

GE Transportation

Engine Cooling System, PH37AC PowerHaul[®] Series Locomotive

Document No. GEK-114526, Rev. B



imagination at work

GEK-114526B
Engine Cooling System, PH37AC PowerHaul® Series Locomotive

© 2012 General Electric Company. All rights reserved. The information contained in this publication is the property of General Electric Company and is disclosed in confidence. This publication is intended for use by GE customers solely for purposes of operating and performing routine maintenance of purchased or licensed GE products, and it shall not be reproduced, redistributed, retransmitted, translated, abridged, adapted, condensed, revised or otherwise modified, in any form, in whole or in part, or used for any other purpose, or disclosed to third parties, without the express written consent of GE. However, if a GE customer ("Customer") requires additional copies of this publication or portions thereof for internal use, GE hereby grants to Customer a limited right to reproduce this publication, in whole or in part, and Customer agrees to use such authorized copies ("Copies") solely for its intended purposes. Any Copies made under this limited reproduction right shall contain this notice and any other legal notices appearing in this publication. The Customer shall be responsible for complying with U.S. export control laws with respect to distribution of all Copies.

GE and Customer agree that the information contained herein does not purport to cover all details or variations in GE products or to provide for every possible contingency with installation, operation or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the user's purposes, the matter should be referred to General Electric Company. Any applicable Federal, State or local regulations or company safety or operating rules must take precedence over any information or instructions given in the Technical Documentation. GE has no obligation to keep the material up to date after the original publication.

GENERAL ELECTRIC COMPANY EXPLICITLY DISCLAIMS ALL WARRANTIES OF ACCURACY, MERCHANTABILITY OR FITNESS FOR ANY PURPOSE IN CONNECTION WITH THIS PUBLICATION AND USE THEREOF.

If you are not an authorized recipient of this publication, you are hereby notified that any perusal, use, distribution, copying or disclosure is strictly prohibited. If you have received this publication in error, please immediately return to GE at the following address: GE Transportation, Technical Publications Department, Building 14, 2901 East Lake Rd., Erie, PA 16531.

Revision History

Rev	Date	By	Description
NEW	Sep-2009	JDP	Initial release of publication.
A	Aug-2012	TLB	Added PH37ACai version to the publication.
B	Oct-2012	TLB	Updated coolant drain procedure

1. GENERAL INFORMATION

1.1. INTRODUCTION

This publication defines the requirements for the locomotive engine cooling to be used on the P616LD for PH37AC PowerHaul® Series Locomotive.

1.2. RELATED PUBLICATIONS

When using related publications, ensure the highest letter revision of the publication is used for the most current information. For the latest publication revision, visit the GE Website or contact the local GE Representative.

Table 1. Related Publications

Publication Number	Publication Title
GEK-114524	P616LD Diesel Engine Maintenance
GEK-114513	PH37ACmi Radiator Cab Equipment
GEK-114885	Cooling Water Maintenance

1.3. SAFETY INFORMATION

Safety precautions, which must be observed when working on this equipment, appear throughout this publication:



Indicates the potential for personal injury.



Indicates the potential for equipment damage.

2. CONTROLS AND INDICATORS

Not applicable.

