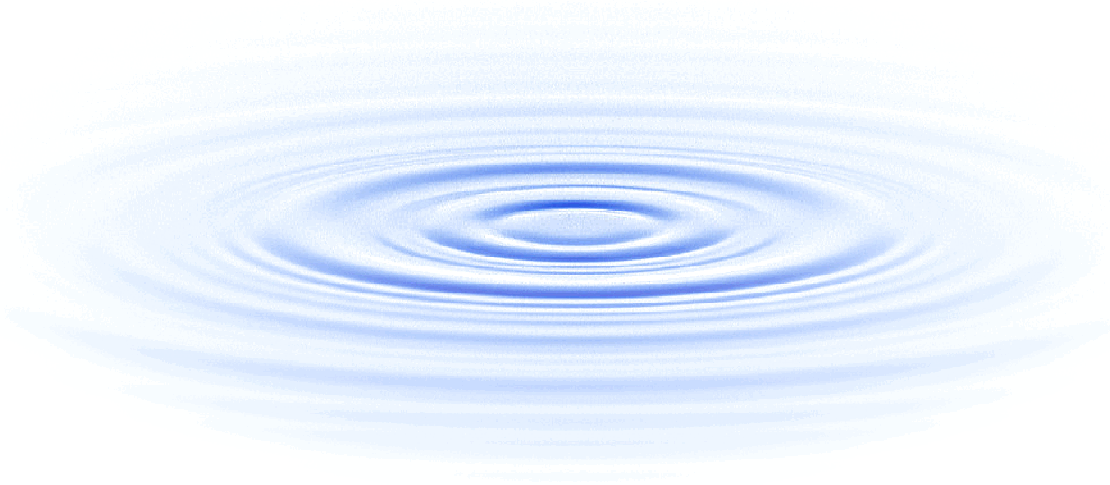


High Efficiency Steam Exchangers

**Steam to Building Heat
Steam to Domestic Water**



Increase energy efficiency and save space

Introducing... the **XE System** for steam control in large facilities. It's a **skid-mounted/pre-piped design** that saves space, energy, and even water

Designed for both building heat and domestic hot water applications. XE systems can reduce energy consumption by between 5 – 15 percent

Advanced
Steam Technology

Toll Free 877-629-4843
website: advancedsteam.com

XE Stands for “Extra Energy Extraction”



How GREEN is your STEAM? Go outside and look at your facility. See that flash steam? It has valuable BTU's that are being wasted. It is pure water that could have been re-used. By using this wasted energy the XE system saves money, reduces emissions, and can even earn LEED points towards GREEN building construction.

Advantages of the XE Vertical Exchanger

The direct benefits of the XE Vertical Exchanger are **threefold**;

- 1) Reduced greenhouse emissions by reducing fuel consumption and flash steam
- 2) Reduced cost of operation, and carbon footprint, and
- 3) Lower installed costs for new projects since high pressure steam can be used directly.

These benefits will result in **simpler mechanical room design**, and add incrementally to the greening of the facility.

Besides being environmentally friendly, the Advanced Steam Technology XE system is:

Accurate

Control liquid leaving temperature:

- at +/- 2F for Building Heat
- at +/- 4F for Domestic Water

Efficient

Utilize steam wasted by other water heaters

- Save 20% of energy usage at 125 psig steam,
- Save 5% of energy usage at 15 psig steam.

