

8. CANAL NAVIGATION

8.1 Models in Pilot's Canal

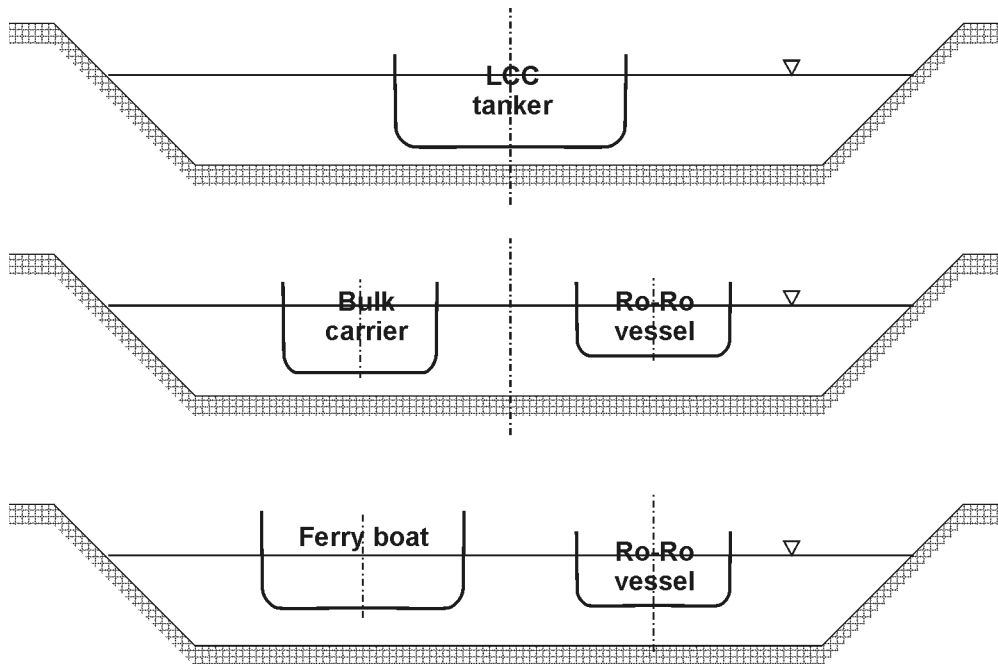


Fig. 8.1

8.2 Critical speed

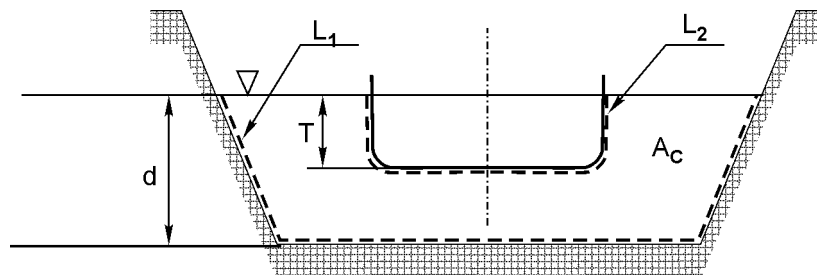


Fig. 8.2

Hydraulic radius: $r = \frac{A_c}{L_1 + L_2}$

Critical speed:

$$V_{crit} = \sqrt{g \cdot r} \quad \text{m/s [} r \text{ in metres]}$$

$$V_{crit} = 6.08\sqrt{r} \quad \text{knots}$$

8.3 Manoeuvring in the canal

8.3.1 Moving in the centreline of the canal

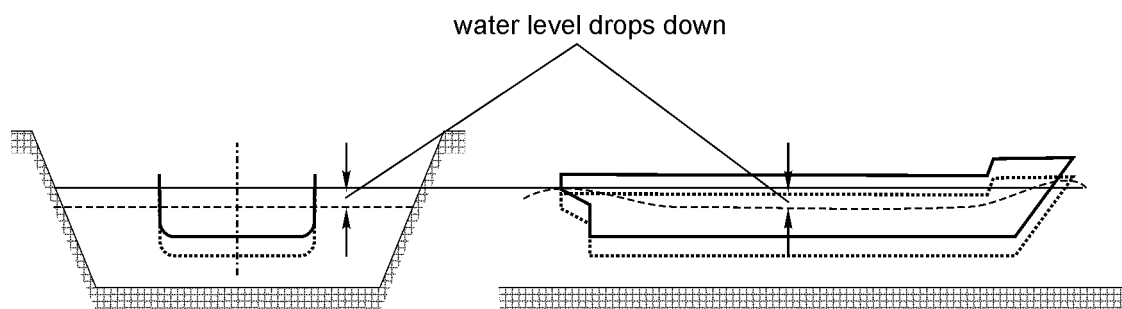


Fig. 8.3

8.3.2 Moving off-centre of the canal

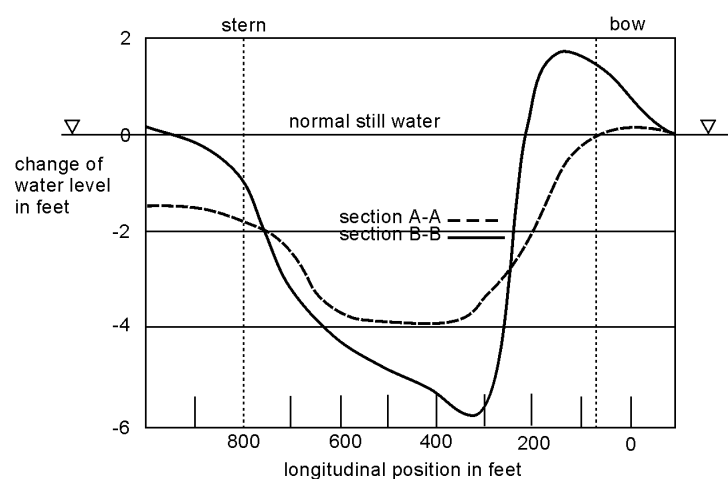
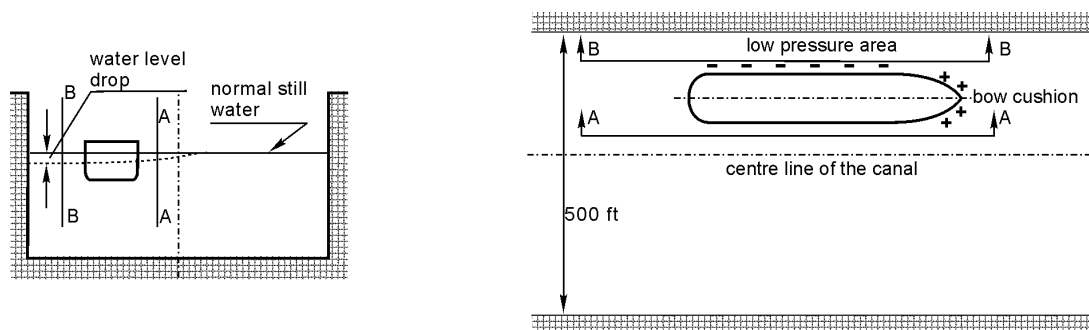
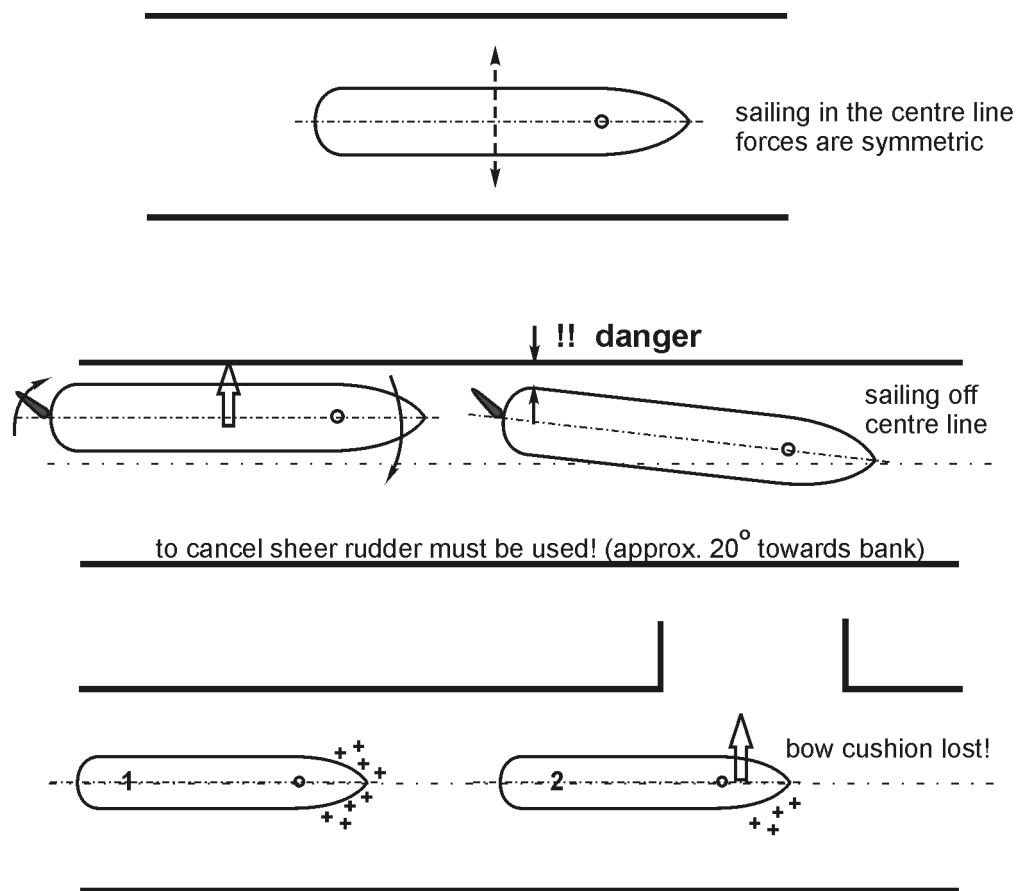


