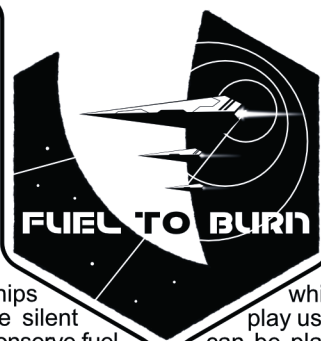


Welcome to space!

Fuel To Burn (FtB) is a retro-styled, minimalistic, pen-and-paper, diceless, near-true-scale, semi-Newtonian, "easy but complex" space opera wargame! In **FtB**, players command a handful of heavily shielded spaceships that are propelled through the dark by roaring engines, firing railguns and long-range guided torpedoes. Ships and their crews face off in the silent and immense void of space. Conserve fuel through precise timing and cunning manoeuvres around planets, manage your heat signature to retain initiative and choose your orders with care. How hard will you push the drive? When is the right time for repairs? What if the torpedo counter-measure has no effect? Will the ship overheat? *It's all up to you, commander!*



1 - What you need to play

FtB is a game designed for simplicity and availability. The only necessary items are paper (preferably an A1 but any size will get you started), pens (3 colours minimum) and a ruler marked in centimeters. You can scale up your game by using a ruler marked in inches instead and play on a whiteboard. It's even possible to play using decimeters. Some scenarios can be played solo and some as a co-op but the most thrilling games are of course played against another human. The **FtB** rules can easily be extended and modified - so go nuts! For free downloads, info, Discord link, additional rules and scenarios, join us at:

www.fueltoburn.xyz

2 - What players do in FtB

In **FtB**, players command a small fleet of **Combat Spaceships** by plotting their course through space, using the **Astrometrics** rules and deciding what **Orders** to give each turn. A **Ship** has several options, such as doing a **Burn** to change course, **Repair** damage or bleed off **Heat**. As **Ships** close in, they must also decide if they will engage in **Combat!** Focus is always on the **Scenario Objectives** and these depend on **Ships** being in the right place at the right time. The challenge is that they carry a limited amount of **Fuel** for **Hard burns** (trapped nuclear explosions in ablative magnetic mirror systems), **Torpedoes**, **Weapons**, **Ship Systems**, **Armour** and will also struggle with **Overheating** which exposes **Ships** and affects **Initiative**. *Refueling and rearming is rare. Players must balance risks, manage assets and plan far ahead in order to reach the scenario objectives and prevent their opponent from reaching theirs!*

3 - How to play a game of FtB

- 1) First, read these rules. The words in **bold** refer to other "rule boxes" or concepts. The resolution mechanism in **FtB** is based on Rock-Paper-Scissors and "REs" (*Random events*).
- 2) Unless you have a pre-printed "space" map of a star system available, a piece of paper must first be prepared with the necessary **Telemetry** to depict the **Star system**.
- 3) Set up a **Scenario** to play out. There are tools for this at the end of these rules. More options and **Scenarios** are published on the **FtB** website.
- 4) **Assemble your fleet** by selecting the **Ships** you think will suit the **Objective** whilst keeping within the points limit or the rules set by a **Scenario**.
- 5) Deploy your ships on the map according to the **Scenario** and **Deployment** rules.
- 6) Run the **Turn sequence** until all possible **Objectives** have been achieved, no **Ships** remain or all **Turns** have been played. This ends the game.

4 - Ship types & Abilities

There are 4 types of **Military** ships, each with a unique **Ability**. A basic ship is equipped with: 1 **Armour**, 2 **Torpedoes** and 2 **Fuel**.

Destroyer: Stealthy and fast. +1 **Fuel**. **Ability:** Stealth - The **Masking signature** test is always an automatic **Success**.

Cruiser: Eagle eyed and laden with ordnance. +1 **Torpedo** capacity. **Ability:** Scanners - Can make a target **Tracked**.

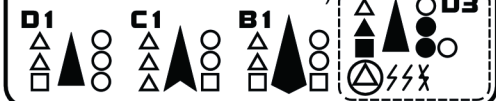
Battleship: Heavily armoured and fitted with huge gun arrays. +1 **Shield**. **Ability:** Focus fire - **Battleship Hits** remove 1 **Shield** and does **Damage** when **Winning** (but not for a **Draw**), even if there is another **Shield** left.

Tanker: A fleet **Tanker** represents a group of refueling vessels that can emerge at different locations during a game. A **Tanker** can **Refuel Ships Passing through** its service range. It has no **Weapons** or **Systems** of its own.

6 - Ship manifests

Each **Ship** has an identification (name, letter or number) where their **Vector** starts the game, which matches that of a **Ship manifest**. This is how a **Ship's** status and its assets are tracked.

