SERVICE WORK INSTRUCTION

SEAKEEPER GLYCOL SERVICE – 107

PRODUCT SEAKEEPER SERIES MODELS

PURPOSE

To provide instructions on the servicing of glycol coolant system of Seakeeper Series model stabilizers, excluding Seakeeper single-cylinder integrated manifold models (see SWI-207 for those models' glycol service).

BACKGROUND

Disassembly or many hours of operation are some reasons for loss of glycol coolant volume. Also reference Document 90426: Seakeeper Scheduled Maintenance Plan.

Current model Seakeepers use a heat exchanger design with a separate reservoir and an on-demand DC-powered seawater pump. These systems present new challenges in servicing the Seakeeper coolant systems and are addressed here.

NOTES/PRECAUTIONS

1. PERSONNEL INJURY MAY RESULT if Seakeeper is unlocked and not at zero RPM before removing covers or accessing unit for service.
2. PERSONNEL INJURY MAY RESULT if attempting to perform maintenance on Seakeeper without removing flywheel motor power and applying lockouts due to remote start capabilities.
3. PUMP DAMAGE MAY OCCUR if glycol pump operated while dry.
4. SEAKEEPER COMPONENT DAMAGE MAY OCCUR if strong acids or bases used in the glycol system.
5. Even after extensive venting efforts, **some air may still be seen in coolant**; this is normal and acceptable. The presence of air is evident by cloudiness in the fluid. If coolant level remains at fill level during operation, the cloudiness is not an issue.
6. When replacing hoses, wetting hose end internals with glycol solution makes installation easier.
7. It is allowable to drain glycol system using a wet-dry vacuum to assist in removal. This is acceptable if coolant override is deactivated first.
8. **Some overflow may still occur** because of thermal expansion during large temperature changes. This is acceptable if the proper fill level is maintained.

REFERENCES

- Applicable model Cooling Water Schematic drawing
- Applicable model Cooling Sub-system or Top Level Assembly drawing

SEAKEEPER GLYCOL SERVICE – 107

PRODUCT SEAKEEPER SERIES MODELS

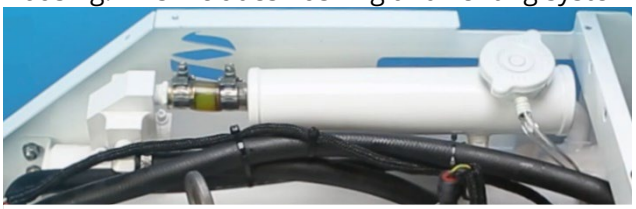
PROCEDURE

SECTION 1: FILLING A RESERVOIR

Use this section to top-off a Seakeeper reservoir on all models. No flushing or venting is performed in this section.

SECTION 2: PERFORMING MAINTENANCE ON MODEL WITH INTEGRATED HEAT EXCHANGER/RESERVOIR

Use this section for servicing glycol coolant system on a Seakeeper equipped with a thermostat housing. This includes flushing and venting system if emptied for maintenance.



Example of early Seakeeper 6 integrated heat exchanger / reservoir

Example of early Seakeeper 2/3 integrated heat exchanger / reservoir

SECTION 3: PERFORMING MAINTENANCE ON MODEL WITH SEPARATE RESERVOIR

Use this section for servicing glycol coolant system on late model Seakeeper with separate reservoir and no thermostat housing. This includes flushing and venting system if emptied for maintenance.

SECTION 4: SERVICING CONTAMINATED SYSTEM

Use this section for servicing Seakeeper with contaminated glycol coolant system. This section includes flushing and venting the glycol coolant system.

SECTION 5: SERVICING OVERFLOWING RESERVOIR IN LATE MODEL SEAKEEPER

Use this section for servicing Seakeeper with a separate reservoir experiencing frothing and overflowing issues. No flushing is performed in this section.

