

Time:

## Engine Space Blowers

### Key Concepts:

#### Main Teaching Points:

**1) Discuss the ventilation requirements for gasoline powered engine compartments, prior to start up, at idle or while underway.**

- a) gas powered engine compartment must be ventilated, a mechanical blower must supplement the natural ventilation.
- b) blower may be installed with separate ducting or incorporate in the natural exhaust system (must not impede natural ventilation).
- c) mounted as high as practicable min 350 mm (14in.) above the bilge low point.
- d) electric motors must be sealed or arc-less type-impellers are required to be non-sparking in relation to their housing.
- e) blower instruction placard shall be provided at every engine ignition switch indicating length of blower operating time.
- f) must be operated min 4 minutes prior to start up

**2) Review examination criteria**

- a) ensure UL approval check exhaust duct for serviceability- perfect integrity (no perforations)
- b) blower to be operated and exhaust check manually, and
- c) listen for any suspicious noises

**Rationalization:** Fuel vapours do not accumulate under the hood of a car, but they quickly reach explosive levels in the engine room on a boat. Remove explosive gas from bilge and fuel tank compartment, prior to start up.

## Notes

### Quick Points

	<b>Handouts</b>
	<b>Discuss Requirements</b>
	<b>Review Examination criteria</b>

### Handouts

*Fire / Explosion Incident Report* (1989 California) NAZLBA – Boating Accident Investigation & analysis course (sec10)  
Refer to ppt. for pictures

### Instructors note:

*SVR Sec 39 No person shall start up a gasoline powered SV unless engine space blower has been operated for a period of not less than 4 minutes immediately before start up.*

### References linked to LP

*TP1332 Construction Standards for Small Vessels*  
Blowers Paragraph 28 (6.3.8)

[http://www.tc.gc.ca/marine\\_safety/TP/TP1332/pdf/E-Section6.pdf](http://www.tc.gc.ca/marine_safety/TP/TP1332/pdf/E-Section6.pdf)

*Small Vessel Regulations (SVR) PART VI Sec 39.*

<http://www.tc.gc.ca/acts-regulations/GENERAL/C/C-SA/regulations/070/csa076/csa76.html#0.2.VF5B4I.Z2BFBE.oFFTID.23>

PCCC manual Pg.103

*Safe Boating Guide*

<http://www.tc.gc.ca/BoatingSafety/sbg-gsn/noise.htm>

pg. 54

***Suggested Activities:***



<b><i>Method of Evaluation &amp; Condition</i></b>	<b><i>Skill / Knowledge and Standard</i></b>
<b><u>Skill</u></b>	
Each candidate can be evaluated for these points by written examination or oral questioning during vessel examination. Each candidate shall participate in a thorough examination of the blower and engine and fuel tank space ventilation (gasoline engine) system demonstrating the inspection criteria for each. . If no engine is available, candidates may be evaluated through a table top scenario (given either engine parts or photographs) verbalizing examination criteria with an instructor.	When examining engine space blowers each candidate will: <ul style="list-style-type: none"><li>• ensure UL approval</li><li>• check exhaust duct for serviceability- perfect integrity (no perforations)</li><li>• blower to be operated and exhaust check manually, and</li><li>• listen for any suspicious noises</li></ul>
<b><u>Knowledge</u></b>	
Each candidate can be evaluated for these points by written examination or oral questioning during vessel examination. Each candidate shall participate in a thorough examination of the blower and engine and fuel tank space ventilation (gasoline engine) system demonstrating the inspection criteria for each. . If no engine is available, candidates may be evaluated through a table top scenario (given either engine parts or photographs) verbalizing examination criteria with an instructor.	Each candidate shall describe the ventilation requirements for gasoline powered engine compartments, prior to start up, at idle or while underway. <ol style="list-style-type: none"><li>2. blower may be installed with separate ducting or incorporated in the natural exhaust system.</li><li>3. mounted as high as practicable (min 350 mm above bilge low point, and</li><li>4. must be operated min 4 minutes prior to start up</li></ol>