Below are examples of a **Destroyer (D)**, **Cruiser (C)** and **Battleship (B)**. The **Destroyer "D3"** is an example of a *ship in play*. It has a **Damaged Drive System** (symbol is added only after **Damage** has occurred), no **Armour** left, 2 levels of **Heat**, has 1 **Torpedo** left and 2 **Fuel** (it has also **Refueled** once and **Cooled down** 1 **Heat**).



7 - The Telemetry concept

The paper map which **FtB** is played on (the **Star system**), consists of visual information for **Ships** and **Torpedoes** and their movement **Vectors**. In **FtB**, distances are measured in LU's "Length Units". Specific symbols are used for **Combat Engagements**, **Radiation zones** and **Asteroid fields** etc. These are all drawn on the map by the players as the game progresses. This is the "*Telemetry concept*". Below is a small example of a ship (grey) moving in and attacking another and how this looks in practice (the grey ship scored a hit on the black one).



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Game design, text, art & layout by
Daniel Vintersvärd

8 - Turn sequence

A **Turn** (or **Day**) is divided into 4 **Phases**:

- 1) **Turn counter (Calendar)**
The scenario states how many **Turns** (or **Days**) to play. Write down the total number of **Turns** on a paper or the map itself. At the start of each **Turn**, write the current **Turn** number under or next to the previous then proceed to the **Initiative** phase.
- 2) **Initiative**
Initiative is decided by **Ship** count. *First* by most **Untracked Ships**, *second* by total number of **Ships** and *third* (as tie-breaker) by using a **Combat resolution** (without the **Evasive** option and redoing any **Draw** results). **Tankers** don't count but **Civilian Ships** do. **Initiative** is decided once per **Turn**. Note in the **Calendar** who won the **Initiative**.
- 3) **Ship activation**
a) The player with the **Initiative** selects one of their **unactivated**, **Untracked** ships to **Activate** OR may instead choose to force a specific **unactivated** **Tracked enemy Ship** to **Activate** (if there is one). Then the opponent does the same.
b) Once out of **Untracked** ships to **Activate**, a player must forego their turn and wait for their opponent to force **Activation** on one of their **Unactivated** Ships.
c) When both players are out of **Untracked** ships, the player with the **Initiative** chooses who will force an enemy ship to **Activate**, until there are no **Unactivated** ships left and the **Ship activation Phase** ends.
- 4) **Administration**
a) After all **Ships** have been **Activated**, check for fulfilled **Win conditions**. If the **Scenario Objectives** are fulfilled, or it was the last **Turn**, the game ends.
b) If the game continues, update all relevant **Vectors** as completed (add the **Activated symbol** on all current vectors).
c) A new **Turn** (**Day**) starts.

9 - Tracked ships

There are 2 ways a **Ship** can become **Tracked**: being **Scanned** or becoming **Overheated**.

- 1) **Tracked through Scanning**
A **Ship** can only ever be **Scanned** whilst being **Passive** since another **Ship** (a **Cruiser**) must be **Active** to perform the **Scan**.
If the **Scan** is successful, the **Ship** becomes **Tracked** and its current **Vector end point** is marked with the **Tracked symbol** (see **Telemetry**).
- 2) **Tracked through Overheating**
Overheating happens immediately when 3 **Heat** is reached, both during a **Ship's** own **Activation** or whilst being **Passive** (i.e. another ship is **Active**). It becomes **Tracked** and that **Ship's** current **Vector end point** is marked with the **Tracked symbol** (see **Telemetry**).
If an **Active Ship** reduces its **Heat** levels below 3, it can attempt to **Mask signature** in the same **Activation**.

10 - Scanning

- ★ The **Cruiser** is the only ship able to **Scan**.
- ★ The **Scan** is performed at the **Vector end point**, before the **Masking signature** step.
- ★ The **Scan range** is 15 LU.
- ★ A single enemy ship within **Scan range** can be selected as a target.
- ★ If the **Core system** of the **Cruiser** is **Damaged**, it cannot perform a **Scan**.
- ★ A **Scan** is done with an **easy RE test**. **Failure** results in the **Cruiser** gaining 1 **Heat** and the target not becoming Tracked.
- ★ There is no difference between a **Tracked status** coming from **Overheating** or being **Scanned**. It is treated the same way in the **Mask Signature** step. This means that a ship that got **Untracked** this turn risks becoming **Tracked** again (from either **Overheating** or being **Scanned**).