EQUIPMENT/SUPPLIES

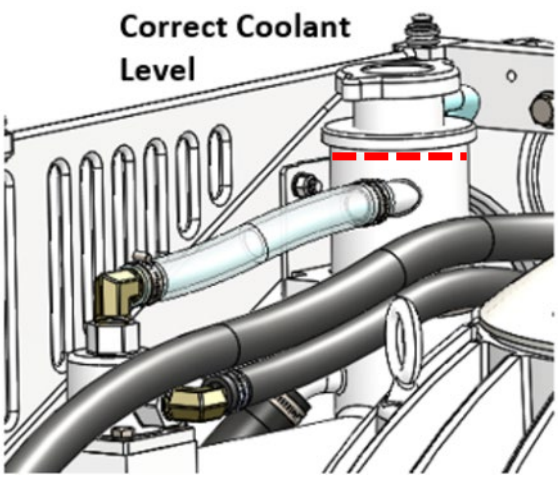
4 - 6 feet of ½ inch hose	½" hose barb cap
½" Hose clamp	Small container/plastic bag
½" (12.7 mm) hose mender	Cable ties
½" T-Fitting (if for Seakeeper 35/40)	Funnel
Straight slot screwdriver or hex driver for hose clamps	Large bucket, two or three, 5 gal (20 L) preferred
Phillips Screwdriver	Pre-mixed 50/50 water and ethylene glycol coolant mix (automotive or marine grade), 2 to 3 gallons

SECTION 1: FILLING A RESERVOIR

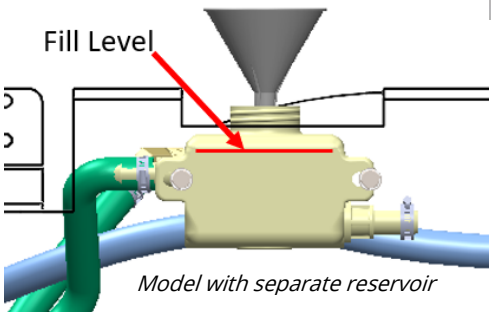
1. **REMOVE** cap from glycol reservoir.

Figure 1: Two types of reservoirs in Seakeepers

2. **ADD** new 50/50 coolant mix to reservoir fill line shown in Figure 2.



Model with thermostat housing and integrated reservoir



Model with separate reservoir

Figure 2: Filling the two types of reservoirs

3. **IF** frothing in the reservoir observed,
   THEN PERFORM following:

   a. **DISCONNECT** glycol pump wire harness Deutsch connector.

   b. **ACTIVATE** glycol override (Figure 3).

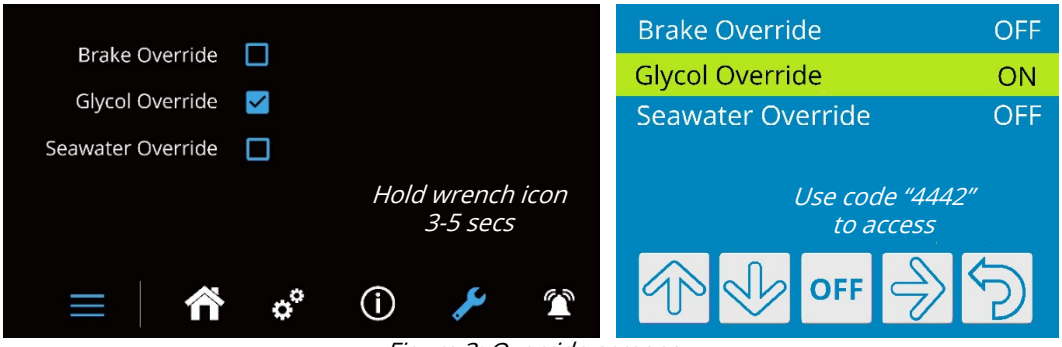


Figure 3: Override screens

   c. **FILL** reservoir with new coolant to level shown in Figure 2.

   d. **CONNECT** glycol pump connector.

   e. **WHEN** any of following occur:

      - reservoir pumped down,
      - air is vented (burped), or
      - 5 seconds elapse,

      THEN DISCONNECT glycol pump connector.

   f. **FILL** reservoir with new glycol.

   g. **REPEAT** steps 3.d through 3.f until the resrevoir no longer drops in level or air vented when the glycol pump is run.

   h. **FILL** reservoir to level shown in Figure 2.

   i. **DEACTIVATE** glycol override.

4. **PLACE** cap on reservoir securely.

SECTION 2: PERFORMING MAINTENANCE ON MODEL WITH INTEGRATED HEAT EXCHANGER/RESERVOIR

1. **INSPECT** Seakeeper for glycol coolant leaks.

   a. **REPAIR** leaks if found.

2. **REMOVE** cap from glycol reservoir.

Figure 4: Early Seakeeper reservoir shown

NOTE:

- Thermostat housing has both a clear hose and a black ½" diameter hose connected to hose barbs on housing.
- Seakeeper 35 & 40 have two return lines.

3. **LOCATE** glycol return line to reservoir or thermostat.

