

OPERATING INSTRUCTIONS

AND OWNER'S MANUAL

www.seastarsteering.com





DC POWER STEERING UNIT PART # DC1000 & DC2000



ISO 9001





lielefi EX®

Notice to Boat Manufacturer or Installer

Throughout this publication, Warnings and Cautions (accompanied by the International Hazard Symbol $\underline{(?)}$) are used to alert the manufacturer or installer to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly.

Observe Them Carefully!

These "safety alerts" alone, cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the installation and maintenance plus "common sense" operation are major accident prevention measures.

A DANGER	WARNING		NOTICE
Immediate hazards which WILL result in severe personal injury or death.	Hazards or unsafe practices which COULD result in severe personal injury or death.	Hazards or unsafe practices which COULD result in minor injury or product or property damage.	Information which is important to proper installation or maintenance, but is not hazard-related.

WARNING

Cleaning fluids containing ammonia, acids or any other corrosive ingredients <u>MUST NOT</u> be used for cleaning any part of this Hydraulic Steering System. Failure to comply will cause serious damage to the steering system, resulting in possible loss of steering, causing property damage, personal injury and/or death.

NOTICE

Help protect your boating environment by ensuring that all used oil is disposed of properly.

Don't compromise performance... use genuine SeaStar parts only!

- SeaStar helms
 SeaStar Cylinders
- SeaStar hoses
 SeaStar Oil
- Substituting non SeaStar parts in any part of the SeaStar hydraulic steering system, may seriously compromise system performance.

INTRODUCTION

Before proceeding with the installation, please read these instructions thoroughly to familiarize yourself with the workings of this SeaStar DC Power Steering System. Teleflex cannot accept responsibility for installations where instructions have not been followed, where substitute parts have been used, or where modifications have been made to our products. Warranty may be void if products other than Teleflex products are used with this system.

Index

Introduction 1
How the System Works
SeaStar DC Power Unit Compatibility Chart
Tools
Specifications 4
System Overview 5
System Installation
Step 1 Mounting & Plumbing 7
1.1 DC Power Unit Mounting7
1.2 Relief Module Installation
1.3 Plumbing the DC Power Unit
Step 2 Electrical Connections 11
2.1 DC Power Unit Battery Connections 11
2.2 Ignition Connection 12
2.3 Autopilot Connections 12
Step 3 Filling and Purging 13
3.1 Purging Using Fast Purge Kit (HA2266) 13
3.2 Purging Using Supplied Bleed Tubing14
Step 4 Autopilot Tuning 16
Step 5 System Verification and Operation Check 17
Maintenance
Troubleshooting Guide
Statement of Limited Warranty 20
Return Goods Procedure

HOW THE SYSTEM WORKS

The SeaStar DC Power Unit is a self contained steering system designed to provide an alternative to existing power steering systems. Unlike conventional power steering systems which require engine/pulley driven pumps, oil coolers, oil reservoir, filter and relief control valves, the DC Power Unit is an integrated power steering solution requiring only the DC Power Unit, a steering cylinder and one, or multiple, helm pumps. The end result will be less power consumption and very little heat generation. Installation of the SeaStar DC Power Unit requires fewer parts, less installation time and easy troubleshooting, making it an all around user friendly system. With the built in semi-automated purge system, the SeaStar DC Power Unit will help the installer bleed ALL of the air out of the steering system in minimal time.

The DC Power unit incorporates an autopilot pump as well, for a cleaner, more reliable installation than using external pumps.





SeaStar DC Power Unit Compatibility

The DC Power Unit is compatible with the following SeaStar steering equipment:

Helms All 1.4 and 1.7 SeaStar Non-Feedback helms. DC Power Unit is NOT compatible with Hynautic, Capilano, or other manufacturers' helms.

Cylinders		9" STROKE, 2" DIA.	11" STROKE, 2" DIA.	9" STROKE 2.5" DIA.
	SINGLE	YES (HC5801-2)	YES (HC5803-2)	YES (HC5805)
	TWIN	YES (HC5801-2 & HC5802)	YES (HC5804 & HC5803-2)	NOT Recommended

causing property damage and/or personal injury or death.