Economical

Lower installed cost than other water heaters

Space saving

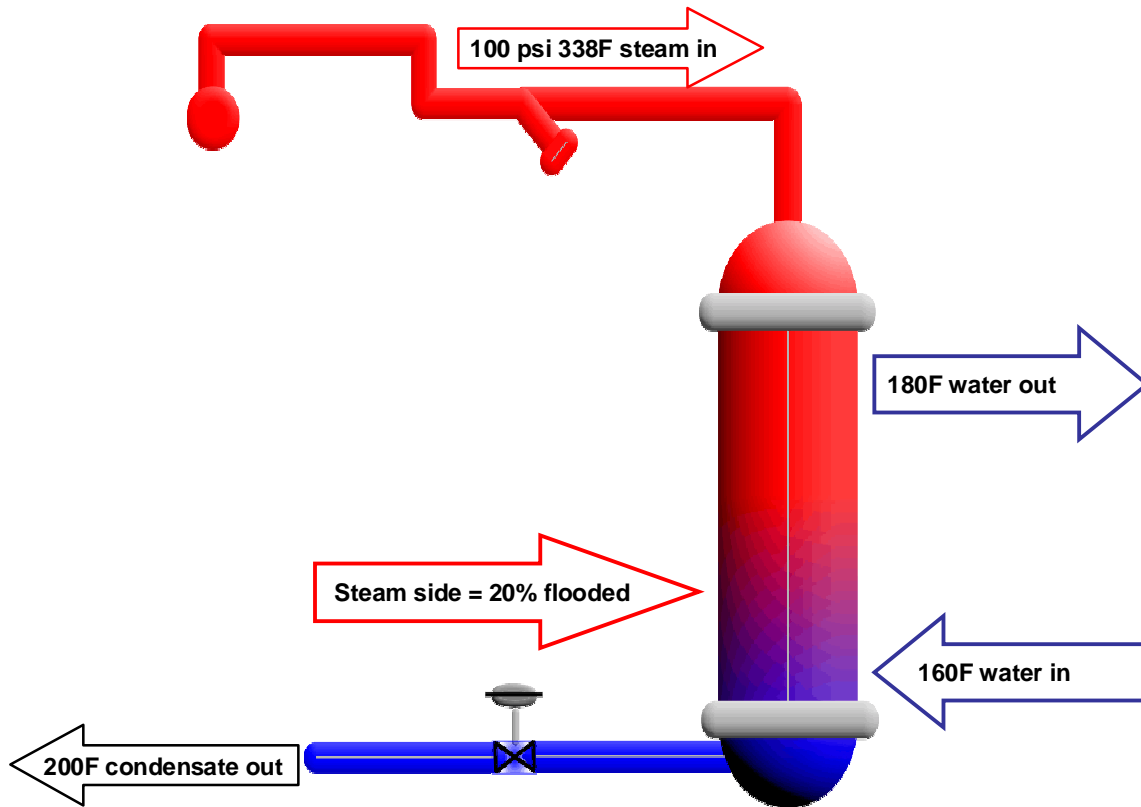
Smaller footprint – typically 3ft.x 4ft.

Easy to install

Only 4 connections required

How does the XE design extract *extra energy* from condensate?

Simply put...By using the *lower part* of the heat exchanger as a *water to water* exchanger:



XE - Flooded Vertical Heat Exchanger

In this simplified diagram, straight 100 psi steam fills the unit, except for the bottom 20 percent. The condensate there is being cooled by the entering 160F return water. The unit is sized to cool the condensate to 200F, so it doesn't flash.

The **primary control valve** is at the bottom of the heat exchanger, and adjusts the amount of flooding to meet the heat demand.

Often times a pump is not needed to lift the condensate, because unlike a modulated steam unit, 100 psi is pushing the condensate.