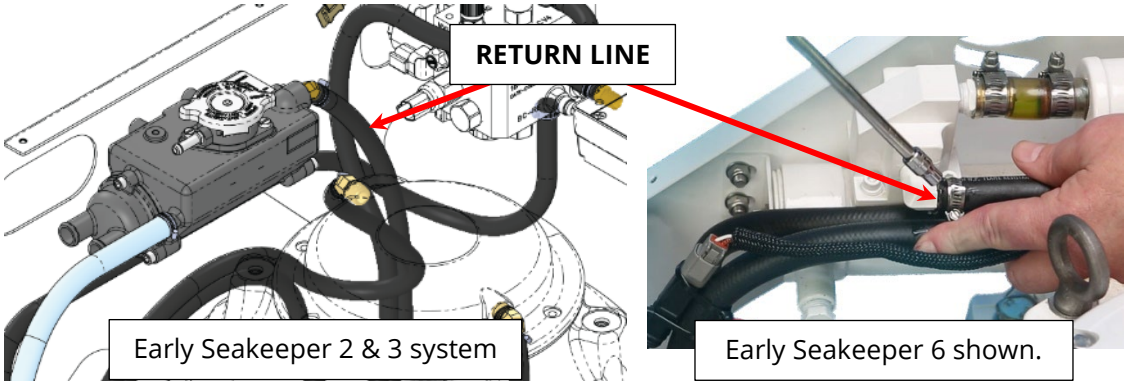


Figure 5: Return lines shown on two early Seakeeper models

4. **CUT** wire ties securing black glycol return hose to reservoir or thermostat housing.

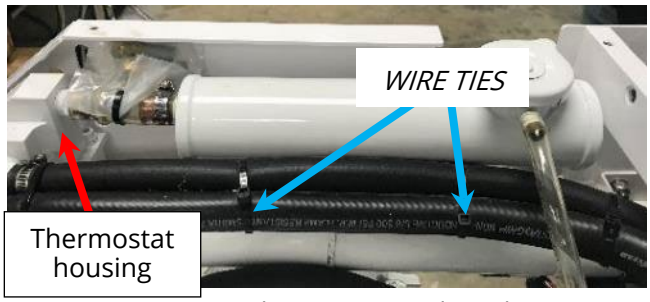


Figure 6: Wire tie locations on early Seakeeper

5. **INSERT** hose mender into 4–6-foot length of ½" hose and secure with hose clamp.

6. **PLACE** bag under black glycol return hose connection to contain any glycol that drains.

Figure 7: Hose extension with mender fitting

Figure 8: Bag used to catch glycol

7. **LOOSEN** hose clamp securing return hose. [**NOTE**: Seakeeper 35 and 40 have TWO return lines – **USE** ½" T-fitting for extender hose.]

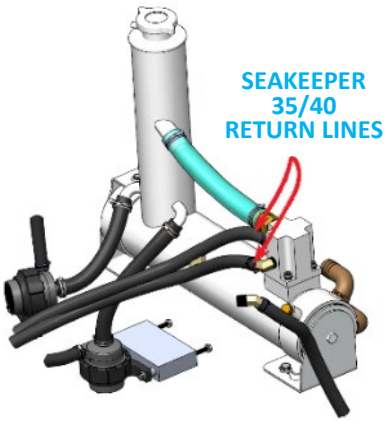


Figure 9: Removing return line hose clamp

8. **REMOVE** black return hose from hose barb **AND PLACE** ½" rubber barb cap over hose barb.

Figure 10: Return line barbs capped to prevent glycol loss

9. **INSERT** ½" extender hose into return line(s) **AND TIGHTEN** return line hose clamp(s).

Figure 11: Connecting extender hose to return line

10. **PLACE** end of return line extender into empty large bucket.

