



THE CARE AND MAINTENANCE OF STEAMJACKS

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The logistics of steamjack maintenance are potentially very complex and not necessarily appropriate for every *Iron Kingdoms Full Metal Fantasy Roleplaying Game* campaign. However, having a basic knowledge of how a steam engine operates can be helpful for both Game Masters setting challenges for their players and for players who wish to more fully immerse themselves in the steam-powered world of the Iron Kingdoms.

It is also worth pointing out that while logistics and supply trains are important aspects of life in the Iron Kingdoms, they should not be used to punish players wishing to portray Field Mechanics, Warcasters, and others who depend upon the use of steamjacks. Unless the Game Master is running a campaign that focuses on the minute details of supply, we recommend letting players make general preparations for the use of their 'jacks and not impede their ability to have fun.

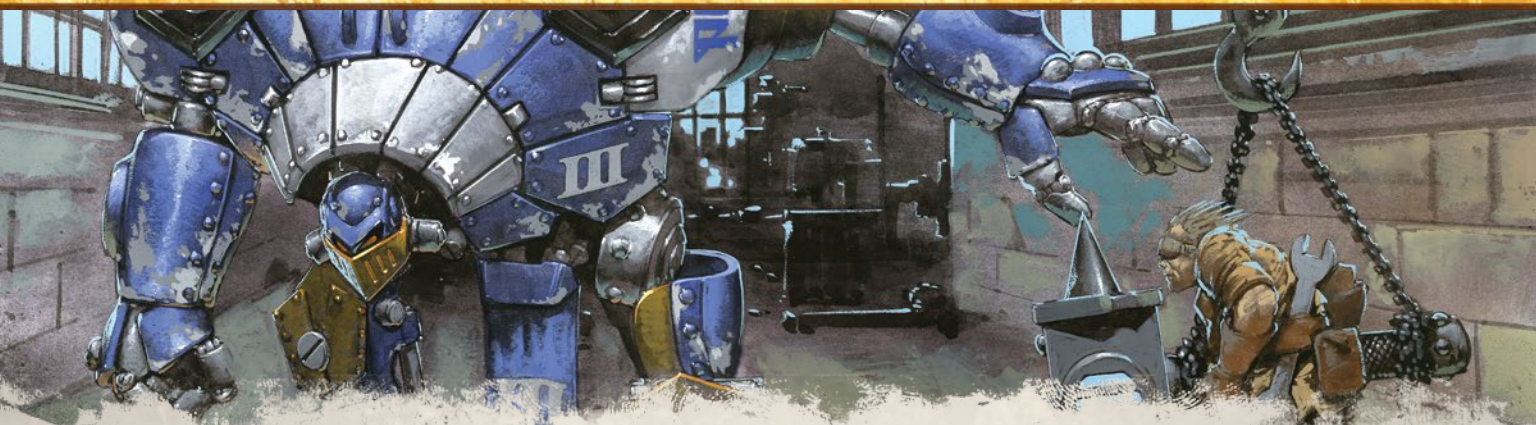
COAL-FED, STEAM-POWERED

Steamjacks are machines powered by specialized industrial steam engines. These engines consist of several components: a steam boiler, a fire box, a coal hopper, a feed regulator, a system of pneumatic valves, and an emergency pressure release. A steam engine uses a coal fire to heat water to its boiling point, thus generating steam. This steam then drives the machine, fires its pistons, and enables it to move, work, and fight.

The steam boiler is a large tank holding the engine's water supply and built-up steam. In most steamjacks the boiler is installed directly beneath the fire box, where coal is burned to heat the water in the boiler and create steam. This steam is constantly replenished as the firebox boils more of the water supply. In order to maintain the blaze in the firebox, it must be fed a steady supply of coal. This coal is gravity fed directly into the firebox from the coal hopper. Typically, the rate at which coal is dropped into the firebox is controlled by a clockwork feed regulator as directed by the 'jack's cortex. This coal-feed regulator is circular and opens to a variety of diameters, allowing a variable amount of coal into the firebox before closing again. The regulator can be used to reduce the heat of the fire and slow down steam generation or stoke the fire and rapidly create additional steam pressure.

Once a sufficient pressure of steam exists in the boiler, the steam can be used to power the 'jack. The steam is vented out of the boiler through three main valves. The first valve directs flow to the pneumatic valve chamber. Here the steam is directed through one or more secondary valves. These valves route the steam to the 'jack's pneumatic system and drive the





pistons that move the 'jack. Opening and closing these valves gives the 'jack its motive power. The second valve directs a constant flow of steam through the arcane turbine. The hot, high-pressure steam rotates the turbine, which provides arcane power to the steamjack's cortex, sensors, and internal relays. This allows the 'jack to follow commands, observe the world around it, and control its internal systems. The third and final valve is the emergency release. This critical component prevents the steam pressure in the boiler from becoming too great, which can cause the boiler to rupture in a massive explosion. This valve is mechanical and opens automatically whenever the pressure in the boiler reaches a certain level. Excess steam will be vented out of the boiler and the valve will close automatically once the pressure drops to a safe level. 'Jacks that have developed personalities sometimes use the whistling of the pressure valve to express their frustration, gratitude, or other simple emotions.