Fig. 8.4

8.4 Suction force and bow cushion when moving in a narrow canal



Example: East channel, Aruba

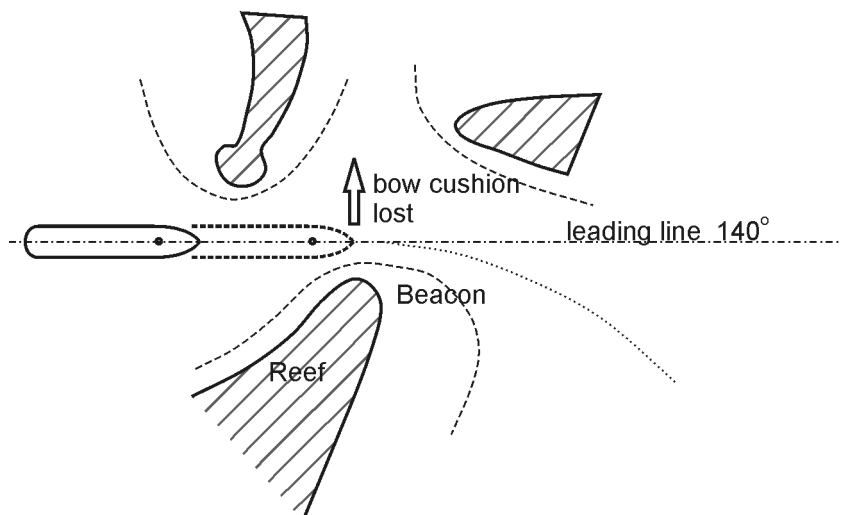
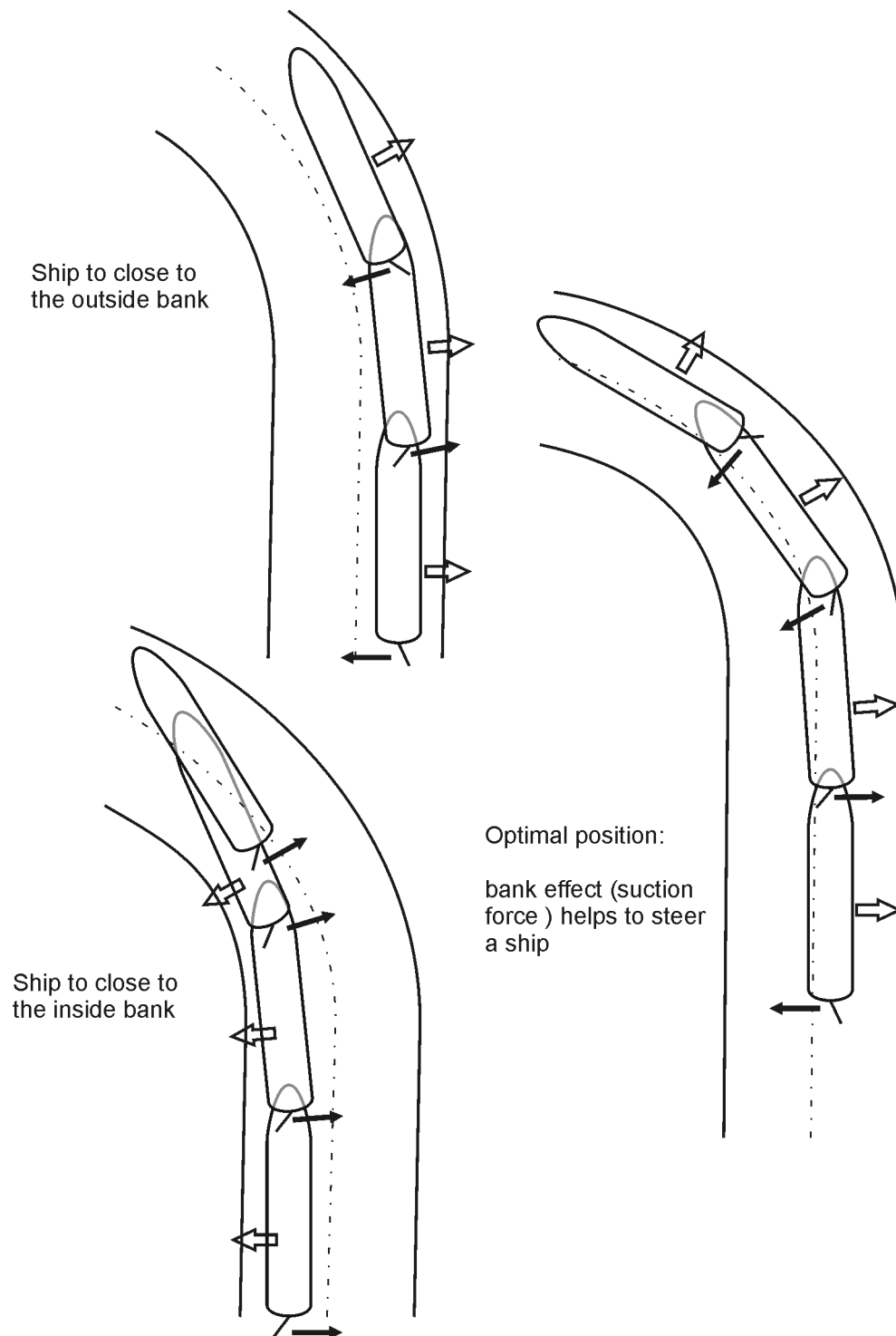