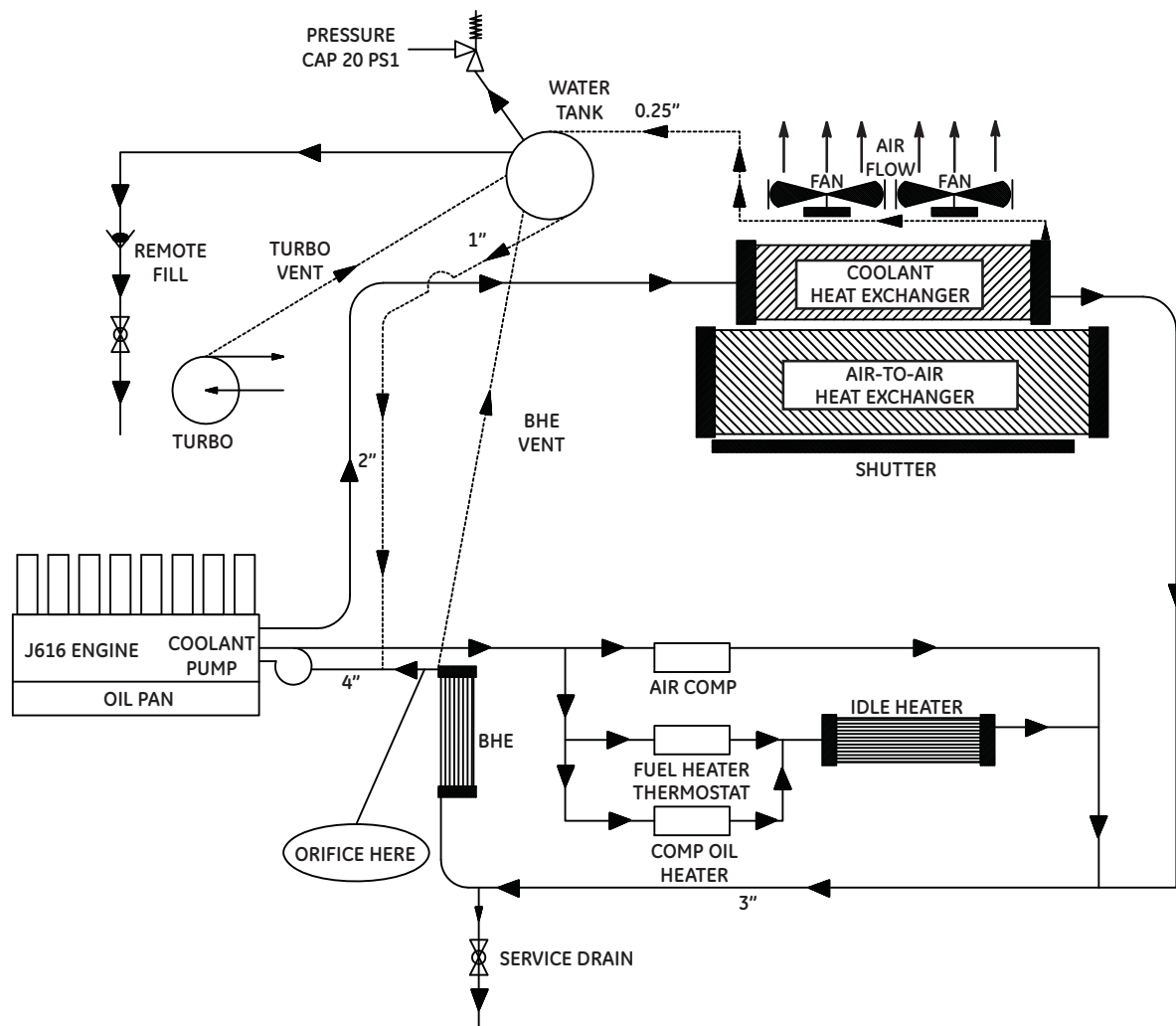
3. FUNCTIONAL DESCRIPTION

The engine cooling system for P616LD Diesel Engine (Figure 1 and Figure 2) is a wet coolant system. Upon exiting the engine the coolant flows through the radiator located in the Radiator Cab. The radiator fans force air through the radiator, reducing the coolant temperature. If coolant temperature approaches boiling the expanded coolant flows to the water tank. The remaining coolant continues back to the engine collecting water from the Air Compressor, Auxiliary Power Unit (APU, PH37ACmi units only) idle heater through the Brazed Heat Exchanger BHE, and finally to the engine coolant pump and back into the engine.

