

Skagerrak Player Guide

1 Scenario Setup

1.1 Organization

Ships larger than destroyers are assigned to units representing squadrons or divisions of up to 5 ships. Destroyers, torpedo boats, minesweepers, convoys and trawlers are organized into divisions or flotillas and are represented by multi-ship bases.

1.2 Data Sheets

The data sheet for each side lists the ships and some information about them. The codes C, O, S or B next to the speed indicate coal-fired, oil-fired, oil spray or both coal boilers and oil boilers. Oil creates less smoke than coal or oil spray except near full speed. Ship type codes are:

AC armored cruiser	CL light cruiser	DD destroyer	PC protected cruiser	ZP Zeppelin
AY armed yacht	CN convoy	DN dreadnought	SB shore battery	
BB pre-dreadnought	CV seaplane carrier	FL flotilla leader	SS steamship	
BC battlecruiser	DC dock	MC merchant cruiser	TB torpedo boat	

2 Orders

Each turn, players will write any changes to the course, speed, formation or target of their ships. It will generally only be necessary to give the course and speed of the unit lead ships.

2.1 Course and Speed

Course and speed should be written using 3 and 2 digits, respectively, with leading zeros if needed (e.g., 045/09). If there is no change from the previous turn, write “ in the space.

Course changes of more than 20 degrees will reduce ship's speeds. Speed reductions increase with the amount of course change up to 90 degrees and then level off at about a 40% speed reduction.

Light or protected cruisers and destroyer or torpedo boat units accelerate at 2 knots/min and other ships accelerate at 1 knot/min, unless near full speed where acceleration slows. For example, a 21 knot battleship requires 4 minutes to accelerate from 19 to 20 knots and a further 5 minutes to accelerate from 20 to 21 knots.

2.2 Formations

Units can be formed in line ahead, line abreast, quarter line (port, starboard or both), line of bearing (specifying number of points from astern), reverse line or by subdivision (two ships, the second of each pair following astern of the first) [Figure 1, page 8]. Formation spacing is nominally 500 yards stem to stem, but can be adjusted for each side or each ship. Use of formations other than line ahead will complicate maneuvers, in that ships other than the unit leader may require additional course and speed changes and may fall behind.

Screening units can be in line abreast, quarter line (at 45 degrees) to port or starboard or in a semi-circle. Screens in line abreast can be formed of pairs of ships in line ahead. Screen spacing is set by the scenario, but can be adjusted for each side or for each ship. Screens can be stationed at a relative bearing and distance from a unit lead ship, and semi-circular screens must be so stationed.

Instead of a formation, ships can steam independently, can keep their current position relative to the unit leader or can follow the ship ahead in their unit.

A Gefechtskehrtwendung to port or starboard can be ordered (depending on the scenario), and will result in the units steaming in reverse line (or line ahead if already in reverse line). Course changes while in reverse line are problematic, particularly for units stationed on other ships.

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2.3 Stations

Units can take station at a relative bearing and distance from another unit's lead ship [designated the guide ship, Figure 2, page 9]. Units moving to an assigned station will use the maximum speed of the slowest ship in the unit. Since course changes and acceleration differences may cause non-lead ships to fall behind, players may reduce the speed used to gain station by 1 to 3 knots. In some cases (e.g. battle lines disposed in line ahead), units will use the ordered speed of the guide ship ('equal speed maneuvers').

Destroyer and torpedo boat units can take station at a relative bearing and distance from any ship.

When it is desired to station several units relative to each other, it is preferable to use a single guide rather than a chain of guides, each stationed on the next. The latter method can result in the units at the end of the chain making unnecessary maneuvers. For example, at Jutland the Grand Fleet battleships were cruising in six divisions abreast, each division of four ships in line ahead, and then deployed as a single line ahead on the port division. Typical Grand Fleet battle line ship to ship spacing was 500 yards with an extra cable (200 yards) between divisions. To replicate such a battle line the lead ship of the division chosen to be at the head of the line would be the guide for each of the other five divisions, with station distances calculated based on the lengths of the units ahead and the required extra space between divisions. In this example the second division would be stationed at 180 degrees (relative) and 2,200 yards, the third division would be stationed at 180 degrees (relative) and 4,400 yards, and so forth.

2.4 Gun Targeting

Primary gun targets may be chosen for each ship, excluding destroyers, torpedo boats or smaller ships in flotillas.

