

STATIONS
MANNED AND READY
PART 1 – WORLD WAR ONE

CONSTRUCTION ALGORITHMS FOR SHIPS
1910 TO 1920

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Update History

The previous edition of this document (1.3) included a number of cost revisions to torpedoes and guns for the following reasons.

On closer examination of the calculation we had used for torpedoes, we uncovered the failing that the calculation did not adequately take into account the chance of hitting at any given range. This error has been corrected, and the results vary very slightly from the original figures used. Having uncovered one anomaly, we immediately realised that the gun costing also failed to take account of the chances of delivery of the damage at the various ranges. This has now also been corrected.

The parts of the document that were changed in Edition 1.3 are marked with red marginal lines thus:



Note that as nearly all the weapons costs have been altered we have not left the few unchanged entries unmarked.

Changes implemented in version 1.4

There is a minor adjustment to the method in which the factors for Quick Firers should be calculated in WW1. (The result does not change).

The change in the table is marked with blue marginal lines thus:



WARSHIP DATA WW1

Before play can commence a data sheet must be completed for each vessel. We have tried to keep the data required to play to the minimum, and to keep the ship construction system as simple as possible as well. These rules provide you with a selection of vessels for you to start off with.

Players will wish to expand the selection by putting together their own vessels. Data for this purpose can be gathered from various available sources. Various routes are available:

- Use Jane's Fighting Ships (originals or reprints)
- Use Conway's All the World's Fighting Ships
- Use other sources

The choice of which source book is used is left to the players, however it must be noted that you may well arrive at different results if you use different sources. You are advised to avoid mixing sources because there will probably be differences in the data. More recent publications will tend to have benefited from subsequent historical and technical analysis, while Jane's was published at the time, and while it is seen as a respected and authoritative source with access to information that has never been possible since, the information is often based on the ideal values seen at the time (and also served as misinformation used by the naval powers against each other). Later sources tend to take account of how the vessels actually performed in action.

The effect of the flotation calculation is that a long thin ship will tend to have fewer flotation points than a fatter ship of the same length with otherwise a similar displacement.

1 – Ship Construction

To put together a ship, you need to equip yourself with the following data:

- Displacement (in tons)
- Length (in feet, waterline if shown)
- Beam (in feet)
- Year the ship was laid down.
- Maximum speed in knots
- Armour protection (see below)
- Number of crew

Ship construction follows a simple logical sequence, and starts with determining the displacement. This should either be the **Standard** or **Normal** displacement. Whenever the source shows several, use the lowest. The displacement provides the Flotation points (F) and these in turn provide the Structural Points (S).

The structural points receive armour bonus points depending on specific component areas on the vessel (if these are armoured). You will need to jump forward and check the armour section which follows to determine the armour bonus points.

After the values for the ship's hull have been determined, then you calculate the armour classes for specific component areas. The ship's speed is a straight transfer from knots. Finally you must determine the ship's manoeuvre rating, its size and visibility range, Fire Control, Damage Control and Searchlight ratings. After the hull is completed, then the weapons are added, and last of all the points value is calculated.

In the following section we will take some sample vessels to show the various stages involved.

2 – Flotation (F)

The first Item to be calculated is the **Flotation**, which is referred to as **F**. This is calculated from the displacement in tons (t) as follows:

$$\left(\frac{t^{0.66}}{29}\right) \times \left(\frac{7.5 \times \text{beam (feet)}}{\text{length (feet)}}\right)$$

The exact result of this calculation is recorded for the calculation of the structural value (S) in the next stage. The figure is also now rounded to the nearest whole number (0.5 and greater is rounded up) and recorded as the ships Flotation (F) value.

For our examples we will use the German Battleship Kaiser, and Cruiser Scharnhorst, and the British Light Cruiser Bristol and M-Class Destroyer. The F values below have been rounded to the nearest whole number.

SMS Kaiser displaces 24,330 tons, an F value of 34;

SMS Scharnhorst displaces 12,781 tons an F value of 20;

HMS Bristol displaces 4,800 tons, an F value of 7;

The M-Class displaces 900 tons, an F of 2

3 – Structure (S)

The structural value of the vessel is derived from the Flotation value, to which armour bonuses are added for the following components on the ship:

- Belt – This takes the thickest listed armour. On older WW1 vintage Protected Cruisers, the deck armour value is applied here (and used again when calculating the deck bonus).
- Deck – This takes the thickest listed armour if there are a number of armoured decks.
- Conning Tower – Take the thickest listed armour.
- Main armoured turrets – This covers armoured, fully enclosed turrets. The thickest listed armour is taken. If the main gun is not fully enclosed then this item is ignored.
- All other guns in armoured turrets – This applies to any guns in fully enclosed armoured turrets. It does not apply to casemate guns (even if armoured) nor to any weapon not in a fully enclosed mount.

Our sample ships carry forward the following structural base values: Kaiser 34.16, Scharnhorst 19.85, Bristol 7.22, and the M class 2.25. We now add the armour bonus values (if there are any). The first step is to ascertain what modifier is used to convert the armour thickness to a KCE standard, this being based on the date of construction.

The Kaiser class were laid down between 1909 and 1911, so referring to the table overleaf we see that the best conversion value is 1.02; the Scharnhorst class were laid down in 1904 and 1905, giving a value of 1.04; the Bristol class were all laid down in 1909, giving 1.07; the M-Class has no armour. For the purpose of our illustration, we will now skip forwards to the calculation of the armour class of the various component parts of the ships, this being part of the build routine, and which also determines how many Structural bonus points are accrued.

4 – Armour

To set a starting point for the armour calculations, all armour types are converted to their “Krupp Cemented Equivalent” (KCE), which is really the only complicated part of the calculations. The KCE is then used in the calculations with two formulae, appearing below. Within the game system, the armour fitted to a vessel provides not only the armour class for critical component areas of the vessel, but also a Structural Bonus. The following table shows the modifier which should be used to convert the listed armour thickness in inches to its “Krupp Cemented Equivalent” (KCE).

Note the minimum thickness of armour which is considered in these calculations is 1” of actual armour thickness.

- $KCE = \text{Actual armour thickness in inches} \times \text{modifier}$ (see table below)

British 10” armour in 1910 has a KCE of $10 \times 1.07 = 10.70$

Condition	Modifier
Generic values for all vessels laid down:	
Prior to 1890	0.88
In 1890	0.99
From 1891 to 1894	0.98
From 1895 to 1897	0.97
In 1898 and 1899	0.98
From 1900 to 1918	0.99
From 1919 onwards	1.03
Austrian vessels between 1908 and 1918	1.14
British vessels	
From 1900 to 1904	1.15
From 1905 to 1910	1.07
From 1911 to 1918	1.09
From 1919 to 1925	1.12
German vessels	
From 1894 to 1899	1.07
From 1900 to 1905	1.04
From 1906 to 1918	1.02
From 1919 to 1924	0.97
Italian vessels	
From 1900 to 1904	1.15
From 1905 to 1910	1.07
From 1911 to 1928	1.15
Japanese vessels	
From 1900 to 1914	1.15
From 1915 to 1918	1.09
From 1919 to 1930	1.12
United States vessels	
From 1900 to 1906	1.00
From 1907 to 1909	1.03
In 1910	1.07
In 1911 and 1912	1.10
From 1913 to 1923	1.11

Unless data is shown specifically for a nation, then use the generic numbers. The date to be used is that when the ship was laid down.