3.1. DRAIN MAIN ENGINE COOLANT

1. Shut down the engine. Open the Local Control circuit breaker (LLCB), Fuel Pump circuit breaker (FPB) and Battery Charge circuit breaker (BCCB) on the Engine Control panel (EC1). Open the Battery Switch (BS) in Control Area 1 (CA1) to ensure the engine cannot be started.

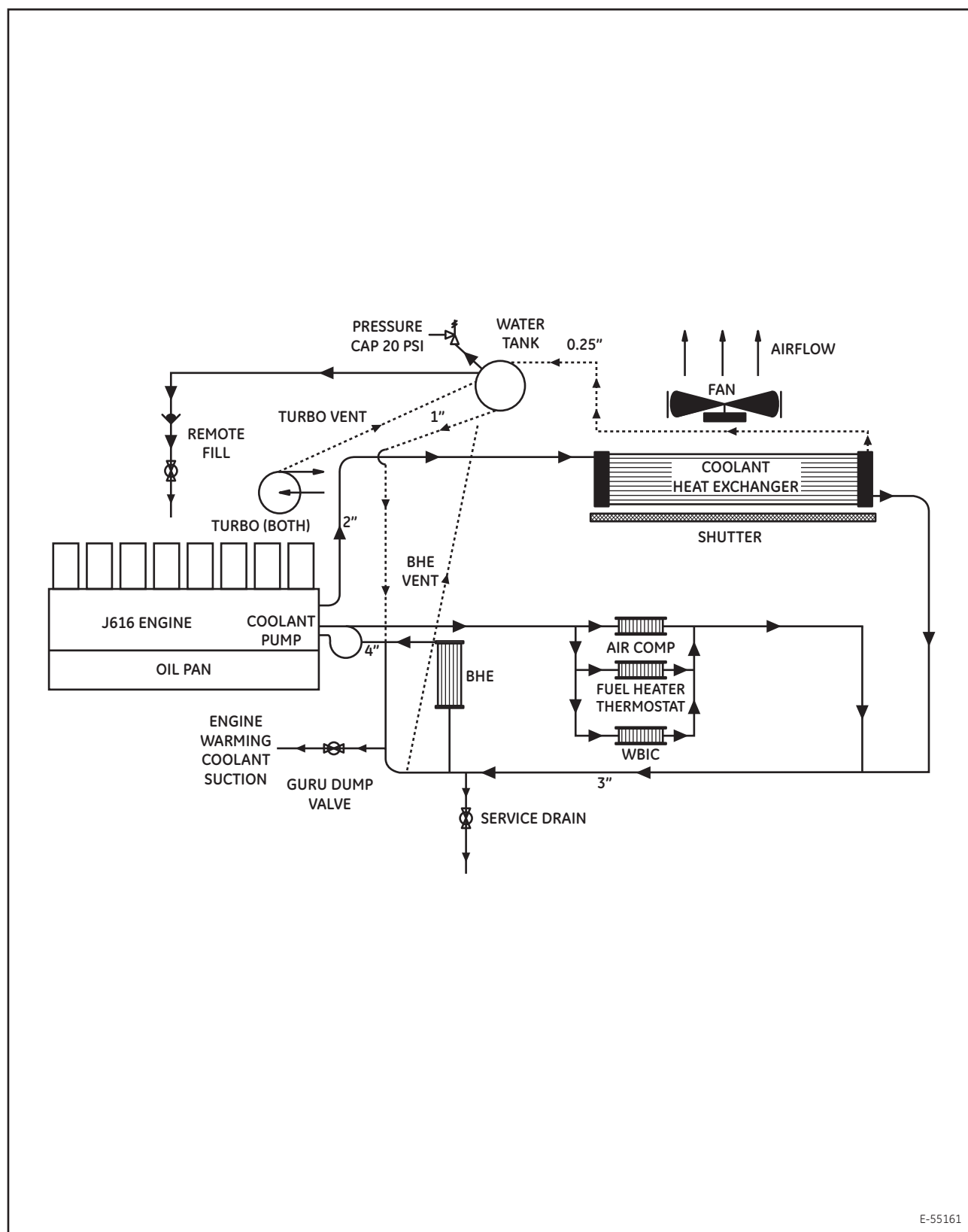
Revisions are indicated by margin bars.