Primary gun targets for a unit of armored ships (battleships, battlecruisers and armored cruisers) may be designated by indicating the enemy formation or lead ship and specifying fire distribution from the front or rear, doubled from the front, concentration on enemy lead ships, or concentration on a single target.

Ships may be ordered to find primary gun targets and open fire automatically. Battleships and battlecruisers can be ordered to target or not target unarmored ships or shore batteries. Protected and light cruisers are classified as unarmored for this purpose. Ships with automatic targeting orders will switch to better targets unless ordered to keep the current target until it can no longer be fired on.

Ships may be ordered to reply to any enemy primary fire, or if they have no current target reply to an enemy ship, or return enemy fire regardless of ship type.

Ships may be ordered to give target priority to unarmored cruisers or destroyers and torpedo boats.

Destroyers, torpedo boats and tertiary guns always find targets automatically. They will not target armored ships. For each side, destroyers and torpedo boats can be ordered to target enemy destroyers and torpedo boats in preference to unarmored cruisers.

Secondary guns may fire at the primary gun target, fire as tertiary guns (finding targets automatically), or fire at manually selected targets. This can be set for each ship with secondary guns. When secondary guns are set to fire at the primary gun target, primary guns may be ordered to hold fire, allowing the secondary guns to fire alone.

Each ship may be given a range at which to open fire with primary guns and any secondary guns not firing in tertiary gun mode. This range limit is removed once those guns have opened fire or if the unit's lead ship opens fire and the non-lead ship's target range is within 2000 yards of the range limit.

Each side may be ordered to hold all fire, or to hold tertiary gun fire. Any enemy ship may be specified as not a valid target.

Primary guns on most large ships may have armor piercing (AP), semi-armor piercing (SAP), and/or high explosive (HE) shells. By default, AP shells are fired at armored targets and SAP/HE shells at unarmored targets. AP, SAP or HE shells may be manually selected for each ship, or a range may be specified above which SAP/HE is fired and below which AP is fired. SAP/HE may be used for ranging. When the selected shell type is exhausted, the most appropriate remaining type is used. The SAP classification includes CPC and base-fused HE.

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2.5 Torpedo Targeting

Torpedo targets may be specific ships or may be determined automatically. Automatic targeting may be set to target armored ships, warships larger than destroyers, or any floating target. Actual torpedo launches are controlled by the code. Once launched, torpedoes can hit anything in their path, regardless of the original target.

Torpedo speed can be set for each side or for each ship. Setting slow speed (long range) will not prevent the use of high speed if the opportunity occurs. This may be historically inaccurate since some ships could not easily change torpedo speed settings.

Doctrine for the number of torpedoes to launch at one time can be set for each side and separately for destroyers/torpedo boats and larger ships. The choices are low (historic for early WW1), medium and high. For many ships the small number of tubes (1 or 2) facing in any direction makes this choice irrelevant. It primarily effects destroyer and torpedo boat units.

Underwater tubes, except stern tubes, have a maximum safe speed for launch. The speed is specific to the ship class. Attempts to fire above that speed may result in failure to launch or failure of the torpedoes after launch. These launch limits may not have been known or understood at the time.

Destroyer and torpedo boat units will normally turn away from the target after a torpedo launch. This can be overridden for each unit, allowing it to continue on the ordered course.

2.6 Making Smoke and Smokescreens

Normal funnel smoke extends 750 yards downwind. For flotillas this varies with the number of boats from about 500 to 1500 yards. Ships may make additional funnel smoke which is denser and extends 1000 yards downwind. For flotillas this varies from about 1000 to 2000 yards. Downwind is based on apparent wind, i.e., it combines actual wind with ship motion.

Some nations may create chemical smokescreens or lines of smoke pots after certain dates (mid to late WW1). Smokescreens drift with the wind, smoke from smoke pots does not. The amount of chemical smoke on any ship is limited, nominally 15 minutes worth. Chemical smokescreens disperse with time, and do so more quickly in higher winds.

2.7 Retreats

Retreat options (doctrine) may be specified (on or off) for each ship type of each side. These options should be chosen prior to the game.

Ship types:

- Dreadnoughts and pre-dreadnoughts
- Battlecruisers
- Armored cruisers
- Light and protected cruisers
- Destroyers and torpedo boats

Retreat options:

- close range and closing rate
- high damage and ratio of incoming to outgoing fire
- medium damage and ratio of incoming to outgoing fire
- heavy shell incoming
- medium/heavy shell incoming
- any incoming fire

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3 Involuntary Maneuvers

3.1 Collisions

Ships which may cross the path of enemy ships will attempt to avoid collisions by turning away. Depending on size and speed, collisions and damage are possible. Destroyer and torpedo boat units are not subject to collisions. The code has an option for collisions between friendly ships, but it is not typically used.