Where there are many vessels in a class constructed over a long period this will generate a range of modifiers. In such cases always take the best modifier available and apply to the whole class.

The Kaiser has 14” Belt, 4.7” Deck, 14” Conning Tower and 5 main turrets with 12” armour. The Scharnhorst has 4” Belt, 2” Deck, 8” Conning Tower and 2 main turrets with 6” armour. The Bristol is a protected cruiser and has 2” Belt and 2” Deck. Now it is time to get out the calculator... don’t be nervous... it is actually quite easy!

Armour Class

The armour class formula is as follows:

- $(\sqrt{KCE}) \times 3.24 - 2.24$, rounded to the nearest whole number.

If we take the previous example of British 10” armour, the formula is $\sqrt{10.7} \times 3.24 - 2.24$, or 8.35832, which rounds to an Armour Class of 8.

If the armour class results in a value of less than 0, it is treated as 0. It is possible for an armoured vessel to end up with an AC of 0 if the original thickness is not very great.

Structural Bonus

The structural bonus for each component part is calculated as follows and expressed as a percentage.

- Belt: $\sqrt{KCE} \times 16$
- Deck: $\sqrt{KCE} \times 6$
- Conning tower: $\sqrt{KCE} \times 3$
- Main Turret: $\sqrt{KCE} \times 3 \times \# \text{ of turrets}$.
- Secondary turret: $\sqrt{KCE} \times 1.5 \times \# \text{ of turrets}$.

Work out each percentage value, total them all, and then apply this to the Base Structural value in one calculation. The examples below show this in action.

That was not all that scary, was it ?

Ship	KCE	Armour Class	Structural Bonus
Kaiser	(1.02)		
Belt 14”	14.280	10 (10.004)	60.46%
Deck 4.7”	4.794	5 (4.854)	13.13%
CT 14”	14.280	10	11.33%
Turrets 12” x 5	12.240	9 (9.095)	52.47%
			= 137.39%
The Base value of S = 34.16 gets a bonus of 137.39% added (46.93) for a total of 81.09, rounded to an S value of 81.			
Scharnhorst	(1.04)		
Belt 4”	4.16	4 (4.368)	32.63%
Deck 2”	2.08	2 (2.433)	08.65%
CT 8”	8.32	7 (7.106)	08.65%
Turrets 6” x 2	6.24	6 (5.854)	14.98%
			= 64.91%
The Base value of S = 19.85 gets a bonus of 64.91% added (12.88) for a total of 32.73, rounded to an S value of 33			
Bristol	(1.07)		
Belt 2”	2.14	2 (2.499)	23.40%
Deck 2”	2.14	2	08.77%
			= 32.17%
The Base value of S = 7.22 gets a bonus of 32.17% added (2.32) for a total of 9.54, rounded to an S value of 10			
M Class			
Nil	Nil	Nil	Nil
The Base value of S = 2.25 gets no bonus and is therefore rounded giving the ship a S value of 2			

5 – Maximum Speed

Ships' maximum speeds are converted directly from knots. Remember that while quoted speeds are often taken from trials when the ships were in perfect conditions and the stokers were fresh and prepared for the trial, all things are relative and we are determining a speed for the game.

Kaiser has a top speed of 21 knots; Scharnhorst a speed of 24 knots; Bristol has a speed of 25 knots, and the M-class has a speed of 34 knots.

6 – Manoeuvre rating

Different ships of different sizes have different manoeuvre ratings (MVR). In the game a ship can turn up to 45 degrees each time it makes a manoeuvre, after which it moves straight ahead a distance equal to the manoeuvre rating. There are a number of specific conditions regarding manoeuvre which are explained in detail in the Movement section, and are not examined here.

- MVR is calculated by dividing the overall length in feet by 66, then rounding to the nearest whole number.

Kaiser is 566 feet long giving MVR of $8.575 = 9$

Scharnhorst is 475 feet long = MVR $7.197 = 7$

Bristol is 453 feet long = MVR $6.863 = 7$

M-class is 273 feet long = MVR $4.136 = 4$

When you compare the MVR with the speed above, Kaiser can make 2 changes of course in a game turn; Scharnhorst and Bristol could make up to 3, while the Destroyer could make up to 8!

7 – Ship Size and its visibility range.

The relative sizes of ships have an effect on combat. Larger vessels will be easier to hit, while smaller ones will be more difficult. We decided to pre-calculate the ship displacements which would provide the various size classes. The size modifier in the table is used in many places in the rules.

The physical size of a ship (in reality its height above the waterline) determines how far it can actually see. Given that these rules also make use of the concept of range bands, rather than exact distances, we have also calculated the range of displacements which can see up to the maximum possible visibility distance.

In both cases the actual displacement used to initially calculate the Flotation value is the determining factor.

Kaiser displaces 24,330 tons and has a Size modifier of +1 and can see 5 Range Bands;

Scharnhorst displaces 12,781 tons so it also has a Size modifier of +0, but can only see 4 RB;

Actual Displacement	Size Modifier	Maximum visibility
up to 747 tons	—	2 Range Bands
up to 1,124 tons	-3	3 Range Bands
up to 3,249 tons	-2	
up to 3,477 tons	—	
up to 9,249 tons	-1	4 Range Bands
up to 16,197 tons	—	
up to 17,249 tons	+0	5 Range Bands
up to 27,249 tons	+1	
up to 48,499 tons	+2	
Larger vessels	+3	

Bristol displaces 4,800 tons, has a Size of modifier of -1 and can see 4 RB;

The M-class destroyer, displacing 900 tons, has a Size modifier of -3 and can see 3 RB.

When you start equipping your ship with guns, you will possibly start to find cases where the gun may shoot farther than the ship can actually see.

The hull of the ship is now complete. All that remains is to add the weapons.

8 – Armament and Equipment

These rules incorporate guns with a calibre down to 3.9". The guns and torpedoes to be fitted can be found in the tables which follow. A standard reference work such as 'Conway's' will provide you with the details of which guns were fitted on which ships.

Weapons tables

These tables show details of the calibre and identification of the gun or torpedo in question, the IP value of the shell or warhead, and the maximum game range in range bands (RB). They also show the penetration or to hit modifier at the range band concerned. Finally the cost of each gun or torpedo tube is shown, as well as details of ship classes or types that carried the weapon. For further details see the tables concerned.

For game record keeping you will need to know the weapons, their IP value and range, the penetration or to hit modifier at each range band and also how and where they are mounted on the ship.

Fire Control

All combat vessels have a Fire Control value. This is based on the final structural value (S) of the ship, and represents not just systems but also their protection against damage. The number is calculated from:

$$\frac{S}{15} + 1 \text{ rounded to the nearest whole number}$$

Damage Control Teams

All combat vessels have Damage Control Teams, the value depending on the size of the Crew, calculated using the formula:

- $\sqrt{\text{(number of crew)}} \div 10$, rounded to the nearest whole number.