11 - Ship activity steps

When a **Ship** is being **Activated** (regardless of whether it is **Tracked** or not), it is no longer **Passive** and will do the following 5 **Steps** in sequence:

- 1) **Guide Torpedo:** Any **Torpedo** guided by the **Ship** now **Activates**. It will **Coast** every turn and may **Attack** during its move. Note: If it is within 30 LU from the **Guiding Ship** at this point, it can be guided. If not, it is **Deactivated**.
- 2) **Orders:** The ship can be given 1 **Order**.
- 3) **Vector plot:** The ship's **new Vector end point** is plotted (see **Astrometrics**).
- 4) **Vector actions:** Follow the **Vector** and resolve **Attacks**, complete **Refueling** and apply area effects (**Radiation** and **Asteroids**) in the order they happen, as the **Vector** is drawn.
- 5) **Masking signature:** If the **Ship** is **Tracked** (for any reason) but not currently **Overheated**, the ship can try to **Mask signature**. This is an **easy RE Test**. If the test **Succeeds**, the **current Vector point** is cleared of the **Tracked symbol**.

12 - Orders

Only 1 **Order** can be given to a **Ship** each **Activation**. If no choice is made for a **Ship** (or it is forgotten), it will default to a **Coast Order** and move with the same velocity and in the same direction as last turn. Note that all **Heat** reduction requires a working **Core**.

Coast: The **Ship** is idle and will **Cool down** if there is **Heat** to get rid of. Remove 1 **Heat** at the end of the **Vector action Step**. This **Order** can always be chosen, regardless of **Heat** levels.

Burn: Acceleration. A **small Vector change** of 3 LU. This option is always available unless the **Drive System** is **Offline**. Adds 1 **Heat**.

Hard burn: Acceleration. A **large Vector change** of 7 LU. Consumes 1 **Fuel**. If there's no **Fuel** left or **Drive System** is **Offline**, this **Order** cannot be chosen. Not allowed within 2 LU of a **Planet** or **Station**. Adds 1 **Heat**.

Heat dump: A desperate action to reduce **Heat** is to dump accumulated heat into ablative shielding and dump it overboard. 1 **Fuel** is lost but **Heat** levels are set to 0 regardless of the amount of **Heat** the **Ship** had to begin with. This is done at the end of the **Vector action Step**.

Repair system: Orders the crew to attempt to repair the **Damaged System** with a **RE test**. Check the outcome immediately in the **Order Step**. A **Repaired** system is no longer **Offline** and is crossed over in the **Ship manifest**.

- ★ **Success:** Repairs the **System**.
- ★ **Partial success:** **Success** but also adds 1 **Heat**.
- ★ **Failure:** No effect (stays **Damaged**).

Launch Torpedo: The **Ship** launches 1 **Torpedo** if it has any available and not already guiding one, otherwise this **Order** cannot be chosen. **Heat** levels remain the same.

Special order: Other **Orders** as described in the rules (like **Refit**) or in a **Scenario**, which can define any number of such **Orders**. Example: a **Scenario** can state that whilst **Docked** at a **Station**, a **Boarding Special order** can be used to reach a specific **Objective**, unique to that **Scenario**.

13 - Random events

Random events (**RE**) are decided using the same system as for **Combat** (without **Evasive**). If cards are used instead, pick one randomly. The suite symbols can be used as shown below and the **Combat cards** clearly state the outcome. **Evasive** is only included if a **Scenario** specifies its use.

△ ♣ **Win: Success!** The action is performed or a negative event was avoided.

□ ◇ **Draw: Partial success.** It didn't go quite as well (or bad!) as it could have.

○ ♠ **Loose: Failure!** The action fails and there may be severe consequences.

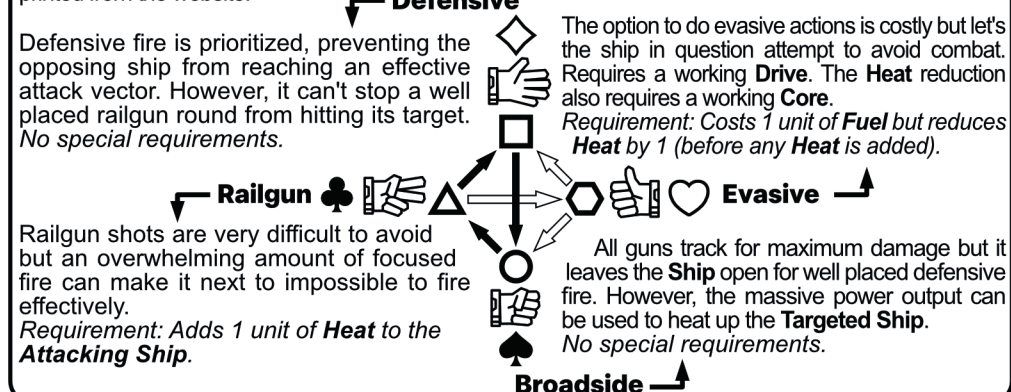
When any rule calls for a "**RE test**", the player resolves a **Random event**. Each such rule will clearly state what the outcomes from the three possible results are. If the rule calls for an "easy test" or "**easy RE test**", a **Partial success (Draw)** will count as a **Success!**