3.2 Torpedo Avoidance

Generally, if a torpedo launch is reported it is preferable to order courses for threatened units that will evade the torpedoes. Failing this, ships which detect approaching torpedoes will attempt to avoid them by turning toward or away from the torpedo tracks. These avoiding maneuvers may result in disordered formations and slower speeds.

3.3 Steering Damage

Hits to the after part of a ship, to the bridge or to the conning tower may cause steering to be lost temporarily. Ships with steering damage will follow an erratic and generally circular path for several minutes. If steering is not repaired by the end of a turn, players should modify the orders for any ships which would otherwise follow or take station on the out-of-control ship.

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4 Output Files

Example turn output file. The individual lines are from different times and reports and not meant to be consistent.

```
=====
Turn 1          06:20 Hrs      Real Time 09:12:32 AM 07/03/2024
Visibility 18,400-20,500 yards, improving, best toward SW

REPORTS for Force 1
Melbourne reports smoke bearing S, about 8 NM, multiple ships
four-funneled cruiser ----- 43N 94E Crs ENE Spd 15 from Birmingham 06:17 Hrs
Derfflinger class BC ----- 306N 114E Crs SE Spd 25 from Lion 15:31 Hrs
  another ----- 306N 114E Crs ESE Spd 25
12 torpedoboats ----- 302N 117E Crs S Spd 30 from Lion 15:41 Hrs
  Penelope turns away to SE making smoke due to damage
  Queen Elizabeth avoiding torpedoes by turning toward
  Warspite primary barbette hit, BLOWN UP

FLAGSHIP REPORTS, Jaureguiberry
Apparent wind on Jaureguiberry from WSW at 18 knots (smoke trails 6 points to starboard)
Target bears S021, Range Rate -635 yds/min, closing
Primary shells fired in previous minute: 1
Enemy battleline course SSW, speed 20 knots, range 14,000 yards

TARGETING
Firing Ship          Pos. Target class      Range yds Arc Con Obstruction/problem
Warspite -----> 1 Seydlitz -----10,677 4 2 Breslau class
Queen Elizabeth -----> 2 Derfflinger -----11,319      Warspite/2ptsS
Queen Mary -----> 1 Seydlitz -----11,564      2 Breslau class
Warrior -----> 1 Prinz Adalbert -----14,000      Warrior smoke/Downwind
9th Flotilla (9)-----> 1 Breslau ----- 6,427      /Range rate

POSITIONS
Unit      Lead, screen, out of form.  Pos (in.)  Course  ord/cur/avg /max/unit
1stDiv ----- Warspite ----- 71N 124E    200     18 18 18.0 24 24
  indep.  Tiger ----- 73N 128E    160     18 18 18.0 29 --
1stLC ----- Arethusa ----- 54N 134E    220     18 18 18.0 28 28
  screen  Aurora ----- 60N 128E    220     18 18 17.2 28 --
1stFlot ----- 1st Flotilla(9) ----- 09N 111E    075     16 16 16.0 30 30

HITS and STATUS
Queen Elizabeth ----- 7 hits, 7 total
1 Seydlitz class ----- 8 hits, 8 total  1 hit, 1 total
Caroline ----- under heavy fire
Penelope medium damage
```

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Notes to output file example:

- 1: Turn number, scenario time and real time/date.
- 2: Visibility is reported only if changing.

REPORTS

- 3-7: Enemy vessels sighted this turn, reported as smoke or by class and type code (see Section 1.2).
Speeds are approximate. Reporting ship and message time.
 - 4: Armored, protected and light cruisers reported by number of funnels.
 - 7: Estimated number of destroyers, torpedo boats, etc.
 - 8: Friendly ship turns away from enemy fire based on retreat doctrine.
 - 9: Friendly ship turns to avoid sighted torpedoes.
 - 10: Friendly ship damage
- REPORTS FROM FRIENDLY SHIPS ARE REDUCED WHEN THE REALISTIC OPTION IS ON

FLAGSHIP REPORTS

- 11-12: Reports of conditions on the player's flagship bridge and details not available for other ships.