Quick Firer Guns

These weapons cover guns over 40mm and less than 3.9" calibre. The guns of an appropriate calibre are regarded as Quick Firers (QF) in the rules. These may be fired against ships, with a relatively low effect.

For game purposes they are calculated as a factor by totalling the number of gun barrels that fall in this calibre range and entering them in the following calculation:

- $\sqrt{\text{(# of barrels)}}$ rounded to the nearest whole number.

Arcs of fire

Arcs of fire are an important part of these rules. The placement of the weapons on the model will usually enable players to work out where they can fire. Knowing which arcs of fire are covered by your weapons is very important.

We have tried to make this part of the rules as simple as we can by classifying the various arcs of fire, following study of different ship designs. By this means we can say that a ship has a certain type of gun battery, and how it is laid out. When you are making an assessment of which arcs the gun can fire into, study of reference books or the model is recommended. Bear in mind that in most cases a turret mounted on the side of a ship is unlikely to be able to fire to the Bow or Stern, because its blast is going to damage the superstructure. Such guns would be limited to a broadside arc. Guns with a quarter arc (allowing restricted fire along the length of the ship) are going to cost more, as explained later.

There are some cases where a battery is split and conforms to two different layouts, in which case we show the number of guns in each layout. Arcs of fire are delineated by angles of 45° or 90°. The following arcs are most common. The angles shown are centred in the direction shown, unless otherwise indicated.

Note under cost calculations that arcs in excess of 90° cost an additional 10% for each extra 45° or part thereof. The cost supplements are shown in the above table as indicators. Some guns on the bow or stern may have limited arcs of fire, so it is important to check this when constructing the ship.

Weapon Mounts

The type of mount that carries the weapon is significant when it comes to applying critical hits. To get the correct type requires reference to a plan or photo of the ship. There are cases where the same guns may be mounted differently on the same ship. We have chosen to use the following set of abbreviations in the rules, mainly in the ship data tables. The annotation *n* is used to denote the number of guns in the mount. The mount type is followed by a colon (:) then the arc into which the weapon mounts fire, then the number of such mounts in parenthesis (x *n'*).

<i>Arc</i>	<i>Abbreviation</i>	<i>Definition</i>
Bow or Stern Full arc	B S	Weapons are mounted on the bow or stern of the ship, covering an arc of 270° centred in those directions, consisting of the Bow or Stern plus BOTH Broadside arcs. Arc B or S: mount cost +40%
Bow or Stern Limited arc	BLP BLS SLP SLS	Weapons are mounted side by side on the bow or stern of the ship, covering an arc of 180° consisting of the Bow or Stern plus ONE Broadside arc. This arrangement was used on many WW1 light cruisers. '...LP or ...LS' arcs: mount cost +20%
Bow or Stern Restricted arc	BR SR	Weapons are mounted on the bow or stern of the ship, covering an arc of 90° centred in those directions, effectively only firing ahead or astern. This arrangement is rare. Arc B or S: normal mount cost
Broadside Port Starboard Centreline	PB SB CB	Weapons are mounted on either side of the ship, and fire in an arc covering 90° in the direction shown. Centreline turrets can fire to either side. Arc PB or SB: mount cost +0% Arc CB: mount cost +20%
Quarter Port Starboard plus... Foreward Aft	PFQ SFQ PAQ SAQ	Weapons are mounted into the relevant broadside, but also to a limited extent ahead or astern. In this case, the broadside arc is supplemented by an additional widening of the arc by 45° foreward or aft so that its limit is defined by the axis of the ship. For practical purposes the port arc is limited in the starboard direction by an extension of the starboard base edge and vv. All '...Q' arcs: mount cost +10%

<i>Mount type</i>	<i>Abbreviation</i>
Armoured turret	AT <i>n</i>
Unarmoured turret; fully enclosed weapon mount	UT <i>n</i>
Weapon with splinter shield	S <i>n</i>
Open, unprotected weapon mount	O <i>n</i>
Casemate	C <i>n</i>
Torpedo mount	TT <i>n</i>

The Kaiser is armed with 10 x 12" SKL/50 (L/47) guns, mounted in 5 armoured turrets, each with two guns. These are located with one at the bow, one on each broadside, and two at the stern. There are 14 x 5.9" SKL/45 (L/42), mounted in casemates, 7 guns on each broadside (these guns have improved values after the end of 1915). In addition there are 12 guns of the Quick Firer type, providing a QF value of 3. The Structural value of 81 provides a Fire Control Value of 6 (6.40). The crew of 1084 provides 3 damage control teams (3.292). The annotation for the main weapons is:

10x12" SKL/50 (L/47): AT2: B.PB.SB.S (x2)

14x5.9" SKL/45 (L/42): C1: PB (x7).SB (x7)

The Scharnhorst is armed with 8 x 8.2" SKL/40 (L/37) mounted in two armoured turrets, each with two guns. These are located at the bow and stern. The other 4 guns are mounted 2 on each side of the ship in casemates, though with the additional capability of firing ahead or astern, into quarter arcs. 2 on each side of the vessel. Note that these guns have different game values to the turret weapons. She also carries 6 x 5.9" SKL/40 (L/37), in normal casemates, 3 on each side of the ship. There are 18 guns of the Quick Firer type, providing a QF value of 4. The Structural value of 33 provides a Fire Control Value of 3 (3.20). The crew of 764 provides 3 damage control teams (2.764). The annotation for the main weapons is:

4x8.2" SKL/40 (L/37): AT2: B.S

4x8.2" SKL/40* (L/37): C1: PFQ.PAQ.SFQ.SAQ

6x5.9" SKL/40 (L/37): C1: PB (x3).SB (x3)

The Bristol is armed with 2 x 6" Mk XI (L/50), mounted behind shields, one each to the bow and stern. There are 10 x 4" Mk VIII*** (L/50), mounted behind shields with 5 on each broadside. In addition there are 4 guns of the Quick Firer type, providing a QF value of 2. The Structural value of 10 provides a Fire Control Value of 2 (1.67). The crew of 480 provides 2 damage control teams (2.191). The annotation for the main weapons is:

2x6" Mk XI (L/50): S1: B.S

10x4" Mk VIII*** (L/50): S1: PB(x5).SB(x5)

The M-Class destroyer is armed with 3 x 4" Mk IV (L/40), mounted behind shields, one on the bow, one amidships (firing to either broadside) and one to the stern. The torpedo armament is two twin 21" torpedo tubes on the centre line, firing to either side of the ship. These could be Mk II or Mk IV, depending on the date of the battle. There are no Quick Firers. The Structural value of 2 provides a Fire Control Value of 1 (1.13). The crew of 80 provides 1 damage control team (0.894). The annotation for the main weapons is:

3x4" Mk IV (L/40): S1: B.CB.S

4x21" Mk II: TT2: CB (x2)

9 – Points Values

While we know that points values are anathema to some naval wargamers, we prefer to include these so that some sort of evaluation can be made of the results of an action. Points values for a ship with Crew Quality 0 are calculated from:

Hull Cost PLUS Equipment Cost

This figure is modified by Crew Quality using the modifier of between + 20% and – 20%, and then additional equipment is fitted at a cost of

- 50 points per float plane/scout,

Hull cost

The value of the hull is calculated taking:

- (Structure S plus Flotation F) x Speed ÷ MVR, rounded to the nearest whole number.
- If a ship has poor underwater protection, then its HULL COST is reduced by 10%. Such vessels are counted as being merchant vessels converted to military use (such as armed merchant cruisers); First World War vintage Pre-dreadnought Battleships and Armoured Cruisers (WW1).