Hydraulic Fluid	Recommended hydraulic fluids are:	
	 SeaStar Steering Fluid Fluids meeting MIL H5606 Specifications 	 Automatic transmission fluid, Dextron II may be used in an emergency
A CAUTION	Never use Brake Fluid. Any non-ap damage, loss of steering, and can	pproved fluid may cause irreparable cellation of warranty.
	In cases of extreme emergency may provide temporary steering.	any non-toxic, non-flammable fluid
NOTICE	DC Power Unit is designed specifi DO NOT use Hynautic, Capilano,	cally for use with SeaStar NFB helms. or other manufacturers Helms.
A WARNING	DO NOT use extruded nylon tubing SeaStar Outboard type steering I and ONLY use Dash - 8, 2000psi 3/8" Copper tubing is also acce lines, provided 4' SeaStar hose s copper to any fittings.	g for plumbing this system. ONLY use ines for all helm pump connection hose for PRS/TNK connections. ptable as a substitution for SeaStar sections are used to connect the
	Failure to follow the above may	lead to loss of steering control



Tools

WARNING

DO NOT Use Teflon Tape.

- 5/32" and 1/4" Allen keys
- Phillips head screw driver
- Slotted/Flat head screw driver
- PST Liquid, Teflon based pipe sealant
- 3/4" and 7/8" open ended wrenches
- ave Electrical out and arimp plice
 - Electrical cut and crimp pliers
 - ALL other tools noted in your helm pump and steering cylinder owner's manual
 - Funnel

You will need the following tools to complete your installation.

Crescent wrench

Specifications

DC 1000

- Power unit = 24Volts
- Autopilot pump = 12Volts 0-60 in³/min (fully adjustable)
- Peak current draw
 @ 1250psi = 72A
- Idle current draw = 0.2 amps
- Average current draw = 10-15 amps (depending on application)
- Weight = 55 lb (25kg) Dry
- Tank Capacity = 1.85 gal (7L)

DC 2000

- Power unit = 24Volts
- Autopilot pump = 24 Volts 0-60in³/min (fully adjustable)
- Peak current draw @ 1250psi = 72A
- Idle current draw = 0.2 amps
- Average current draw = 10-15 amps (depending on application)
- Weight = 55 lb (25kg) Dry
- Tank Capacity = 1.85 gal (7L)







System Overview

Included with your kit	SeaStar DC Power Unit x 1 Seals x 2 Seals x 2
	Relief Valve Module x 1
Additional items required for installation	 Power steering cylinder (See cylinder selection guide, and page 3 for DCPU compatibility). Hoses (See hose information on page 9). Liquid Teflon Sealant (DO NOT USE TEFLON TAPE). Helm (1.4 or 1.7 NFB models ONLY). Non-vent caps for helms. Wiring (see "Wiring Connections" section for details). 90A peak power supply on vessel. Autopilot controller (Optional). Fast Purge Kit (Optional). SeaStar Steering Fluid. 1.85 gal (7L) for Power Unit tank 0.13 gal (1/2L) for each steering cylinder 0.26 gal (1L) for each helm station Additional 1–2 gal (4–8L) depending on hose length and type Misc. mounting hardware. Misc. crimp or solder connectors for making electrical connections. One HF5529 fitting kit per additional helm station
STEP 1	 System Installation Install SeaStar helm pump(s) using installation instructions provided with your helm. Install steering cylinder using the installation instructions provided with your cylinder.
	Install non-vent plug part # HA5432 into ALL helm pump stations on board vessel. Failure to properly install non-vent plugs can result in loss of steering causing property damage, personal injury and/or death.



STEP 4 Autopilot Tuning

• Refer to page 16 of this manual to adjust autopilot speed.

STEP 5 System Verification & Operation Check

• Refer to page 16 of this manual to verify system operation.