TARGETING

- 13-18: Friendly ship primary gun targets. Numbers in front of the target ship class names (if any) are the formation positions of the targets (e.g., in line 15, a Derfflinger class is the 2nd ship in an enemy unit).
- 13: The 'Arc' column shows the number of primary guns firing if not all possible primary guns are in arc, or "S" if only the secondary guns are firing. The 'Con' [concentration] column shows the number of batteries firing on the target if more than one.
- 14-17: An obstruction listed is that which applies the worst firing penalty.
- 15: 'n ptsS': points starboard (or port) from astern for a line of bearing to clear smoke from ships ahead.
- 17: 'Downwind', 'Upwind' or 'sun glare' indicate the firing direction has a penalty.
- 18: 'Range rate' indicates the range is changing faster than the fire control system can handle.

POSITIONS

- 19-24: Friendly ship positions, courses and speeds (ordered/current/average over the 5 minute turn/maximum for the ship/maximum for the unit). Only unit lead ships are listed unless in screens, sailing independently or significantly out of formation. Distance out of formation is shown in yards.
Positions may be in inches (relative to the table) or nautical miles (NM).
- 24: Values in () are the initial numbers of destroyers, torpedo boats, etc.

HITS and STATUS

- 25-28: Hits on friendly and enemy ships. Enemy ships are reported by class, including formation position if any.
REPORTS OF HITS ARE SIMPLIFIED WHEN THE REALISTIC OPTION IS ON
- 29: Report that a damage threshold has been passed and a medium (white) or heavy (red) damage marker needs to be placed on the ship. There are arbitrary damage thresholds for flotation, propulsion and primary guns. These thresholds have no purpose other than to give players a general indication of the condition of the ships.

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5 Tactical Considerations

“While it is the business of the strategist and the organizer to bring a superior force against the enemy at the decisive point, it is the business of the tactician to fight with whatever force he is furnished.”

Richmond

The following excerpts from Admiral Jellicoe’s Grand Fleet Battle Orders (~ May 1916) are particularly applicable. Some of these also appear in the ‘Remarks on action tactics’ distributed to the Home Fleets by Admiral Callaghan in 1913 or 1914.

When line of battle is formed ... a speed of eighteen knots is not ordinarily to be exceeded. [Section VI.2.]

Weather ... The leeward position, with the wind on the engaged bow, is usually the better ... In fine or moderate weather, the main consideration is that of being in a position where the gun and funnel smoke from our own ships do not interfere with gunlaying... in bad weather ... spray ... when firing to windward may... render the leeward position one of great disadvantage. [Section VIII.3.]

Speed ... the speed of a column in the line of battle should be less than the maximum, in order to facilitate station keeping, reduce smoke, and leave something in hand for emergency. At medium speeds gunlaying is easier ... [Section VIII.7.]

Helm ... small helm should be used in action ... otherwise good gunnery is impracticable. [Section VIII.8.]

Opening Fire ... in fine weather ... it is not intended to order the battlefleet to open fire at a greater range than 18,000 yards ... [Section XIV.1.]

A ship's outfit of ammunition will not last long if fire is continuous, and it must therefore be used with discretion. [Section XIV.9.]

Distribution of Gunfire ... two main principles ...

- (i) No ship of the enemy in a position to inflict damage should be unfired at.
- (ii) Fire at your opposite number. [Section XV.1.]

It is a mistake to change target more often than is necessary ... [Section XV.3.]

Concentration ... When concentration is possible, pairs will give the best results, as mutual interference to observation of fire is then practically negligible ... [Section XV.9.]

