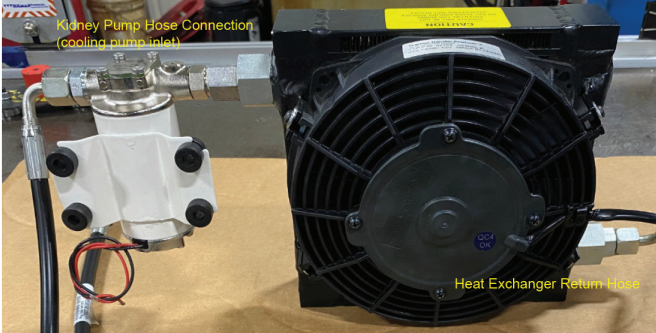




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**Hybrid Actuation System Cylinders**  
 Issued: February 2022  
 Supersedes: None

## HAS 500 Kidney Loop Cooling Package



HAS Air Cooled Heat Exchanger options fitted with optional kidney loop recirculation pump. This option is available when extra cooling is required. It consists of a separate hydraulic pump, DC motor to recirculate the sealed HAS fluid thru an external air cooled Heat exchanger. Pump/Motor Voltages available are 12V and 24V and are matched to the Cooler Fan Motor.

When ordering Reference  
 Part Number: 0993070012 (12V motors)  
 Part Number: 0993070024 (24V Motors)

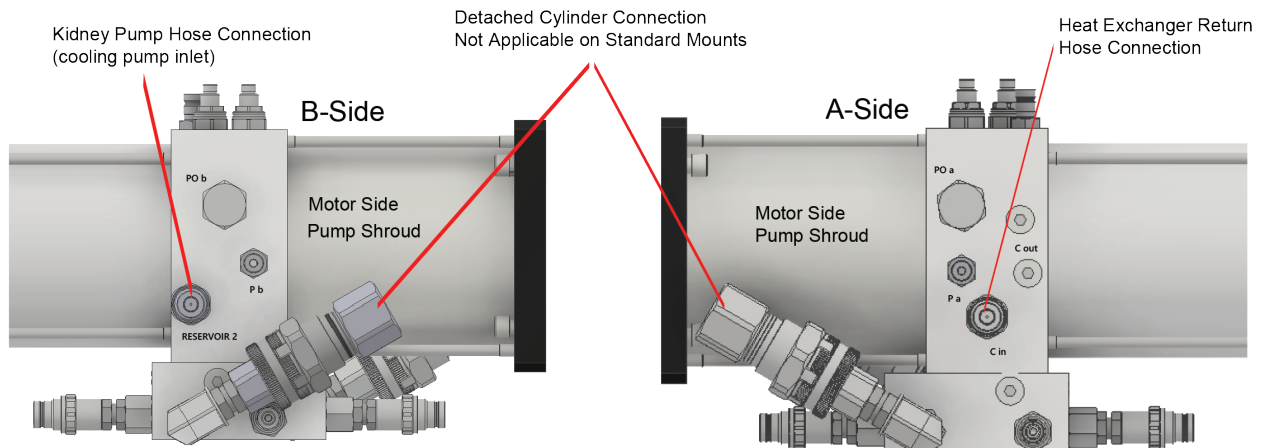
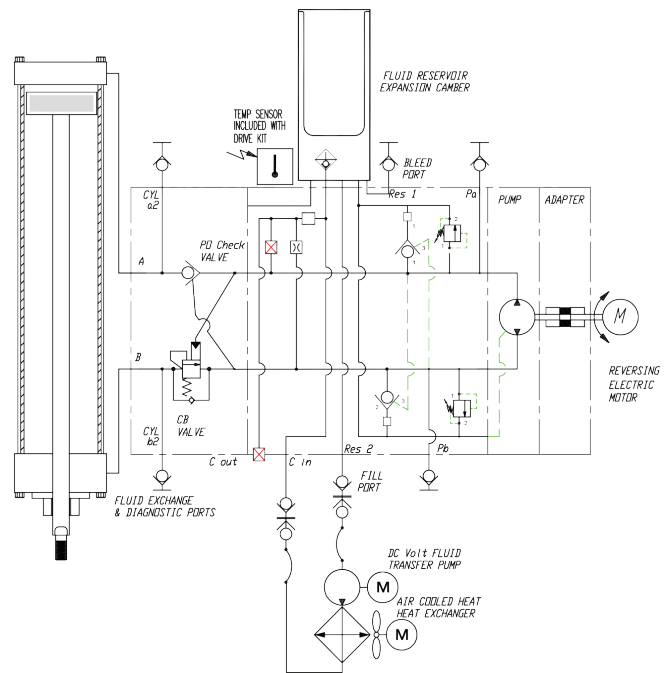
Optional Kidney Loop Cooling/Filter package is available as a non-standard option, needs to be added to the notes when configuring HAS units, for implementation. Can not be added to existing unit previously configured. This cooling loop option is recommended when used with counterbalance valves when high levels of internal heat is generated in the closed hydraulic system. The kidney loop will provide cooling separate from HAS actuator operation, will continue to cool the system when the HAS actuator is off. It is also acceptable when flow loss through orifice is not desirable.