SYSTEM INSTALLATION

Step 1 Mounting and Plumbing

1.1 Install Helm Pump(s)

• Install SeaStar Helm pump(s) using the instructions provided with your helm(s).

1.2 Install Steering Cylinder(s)

• Install SeaStar steering cylinder(s) using the instructions provided with your cylinder(s).

1.3 DC Power Unit Mounting

• Using the four mounting holes on the base of the unit, mount the DC Power Unit in the desired location. Confirm that there will be sufficient room for filling/purging, hose connections and future access to the unit.

Mount the unit in a cool location, away from any sources of excessive heat, such as engine manifolds, and also free of any water splash.





NOTICE

For installations with minimal clearance behind unit, it is advised that electrical connections are made prior to mounting the Unit.

NOTICE

For installations in areas where pump noise may disturb passengers, the use of rubber isolation mounts is recommended. Teleflex part # HA2222.

1.4 Relief Module Installation

NOTICE

All cylinders manufactured during or after January 2008 will have mounting provisions for the relief module.

🚹 WARNING

Ensure that the quad rings remain seated in the relief valve module and are not pinched and/or rolled between the module block and the servo cylinder valve. Failure do so will result in fluid leaks causing property damage, personal injury and/or death.

- Remove steering cylinder from its packaging and inspect servo valve block. The cylinder MUST have three tapped holes on the face of the servo valve block as shown in figure 5 below. If the servo valve block does NOT have these tapped holes contact Teleflex Technical Support.
- Remove fittings from the PRS and TNK ports on the steering cylinder servo block if required.
- Inspect valve block face. It MUST be free of ALL contaminants, including thread sealant, debris, burrs, gouges or large scratches. Clean as required.
- Install both quad rings (items #2) into relief valve module as shown in Figure 5.
- Insert three (3) socket head cap screws (items #1) into relief valve module (item #3) and fasten to front face of cylinder servo valve as shown in Figure 5. Torque mounting bolts to 40 in.lb.
- Clean threads and apply a Teflon based, liquid pipe sealant to the threads of the fittings that were removed in the second point above. Install fittings into the ports on the relief module. DO NOT USE TEFLON TAPE. Torque fittings to 200 in. lb.



Figure 5.

SEASTAR Hydraulics

Seastar. DC POWER STEERING UNIT

WARNING

1.5

Install non-vent plug part # HA5432 into ALL helm pump stations on board vessel. Failure to properly install non-vent plugs can result in loss of steering causing property damage, personal injury and/or death.

All SeaStar hose connections and bleeders must be torqued to 15 ft-lb. SAE-8 fittings should be torqued to 40 ft-lb. Failure to correctly torque may lead to loss of steering control causing property damage and/or personal injury or death.

DO NOT reverse PRS/TNK lines or damage to unit may result.

ONLY use SeaStar or SeaStar PRO steering lines for all lines except PRS and TNK. 3/8" Copper tubing is also acceptable as a substitution for SeaStar lines, provided 4' of SeaStar hose is used to connect copper to fittings. Failure to comply may lead to loss of steering control causing property damage and/ or personal injury or death.

NOTICE

For multiple helm installations, helm reservoirs must be DIRECTLY chained together by connecting the upper reservoir port of the lower helm to the lower reservoir port of the next highest helm. (Refer to Figures 6 and 7.)



Plumbing the DC Power Unit



Figure 6. Rear Mount Helms. (Recommended wherever possible.)



Figure 7. Standard helms. (Acceptable configuration; helms will need to be burped during purge. Refer to page 13 to page 16)

Helm pump to DC Power Unit

- Connect P and S helm pump ports to H1 and H2 as outlined in Table 1, Figure 8 and Figure 9.
- Connect hose from lower R port on the helm pump to the HB port on the DC Power Unit. (Refer to Figures 6 and 7.)
- Connect hose from upper R port (or fill port) on helm to the HT port on the DC Power Unit. (Refer to Figures 6 and 7.)