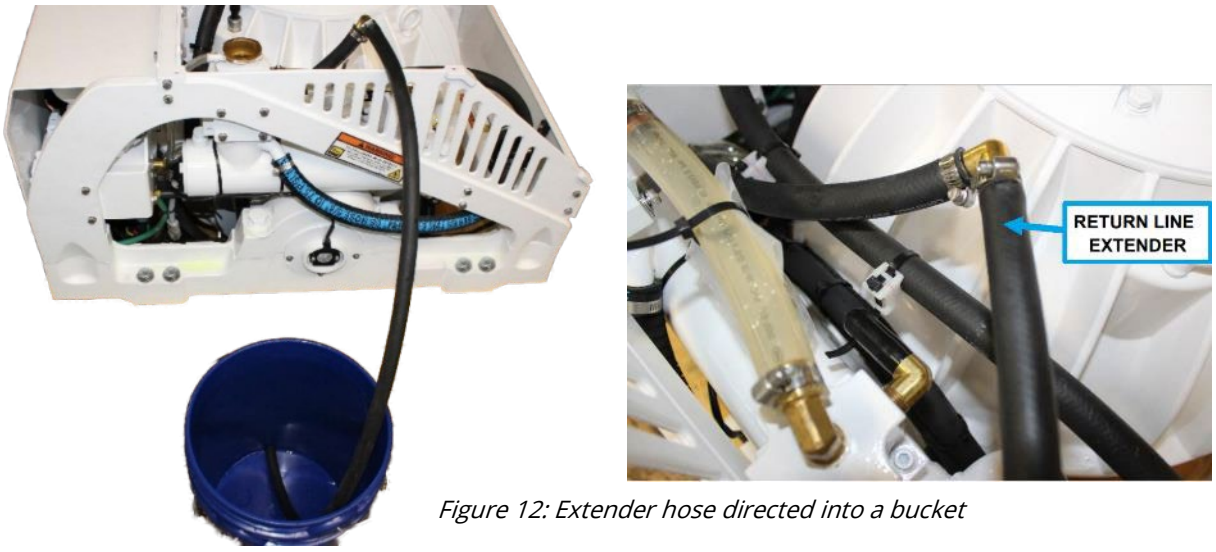


Figure 12: Extender hose directed into a bucket

11. **IF** performing contaminated system flush,
THEN RETURN to section 4, step 3.

12. **ACTIVATE** glycol override at display/MFD app.

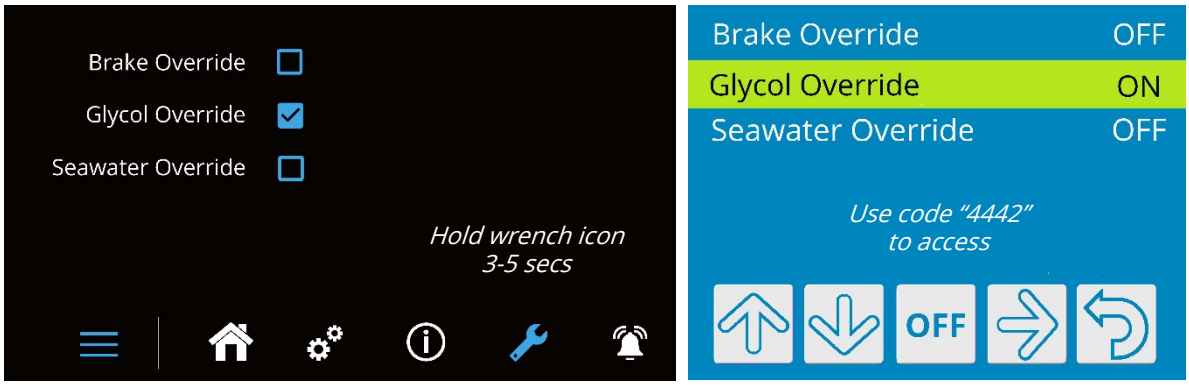


Figure 13: Override screens

NOTE:

Pouring too quickly can lead to overflow.
Pouring too slowly can lead to air in glycol pump casing.

13. **ADD** minimum of two gallons of new 50/50 coolant mix into reservoir fill.

14. **WHEN** desired amount of fluid flushed,
THEN DEACTIVATE coolant override at display/MFD app.

15. **ENSURE** glycol level just below filler cap neck.

Figure 14: Filling reservoir

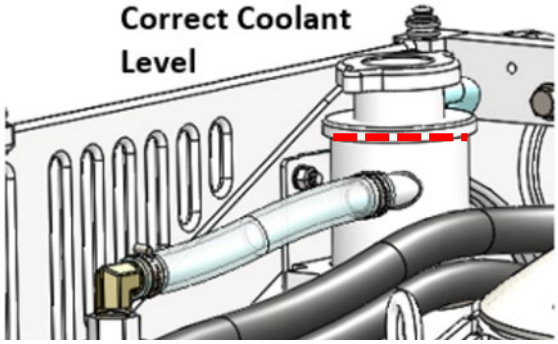


Figure 15: Fill level on legacy reservoir

16. **REMOVE** return hose extension from return hose(s).
17. **REMOVE** barb cap from hose barb on thermostat housing.
18. **RE-ATTACH** return line to barb of thermostat housing **AND TIGHTEN** hose clamp.
19. **REPLACE** wire tie(s) securing return line(s), if removed.