Fig. 8.5

8.5 Negotiating a bend in a narrow canal**Fig. 8.6**

8.6 Interaction between two ships

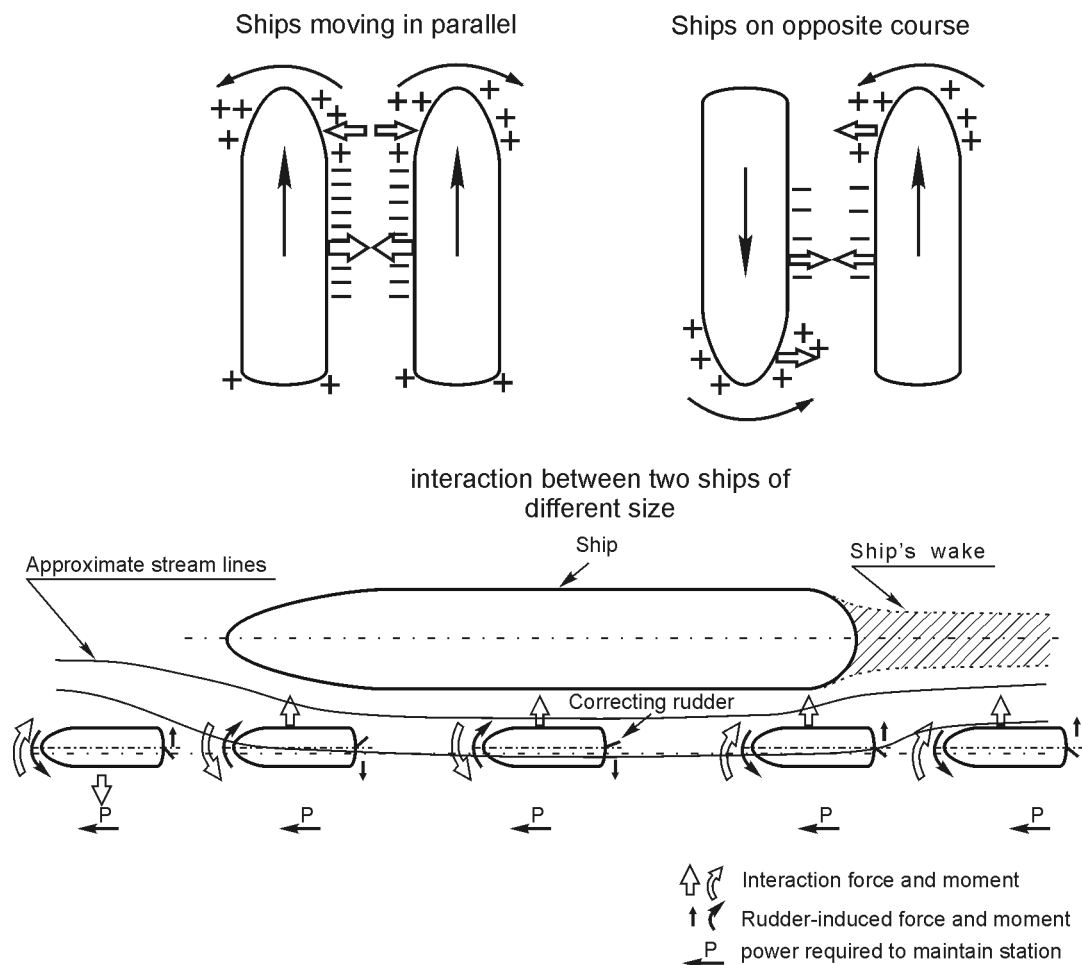
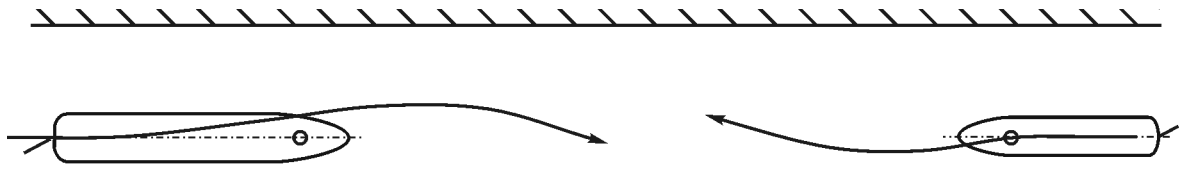


Fig. 8.7

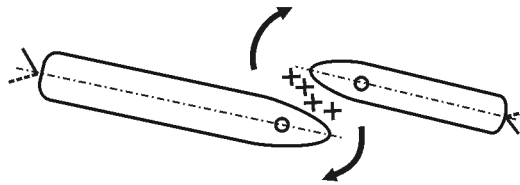
Some rules for interaction

1. Maintain a sensible speed. Excessive speed magnifies interaction.
2. If possible recognize and anticipate interaction. It is much preferable to avoid sheer than to try steer of it.
3. Interaction effects are greater in shallow water.
4. When coming alongside other ship the area of safest approach is near the middle of the ship. The greatest interaction effects occur near the bow or stern of another ship.
5. In head on passing on reciprocal courses interaction should push the bow apart.

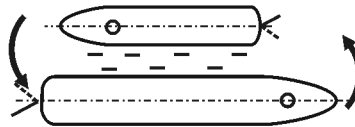
8.7 Passing procedure



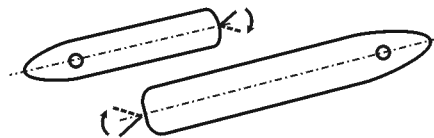
Phase 1: Both ships right rudder to bring ships off-centre



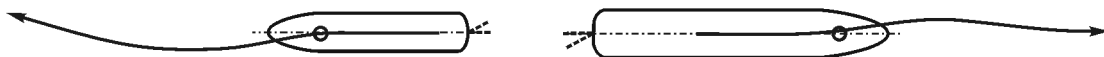
Phase 2: Bow cushions push bows apart, both ships left rudder to clear the stern