14 - Range, Attacks & Cover fire

- ★ **Ship weapons** has a **Range** of 3 LU and **Torpedoes** has a **Range** of 6 LU for **Attacks**.
- ★ **Enemy Ships** within **Range** from the **Active Ship's/Torpedo's Vector** are **Potential Targets**.
- ★ The **Attack** is made from 1 selected **Attack point anywhere** along the **Attacker's Vector**.
- ★ An **Attack** can only have 1 **Target**.
- ★ If an **Active Ship** don't **Attack** the first available **Target(s)**, none at all, or if there are additional **Potential Targets** at a point along the **Vector** after **Combat resolution**; the opponent may **Attack** by **Cover fire** from 1 of those **Ships** (in order along the **Vector**). If so, neither **Ship** may take **Evasive actions** in that **Combat**.
- ★ **Ships** can't **Attack Torpedoes**. A **Torpedo** will automatically **Attack** a **Ship** placing its **Vector end point** within 3 LU. This **Attack** is **Resolved** right away. If multiple **Torpedoes Attacks**, **Resolve** these in the order decided by the controlling player.

16 - Combat resolution

Instead of dice, players use the common **Rock-Paper-Scissors** game but with a few twists. There is a fourth alternative (**Bomb**) and each of the four **Combat protocols** will affect the ship in question in different ways. Instead of doing **Rock-Paper-Scissors** by hand, players can use regular playing cards or **Combat cards** printed from the website.



17 - Combat effects

Whenever **Combat** is **Won**, or is a **Draw** (in which case both players win), these steps apply:

- a) The opposing **Ship** is **Hit** and loses a **Shield**.
- b) If there's no **Shield** it suffers **System Damage**.
- c) If the **Ship** already has a **Damaged system** (even if Repaired), it will be **Destroyed** and removed from play (and marked as **Destroyed**).

Combat protocol dependent effects:

- ★ **Winner was Defensive:** **Target's** choice of **Damage**. If the **Target** has a **Shield**, they may convert the **Hit** to 2 **Heat** instead.
- ★ **Winner fired Railgun:** **Winner's** choice of **Damage**, unless the **Target** took **Evasive actions**, then it's the **Target's** choice.
- ★ **Winner fired Broadside:** **Target's** choice, or winner may add 1 **Heat** to targeted **Ship** instead of the **Hit**.
- ★ **Winner did Evasive actions:** No **Combat** effect on opponent, no **Damage** or loss of **Shield**.

18 - Damage effects & Destruction

Whenever a **System damage** is inflicted, the corresponding **System symbol** is added to the **Ship's Manifest**. That **System** is **Offline**. Once **Repaired**, the **symbol** is **crossed over** once and that **System** becomes available again.

The moment a **Ship** reaches 5 **Heat** levels, the **Ship** is instantly **Destroyed** due to **Meltdown** and crew death.

Attacks may cause **Splash damage** due to massive radiation bursts. **Ships** that are **Hit**, i.e. loses a **Shield** or takes **System damage**, will inflict 1 **Heat** on any other ship within 1 LU. A **Ship Destroyed in Combat** or by **Meltdown** will, in addition to **Splash damage**, also inflict a **Hit** on any other ship within 1 LU after the **Splash damage Heat** has been added. The "targets" will decide which **System** is **Damaged** and **Offline**, if any. This can lead to a nasty chain reaction so keep your distance!

15 - Launching Torpedoes

- ★ **Torpedoes** are launched with an **Order**. It is deployed on the **Map** at the end of the **Vector plot Step**. The **Vector end point** for the **Torpedo** is based on the **new Ship Vector end point**.
- ★ The launch **Acceleration** of a **Torpedo** must be set to 3-6 LU. The resulting **Vector end point** may not be placed closer than 3 LU to any Ship (stealth and activation protocols takes time, so a direct point-blank **Attack** is not possible).
- ★ If a **Ship's Vector end point** is placed within 3 LU of a **friendly Torpedo**, the **Torpedo** is automatically **destroyed** for safety reasons.
- ★ The **Torpedo** is **Guided** by the ship that fired it and will **Activate** when the ship does, in the first **Step of Activating a ship**.
- ★ A **Ship** can only **Guide 1 Torpedo** at a time but may choose to **Deactivate** it instead of **Guiding** it (if so, it is removed from play and a new may be launched in the same **Turn**).