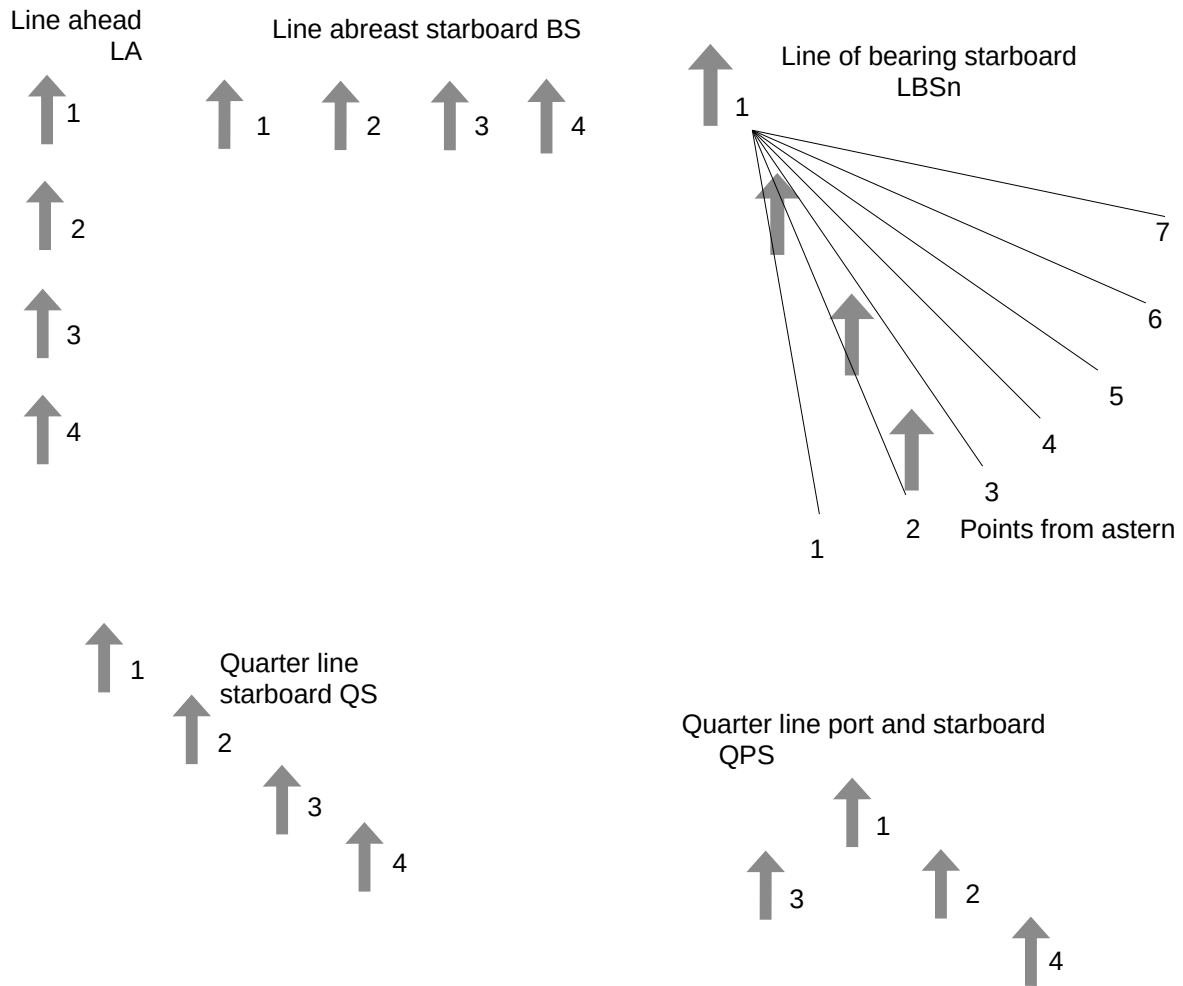
Chatfield's memo to (then) Rear Admiral Beatty on “Fast Division Work from a Gunnery Standpoint” (October 1913, Beatty papers Vol I, Part II, Document 49, page 90) has recommendations to minimize the range rate (the rate at which target range is changing). Early fire control systems did not cope well with high range rates.

5.it is quite easy, with superior speed, to calculate suitable courses which will keep the range constant and the rate nil...

6. The ‘T’ must never be crossed at too broad an angle as this is unnecessary and causes a big and difficult rate.

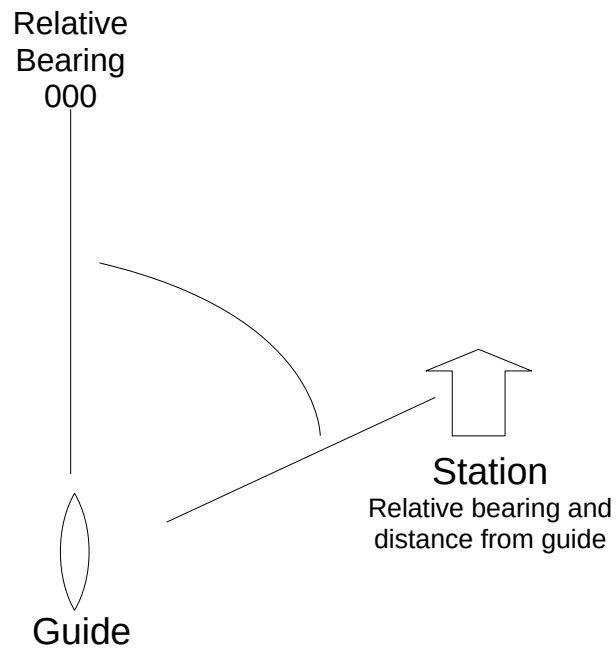
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Figure 1 Formations