Phase 3: Right rudder to compensate for suction and bring both ships to channel centre



Phase 4: Left rudder to counter suction astern and to assist to bring ships to the centre of the channel



Phase 5: Both ships brought to the channel centre; rudders amidship

Fig. 8.8

8.8 Overtaking procedure

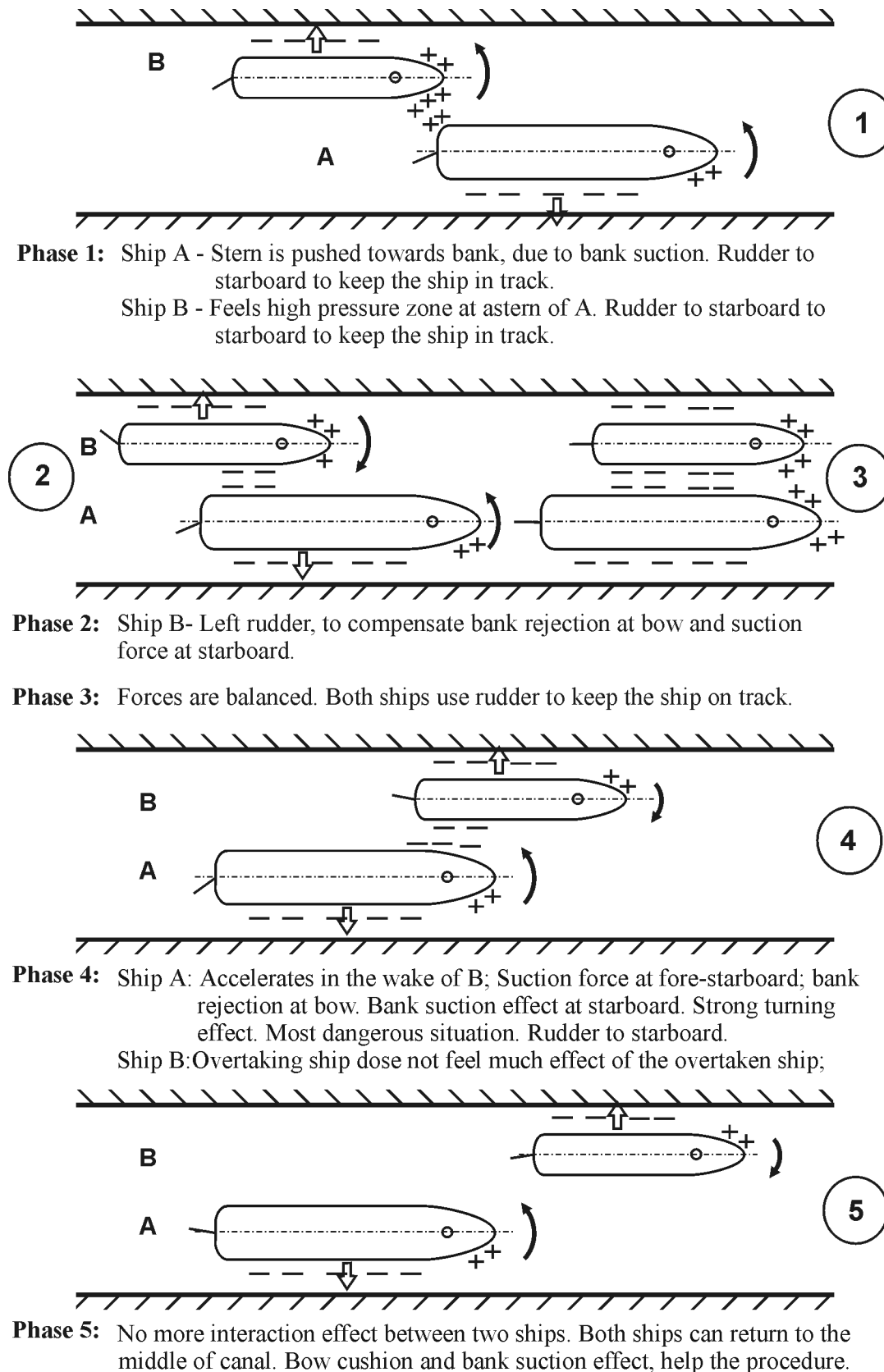


Fig. 8.9