19 - Torpedo attacks

When a **Torpedo Attacks** (automatically or not), the **Targeted Ship** will fire **Countermeasures**. This is a **RE test** (for the **Ship**, not the **Torpedo**):

- ★ **Success:** The attacking **Torpedo** is **Defeated** and removed from play. No effect on the **Target**. If **Weapons** are **Offline**, this result becomes a **Partial success**.
- ★ **Partial success:** The attacking **Torpedo Hits** the **Target** but the **Target** chooses **System damage**, unless there are **Shields**, then a **Shield** is removed and the **Attack** ends.
- ★ **Failure:** The **Torpedo Hits** the **Target** and the **Torpedo** player chooses **System damage**, regardless of **Shield** status.

The **Targeted Ship** can, before the test, do **Evasive actions** for 1 **Fuel** (unless the **Drive** is **Damaged**). It removes 1 **Heat** (unless the **Core** is **Damaged**) and the **Countermeasure** test becomes an **easy RE test**, increasing the **Ship's** chance to survive.

20 - Torpedo vs. Torpedo Combat

Only an **Active Torpedo** can **Attack** another **Torpedo**. It uses the same procedure as when **Attacking a Ship** but then follows the steps below.

The attacking player's **Torpedo** is **Detonated** (removed from play). That player then makes an **easy RE test** to see what happens with the enemy **Torpedo**, as if the guiding **Ship** was firing **Countermeasures**.

- ★ **Success:** The targeted **Torpedo** is **Defeated** and removed from play.
- ★ **Failure:** The blast is ineffective and the targeted **Torpedo** is left in play.

Torpedoes has no proximity protocol for other **Torpedoes** and will not automatically **Attack**. They have to do an **Active Attack** to engage one another, or they will just pass each other by. There's no **Splash damage** effects from these pin-point attacks.

21 - Tankers

- ★ Tankers can Refuel Ships.
- ★ Unless a Scenario says otherwise, Tankers start hidden and not on the map.
- ★ Instead of a player Activating one of their Untracked ships, they can decide to deploy 1 Tanker. This means that if there are no Untracked ships, the player can't deploy it.
- ★ Once deployed, note the day of deployment next to the Tanker Symbol. A Tanker will remain on station for 5 Turns (Days). I.e. if deployed on the 5th day, it will be removed at the start of the 10th. Cross over the symbol.
- ★ After having been removed, a Tanker must resupply and cannot be deployed for 5 days.
- ★ Tankers aren't Attacked in the usual way. Once 3 Attacks have been declared against it (including Torpedo Attacks or Splash damage), it will be removed but can be deployed again after resupplying.

22 - Refueling

- ★ Any friendly Ship Passing through within 2 LU of a Tanker may Refuel once per Activation.
- ★ A Tanker cannot Refuel more than 2 Fuel per Turn (Day).
- ★ A Ship cannot have more Fuel than its maximum capacity and cannot receive more than 1 Fuel per Turn (Day).
- ★ Ships that are in Orbit or Docked can not be Refueled by Tankers.
- ★ The Refueling action is instantaneous during the Vector action Step (when the Ship comes within range). Update the Manifest accordingly before moving on.
- ★ Note that Refueling is completed before applying effects from Radiation zones or Asteroid fields, if they could be applied at the same time (this is a rare case since effects should be applied as they are encountered).

23 - Radiation zones & Asteroid fields

- Space is a dangerous place. There are areas with intense radiation and others with more rocks than is healthy when travelling with a high relative speed.
- A Ship Passing through either of these types of areas (also after Deflection) will be affected each Turn, during Vector activation (when encountered). Torpedoes are Destroyed by Radiation unless it is Attacking, but are unaffected by Asteroids.
- Radiation effect:** A Ship gains 2 Heat.
- Asteroid effect:** The Ship must do a RE test. If the Ship has a Vector of 5-12 LU, it's an easy RE test. At 1-4 LU it's an automatic Success.
- ★ Success: No effect on the Ship.
 - ★ Partial success: The Ship gains 1 Heat.
 - ★ Failure: The Ship is Hit. Choose System damage unless a Shield can take the blow instead, as per the Combat rules.

24 - Liners & Runners L1 R1

- Civilian type Ships do not have any Weapons and cannot Attack. Resolve Combat as usual but without effect on the opposing Ship. Any Damage can only affect the Drive or Core.
- Liners are lumbering freighters. Burn is 2 LU, Hard burn is 5 LU. Ability: Repairs of the Drive is always a Success unless the Core is Offline.
- Runners are fast couriers for priority goods and travel. Ability: Burn Acceleration is 4 LU and does not add Heat.
- When a Civilian ship is controlled by a player, it will be Activated as one of their ships (including Refueling) and must manage Heat as usual but they Overheat at 2 Heat.
- When Neutral, Civilian Ships are governed by script or events as defined by a Scenario. They are usually Activated before any other Ships, regardless of Tracking status.