DC Power Unit to steering cylinder

- Connect 1/2" Dash 8; 2000psi SAE 100R hose from the PRS port on the DC Power Unit to the PRS port on the steering cylinder.
- Connect 1/2" Dash 8; 2000psi SAE 100R hose from the TNK port on the DC Power Unit to the TNK port on the steering cylinder.
- Connect C1 port on DC Power Unit to HS port on cylinder.
- Connect C2 port on DC Power Unit to HP port on cylinder.





Config.	Hose Connection
Α	Connect 'P' on helm to 'H2' on power unit
	Connect 'S' on helm to 'H1' on power unit
В	Connect 'P' on helm to 'H1' on power unit
	Connect 'S' on helm to 'H2' on power unit

Table 1



Step 2 Electrical Connections

NOTICE

To avoid risk of fire, ensure that the area in which any electrical connection is being made is vented and free of any fumes that may cause fire or explosion.

WARNING

To avoid fire and/or poor steering performance, ALL electrical connections and cable MUST comply with ABYC wiring standards, be rated for 105 degrees C, and compliant with SAE J1128. Battery leads must be a MINIMUM of 6AWG and a MAXIMUM of 30ft in length, with an appropriate fuse or breaker for fire protection. If your application requires longer battery leads, please consult factory.

DO NOT REVERSE POLARITY. The use of color coded (Red/ Black) wiring is highly recommended to avoid reversing polarity. Failure to comply may result in damage to the unit.

NOTICE

Battery connections inside the electrical box should be made using ring terminals sized for a #10 stud.

NOTICE

2.1 DC Power Unit Battery Connections

It is recommended that the DC Power unit be connected directly to a main battery, or other on-board 24-volt power source rated for 90 amps peak using an appropriate fuse or breaker.

- **1** Remove electronics casing cover by removing the 6 Phillips head screws. (Refer to Figure 10.)
- **2** Insert positive battery lead through the upper strain relief fitting on the electronics box. (Refer to Figure 10.)
- **3** Remove the #10 Phillips head screw from the top-most terminal inside the electronics enclosure. Securely fasten the positive lead with ring connector to this terminal post, torque to 25in-lbs.
- **4** Insert negative battery lead through the lower strain relief fitting on the electronics box. (Refer to Figure 10.)
- **5** Remove the #10 Phillips head screw from the bottom-most terminal inside the electronics enclosure. Securely fasten the negative lead with ring connector to this terminal post, torque to 25in-lbs.
- **6** Using a crescent wrench, tighten the strain relief nuts until the rubber sleeves form a seal with the wires. DO NOT OVER TIGHTEN.
- **7** Connect the other ends of your battery leads to your breaker box, battery, or other 24V power source rated for a minimum of 90A peak current.
- **8** Leave the electronics cover off for the moment, you are not finished.



It is recommended that ring-type crimp connections are used at each end of the battery harness. Use the correct ring terminal for the wire gauge, and the appropriate crimping pliers.

DC Power Steering System



SeaStar

DC POWER STEERING UNIT

2.3 Autopilot Connections

NOTICE	When extending wire leads, marine best practices must be followed. Solder and shrink wrap are highly recommended. Appropriately sized and properly installed crimp connections with shrink wrap protection are also acceptable. A minimum of 12AWG wiring should be used for any extensions.
	1 The Red (+) and Black (-) leads from the autopilot motor should be connected to your autopilot controller as specified in your autopilot controller documentation.
	NOTE: The polarity of the autopilot connections may need to be reversed for correct operation in some installations.
NOTICE	Consult autopilot manufacturer's documentation for full operation instructions, EMC guidelines, etc.



Step 3 Filling & Purging the System



Figure 11. Fast Purge Kit HA2266.

NOTICE

The use of Fast Purge Kit (HA2266) is highly recommended and will improve speed and quality of purge.

CAUTION

Monitor tank oil level during purge. Failure to maintain MIN oil level will allow air into the system and may lead to damage to the power pump.