The Cooling loop pump/motor voltage is matched to the Heat exchanger fan voltage so they may be operated in parallel off the same power supply. Hose lengths are available in 1 meter increments, and should be specified at time of quotation.

Cooling pump inlet hose must be connected to Reservoir 2 on HAS Upper Manifold. Heat Exchanger return hose must be connected to "C in" located on HAS Upper Manifold. These 2 connections are on opposite sides of the HAS Upper manifold.

**Never Operate without both hoses connected**

### Hydraulic Schematic



**PROP 65 WARNING** WARNING: This product can expose you to chemicals including Lead and Lead Compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



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## Specifications

### Heat Exchanger

Max Pressure: 250 PSI  
 Construction: Brazed Aluminum  
 Amp Draw 12V: 12.5 Amps  
 Amp Draw 24V: 6.3 Amps  
 CFM: 300  
 Weight (less oil): 9 lbs

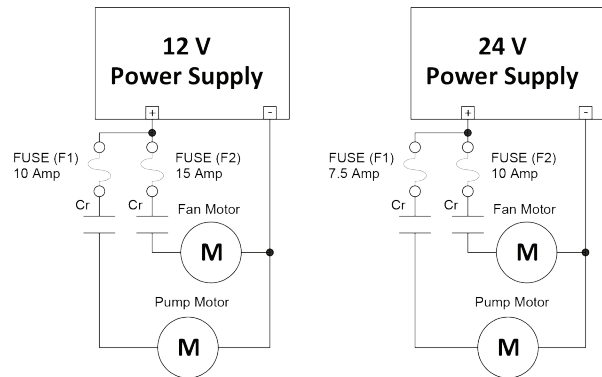
### Cooling Pump

Max Pressure: 73 PSI  
 Construction: Nickel-Plated Brass  
 Amp Draw 12V: 7 Amps  
 Amp Draw 24V: 4 Amps  
 GPM: 0.3 GPM  
 Weight (less oil): 5.5 lbs

### Electrical Interface

Suggested to use a Double Pole Single Throw (DPST) relay with the Fan and Pump/Motor fused individually. With AC890 Drive Kits, the user provided relay may be controlled by the drive. See Heat Exchanger manual for more details.

Use with user provided controller may order HAS Temp sensor, and control relay based upon HAS temperature.

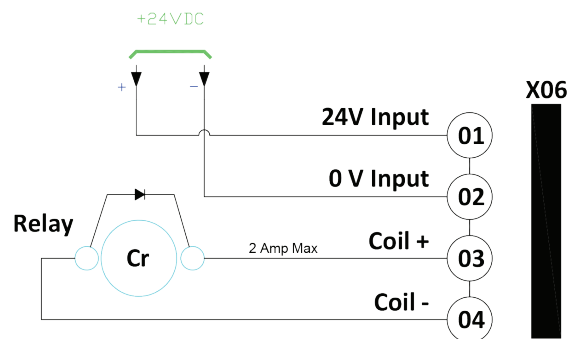


### 0991760\*\*\*Drive Connections

Connection to AC890 Drive kits require an 24V DC coil selection for the relay to control the Fan and pump assembly.

Control macro setup should be set to mode 4 (Always On). This mode will fire the relay coil when the reservoir temperature is above the temp setting in the drive.

HAS Temp Sensor must be used. See Heat Exchanger manual for more details.



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