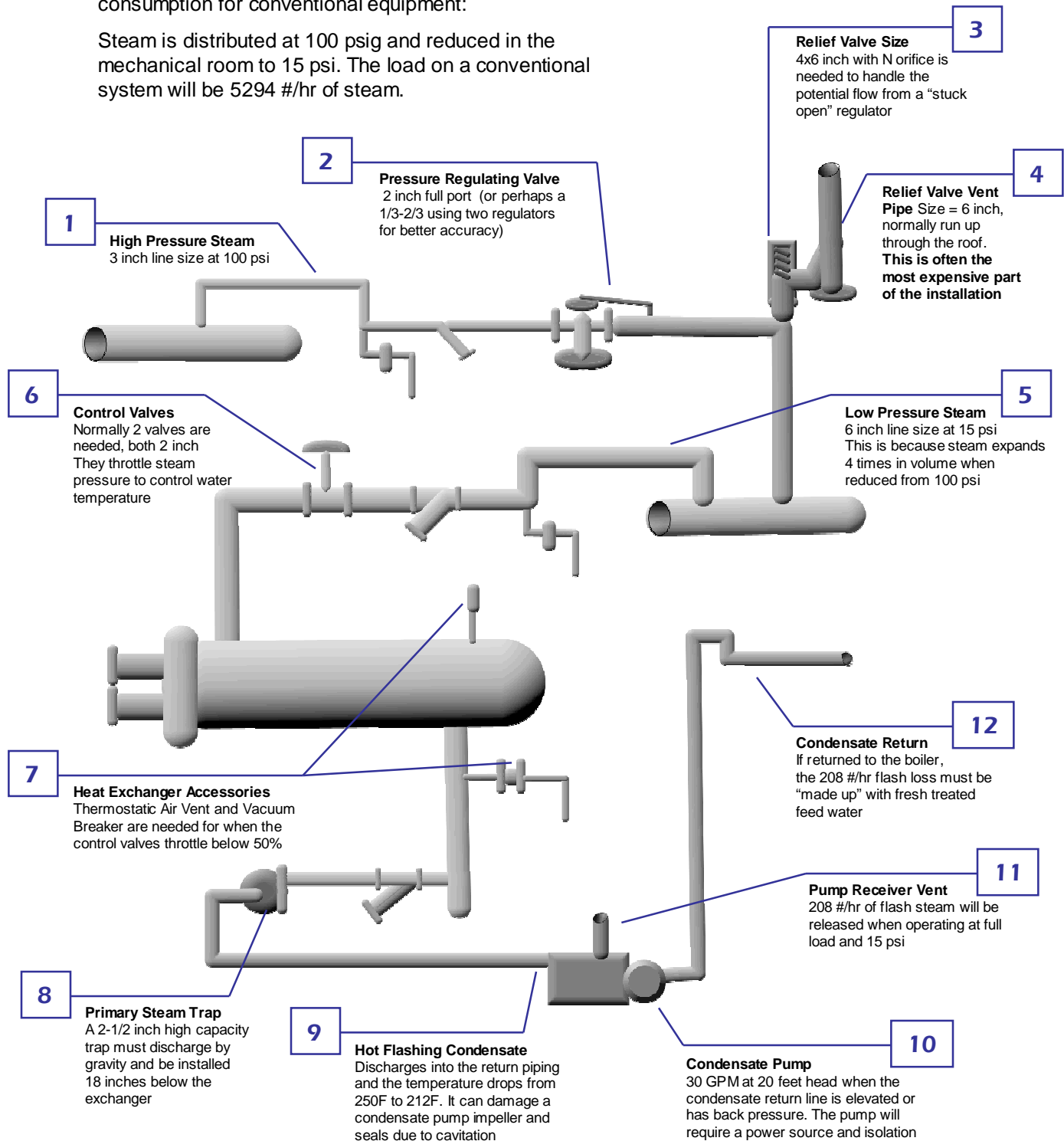
New Project Benefits include:

- ✓ **LEED Certifiable** for energy savings and innovation points
- ✓ Reduce steam pipe size and total installed cost
- ✓ Reduce or eliminate wasteful flash steam venting
- ✓ Vertical design saves expensive mechanical room floor space

Conventional Steam Piping Requirements

Compare an example of a 500 GPM, 5 million BTU/hr, building heat system. Let's look at the sizing and energy consumption for conventional equipment:

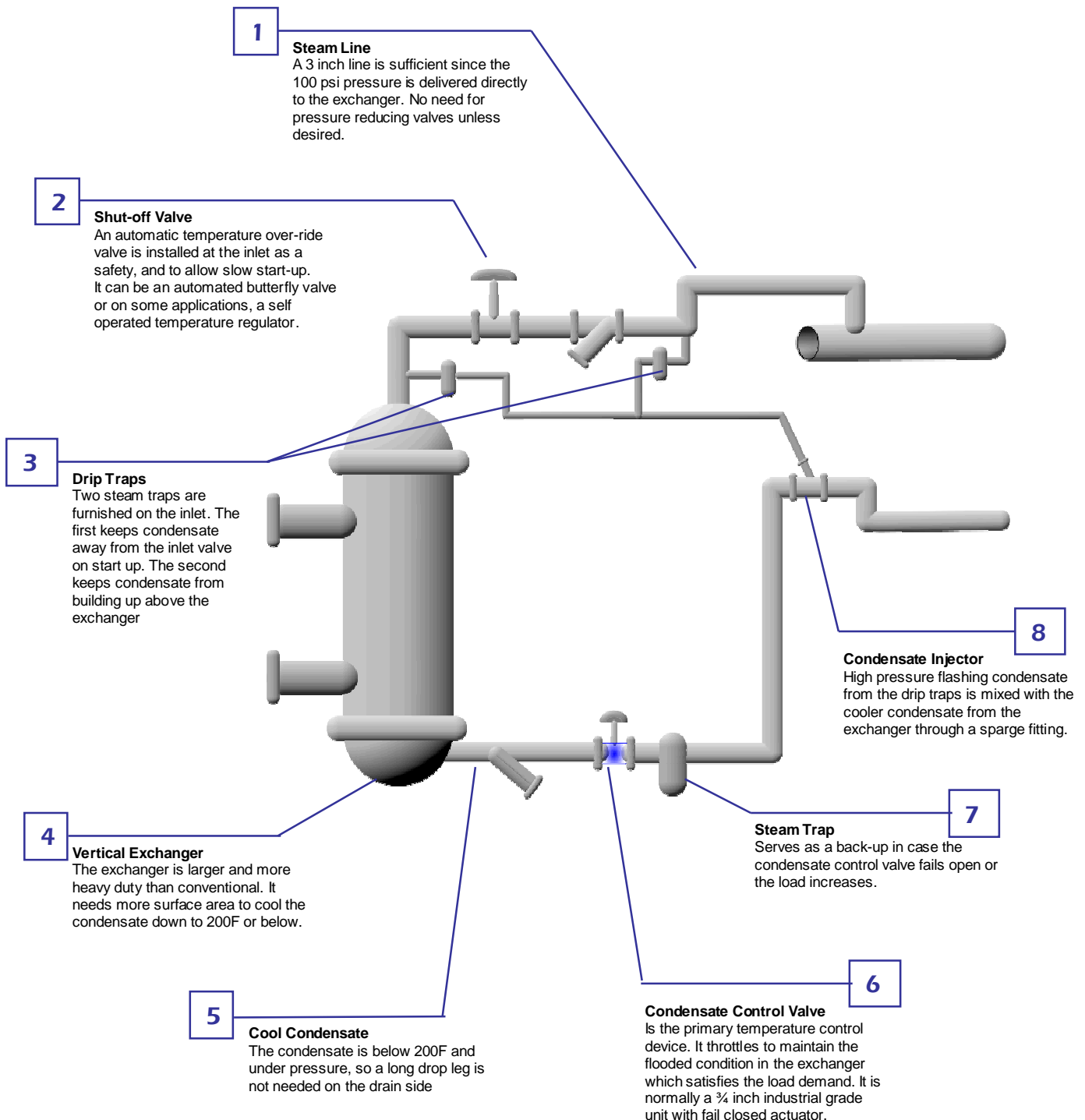
Steam is distributed at 100 psig and reduced in the mechanical room to 15 psi. The load on a conventional system will be 5294 #/hr of steam.



XE Thermal Steam Piping Requirements

Look at the same example of a 500 GPM, 5 million BTU/hr system. Let's look at the sizing and energy consumption for the XE Thermal System:

Steam is condensed at 100 psig, but the extra efficiency uses only 4906 #/hr of steam, about 8% less steam than conventional.



Typical Systems

The XE steam exchanger systems are available in multiple sizes:

Building heat from **10 - 1700 gpm.**
Domestic water from **10 - 200 gpm.**

Units can be duplexed for higher capacity and redundancy.