WARNING

3.1 Purging Using Fast Purge Kit (HA2266)

- **1** Fill DC Power Unit tank with SeaStar Steering Fluid to the "FULL" line on sight glass, DO NOT OVERFILL (refer to Figure 14 for location of sight glass).
- **2** Turn ignition ON to power DC Power Unit.
- **3** Enter purge mode by holding down the purge button on the DC Power Unit for 5 seconds. The unit's main power pump will start operating, and the red purge LED will light up.
- **4** Install Fast Purge Kit on steering cylinder and open all three cylinder bleeder fittings a 1/4 turn. (Refer to Figure 11.)
- **5** Open purge valve by rotating counter-clockwise until valve seats. (Purge valve marked with the letter P on Power Unit, refer to Figure 14).
- **6** Allow the unit to run for approximately 5 minutes while monitoring and filling the oil reservoir as needed. Take this opportunity to check helms and hose connections for leaks.
- **7** Start at the highest helm station; turn the wheel to port for at least 10 wheel revolutions.
- 8 Repeat Step #7 to the starboard side.
- **9** Repeat steps #7 and #8 for each helm station, working from highest to lowest.
- **10** If equipped with an autopilot, jog the a/p controller in both directions at this time.
- **11** At this time verify oil level again and wait approximately 2 minutes while the unit purges the power circuit.
- **12** Using any steering station, stroke cylinder from hard over to hard over several times, or until an air free stream of fluid is seen through the bypass line.

If cylinder will not stroke at this time verify that the bleeders opened in Step 4 are open 1/4 turn MAX.

- **13** Close Purge Valve completely. Torque to 80 in-lb. (Purge valve marked with the letter P on Power Unit, refer to Figure 14).
- **14** Close cylinder bleeder fittings (torque to 15 ft-lb) and remove Fast Purge kit.
- **15** At this time, if using front mount helms as shown in Figure 7, 'burp' each helm station by loosening the fill cap slightly to release any trapped air. Loosen cap just enough to allow oil to start escaping (DO NOT fully remove cap.) Use a rag to catch any oil spillage.
- **16** Exit "purge mode" by either pressing the purge button once, or, by cycling the power unit ignition power.
- **17** Verify oil level and replace fill cap. With Power Unit on confirm that the bleeding is completed by counting the number of wheel turns from hard over to hard over. Use the chart on next page to determine wheel turn amount.

Ensure purge valve is fully closed and tightened to 80 in-lb before operating vessel. Failure to comply may lead to loss of steering control causing property damage and/or personal injury or death.

DC Power Steering System

SYSTEM	HC5801-2	HC5803-2	HC5805
SeaStar 1.4	4.3 Turns	5.3 Turns	4.3 Turns
SeaStar 1.7	3.6 Turns	4.4 Turns	3.6 Turns

Number of Wheel Turns by Installation

Table 2

If your wheel turns are not to within at least a 1/2 turn of the ones shown above, repeat bleeding procedure.

- 3.2 Purging Using Supplied Bleed Tubing (No Fast Purge Kit)
 - **1** Fill DC Power Unit tank with SeaStar steering fluid to the full line on sight glass; DO NOT OVERFILL. (Refer to Figure 14 for location of sight glass.)
 - **2** Turn ON DC Power Unit ignition.
 - **3** Enter purge mode by holding down the purge button on the DC Power Unit for 5 seconds. The unit's main power pump will start operating, and the red purge LED will light up.
 - 4 Connect the bleeder tube to the HP bleeder tee and the tank bleeder fitting on the power steering cylinder (Refer to Figure 12.) Open bleed fittings 1/4 − 1/2 turn. Use supplied spring clamps to retain hose securely.
 - **5** Open the purge valve by rotating counter-clockwise until the valve seats. (Purge valve marked with the letter P on Power Unit; refer to Figure 14.)
 - **6** Allow the unit to run for approximately 5 minutes while monitoring and filling the oil reservoir as needed. Take this opportunity to check helms and hose connections for leaks.



Figure 12.

WARNING

Failure to enter purge mode prior to opening the purge valve may result in damage to system.