Equipment cost

- The value of equipment is taken from the weapons tables x the number of guns or torpedoes. In addition, there is a cost for the gun or torpedo mount itself, which is based on the extent of its firing arc. All weapons get a 90° of fire for free, and then each additional 45° or part thereof adds 10% to the cost of a mount. Calculate the cost for each mount based on the number of guns and arc of fire and total the figure for the equipment concerned. Retain decimal points in this calculation, and only round to the nearest whole number when all the weapons have been costed.
- Some vessels may be regarded as having poor magazine safety, either due to weak protection or poor handling facilities. On such vessels the cost of the battery concerned is reduced by 10%. Note that this effect is only applicable to vessels that have the guns in a given battery mounted in an armoured turret. Typical vessels falling into this category are First World War vintage Pre-dreadnought Battleships and Armoured Cruisers (WW1); British First World War Battle Cruisers.
- The additional cost of a QF factor is 1 per factor. Fire Control and Damage Control are a function of the size of the vessel, so these are deemed to be included in the basic hull value.

Scout and float planes

Scout aircraft started to be carried on towed lighters in about 1915/16, then on turret-top flying-off platforms towards the end of the First World War. They were carried more extensively (mainly by cruisers) until the middle of the Second World War, when carriers gained the upper hand. While the intended role of these aircraft was as gunnery spotters, this was usually restricted to shore bombardment.

In these rules aircraft are restricted to a scouting function. Each aircraft carried adds 50 points to the final cost of the vessel (as shown above). These assets are used in the game to try to gain the tactical advantage before the game starts. No more aircraft can be carried on a ship than it did historically. In the First World War, when ships did carry aircraft this was usually limited to one, perhaps two, per ship. If using aircraft on lighters, then you may have one per lighter, and the lighter must have a suitable towing vessel, such as a light cruiser.

Final cost calculation examples (assuming CQ of +0)

The following table shows the final calculations for our sample ships. The calculations are shown so you see how we reach the numbers. The weapons show the basic cost then the multipliers for the mounts on the ship. Mounts with the same costing modifier have been combined.

Ship	Costs
(S plus F) x Speed / MVR	
Kaiser	
(81+34) x 21 ÷ 9 =	268.33
12": 71.3 x (6 x 1.4 + 4 x 1.0) =	884.12
5.9": 6.7 x (14 x 1.0) =	93.80
QF x 3 =	3.00
	980.92
Total	1249
Improved 5.9" used later changes the costs to:	
5.9": 7.1 x (14 x 1.0) =	99.40
which increases weapons cost to 987 (986.52) points and the total to 1255, an increase of 6 points	
Scharnhorst	
(33+20) x 24 ÷ 7 =	181.71
Less 10% for poor underwater protection	-18.17
	163.54
8.2" Turrets: 19.1 x (4 x 1.4) =	106.96
Less 10% for poor magazines	-10.70
8.2" Casemates: 17.7 x (4 x 1.1) =	77.88
5.9": 6.7 x (6 x 1.0) =	40.20
QF x 4 =	4.00
	218.34
Total	382
Bristol	
(10+7) x 25 ÷ 7 =	60.71
6": 7.2 x (2 x 1.4) =	20.16
4": 1.6 x (10 x 1.0) =	16.00
QF x 2 =	2.00
	38.16
Total	99
M Class	
(2+2) x 34 ÷ 4 =	34.00
4": 3.2 x (2 x 1.4 + 1 x 1.2) =	12.80
21"TT: 3.0 x (4 x 1.2) =	14.40
	27.20
Total	61
Alternative torpedo types cost:	
3.7 x (4 x 1.2) =	17.76
this increases the total weapons cost to 31 (30.56) giving an increase of 4 points to the total ship cost	
5.0 x (4 x 1.2) =	24.00
this increases the total weapons cost to 37 (36.80) giving an increase of 10 points to the total ship cost	

10 – Table of Guns by Nationality and Calibre

The tables on the following pages show the calibre and identification of the gun in question, the IP value of the shell, and the maximum game range in range bands (RB).

The gun tables show 5 range bands (I-V) with the Armour Class penetrated at each range band. This value has been pre-calculated and uses the same underlying calculation as those used earlier when determining the AC of the ship.

Finally the cost of each individual gun is shown, as well as details of ship classes or types that carried the weapon.

A note should be made about the sort order in the table under each nation. The table follows a descending order of calibre, subdivided where necessary by calibre length (the 'L/nm' values). All weapons with the same game data are grouped into the same row.