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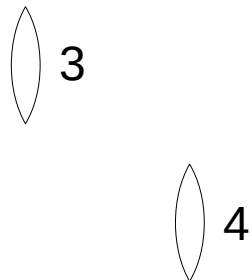
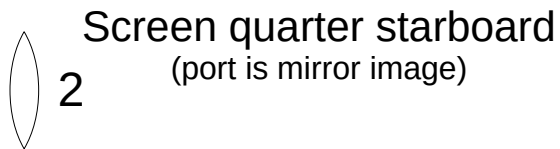
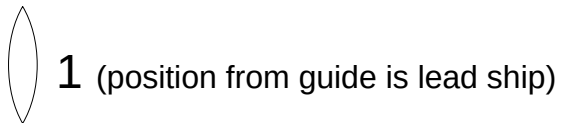
Figure 2 Station Positions



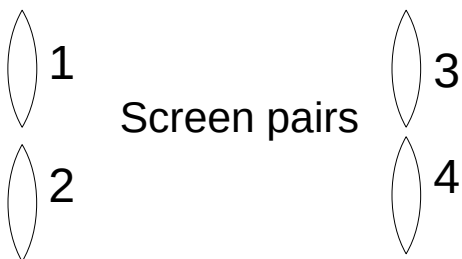
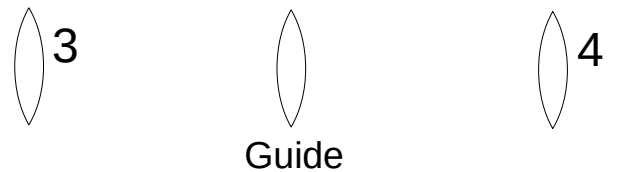
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Figure 3 Screen Formations

Screen line abreast
(position from guide is center of line)



Screen semi-circular



Screen pairs

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Quick Reference

Formations: (default set by scenario)

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LA	Line ahead
BP, BS	Line abreast port, starboard
QP, QS, QPS	Quarter line port, starboard, port and starboard
LBPn, LBSn	Line of bearing port, starboard – points from astern
SA, SP	Screen abreast, pairs
SQP, SQS	Screen quarter port, starboard
SC	Screen semi-circular
RL	Reversed line
TT	Turn together
TS	Turn by subdivision
FS	Follow ship ahead
TW	Turn into wind
GP, GS	Gefechtskehrtwendung port, starboard

Gun Targeting:

Page 2

Primary battery:

- Set manual target (default)
- Find target if none
- Find target including battleships or battlecruisers targeting unarmored ships or shore batteries
- Find target and keep it until lost
- Distribution from forward, starting from lead ship target
- Distribution from aft, starting from lead ship target
- Doubled from forward, starting from lead ship target
- Concentrate on one target
- Reply to any enemy primary firing
- Reply to enemy ship if no current target
- Return fire regardless of type
- Armored ships concentrate on enemy lead ships
- Target priority un-armored cruisesers
- Target priority destroyers, torpedoboats
- AP or SAP/HE selection – manual or range breakpoint
- Hold primary fire and fire secondaries at primary target

Secondary battery: (default set by class)

- Fire at the primary gun target
- Fire as tertiary guns (find targets automatically)
- Set manual target

All batteries:

- Hold fire
- Do not target specified enemy ship

Torpedo Targeting:

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- Set manual target (default)
- Find armored ship target
- Find target larger than destroyer
- Find any floating target
- Set torpedo speed to fast
- Override turn away after launch by destroyer/torpedo boat

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Smoke:

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- Normal funnel smoke (default)
- Make excess funnel smoke
- Make chemical smoke
- Drop chemical smoke pots

Retreat options:

Page 3

- Close range and closing rate
- High damage and ratio of incoming to outgoing fire
- Medium damage and ratio of incoming to outgoing fire
- Heavy shell incoming
- Medium/heavy shell incoming
- Any incoming fire