Figure 16: Placing wire ties on anchors

NOTE:

Zincs are often identified by red arrow decals pointing to them on heat exchanger body.

20. [OPTIONAL] **REPLACE** zincs as follows:
    a. **IF** vessel in water,
    THEN:
        i. **SHUT** seacock valve servicing Seakeeper.
        ii. **DRAIN** seawater from system via inlet strainer.
    b. **REMOVE** zinc anodes from heat exchanger.
    c. **REPLACE** zinc anodes depleted 50% or greater.
    d. **ENSURE SHUT** inlet strainer drain, if opened for draining seawater.
    e. **OPEN** seacock, if closed for draining seawater.

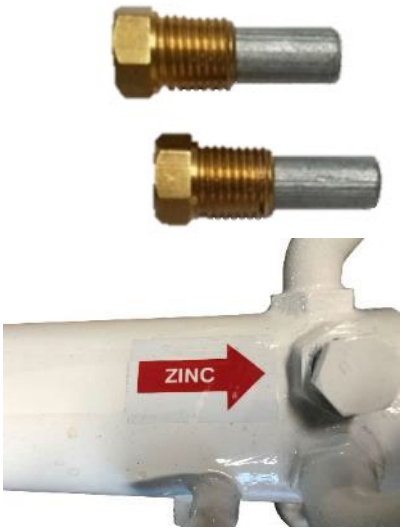


Figure 17: Zincs (top) and zinc location decal (bottom)

CAUTION:

GLYCOL LEVEL SHOULD NOT BE ALLOWED TO DROP TO RESERVOIR OUTLET TO PREVENT RUNNING GLYCOL PUMP DRY.

21. **VENT AND FILL** coolant system as follows:

    a. **ENSURE** glycol level at fill line shown.

    b. **ACTIVATE** glycol and brake overrides.

    c. **IF AT ANY TIME** glycol level drops in reservoir,
    THEN ADD new glycol mixture to maintain level in reservoir.

    d. **PRECESS** sphere manually fully back and forth **6 times** to remove air trapped in cooling jackets and associated hoses.

    e. **IF** frothing of glycol observed,
    THEN VENT air per Section 1, Step 3.

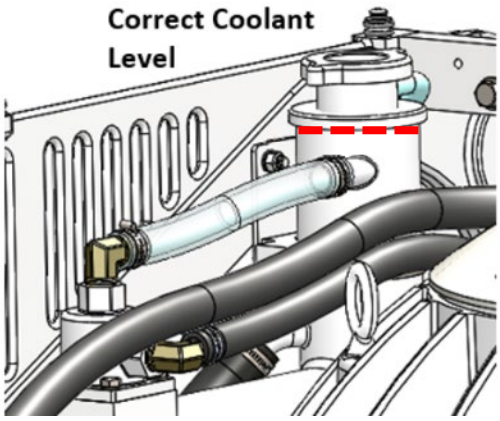


Figure 18: Fill level on legacy reservoir shown

22. **INSTALL** reservoir fill cap.

23. **DEACTIVATE** glycol and brake overrides.

24. **REPLACE** any cable ties cut with new ties.

25. **IF** panels removed for access,
    THEN REINSTALL cover panels.

SECTION 3: PERFORMING MAINTENANCE ON MODEL WITH SEPARATE RESERVOIR

1. **INSPECT** Seakeeper for glycol coolant leak.
   a. **REPAIR** leaks found.
2. **REMOVE** cap from glycol reservoir.
3. **LOCATE** glycol return line to reservoir. [Return is higher of two lines attached to reservoir]