<i>Weapon</i>	<i>IP</i>	<i>RB</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Cost</i>	<i>Typical Ships (* denotes vessel never constructed)</i>
Austria Hungary									
13.8" K14 (L/45)	10	5	11	10	8	7	6	99.7	BB-Ersatz Monarch*
12" K10 Skoda (L/45)	7	4	11	9	7	6	—	62.4	BB-Viribus Unitis; B-Radetzky
9.4" C94 (L/40)	4	4	6	5	3	2	—	19.1	B-Erzherzog Karl, Habsburg, Monarch, Radetzky; CA-Sankt Georg
7.5" Skoda (L/42)	3	4	7	5	3	2	—	15.3	B-Erzherzog Karl; CA-Sankt Georg
5.9" Krupp (L/37)	2	3	5	3	2	—	—	6.7	B and CA secondary armament
5.9" K10 Skoda (L/50)	2	3	5	4	2	—	—	7.2	BB-Viribus Unitis
3.9" Skoda K10 & 11 (L/50)	1	2	3	2	—	—	—	1.9	CL-Helgoland, Saida, Tatra
France									
13.4" M 1912 (L/45)	8	5	12	10	8	6	5	80.9	BB-Bretagne
12" M1893 (L/45)	3	5	10	8	6	5	4	24.8	B-Bouvet
12" M1906; M1910 (L/45)	6	5	11	9	7	5	4	54.5	BB-Courbet; B-Danton
12" M1893/96 (L/40)	3	4	10	8	6	5	—	23.9	B-Charlemagne, Iena, Liberte, Massena, Republique, Suffren
10.4" M1887/93 (L/45)	6	5	9	7	5	4	3	43.5	B-Bouvet, Massena
10.4" M1893/96 (L/40)	6	5	9	7	6	4	3	44.7	B-Caiman, Henri IV, Indomptable, Requin
9.45" M1902/06 (L/50)	4	5	9	7	5	4	2	28.7	B-Danton
7.6" M1902 (L/50)	2	5	7	5	4	2	1	10.8	B-Liberte; CA-Edgar Quinet, Ernest Renan, Jules Michelet
6.4" M1893/96 (L/45)	1	3	5	3	2	—	—	3.3	B-Iena, Republique, Suffren
5.45" M1884/88/91/93 (L/45)	1	3	4	3	1	—	—	2.8	B-Bouvet, Carnot, Charlemagne, Charles Martel, Jauréguiberry, Masséna
5.45" M1910 (L/55)	2	4	5	3	2	1	—	7.1	BB-Bretagne, Courbet
Germany									
15" SKL/45 (L/42)	13	5	13	11	10	8	7	150.0	BB-Baden, Ersatz Yorck*
13.8" SKL/45 (L/45)	11	4	12	10	9	7	—	110.8	BC-Mackensen*
12" SKL/50 (L/47)	8	4	11	9	7	6	—	71.3	BB-Helgoland, Kaiser, Koenig; BC-Derfflinger, Hindenburg
11.1" SKL/50 (L/47)	7	4	10	8	6	5	—	55.7	BC-Goeben, Moltke, Seydlitz
11.1" SKL/50 (L/47)	7	5	10	8	6	5	4	57.9	BC-Goeben (after 1915)
11.1" SKL/45 (L/42)	7	4	10	8	6	5	—	55.7	BB-Nassau; BC-Von der Tann
11.1" SKL/40 (L/36)	4	4	9	7	5	4	—	28	B-Braunschweig, Deutschland
9.4" SKL/40 (L/37)	4	4	6	5	3	2	—	19.1	B-Kaiser Friedrich III, Wittelsbach; CA-Fuerst Bismarck, Prinz Heinrich
8.2" SKL/45 (L/42)	4	4	7	5	4	2	—	21.2	CA-Bluecher
8.2" SKL/40 (L/37)	4	4	6	5	3	2	—	19.1	CA-Prinz Adalbert, Roon, Scharnhorst, Viktoria Luisa
8.2" SKL/40* (L/37)	4	3	6	5	3	—	—	17.7	CA-Scharnhorst (casemates)
6.7" SKL/40 (L/37)	3	3	6	4	3	—	—	12.5	B-Braunschweig, Deutschland
5.9" SKL/45 (L/42)	2	3	5	3	2	—	—	6.7	BB-Baden, Helgoland, Kaiser, Koenig, Nassau; BC-Derfflinger, Moltke, Seydlitz, Von der Tann; CA Bluecher
5.9" SKL/45 (L/42)	2	4	5	3	2	1	—	7.1	BB-Baden+, Helgoland+, Kaiser+, Koenig+, Nassau+; BC-Derfflinger+, Moltke+, Seydlitz+, Von der Tann+; CA Bluecher+; CL-Brummer, Graudenz, Kolberg, Koenigsberg (ii), Magdeburg, Pillau, Wiesbaden; (+after 1915)
5.9" KL/45 (L/42)	2	3	4	3	1	—	—	5.6	DD-S113 Class
5.9" SKL/40 (L/37)	2	3	5	3	2	—	—	6.7	B-Kaiser Friedrich III, Wittelsbach; CA-Fuerst Bismarck, Prinz Adalbert, Prinz Heinrich, Roon, Scharnhorst, Victoria Luise
4.1" SKL/45 (L/47)	2	3	3	2	1	—	—	4.4	CL-Graudenz, Karlsruhe, Kolberg, Magdeburg; DD-V25, G 96, B97 Classes
4.1" SKL/40 (L/42)	2	3	3	1	0	—	—	3.4	CL-Bremen, Dresden, Gazelle, Koenigsberg (i)

<i>Weapon</i>	<i>IP</i>	<i>RB</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Cost</i>	<i>Typical Ships (* denotes vessel never constructed)</i>
Great Britain									
18" Mk I (L/40)	11	5	15	14	12	11	10	154.6	BC-Furious
18" Mk I (L/40)	3	5	15	14	12	11	10	42.2	MO-Lord Clive, General Wolfe
16.25" Mk I (L/30)	2	2	11	9	—	—	—	13	B-Benbow, Victoria
15" Mk I (L/42)	13	5	14	12	10	9	7	159.7	BB-Queen Elizabeth, Royal Sovereign; BC-Courageous, Hood, Renown
14" Mk I (L/45)	11	5	13	11	9	8	7	124.7	BB-Canada
14" Mks II; III; IV (L/45)	6	4	12	10	9	7	—	60.4	MO-Abercrombie
13.5" Mks V (L and H); VI (L/45)	8	5	12	10	8	7	6	82.5	BB-Ajax, Benbow, Conqueror, Erin, Iron Duke, King George V, Orion; BC-Lion, Queen Mary, Tiger
13.5" Mks I; II; III; IV (L/30)	2	3	10	8	7	—	—	14.8	B-"Middle Admiral", Royal Sovereign
12" Mks XI; XI*; XII (L/50)	5	4	11	9	7	6	—	44.6	BB-Colossus, Neptune, St. Vincent
12" Mks X; XIII (L/45)	5	4	11	9	7	5	—	43.9	BB-Agincourt, Bellerophon, Dreadnought; BC-Indefatigable, Invincible; B-Lord Nelson
12" Mk IX (L/40)	5	3	10	8	6	—	—	36.1	B-Duncan, Formidable, London
12" Mk IX (L/40)	5	3	10	8	7	—	—	37.1	B-King Edward VII
12" Mk VIII (L/35)	2	3	10	8	6	—	—	14.4	B-Canopus, Majestic
12" Mk VIII (L/35)	2	5	10	8	6	5	4	16.5	MO-Sir John Moore
12" Mk II-V; Vw (L/25)	1	2	7	6	—	—	—	4.3	B-Collingwood, Colossus, Conqueror, "Early Admiral"
10" Mk VI (L/45)	5	3	9	7	5	—	—	32	B-Swiftsure
10" Mk VII (L/45)	4	3	9	7	5	—	—	25.6	B-Triumph
10" Mks I; II; III; VI (L/32)	1	2	7	5	—	—	—	4.0	B-Barfleur, Devastation, Thunderer, Victoria
9.2" Mk XII (L/51)	3	5	9	7	5	4	2	21.5	MO-Glatton
9.2" Mk XI (L/50)	5	3	9	7	5	—	—	32	B-Lord Nelson; CA-Minotaur
9.2" Mk X (L/47)	5	3	8	6	5	—	—	28.9	CA-Cressy, Drake, Duke of Edinburgh, King Edward VII, Warrior
9.2" Mk X (L/47)	2	3	8	6	5	—	—	11.6	MO-M15-18
9.2" Mk VIII (L/40)	3	3	7	5	4	—	—	14.9	CA-Powerful
9.2" Mks III-VII (L/31.5)	2	2	7	5	—	—	—	8.1	CA-Blake, Edgar, Imperieuse, Orlando
9.2" Mks III-VII (L/31.5)	1	3	7	5	4	—	—	5.0	MO-M19 to 28
7.5" Mks II-V (L/50)	4	3	7	5	3	—	—	19.1	CA-Minotaur, Swiftsure, Warrior
7.5" Mk I (L/45)	3	3	7	5	3	—	—	14.3	CA-Devonshire
6" Mks XI; XI*; XVII (L/50)	2	3	5	4	2	—	—	7.2	BB-Canada; B-King Edward VII (last 3); CA-Duke of Edinburgh; CL-Bristol, Weymouth, Chatham; MO-Marshal Ney
6" Mk XIII (L/50)	2	3	5	3	2	—	—	6.7	BB-Agincourt
6" Mks XIV; XV (L/50)	1	3	5	3	2	—	—	3.3	MO-Severn
6" Mk XVI (L/50)	2	3	6	4	2	—	—	7.9	BB-Erin
6" Mk XVIII (L/50)	1	3	5	3	2	—	—	3.3	MO-Glatton
6" Mks VII; VIII, XII (L/45)	2	3	5	3	2	—	—	6.7	BB-Iron Duke, Queen Elizabeth, Royal Sovereign; BC-Tiger; B-Duncan, Formidable, King Edward VII (1st 5), London; CA-Cressy, Devonshire, Drake, Monmouth; CL-Challenger; MO-Severn
6" Mk XII (L/45)	2	4	5	3	2	1	—	7.1	CL-Caledon, Calliope, Cambrian, Caroline, Centaur, Ceres
6" Mks I; II; III (L/40)	2	2	4	3	—	—	—	5	B-Canopus, Hood, Majestic, Renown, Royal Sovereign; CA-Diadem, Edgar, Powerful, Royal Arthur; CL-Aeolus, Arrogant, Astraea, Blake, Brilliant, Challenger, Eclipse, Hermes, Iphigenia
5.5" Mk I (L/50)	4	4	5	3	2	1	—	14.2	BC-Hood, Furious
5.5" Mk I (L/50)	4	3	5	3	2	—	—	13.3	CV-Hermes; CL-Birkenhead
5" Mks I - V (L/25)	2	2	2	1	—	—	—	2.5	CL and SL of 1880's
4.7" Mks I/II (L/45)	1	3	4	2	1	—	—	2.5	DD-Amazon, Scott, Shakespeare, W Class (Mod)
4.7" Mks Elswick; I-IV; VI (L/40)	1	2	3	1	—	—	—	1.6	B- and C- of late 1800's
4" Mks VII; VII**, VIII*** (L/50)	1	2	3	2	—	—	—	1.9	BB-Bellerophon, Colossus, King George V, Neptune, Orion, St. Vincent; BC-Indefatigable, Lion, Queen Mary; CL-Active, Blonde, Boadicea, Bristol; DD-Medea
4" Mk V (L/45)	2	3	3	1	0	—	—	3.4	DD-V Class
4" Mk IX, X (L/45)	1	3	2	1	0	—	—	1.4	BC-Renown, Courageous