- **7** Referring to Table 1 and Figure 12 and starting at your highest helm station, turn the wheel starboard (configuration A) or port (configuration B) until cylinder is fully retracted. If cylinder is already fully retracted, proceed to the next step.
- **8** Turn the wheel 10 turns in the opposite direction. The cylinder may not move at this point, this is OK. Repeat, turning in the same direction for each station from highest to lowest.
- **9** If equipped with an autopilot, jog the a/p controller in both directions at this time.



Figure 13.

- **10** Close the cylinder bleed fittings. Remove the bleeder tube from the HP bleeder tee and connect it to the HS bleeder tee on the cylinder (Refer to Figure 13). Open bleed fittings 1/4 1/2 turn.
- **11** Referring to Table 1 and again starting at your highest helm station, turn the wheel port (configuration A) or starboard (configuration B) until cylinder is fully extended. If cylinder is already fully extended, proceed to the next step.
- **12** Turn the wheel 10 turns in the opposite direction. The cylinder may not move at this point, this is OK. Repeat, turning in the same direction for each station from highest to lowest.
- **13** Repeat steps 7 through 11, 4 times or until no air can be seen in the bleeder tube when the cylinder is taken to full extension/retraction.
- **14** Close all the cylinder bleed fittings (torque to 15 ft-lb).
- **15** Close the purge valve completely. Torque to 80 in-lb.
- **16** At this time verify oil level in the reservoir and wait approximately 2 minutes while the unit purges the power circuit.

Ensure purge valve is fully closed and tightened to 80 in-lb before operating vessel. Failure to comply may lead to loss of steering control causing property damage and/or personal injury or death.



- **17** If using front mount helms as shown in Figure 7, 'burp' each helm station by loosening the fill cap just far enough to allow oil to start escaping (do not fully remove cap). Use a rag to catch oil spillage. DO NOT REMOVE THE FITTING. Tighten fill cap.
- **18** Exit purge mode by either pressing the purge button once, or by cycling the power unit ignition power.
- **19** Verify oil level and replace fill cap.

With Power Unit on, confirm that the bleeding is completed by counting the number of wheel turns from hard over to hard over. Use chart on page 14 to determine the correct number of turns.

Step 4 Autopilot Tuning

The DC Power Unit is supplied with the autopilot pump set to "full speed" This will give approximate 60 cu in/min of flow. To adjust the autopilot speed, locate the adjusting screw (refer to Figure 14). To reduce speed, turn adjusting screw counter-clockwise until the desired autopilot speed is achieved.

 Refer to autopilot controller documentation for complete autopilot system set-up

NOTICE

It is suggested that after an adjustment is made, the vessel be sea trialed in an open area to determine proper/safe hard over times.

NOTICE

Refer to autopilot controller documentation for complete autopilot system setup.



Figure 14.



Step 5 System Verification & Operation Check

If a leak is noticed, it MUST be corrected prior to using the boat Failure to do so may lead to loss of steering causing property damage, personal injury or death.
Perform a 'System Leak Test' by taking the helm pump to hard over. Once the hard over point is reached, continue to force the wheel an additional 1/2 turn to pressurize the system. Leave the wheel in this position for at least 5 minutes, then, check ALL connection points, hoses, helm, cylinder, etc. to ensure that no leak is shown. Repeat to the opposite direction. DC Power Unit may cycle on and off repeatedly while held at hard over. This should be considered normal.
At this time you have successfully installed the DC Power Unit. Verify that the system is operating properly, and verify that turning of the helm results in the correct movement of the cylinder shaft and rudder(s).

MAINTENANCE

NOTICE	The oil level in the Power Unit should be checked routinely. Any loss of fluid indicates a leak somewhere in the system which must be repaired immediately before operating the vessel.
	Hoses should also be routinely inspected. Replace any hose(s) showing signs of wear and remove the cause or reroute the hose(s).
	Check all fittings and seal locations for leaks/damage and services as necessary.
	Failure to comply with maintenance checks may result in loss of steering, causing property damage and/or personal injury.
	Maintenance requirements will vary depending on usage and climate. Bi-annual inspection by a qualified marine mechanic is required.