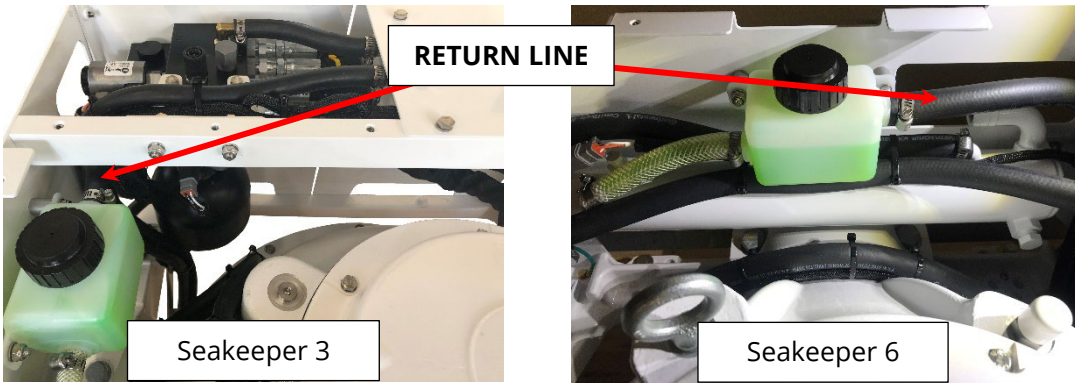


Figure 19: Return line shown

4. **CUT** cable ties securing black glycol return hose to reservoir.

5. **IF** Seakeeper 2,
THEN:

   a. **PLACE** bag or rag(s) under return line at motor drive (Fig. 19).

   b. **REMOVE** return line from motor drive.

   c. Through opening at brake manifold, **ATTACH** ½" extender hose to motor drive barb with hose clamp.

Figure 20: Seakeeper 2 return line

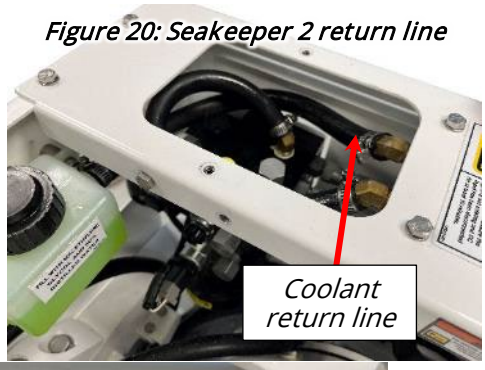
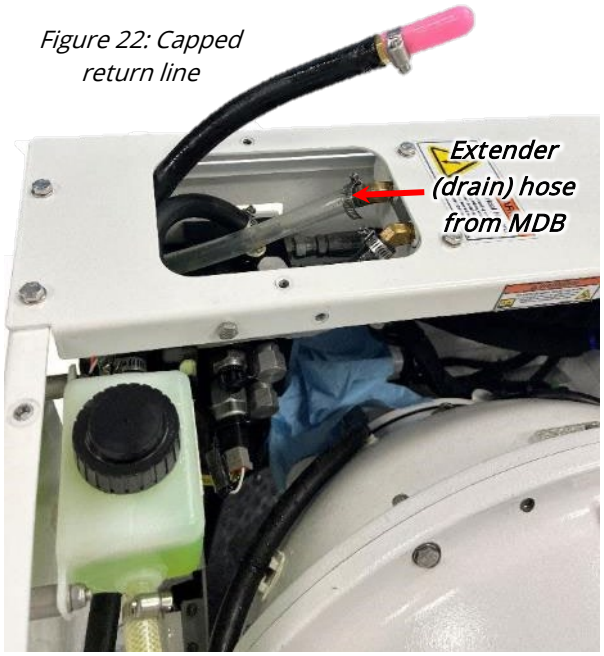


Figure 21: Extender hose routed and attached to motor drive

   d. **PLACE** mender barb of extender hose into black return line just removed from drive.

   e. **PLACE** cap over mender barb**.**

Figure 22: Capped return line



6. For all other models, **PERFORM** following:

   a. **INSERT** hose mender into 4-6 ft length of ½" hose and secure with hose clamp (hose will be used as a return line extender).

Figure 23: Extender hose components

   b. **PLACE** bag or rags under black glycol return hose connection at reservoir to contain any glycol that drains.

   c. **PLACE** barb cap over reservoir return line barb.

   d. **INSERT** extender hose with mender into return line.

7. **DIRECT** extender hose to large bucket.

8. **IF** performing contaminated system flush,
   THEN RETURN to section 4, step 3.

9. **ACTIVATE** glycol override at display/MFD app.

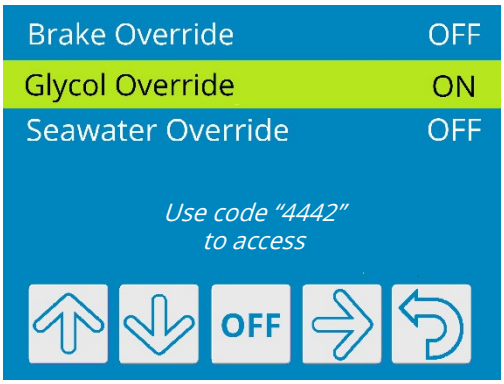


Figure 24: Override screen shown

NOTE:

Pouring too quickly can lead to overflow.
Pouring too slowly can lead to air in glycol pump casing.