COOLANT SYSTEM SCHEMATIC

E-51632

Figure 1. Diesel Engine Cooling Schematic (PH37ACmi Unit Shown)



E-55161

Figure 2. Diesel Engine Cooling Schematic (PH37ACai Unit Shown)

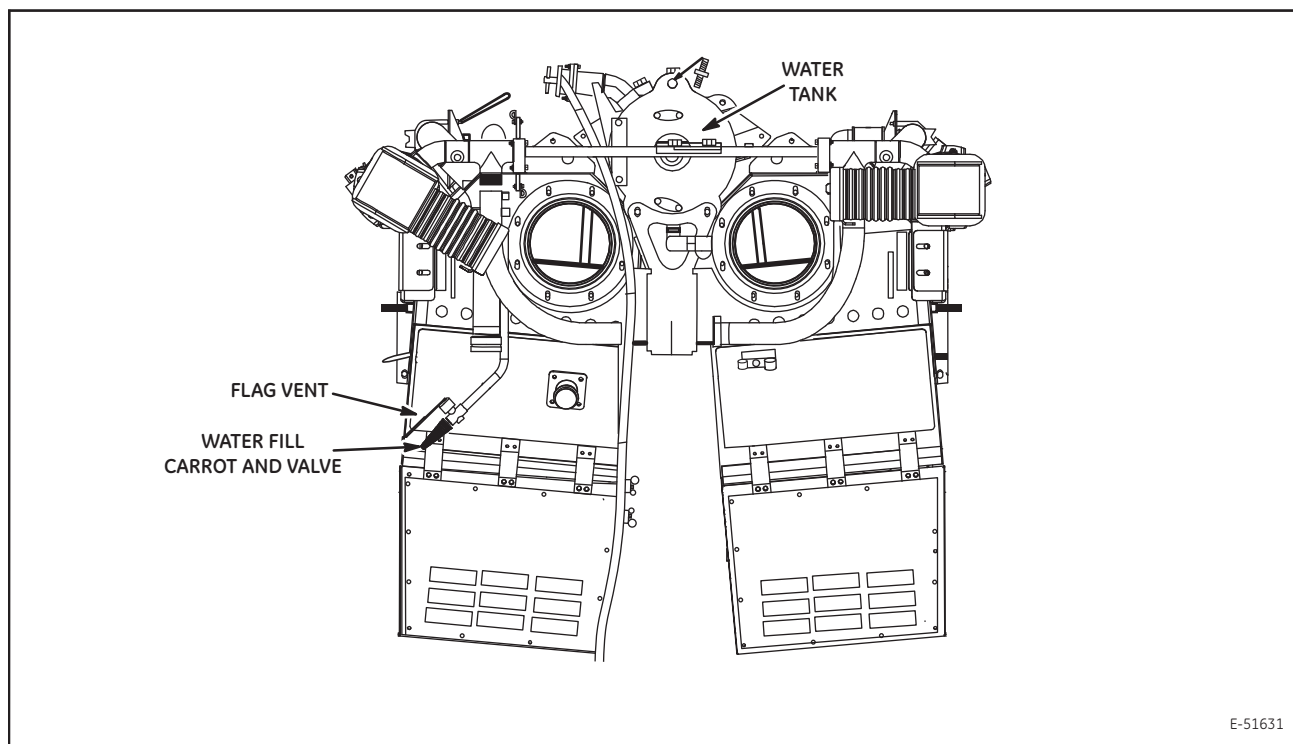


Figure 3. Location of Water Tank and Fill Carrot (PH37ACmi Unit Shown)