25 - Stations, Blockades & Refits

- Stations are immense shielded habitats used for zero gravity production, energy harvesting, scientific research and ship maintenance. Objectives often revolve around them.
- Stations (and Planets) can be Friendly, Hostile or Neutral. If a Ship Docks with any Station (or enters the Orbit of a Neutral Planet), it will start a Blockade (see Orbiting & Docking). Neutral objects should be drawn in black or green. Scenarios can use Blockades as Objectives.
- Station set-up:** The locations of Stations in a Star system can be defined by a Scenario, a pre-printed map or by alternate player placement during system set-up.
- ★ Each player has 3 Stations for a 50 Point Game, 4 at 75 and 5 at 100 for an entire Star system (reduce for smaller maps).
 - ★ Decide by a RE who places the first Station.
 - ★ 1 Station must be placed within 20 LU of the Home planet, the others within 40 LUs of at least one friendly Station. None of them may be placed within 10 LU of another object.
 - ★ 1 Station in 4 must be placed within the Asteroid field (or at least 35 LU from the star).
- Refits:** A Ship can Dock at a friendly Station and request a Refit as a Special order. This takes 3 full Turns (counting from the Turn of the Special Order). In the Administration Phase of the 3rd Turn, the Ship will remove all Heat and may choose between the following:
- ★ Remove the Damage it has suffered, but it must be Repaired before the Refit order.
 - ★ Refuel to maximum Fuel capacity.
 - ★ Replace 1 Shield (not 2 for Battleships).
 - ★ Reload up to 2 Torpedoes (within max capacity).
- If the station is Blockaded during these 3 Turns, the process is paused until the Blockade is lifted. A Station can do one Refit per game, then their resources are spent (note this on the map).

26 - Telemetry symbols

- Ship Vector with start and end point.
- Hit on Ship - 1 Ring / Hit (Active or Cover firing player's colour).
- Ship Destroyed - "Beams" (Active or Cover firing player's colour).
- Diamond marks Ship as Tracked.
- Torpedo - Each Vector line ends with a small circle. Cross over if Detonated/Destroyed.
- Attack - Dashed line drawn to Target (attacker's colour) / Dash-dash-dot line for Cover fire.
- ~ Torpedo Attack - Wavy line to target.
- Vectors - Marked as Activated with a short parallel line (or crossed).
- Radiation zones - Shown with a circle (or a wavy line) with triangles pointing into the zone.
- ~ Asteroid fields - Limited by a zig-zag line and triangles pointing inwards.
- Stars - Dots with dotted or dashed concentric circles. Size: Giant, Average, Dwarf.
- Planets - Dots in the center with additions for Gas giants, Atmospheric planets and Planetoids (no atmosphere).
- Stations - Circles with 4 legs Facilities or Point of Interest (PoI) - A diamond with 2 legs.
- Influence - Lines showing the radial distance of Gravity (the extra mark is for Radiation range).
- Space lane - Transfer: 3 marks that form a "road" to stay on.
- Tunneling: Only 1 mark combined with Star center point.

27 - Star system setup

- FtB focuses on inner systems due to scale and travel times. Outer planets are accessed through Space lanes. Smaller games can be played out on smaller pieces of paper, no need for a full map if it won't be used (or split up a larger map for smaller games). Visit the website for more exact pre-drawn versions and detailed examples of other star systems.
- Data table for Sol**
- | BODY | DIST. | INFL. |
|---------|-------|-------|
| Sol | - | 5/2* |
| Mercury | 6 | 2 |
| Venus | 11 | 3 |
| Earth | 15 | 3 |
| Mars | 23 | 2 |
| Belt | 33-48 | - |
- Distances are in Length Units
* Sol Radiation zone radius
- In the example below, the Ship exits the Tunnel from Proxim (A) with Velocity 10, coasts to Earth (within 1 LU) where it Deflects as Slow (B). The Vector (C) is the result of a Burn from temporary point (D) to (E). At this point, the Ship elects to do a Hard burn with Velocity radius (G), to be able to adjust the Vector from (F) to (H), enter the Lane and aim for the transit mark for Saturn (J) with Velocity 20 (minimum for an inter-system Transfer is 6). Scenarios can place Space lane marks quite freely as well as vary them in size.
-
- The order of PoD's reached must be respected. A Ship can be Deflected several times in one Turn but only once per Influence.