The fuel load of a steamjack is typically several hundred pounds of water and coal. During use, the water is consumed at a greater rate than the coal as steam is directed and vented through the 'jacks pneumatics and arcane turbine and out of the system. A typical fuel load ratio is five pounds of water for every pound of coal.

To prepare a 'jack for work, a mechanik must load crushed coal into the coal hopper and fresh water into the steam boiler. Crushed coal ensures an evenly burning fire and fresh water keeps the pneumatics free from grit and debris. In a pinch, other fuels such as wood and sea water can be used, though damage to the engine, reduced power, or increased burn rates may result.

To start the 'jack, the mechaniks kindle a fire in the fire box and begin to heat the boiler and build up steam pressure. Several minutes after the water has begun to boil, the boiler will acquire enough steam pressure to drive the arcane turbine and power the 'jack's cortex. Once powered, the 'jack will stoke its firebox to generate additional steam pressure. When sufficient pressure has been built up, the 'jack will route the steam through the pneumatic valve chamber and begin to move. As well, most 'jacks are equipped with a secured button allowing the 'jack's controller to simply and expediently engage its systems. The steamjack is now ready to follow commands and perform work. From this point onward the 'jack will regulate its own fuel use to keep itself at optimal power.

THE COST OF STEAM POWER

The logistics of operating steamjacks can be daunting, but the actual costs of fuel are fairly manageable. When purchased in bulk, coal is relatively cheap. In most populated regions of western Immoren, a ton of coal can be purchased for 100 gc. Forward-thinking mechaniks and warcasters stock surplus coal in whichever city or outpost serves as their base of operations. Ready access to water can actually be a greater limiting factor in areas such as the Bloodstone Marches and the deserts of southern Immoren. Most steamjacks carry a load of fuel to allow many hours of exploration, but all steamjacks burn fuel at a much faster rate when engaged in combat. It is worth noting that outside of the battlefield few fights last more than a handful of minutes, so a fully fueled steamjack can be counted on to perform in several brief engagements each day.

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Coal is available throughout the Iron Kingdoms and becomes cheaper when purchased in bulk. The following prices are standard throughout the Iron Kingdoms:

- Coal, 20-pound bag: 3 gc
- Coal, 50-pound bag: 5 gc
- Coal, delivery of 1,000 pounds: 60 gc
- Coal, delivery of 2,000 pounds: 100 gc

TRANSPORTATION

It's affordable and convenient enough for most steamjack owners to have their 'jacks accompany them under their own power on short tasks in towns. However, for prolonged journeys arrangements must be made for the transportation of even light steamjacks.

When journeying between cities, steamjack operators rely on reinforced horse-drawn carts to haul their steamjacks. These carts typically are constructed with sturdy metal ramps or steps by which the 'jack is loaded onto the main platform. Once in place the 'jack is commanded to squat in order to achieve a lowered center of gravity to make it a more stable cargo. The 'jack is then cooled and chains are affixed to various tow points common to most steamjack chassis and in turn chained to iron rings installed on the cart to ensure the 'jack does not topple in transit.

A pair of horses can pull a pair of light steamjacks or a single heavy steamjack across a flat surface without trouble. However, slopes of significant grade can be problematic, and larger teams of horses may be necessary to move steamjacks across mountain passes and other steep terrain. It is also virtually impossible to transport heavy carts through marshy terrain or thick forests and steamjacks must move under their own power, though some ground is insufficient to support the tonnage of even a light steamjack.



WATER, WAGONS, AND INCIDENTALS

In addition to the cost of coal, a 'jack marshal must also consider the logistics of getting fuel to the machine. Unless he limits himself to working in an area in close proximity to his coal supply, at some point he will need to invest in water tanks, coal wagons, and a team of horses to get his 'jack from place to place.

- Wagon, small: 50 gc
- Wagon, large: 85 gc
- Water pump, hand: 10 gc
- Water tank, 5 gallon (holds about 42 pounds of water): 2 gc
- Water tank, 10 gallon (holds about 83 pounds of water): 3 gc
- Water tank, 50 gallon (holds about 420 pounds of water): 5 gc

Wagons designed to carry steamjacks are heavily reinforced constructions of wood and steel. They are generally uncovered and have separate locations for fuel and other cargo. Steamjacks are lashed or chained down for transportation to limit the chance of shifting while on the move.

A typical small wagon is large enough to accommodate a single light steamjack and a modest load of fuel or other cargo. The wagon has room for a driver and single passenger. Small wagons are usually pulled by a pair of draft horses (sold separately).

A typical large wagon is large enough to accommodate a single heavy steamjack or a pair of light steamjacks along with a heavier load of fuel or other cargo. The wagon has room for a driver and up to two passengers. Large wagons must be pulled by a team of at least two draft horses.