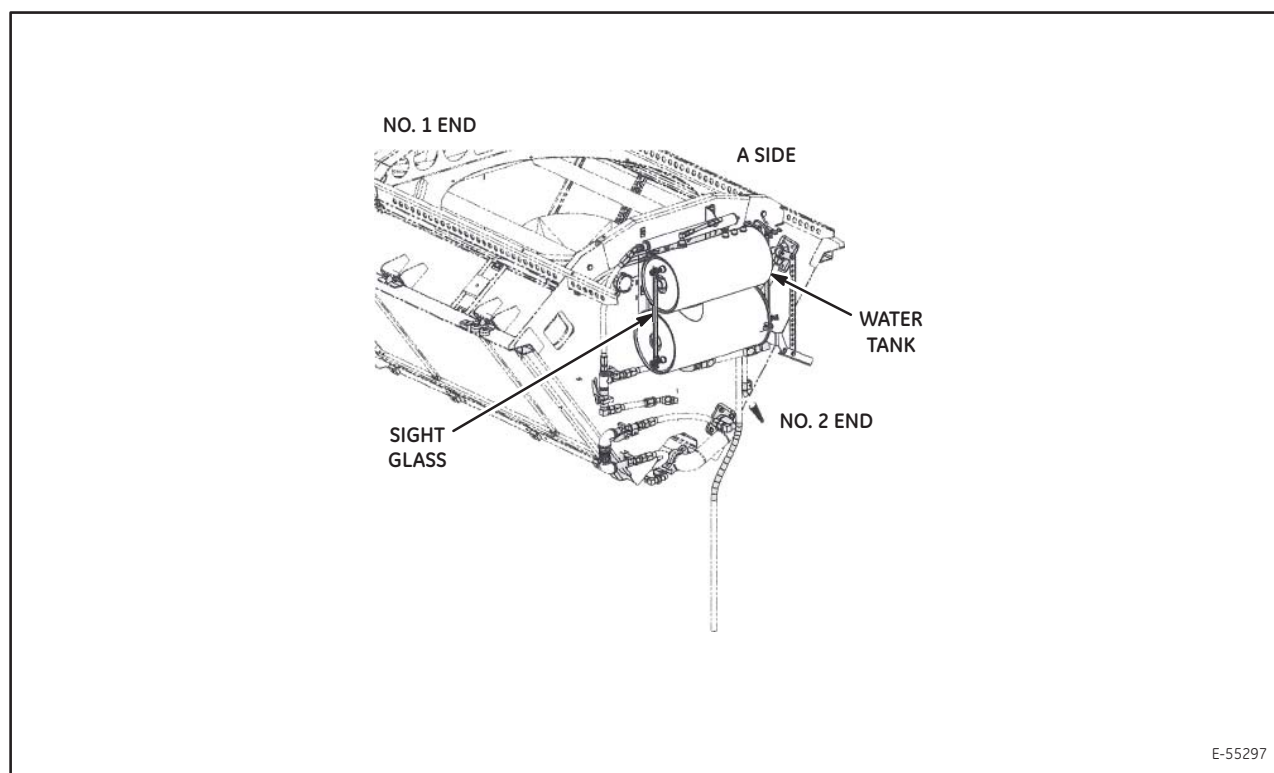


Figure 4. Location of Water Tank and Sight Glass (PH37ACai Unit Shown)

⚠ WARNING

Do not attempt to drain the cooling water system when water temperature is over 38°C (100°F). Wait until water system sufficiently cools. Failure to do so may cause personal injury.

2. Open flag vent (Figure 3, PH37ACmi unit shown).
3. Open vent cap.
4. Open coolant drain valve on A side of locomotive, at the No. 2 end of fuel tank (Figure 5, PH37ACmi unit shown).
5. Close valve when tank is empty.

NOTE: *Coolant should drain to a retention tank for off board collection.*

3.2. FILL MAIN ENGINE COOLANT

⚠ CAUTION

General Electric recommends filling the cooling system using pre-treated water at the supplied water fill pipe connection.