10. **ADD** minimum of two gallons of new 50/50 coolant mix into reservoir fill.

11. **WHEN** desired amount of fluid flushed,
THEN DEACTIVATE coolant override at display/MFD app.

12. **FILL** reservoir to fill level line shown.

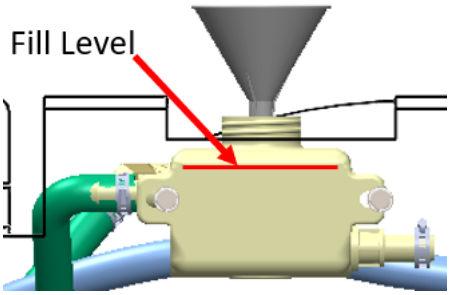


Figure 25: Fill level shown

13. **RESTORE** system hoses as follows:

    a. For Seakeeper 2:

        i. **REMOVE** extender hose from motor drive outlet.

        ii. **RECONNECT** return line to motor drive outlet **AND TIGHTEN** hose clamp.

    b. For all other models:

        i. **REMOVE** return hose extender and barb from reservoir return line.

        ii. **RECONNECT** reservoir return line to reservoir **AND TIGHTEN** hose clamp.

    c. **REPLACE** any cut cable ties to secure return line.

CAUTION:

GLYCOL PUMP DAMAGE WILL OCCUR IF OPERATED DRY.

14. **VENT AND FILL** glycol coolant system as follows:

    a. **IF** system emptied,
    THEN:

        i. **PRIME** glycol pump by removing pump discharge line from first heat load.

        ii. **OBSERVE** reservoir level.

        iii. **IF** reservoir level dropped,
        THEN ADD new 50/50 coolant mix to restore level.

        iv. **RECONNECT** pump discharge line to first heat load.

    b. **ACTIVATE** glycol and brake overrides.

    c. **IF AT ANY TIME** glycol level drops,
    THEN ADD coolant mixture to maintain fill level.

    d. **MANUALLY PRECESS** enclosure fully minimum of **six (6) times AND ADD** coolant mix as necessary.

Figure 26: Fill level shown

    e. **RUN** glycol pump an additional **five (5) minutes** to allow frothing to dissipate.

    f. After five-minute run, **ENSURE** level at fill line in reservoir.

        i. **IF** frothing of glycol persists,
        THEN VENT air per Section 1, step 3.

15. **INSTALL** reservoir fill cap.

16. **DEACTIVATE** glycol and brake overrides.

17. **REINSTALL** cover panels if removed.

SECTION 4: SERVICING CONTAMINATED SYSTEM

1. **IF** Seakeeper equipped with thermostat housing,
   THEN PERFORM steps 1 through 11 of Section 2 to attach return line extender hose **AND CONTINUE** to step 3 in this section.

2. **IF** Seakeeper **not** equipped with thermostat housing,
   THEN PERFORM steps 1 through 8 of Section 3 to attach return line extender hose **AND CONTINUE** to step 3 in this section.

3. **IF** coolant blockage suspected,
   THEN:

   a. Moving from glycol pump discharge, **REMOVE** coolant hose on outlet of each load in coolant loop.

   b. **DIRECT** outlet hose to container (use extender hose if needed) **AND ACTIVATE** glycol override to check flow.

   c. When blocked heat load found, **CLEAR** blocked component with freshwater flush or wet-dry vacuum.

   d. **IF** coolant blockage suspected in water jackets,
   THEN REMOVE water jackets per SWI-132 **AND CLEAN** surfaces.

4. **OBTAIN** source of freshwater (freshwater hose from pier or large bucket of water).

CAUTION: GLYCOL PUMP DAMAGE WILL OCCUR IF OPERATED DRY.

5. **ACTIVATE** glycol override.