<i>Weapon</i>	<i>IP</i>	<i>RB</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Cost</i>	<i>Typical Ships (* denotes vessel never constructed)</i>
Great Britain (continued)									
4" Mks I; II; III (L/40)	1	2	2	1	—	—	—	1.3	BC-Invincible; CL-Amethyst, Pelorus;
4" Mks IV, VI, X (L/40)	2	2	3	1	—	—	—	3.2	CL-Arethusa, Calliope, Cambrian, Caroline; DD-Faulknor, Laforey, Lightfoot, M Class, Parker, R, S Classes, Talisman
4" Mk VIII (L/40)	1	2	3	1	—	—	—	1.6	DD-Acasta, Acheron, Acorn, Swift, Tribal, Beagle
Italy									
15" Ansaldo 1914 (L/40)	11	4	13	11	9	8	—	119.0	BB-Carraciolo*; MO-Alfredo Cappellini, Faa di Bruno
12" M 1909 (L/46)	7	5	12	9	7	6	5	67.4	BB-Andrea Doria, Conte di Cavour, Dante Alighieri
12" Elswick (L/40)	3	4	11	8	7	5	—	25.5	B-Benedetto Brin, Regina Elena
10" M1908 (L/45)	5	5	9	7	5	4	3	36.2	CA-San Giorgio
8" EOC W (L/45)	2	4	8	6	4	3	—	12.1	B-Regina Elena; CA-Garibaldi
7.5" M1908 (L/45)	2	5	7	5	3	2	1	10.4	CA-San Giorgio
6" EOC (L/40)	2	2	4	3	—	—	—	5.0	CA-Garibaldi
4.7" M1909 (L/50)	1	3	4	2	1	—	—	2.5	BB-Cesare, Dante Alighieri; CL-Marsala, Quarto
4.7" OTO 1926; VT 1924; SCA 1918 (L/45)	1	3	4	3	1	—	—	2.8	DD-Leone, Sauro, Sella, Turbine
4.7" M 1889/1891 (L/40)	1	2	2	1	—	—	—	1.3	Cruisers
4" SA 1917 (L/45)	1	3	4	2	1	—	—	2.5	TB-Curtatone, Generali, La Masa, Mirabello, Palestro, Sirtori
4" SA 1914 (L/35)	1	3	3	2	1	—	—	2.2	TB-Audace, Pilo; SL-Diana
Japan									
14" Vickers, 41st Year (L/45)	10	5	12	10	9	7	6	105.2	BB-Fuso, Ise; BC-Kongo
12.6" M 1884 (L/38)	1	3	9	7	6	—	—	6.6	B-Itsukushima
12" 41st year type (L/50)	3	5	11	9	7	6	4	27.7	B-Settsu
12" 41st year type (L/45)	3	5	11	8	7	5	4	26.4	B-Ibuki, Kashima, Mikasa (modified), Satsuma, Settsu (wing turrets), Tsukuba,
12" 41st year type (L/40)	3	3	10	8	6	—	—	21.6	B-Fuji, Mikasa, Shikishima
10" 41st year type (L/45)	3	5	9	7	5	4	3	21.7	B-Kashima, Satsuma
10" 41st year type (L/40)	3	4	8	6	4	3	—	18.2	CA-Kasuga
8" 41st year type (L/45)	2	4	7	5	3	2	—	10.2	B-Ibuki; CA-Adzuma, Asama, Idzumo, Kasuga, Yakumo
6" 41st Year (L/50)	2	4	5	3	2	1	—	7.1	BB-Fuso; BC-Kongo
6" 41st year type (L/45)	2	3	5	3	2	—	—	6.7	CL-Chikuma, Tone
6" 41st year type (L/40)	2	2	4	3	—	—	—	5.0	Battleships and Cruisers
5.5" 3rd Year (L/50)	2	3	5	3	2	—	—	6.7	BB-Ise (as built); CV-Hosho; CL-Tenryu
5.5" 3rd Year (L/50)	2	4	5	3	2	1	—	7.1	BB-Nagato (as built); CL-Kuma, Nagara
4.7" 41st year type (L/40)	1	2	3	1	—	—	—	1.6	CL-1880-1900
Russia									
14" M 1913 (L/52)	16	5	13	11	9	8	7	181.3	BC-Izmail*
12" M1907 (L/52)	7	5	11	9	7	6	5	65.0	BB-Gangut
12" M1907 (L/52)	10	5	11	9	7	6	5	92.9	BB-Imperatritsa Mariya
12" M1895 (L/40)	2	2	10	7	—	—	—	11.2	B-Borodino, Evstafi, Pantelimon, Petropavlovsk, Retvisan, Sissoi
12" M1895 (L/40)	4	4	10	7	6	4	—	30.2	Veliki, Tri Svititelia, Tsessarevitch (1st row as built, 2nd row after gun improvements)
12" M1895 (L/40)	7	4	11	9	7	6	—	62.4	B-Imperator Pavel
12" M1886 (L/35)	2	2	9	8	—	—	—	11.1	B-Georgi Pobiedonosets, Navarin, Tchesma
12" M1877 (L/30)	1	2	7	6	—	—	—	4.3	B-Dvienadsat Apostolov, Ekaterina II, Gangut, Imperator Alexander II, Sinop
10" M 1908 (L/50)	4	4	10	7	6	4	—	30.2	CA-Rurik (II)
10" M 1891 (L/45)	1	4	8	6	4	3	—	6.1	B-Admiral Ushakov, Rostislav
10" M 1891 (L/45)	1	4	8	6	5	3	—	6.3	B-Peresviet
9" M 1877 (L/35)	1	2	6	5	—	—	—	3.7	B-Gangut, Imperator Alexander II
8" M 1905 (L/50)	3	3	7	5	3	—	—	14.3	B-Imperator Pavel (Turrets); CA-Rurik (II)
8" M 1905 (L/50)	4	3	7	5	3	—	—	19.1	B-Evstafi, Imperator Pavel (Casemates)
8" M 1905 (L/50)	4	4	7	5	3	2	—	20.4	B-Petr Veliki, Sinop (Open mounts)
8" M 1892 (L/40)	2	4	7	5	3	2	—	10.2	CA-Bayan (I & II), Gromoboi, Rossia
8" M 1885 (L/35)	2	2	5	3	—	—	—	5.6	CA-Admiral Nakhimov, Pamiat Avova, Rurik (I); GB-Koriets