1. The cooling system may be back-filled at the drain pipe connection or filled at the “carrot” fill connection. The “carrot” fill is a good location for topping off the cooling system.
2. Open pressure cap at the top of water tank to allow air pressure to escape.
3. Attach water supply line to the drain pipe (Figure 5), open drain valve, and begin the fill procedure.
4. Watch water system sight glass (Figure 4 [PH37ACai units only] and Figure 6), stop filling when water is visible.
5. Close the drain valve and remove fill hose.

⚠ CAUTION

Allowing the cooling water to drop below the LOW mark, or be filled above the FULL mark, may damage locomotive components. Damage to sensors, radiator and/or engine may occur.

6. Tighten pressure cap.

If necessary, top off cooling system using the “carrot” fill connection.

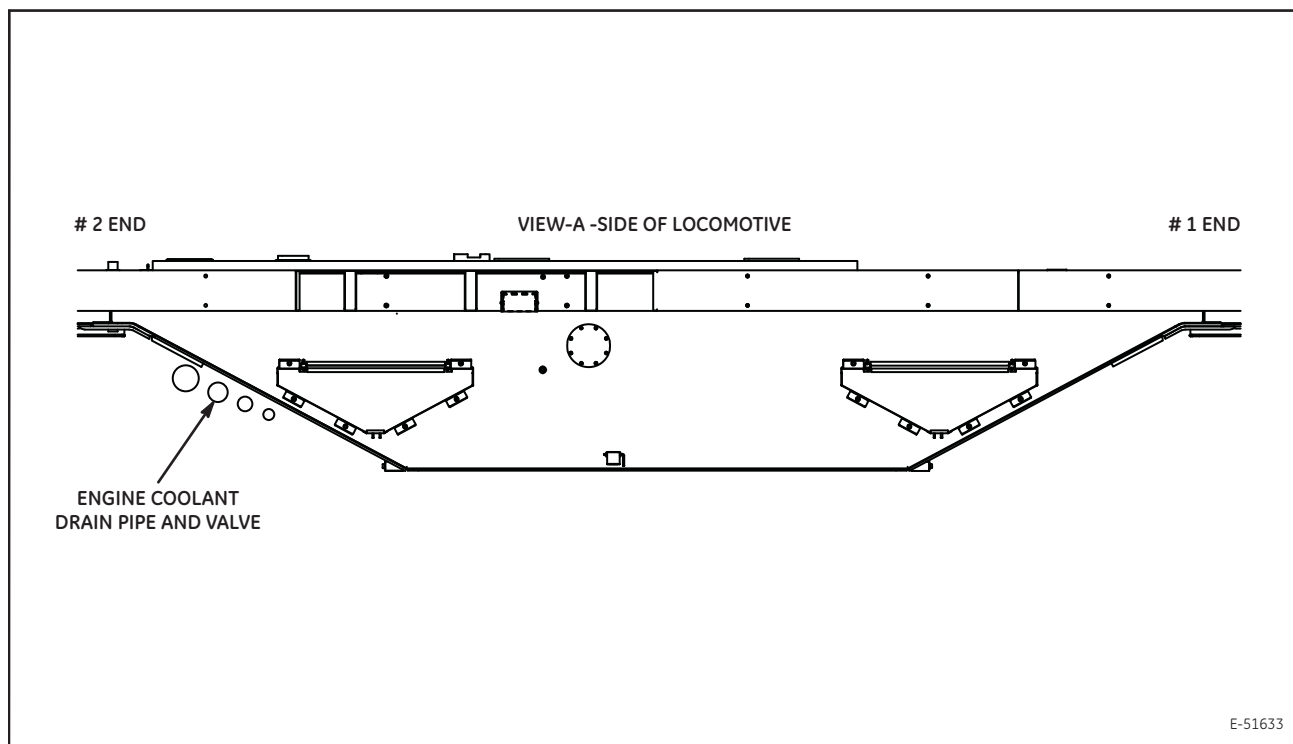


Figure 5. Location of Engine Cooling Drain Valve (PH37ACmi Unit Shown)