High efficiency operation on steam pressures up to 175 psig.



250 gpm Building Heat on 60 psi steam



Duplex 60 gpm Domestic Water on 60 psi steam



Multi-zone Building Heat on 40 psi steam



1150 gpm Building Heat on 175 psi steam



Duplex 65 gpm Domestic on 125 psi steam

Typical Specifications (also available as text files on advancedsteam.com)

Building Heat

XE-BH XE Thermal Vertical Style Steam Water Exchanger for Building Heat.

XE Control for "extra energy extraction" from the steam and condensate. Capacity XX gpm, with EWT 160 LWT 180F, 100 psi steam in, 200F condensate out. Heat exchanger model BEM Vertical steel shell, stainless or cupro-nickel tubes & 150 psig ASME stamp. High performance industrial grade control valve for primary condensate control. Electronic control panel with basic MODBus controls (or control can be BACNet, or by BAS contractor). Self standing steel framework. Pre-piped trap, strainer, and control valve on condensate side. Pre-piped thermometers and gages on water side.

Items delivered separately:

Double acting electric actuator on HP butterfly valve and control interface for secondary steam control.

Pressure gauge with pigtail & isolation valve for the steam side

Pressure relief valve on the water/glycol side

F&T steam trap as drip and air eliminator on steam inlet

Domestic Hot Water

Model: XE-DW Ultra High Efficiency Water Heating Skid with Vertical Flooded Heat Exchanger.

XE Control for "extra energy extraction" from the steam and condensate. Capacity: XX GPM of water, from 40F to 120F, 70 psig steam, 200F condensate out. Heat exchanger model BEM Vertical T-316 stainless steel shell, copper or cupro-nickel tubes & 150 psig ASME stamp. Inlet and outlet thermometers. Modulating Electric Valves: Siemens magnetic control valve for primary condensate control.

Electronic control panel with basic MODBus controls. Self standing steel framework. Pre-piped trap, strainer, and control valve on condensate side. Pre-piped thermometers and gages on water side.

Note: If a 3-way mixing or system anti-scald device limits building recirculation back to this unit, a pre-insulated, 150 psi ASME buffer tank and pump are required for unit recirculation.

The tank shall have the same "gallonage" as the unit capacity. (60gpm = 60 gallon tank)

Items delivered separately:

Temperature Regulator or HP butterfly valve and control interface for secondary steam control.

Pressure gauge with pigtail & isolation valve for the steam side

P/T relief valve on the liquid side

F&T steam trap as drip and air eliminator on steam inlet

Double-wall Domestic Hot Water

Model: XE-DDW Ultra High Efficiency Water Heating Skid with Vertical Flooded Heat Exchanger.

XE Control for "extra energy extraction" from the steam and condensate. Capacity: XX GPM of water, from 40F to 120F, 70 psig steam, 200F condensate out. Heat exchanger model BEU-DW Vertical T-316 stainless steel shell, double-wall copper or cupro-nickel tubes & 150 psig ASME stamp. Inlet and outlet thermometers. Modulating Electric Valves: Siemens magnetic control valve for primary condensate control.

Electronic control panel with basic MODBus controls. Self standing steel framework. Pre-piped trap, strainer, and control valve on condensate side. Pre-piped thermometers and gages on water side.

Note: If a 3-way mixing or system anti-scald device limits building recirculation back to this unit, a pre-insulated, 150 psi ASME buffer tank and pump are required for unit recirculation.

The tank shall have the same "gallonage" as the unit capacity. (60gpm = 60 gallon tank)

Items delivered separately:

Temperature Regulator or HP butterfly valve and control interface for secondary steam control.

Pressure gauge with pigtail & isolation valve for the steam side

P/T relief valve on the liquid side

F&T steam trap as drip and air eliminator on steam inlet

Limited Warranty and Remedy

Advanced Steam Technology Company LLC (Advanced Steam) warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect, or alteration after shipment from the Advanced Steam factory. Except as may be expressly provided in a written agreement between Advanced Steam and the user, which is signed by both parties, Advanced Steam DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

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