<i>Weapon</i>	<i>IP</i>	<i>RB</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Cost</i>	<i>Typical Ships (* denotes vessel never constructed)</i>
Russia (continued)									
6" M 1892 (L/45)	2	3	5	3	2	—	—	6.7	Most B, CA, C between 1890 & 1911 (except as noted)
6" M 1877 (L/35)	1	2	4	2	—	—	—	2.2	B-Dvienadsat Apostolov, Ekaterina II, Gangut, Georgi Pobiedonosets, Imperator Alexander II, Navarin; CA-Admiral Kornilov, Admiral Nakhimov, Pamiat Azova
5.1" B 13 M1913 (L/55)	2	3	5	3	2	—	—	6.7	BB-Imperatritsa Mariya; C-Bogatyr, Pallada
5.1" B 13 M1913 (L/55)	2	4	5	3	2	1	—	7.1	CL-Pamyat Merkuria, Profintern
4.7" M1905 (L/50)	2	4	4	3	1	0	—	5.7	BB-Gangut; CA-Rurik (II)
4.7" M 1892 (L/45)	2	3	4	2	1	—	—	5.0	B-Admiral Ushakov, Imperator Alexander II (rearmed), Imperator Pavel, Tri Svititelia; CA-Rurik (I), Vladimir Monomakh (rearmed); CL-Almaz, Boyarin, Novik; GB-Korietz
4" Obuchov M1911 (L/60)	2	4	4	2	1	0	—	5.2	DD-Old; SL-Uragan
Spain									
12" VSM Mk H (L/50)	5	4	11	9	7	6	—	44.6	BB-Espana
12" M 1884 (L/35)	1	2	9	7	—	—	—	5.3	B-Pelayo
11" M 1883 (L/35)	2	2	7	6	—	—	—	8.6	B-Pelayo; CA-Emperador Carlos V, Infanta Maria Teresa
9.4" M Canet (L/42)	1	3	7	5	4	—	—	5.0	CA-Cristobal Colon, Princesa de Asturias
United States									
14" Mks 4; 6 (L/50)	8	5	13	11	9	8	6	90.1	BB-New Mexico, California (as built)
14" Mks 1; 2; 3; 5 (L/45)	7	5	12	10	9	7	6	73.6	BB-Nevada, Pennsylvania, Texas
13" Mk 1 (L/35)	4	2	9	8	—	—	—	22.2	B-Indiana, Kearsarge, Illinois
12" Mks 5; 6 (L/45)	8	4	11	9	7	5	—	70.2	BB-Delaware, Florida, South Carolina; B-Connecticut, Mississippi
12" Mk 7 (L/45)	8	5	11	9	7	6	4	73.8	BB-Wyoming
12" Mks 3; 4 (L/40)	2	4	11	9	7	6	—	17.8	B-Maine (II), Virginia; MO-Arkansas
12" Mks 3; 4 (L/40)	6	4	10	8	6	5	—	47.8	(1st row as built, 2nd row after 1906)
12" Mks 1; 2 (L/35)	3	2	9	7	—	—	—	15.8	B-Iowa, Texas; MO-Monterey, Puritan
10" Mk 3 (L/40)	1	4	9	7	6	4	—	7.2	CA-Tennessee
10" Mk 3 (L/40)	5	4	9	7	6	4	—	36.1	(1st row as built, 2nd row after 1906)
10" Mks 1; 2 (L/30)	1	4	7	5	4	3	—	5.4	B-Maine (I); MO-Amphitrite
10" Mks 1; 2 (L/30)	5	4	7	5	4	3	—	27.2	(1st row as built, 2nd row after 1906)
8" Mk 6 (L/45)	2	5	7	5	4	3	2	11.2	B-Connecticut, Mississippi, Virginia
8" Mk 5 (L/40)	1	3	7	5	3	—	—	4.8	CA-Pennsylvania; C-Columbia (all as built)
8" Mk 5 (L/40)	2	3	7	5	3	—	—	9.5	CA-Pennsylvania; C-Columbia (1906)
8" Mks 3; 4 (L/35)	1	3	6	4	3	—	—	4.2	B-Indiana, Iowa, Kearsarge; CA-Brooklyn, New York; C-Baltimore, Charleston, Olympia
8" Mks 3; 4 (L/35)	2	3	6	4	3	—	—	8.3	(1st row as built, 2nd row after 1906)
8" Mks 1; 2 (L/30)	1	3	6	4	3	—	—	4.2	C-Atlanta, Chicago
7" Mks 1; 2 (L/45)	3	3	6	4	3	—	—	12.5	B-Connecticut, Mississippi
6" Mk 5 (L/50)	2	4	4	3	1	0	—	5.7	CL-New Orleans
6" Mks 6; 8 (L/50)	2	3	5	4	2	—	—	7.2	B-Maine (II), Virginia; CA-Pennsylvania; C-St Louis
6" Mks 3/2; 4; 7 (L/40)	1	2	4	3	—	—	—	2.5	B-Illinois, Indiana; C-Cincinnati
6" Mks 3/2; 4; 7 (L/40)	3	2	4	3	—	—	—	7.5	(1st row as built, 2nd row after 1906)
6" Mks 1; 2; 3 (L/30)	1	2	4	2	—	—	—	2.2	B-Iowa, Maine (I), Texas; C-Atlanta, Baltimore, Charleston, Chicago, Newark, Philadelphia, San Francisco
6" Mks 1; 2; 3 (L/30)	3	2	4	2	—	—	—	6.6	(1st row as built, 2nd row after 1906)
5" Mks 7; 8; 15 (L/51)	2	4	4	3	1	0	—	5.7	BB-California, Maryland, Nevada, New Mexico, Pennsylvania, Texas, Wyoming
5" Mks 5; 6 (L/50)	1	4	4	2	1	0	—	2.6	BB-Delaware; C-Chester, Denver
5" Mks 2; 3; 4 (L/40)	2	3	3	2	1	—	—	4.4	B-Kearsarge; CA-Brooklyn; C-Cincinnati, Denver, Montgomery, Olympia
5" Mk 1 (L/31)	1	3	3	2	1	—	—	2.2	C-Chicago
4.7" Mk 1 (L/40)	1	2	2	1	—	—	—	1.3	C-New Orleans
4" Mks 7; 8; 9; 10 (L/51)	1	3	4	2	1	—	—	2.5	DD-Flushdecker
4" Mks 1; 3; 4; 5; 8 (L/40)	1	2	2	1	—	—	—	1.3	B-Iowa; CA-Brooklyn, New York; C-Columbia; GB-Helena, Nashville, Wilmington