28 - Astrometrics

- The method of Plotting a course, or Vector, is a simplified way of doing a vector diagram to find the Vector end point (VEP).
- 1) A Temporary VEP can be found by adding the last Vector (X in the diagram below) to the Current end point (same direction and length of the Vector measured in whole LUs).
 - 2) A Ship (or Torpedo being launched) can then move their Final VEP to a point within the Acceleration radius of the Temporary VEP. The Acceleration radius is in LUs, equal to a Burn or Hard burn. The final Vector (Y) must always be in whole LUs.
-
- ★ Length Units (LU) are measured in whole units only (i.e. whole centimeters, inches, etc.).
 - ★ Passing through means that a Ship's Vector intersects a zone or area marked on the map or defined by a radius from a center point (in LUs).
 - ★ If a Vector end point is placed so that the resulting Vector passes straight through a gravity well (or it is ambiguous), the player must choose a side on which to pass.
 - ★ All objects must maintain a minimum safe distance. A Ship or Torpedo may not place its Vector end point (VEP) directly on another VEP. Back off a bit and write down the actual velocity.
 - ★ A Ship (and Torpedoes) must always have at least 1 Length Unit of Velocity (unless the Ship is Docked or in Orbit).
 - ★ Only 1 Deflection is made for each gravity well that is Passed through. Should the next Vector be wholly within the Gravity influence, the Ship or Torpedo crashes and are removed (Ships can enter Orbit, see Orbiting & Docking).

29 - Orbiting & Docking

- If a Ship Plots a Vector that Passes through the 1 LU radius of a Planet or Station, they can enter Orbit or Dock. This requires:
- 1) the player to Declare their intention to enter Orbit or Dock before performing a Burn or Hard burn Order (Step 2 of Activating a ship).
 - 2) that the Ship, after the Plot is done, has a Velocity (i.e. a Vector length) of 3 LU or less. Otherwise the Ship will continue along the plotted Vector as usual.
 - 3) the final Vector to be drawn to the Planet or Station instead of the calculated Vector end point. Add the current Turn number to that Vector. The ship counts as Tracked until leaving (automatically Untracked). At that time, add the current Turn (Day) to the departing Vector (example below).
- ★ Orbiting Hostile Planets is not possible unless stated in a Scenario, due to defensive platforms. That would Destroy the Ship. Same for going into Orbit around the Star (radiation).
 - ★ Being in Orbit or Docked to a Station is the only time a Ship is allowed to have 0 Velocity; they become Stationary. Such Ships are very vulnerable. They cannot Attack, use Evasive actions or Cover fire and any Damage is always the Attacker's choice!
 - ★ Torpedoes can't be fired into or out of Orbits or Stations and Stationary Ships can't initiate Attacks. However, no hostile Ships may also enter Orbit or Dock when it is already occupied (see Blockades). They must do fly-by Attacks, and the Blocking player get to pick which Ship is targeted if several are present.
 - ★ Note that it is possible to have several Ships in Orbit or Docked at the same time, but these will count as within range of Splash damage!
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30 - Gravity influence & Deflection

- Any Ship or Torpedo (object) Passing through an area of Gravitational influence must Deflect their Vector (this is a part of the Vector plot Step). Any Acceleration from a Burn or Hard burn this Turn is added before the Deflection is done.
- If the Vector length (velocity, in LU) of the object is:
- ★ ≥ 3 x Gravitational influence, the object is Fast and Deflects less.
 - ★ < 3 x Gravitational influence, the object is Slow and Deflects more.
- You can find the maximum and minimum Deflection angle using a 3x3 grid diagram.
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- An object Passing through a gravity well at 1 LU or less, always count as Slow.
- The Point of deflection (PoD) is at the shortest distance between the Vector and the gravity well itself (the planet or star), which is always at a right angle between them.
- The length of the Deflected Vector is equal to the number of LUs counted from the one intersecting with the PoD, to the Temporary VEP.
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- This may lead to a temporary change in velocity but in the next Plot of the object, the original Vector length is used to Plot the next Vector end point. The Velocity may need to be recorded as a reminder, but it is always equal to the length of the Deflected Vector + the number of whole LUs before the Point of deflection.

31 - Space lanes & Stellar tunneling

- Space lanes allow Ships to travel to other, more distant parts of a Star system (Transfer) or to other Stars (Stellar tunnelling). A Ship travels through a Space lane by aligning its Vector through the marks.
- For Stellar tunneling, minimum Velocity is 10 LU. It costs 1 Fuel to activate the tunnelling when passing the mark (it does not add Heat). The Ship's Vector direction must pass within 1 LU of the Star. Ships are always removed / added on the Star's Radiation radius (with a ← symbol). When exiting, the Star, Velocity is always 10 LU measured from Star center.
- For Transfer, the Ship minimum Velocity is 6 LU. Ships are always removed / added on the 3rd mark. To begin or exit a Transfer, the Ship's Vector (direction) must pass all 3 marks.
- This Stellar map shows the relative angles of the lanes at each star. Grey planets are outside the inner system. White numbers are Turns (Days) lost in "tunnel space". "?" indicate unsafe, less well known tunnels. Ships Rose using unsafe tunnels must RE test when exiting.
- ★ Success: No effect. The Ship arrives.
 - ★ Partial success: The Ship is delayed, but arrives the next Turn.
 - ★ Failure: The Ship is Destroyed en-route.
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32 - Setting up a scenario

