

## Q: How do I bleed the air out of my hydraulic steering system?

**A:** The methods for bleeding a hydraulic steering system vary for a *Self-Contained* and a *Full Power Hydraulic* system. Both are briefly outlined below: (please call us, toll free at 888-422-7267 if you need further clarification)

Self-contained System: After the Capilano® helm is filled per the Capilano® instructions and with the filler tube connected to the highest port on the helm, disconnect hoses on the cylinder farthest from the helm and connect together using a flare union. While keeping the filler tube half full (so as not to allow air back into the system), slowly turn the wheel in one direction 25 turns. Reconnect hoses on cylinder and repeat for other cylinder. Reconnect hoses to cylinder. During the following bleeding process, keep the filler tube half-full so air is not allowed back into the system. Slowly turn the wheel hard-over in one direction. While holding pressure against motor in the hard-over direction, turn the wheel in the opposite direction while cracking the hose cylinder fitting that is being pressurized. This is the port that is closest to the piston. When the bubbles stop (solid fluid), tighten the hose fitting while still turning wheel to prevent air being re-introduced into the system. Turn the wheel hard-over in opposite direction, and then repeat process for other cylinder.

Repeat the bleeding at the cylinder ports until there is no air left in the system. Shake the motors to check for any play. When the motors do not move back and forth more than 1/16", the bleeding is complete.

Full Power Hydraulic System: Ensure that all hydraulic lines and fittings are securely tightened before starting the bleeding process. During the entire bleeding process, check the oil level in the steering reservoir regularly and top up when necessary. **DO NOT LET IT RUN DRY!** Turn on the engine(s). Be sure water is running to the engines and let run for a few minutes without touching the steering wheel. With the power steering pump(s) running, turn the steering wheel hard-over in one direction and release the wheel. With a bucket placed under one of the steering cylinders, crack the hose fitting that is closest to the piston. This is the port that is closest to the piston rod when the rod is extended and the port that is farthest from the piston rod when the rod is retracted. Allow the oil to leak out of the fitting until there is a solid stream of oil, and then tighten the fitting. With the steering wheel in the same position, repeat this step for any other cylinders. Check oil level in reservoir and top-off if necessary.

After tightening the cylinder hose fitting(s), turn the steering wheel 'hard-over' to the other side then release the wheel. Repeat the bleeding process at the cylinders as described above. Check fluid level in steering reservoir and top-off if necessary. Turn off the motors then shake the wheel back and forth and try to move the drives (hard) back and forth. Check for 1/16" or less movement . If there is no movement of the drive, the bleeding is complete.