11 – Table of Ship Torpedoes by Nationality and Calibre

These tables show the calibre and identification of the torpedo in question, the IP value of the warhead, and the maximum game range in range bands (RB) or 10cm for some types.

Torpedoes show 5 range bands (I-V), with the Torpedo “To Hit” modifier at each range band.

Finally the cost of each torpedo tube is shown, as well as details of ship types or classes that carried the weapon. The cost is taken to 1 decimal place. The date allows you to arm the ship with the appropriate type of torpedo for actions at certain dates.

Torpedoes with the “To Hit” modifier followed by an asterisk have a shorter range of 10cm, but use the RB1 “To Hit” number in the tables.

<i>Weapon</i>	<i>IP</i>	<i>RB</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Cost</i>	<i>Typical Ships</i>
France									
17.7” M12D Toulon	4	2	+0	-1	—	—	—	3.0	Destroyers and Capital ships (1914)
Germany									
17.7” C/03; C/03D	4	1	-1	—	—	—	—	1.6	Most pre WW1 surface ships (1905)
17.7” C/07	3	10 cm	+1*	—	—	—	—	0.6	Coastal batteries (1908)
17.7” C45/91 Br	3	10 cm	+0*	—	—	—	—	0.6	Small Cruisers (Gefion, Freya, Geier) (1891)
17.7” C45/91 S	4	10 cm	+0*	—	—	—	—	0.7	Small Cruisers (1892)
19.7” G/6	4	1	+0	—	—	—	—	1.9	Torpedo boats from G-174 onwards (1911)
19.7” G/6 D	4	2	+0	-1	—	—	—	3.0	Breslau class onwards (1911)
23.6” H8	4	3	+1	+0	+0	—	—	4.7	Coelln II, Dresden II, S-113 class (1915)
Great Britain									
18” Whitehead	2	10 cm	+0*	—	—	—	—	0.4	Surface ships (1894)
18” Mk VII, VIII	4	1	+0	—	—	—	—	1.9	Pre WW1 Torpedo boats, Destroyers (1910)
21” Mk II	4	2	+0	-1	—	—	—	3.0	WW1 Destroyers (1914)
21” Mk II	5	2	+0	-1	—	—	—	3.7	WW1 Destroyers (1915)
21” Mk IV and IV*	5	3	+0	+0	-1	—	—	5.0	WW1 Destroyers (1916)
Japan									
18” Ho Type 30	3	10 cm	+0*	—	—	—	—	0.6	Surface ships (1897)
18” Ho Types 32; 37; 38 No 1; 38 No 2 A	3	1	-2	—	—	—	—	1.0	Surface ships (1899-1905)
18” Ho Type 38 No 2 B	3	1	-1	—	—	—	—	1.2	Surface ships (1905)
18” Ho Types 42; 43; 44 No 1	3	1	+0	—	—	—	—	1.4	Surface ships (1905-1911)
18” Ho Type 44 No 2	3	2	+0	-1	—	—	—	2.2	Surface ships (1911)
21” Type 43	4	2	+0	-1	—	—	—	3.0	Surface ships (1910)
21” Types 44 No 1; 44 No 2	4	2	+0	+0	—	—	—	3.3	Surface ships (1911)
21” Type 6	4	3	+0	+0	+0	—	—	4.3	Destroyers (1918)
Russia									
18” M 1907; M1908; M1910	3	10 cm	+0*	—	—	—	—	0.6	All ships in WW1 with 18” TT (1907-1910)
18” M 1910	3	1	-1	—	—	—	—	1.2	All ships in WW1 with 18” TT (1912)
18” M 1912	3	1	+0	—	—	—	—	1.4	Novik class Destroyers (1912)
United States									
18” Whitehead Mks 1; 1B; 2; 2C; 3A; Bliss-Leavitt Mks 4; 6	2	10 cm	+0*	—	—	—	—	0.4	Surface ships (1894-1900; 1912; 1911))
18” Whitehead Mk 5	2	1	+0	—	—	—	—	0.9	Destroyers, Torpedo Boats, small ships (1908)
21” Bliss-Leavitt Mks 1-3	2	1	-1	—	—	—	—	0.8	Surface ships (1904-1906)
21” Bliss-Leavitt Mk 8	4	3	+1	+1	+1	—	—	5.3	Flushdeckers (1911)

ARCS OF FIRE

The diagrams below indicate the arcs of fire used in the rules. Clearly they are not all shown, but each of the categories can be established from the diagrams and the table. The abbreviation is that which appears in the ship data tables.

Arc	Abbreviation	Definition
Bow or Stern Full arc	B S	Weapons are mounted on the bow or stern of the ship, covering an arc of 270° centred in those directions, consisting of the Bow or Stern plus BOTH Broadside arcs.
Bow or Stern Limited arc	BLP BLS SLP SLS	Weapons are mounted side by side on the bow or stern of the ship, covering an arc of 180° consisting of the Bow or Stern plus ONE Broadside arc. This arrangement was used on many WW1 light cruisers.
Bow or Stern Restricted arc	BR SR	Weapons are mounted on the bow or stern of the ship, covering an arc of 90° centred in those directions, effectively only firing ahead or astern. This arrangement is rare.
Broadside Port Starboard Centreline	PB SB CB	Weapons are mounted on either side of the ship, and fire in an arc covering 90° in the direction shown. Centreline turrets can fire to either side.
Quarter Port Starboard plus... Forward Aft	PFQ SFQ PAQ SAQ	Weapons are mounted into the relevant broadside, but also to a limited extent ahead or astern. In this case, the broadside arc is supplemented by an additional widening of the arc by 45° forward or aft so that its limit is defined by the axis of the ship. For practical purposes the port arc is limited in the starboard direction by an extension of the starboard base edge and vv.