- Playing a Game of FtB usually requires a prepared Scenario but you can generate a generic Scenario following the steps below:
- 1) There has to be a map to play on. Prepare it as described in Star system set-up and Stations, Blockades & Refits.
 - 2) Decide whether or not the game will include any special rules, such as the examples in Alternative rules & Additions.
 - 3) Decide on the Game length between 12-20 Turns (or fewer, 6-8, for a quick encounter).
 - 4) Select suitable Objectives or make up your own.
 - 5) Secretly select which Ships to include in your fleet (see Assemble the fleet).
 - 6) Place Ships (see Deployment) and start the Turn sequence.
- Note: some Objectives may become too challenging or too easy depending on Fleet size or playing too few or too many Turns.

33 - Alternative rules & Additions

- FtB encourages rules experimentation and can easily be modified. Here are just a few examples:
- ★ Hidden manifests: Through mutual trust or with the help of a 3rd party game master, Manifests are treated as Secret. In a Scenario, events such as Blockades could provide Intelligence reports on Ships and their status.
 - ★ Shield recharge: Either as a separate Special order that costs 1 Fuel or by using the Repair Order, ships can regain lost Shields. Maybe for a lone alien intruder?
 - ★ Stealth run: 1 Ship/50 pts can be held back from deployment and instead have a freely placed Deployment point and a starting Vector of 4-6 LU in any direction. This point is placed after all other units are deployed, 10 LU away from all objects. Ships on a Stealth run counts as Untracked and must Activate to arrive in Turn (Day) 4-8, or not at all.

34 - Objectives

- A Scenario can use variants of these Objectives or completely different ones. For 50 pt games and a quick start, choose one of these for one side. At 75 pts, select the same Objective for both sides. For more dynamic games at 100 pts, choose different Objectives and/or multiple Objectives for both sides. The symbols shown below can be used to randomly decide, as with RE's.
- ▲ Blockade: The opponent selects one of their Stations. To complete the Objective, the player must a) blockade that Station for 1 out of 4 turns of the game (rounded up) and b) end the game (last turn) with the Blockade in action.
 - ◻ Transport: The opponent selects one of the player's Stations. A Civilian ship will depart from the player's Home planet for the chosen Station. If playing 14 days or less, the Civilian ship is a Runner, otherwise it's a Liner. The player striving for this objective may choose on which Turn (Day) this ship departs.
 - ♣ Patrol: A Patrol is composed of 3 destinations that a Ship must Pass through in the given order. The 1st destination is the patrolling player's Home planet (choose any) and the two other are Stations. The first Station (the 2nd destination) must be a hostile Station chosen by the patrolling player, the second Station (the 3rd destination) is one of that player's friendly Stations chosen by the opponent. To complete the Patrol Objective, it must end with a Ship returning to the home planet, completing the circuit. The Patrol must go around the Star. Each part of the Patrol may be done by different ships but must be completed in order. Ships much state "on patrol" when plotting the starting Vector (Passes through the destination) and may not be Tracked at this point in time (or they can not go on Patrol).

35 - Assemble the fleet

- In most cases, a Scenario will restrict the number and types of Ships and Extras available. A simple way of building a Fleet is to use "requisition priority", or just Points for short. The Points cost for Ships listed below will result in Fleets of 2-8 units depending on game sizes of 50, 75 or 100.
- Destroyer: 12 pts Cruiser: 18 pts
Battleship: 26 pts Tanker: 7 pts
- "Extras" are small points fillers. Max 1 per player can be selected. These can be used on any ship when it is Activated but only once.
- Engineering bay: 4 pts - When attempting a Repair, the Order succeeds automatically.
- Overdrive module: 2 pts - A single Burn gives 5 LU of Acceleration.
- Tracking probes: 3 pts - Use these probes before the Attack to be able to target 2 different Potential targets. Resolve each Combat in turn. The opponent may still only do 1 round of Cover fire.

36 - Deployment

- There are many ways of handling Deployment of Ships. Below is a simple way of managing this part of the Scenario set-up. Look to the FtB website for more alternatives.
- ★ Decide by a RE who places the first Ship, then take turns (a player with Ships left to place will place all of them at the end). If a player has more Ships than their opponent to place, they must start (no RE).
 - ★ A Ship can be placed within 5 LU of a friendly Station or the Home planet (but not Docked or in Orbit) unless the Scenario specifies otherwise.
 - ★ The initial Vector of a placed Ship can be drawn in any direction and have a Velocity of up to 5 LU.
 - ★ No Torpedo may start the Game on the map unless it is explicitly stated in the Scenario.