TROUBLESHOOTING GUIDE

NOTICE

These troubleshooting notes have been gathered from several cases throughout the years. Whenever a solution calls for removal of parts, disassembly of parts etc. The work must ONLY be performed by a 'Qualified Marine Technician'.

FAULT	CAUSE	SOLUTION
1. Unit blows fuses upon connection.	Electrical connection polarity reversed.	Check battery connections.
	PRS/TNK reversed.	Check PRS/TNK connections.
2. Turning one wheel results in the other wheel turning.	Dirt or debris in inlet checks of helm	Replace or repair helm pump.
3. Turning ON ignition does NOT turn on DC Power Unit.	Ignition wire (purple) not connected to positive ignition source.	Connect to ignition source ONLY.
	Damaged of faulty wire.	Check and replace faulty section as required.
	Battery cables reversed.	Confirm RED is attached to the Positive (+) terminal on battery, and BLACK (–) to the negative terminal of battery.
4. Requires too many turns from hard over to hard over.	Hoses installed in the wrong ports.	Review the plumbing diagrams for your system noted on page 9 through page 10 confirm that your hoses are hooked up correctly.
	Kinked or collapsed line.	Check ALL lines for sign of a collapsed or kinked line.
	DC Power Unit not on.	See item 3.
5. Helm only turns in one direction and free wheels in the other.	Port or Starboard line is connected to the reservoir R port on the DC Power Unit.	Review the plumbing diagrams for your system noted on page 9 through page 10 confirm that your hoses are hooked up correctly.
6. Pump cycles ON/OFF at hard over.	NORMAL	This is not considered a fault.



7. Pump runs continuously.	Bleed fitting left open. Purge valve open. Contamination causing flow sensors to stick. Unit plumbed incorrectly. Air in system.	Close bleed fitting. Close purge valve. Shake wheel back and forth quickly several times. If problem persists contact Teleflex technical support. Verify hose routing as noted on page 9 through page 10. Repeat purge procedure.
8. Cylinder 'Hunts' or makes continuous course corrections	Autopilot incorrectly set up.	Refer to Autopilot controller documentation for correct set up. Adjust Autopilot pump flow rate on DC Power Unit. Refer to page 16.
9. Poor steering response or drift.	Air in system. Dirt or debris in helm check or relief valve(s). Dirt or debris in power steering cylinder valve or damaged power steering cylinder.	Repeat purge procedure . Replace or repair helm pump(s). Replace or repair power steering cylinder

Statement of Limited Warranty

We warrant to the original retail purchaser that **Teleflex Canada Limited Partnership** products have been manufactured free from defects in materials and workmanship. This warranty is effective for two years from date of purchase, excepting that where **Teleflex Canada Limited Partnership** products are used commercially or in any rental or income producing activity, then this warranty is limited to one year from the date of purchase.

We will provide replacement product without charge, for any **Teleflex Canada Limited Partnership** product meeting this warranty, which is returned (freight prepaid) within the warranty period to the dealer from whom such product were purchased, or to us at the appropriate address. In such a case **Teleflex Canada Limited Partnership** products found to be defective and covered by this warranty, will be replaced at **Teleflex's** option, and returned to the customer.

The above quoted statement is an extract from the complete **Teleflex Canada Limited Partnership** products warranty statement. A complete warranty policy is available in our **Teleflex Canada Limited Partnership** products catalogue.

Return Goods Procedure

Prior to returning product to **Teleflex Canada Limited Partnership** under warranty, please obtain a *Return Goods Authorization number* (claim number).

Be sure to label the goods with:

a) the name and address of the sender, and

b) the return goods authorization number (claim number)

Please address the returned goods as follows:

From U.S.A.

RGA # ? Teleflex Canada c/o UPS-SCS Warehouse 1927 Boblett Street Blaine, WA 98230

From Canada

RGA # ? Teleflex Canada 3831 No.6 Road Richmond, B.C. Canada V6V 1P6



TELEFLEX CANADA 3831 NO.6 ROAD RICHMOND, B.C. CANADA V6V 1P6

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