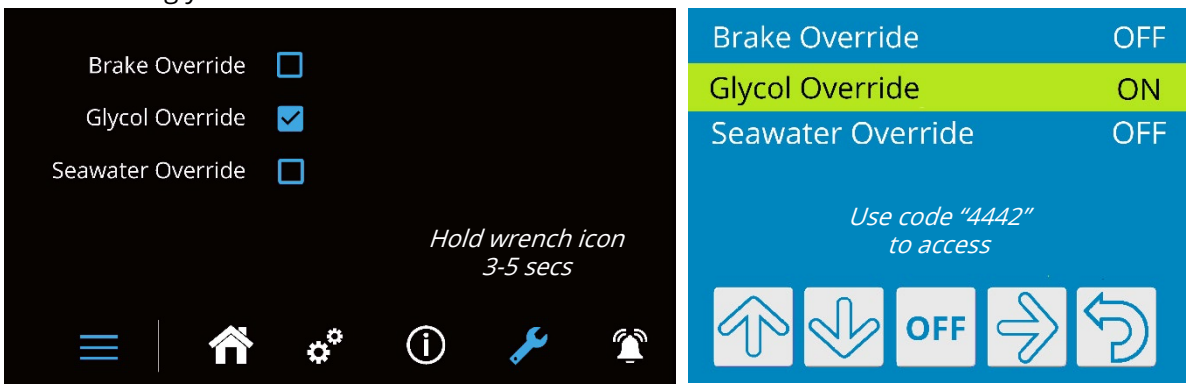


Figure 27: Override screen shown

6. **ADD** minimum of three (3) gal. (20 L) of freshwater to flush contaminated coolant.

7. **DEACTIVATE** glycol override.

8. **IF** Seakeeper equipped with thermostat housing,
THEN VENT AND FILL coolant system per **section 2, steps 15** through 24.

9. **IF** Seakeeper **not** equipped with thermostat housing,
THEN VENT AND FILL coolant system per **section 3, steps 12** through 17.

SECTION 5: SERVICING OVERFLOWING RESERVOIR IN LATE MODEL SEAKEEPER

1. **REMOVE** reservoir fill cap.
2. **CHECK** reservoir level per Figure 28.

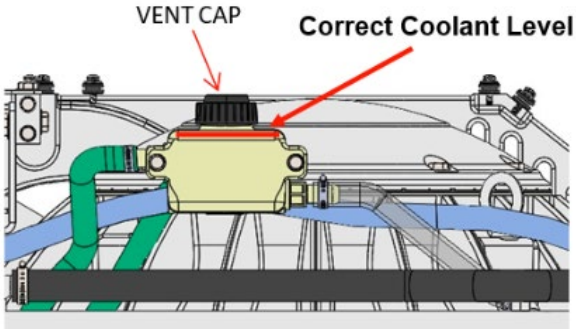


Figure 28: Fill level shown

NOTE:

Reservoir level may drop as air is vented from system while glycol override activated.

CAUTION:

GLYCOL PUMP DAMAGE WILL OCCUR IF OPERATED DRY.

3. **IF** reservoir level below correct coolant level or frothing,
   THEN:
   a. **DISCONNECT** glycol pump wire harness Deutsch connector.
   b. **ACTIVATE** glycol override.
   c. **FILL** reservoir with new coolant.
   d. **CONNECT** glycol pump connector.
   e. **WHEN** any of following occur:
      - reservoir pumped down,
      - air is vented (burped), or
      - 5 seconds elapse,

      THEN DISCONNECT glycol pump connector.
   f. **FILL** reservoir with new glycol.
   g. **REPEAT** steps 3.d through 3.f until the reservoir no longer drops in level or air vented when the glycol pump is run.

Section 5, Step 3 continued

h. **FILL** reservoir to level shown in Figure 28.

i. **DEACTIVATE** glycol override.

j. **PERFORM** following to ensure all air removed:

i. **CYCLE** glycol override on and then off.

ii. **IF** reservoir level drops,
THEN ADD coolant mixture.

iii. **REPEAT** glycol pump run until no level drop observed.

NOTE:
If proper fill level maintained, reservoir overflow is minimized.

4. **RUN** glycol pump an additional **five (5) minutes** to ensure frothing dissipated.

5. As necessary, **ADD** coolant mixture to maintain glycol fill level.

6. **INSTALL** reservoir fill cap.

7. **DEACTIVATE** glycol override.

8. **REINSTALL** covers if removed.

********** END **********

REVISION	DESCRIPTION	APPROVAL	DATE
5	Added reference to SWI-207 for single-cylinder models. Changed product applicability to Seakeeper Series Models. Included Seakeeper 40 in additional applicable steps.	A Patricio	07JUN2024
6	Edited formatting. Added figure numbers to images. Multiple steps rewritten for clarity. Added frothing air removal step.	A Patricio	20FEB2026