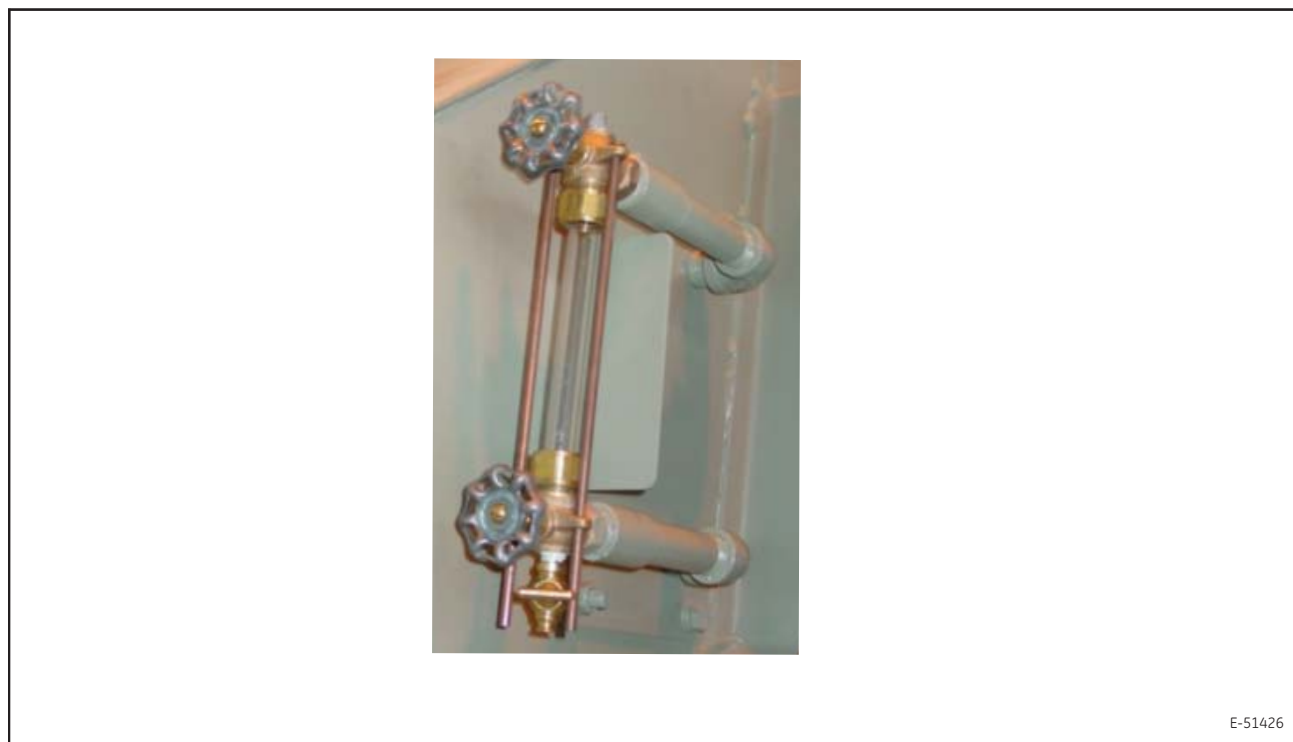


Figure 6. Engine Cooling Sight Glass (PH37ACmi Unit Shown)

4. SCHEDULED MAINTENANCE

Refer to the appropriate interval **Scheduled Maintenance** publication for PH37ACmi locomotives, GEK-114501.

Refer to the appropriate interval **Scheduled Maintenance** publication for PH37ACai locomotives, GEK-114940, GEK-114941, GEK-114942, or GEK-114943.

5. REMOVAL AND REPLACEMENT PROCEDURES

Not applicable.

6. SUMMARY DATA

Not applicable.

