

CUSTOMIZATION (SO, pp. 188-189)

Customization (commonly called a "refit") occurs whenever one or more components on an existing unit are added, removed, or moved to a new location.

(Warning! Performing customization of any unit will invalidate its warranty.)

Performing Customization

Customization requires a Technician skill check with all applicable modifiers from the Customization Table (see [below](#)) and the Maintenance, Repair and Salvage Check Modifiers Table (see pp. 170-172). If the skill check fails, the customization still succeeds, but takes longer (see below) and the unit loses one Quality Rating level (see *Unit Quality*, p. 167; if individual components are being tracked, the loss applies to all components, new and old). GMs may wish to apply a negative quirk to a unit (see p. 193) on a check result of 2.

Additionally, unless a refit kit is used (see p. 189), customization of any level beyond Class B automatically reduces the Quality Rating of the unit by one level, over and above the results of any skill check failure.

Customization Time

The time for a customization depends on the scale of the work. Each item involved in the refit, whether being added, moved or removed, requires exactly one instance of its standard replacement time (see pp. 183-184). Total all such times involved. Then determine the highest class of work being performed (F being the highest). The total is multiplied by the Time Multiplier on the Customization Table for that class.

If the customization skill check fails, the time required doubles. Making the task a rush job or taking extra time is also possible.

Customization Basics

When customizing a unit, the standard construction rules for a unit of that type must be followed. The sole exception is that the prohibition against mixing technology bases can be ignored: Clan parts can be installed in Inner Sphere units and vice versa. This changes the unit's technology base to Mixed.

Note that, during a customization, either moving slots of an existing item within its location(s) or moving any "re-roll" slots (e.g. armor, structure, and myomer slots) from one location to another has no effect on the process.

There are six classes of customization, representing how complex the work is. The procedures detailed in Classes D to F take precedence over earlier classes (e.g. adding a component to a location where nothing was removed is Class C, unless that component is CASE, which makes the change Class D).

Field Refits

These relatively simple refits can be performed in the field, without access to specialized facilities beyond a basic crane and standard tools.

Class A: Changing armor type, quantity and/or distribution. Removing one or more components and not adding anything in the same refit.

Class B: Changing a weapon's facing within its original location. Adding one or more components to a location where something was removed in the same refit (note: you cannot remove an item and then add it back to the same location in the same refit).

Maintenance Facility Refits

These refits require a Transport Bay (p. 239, *TM*) for that unit type, or the equivalent, such as a field workshop or Mobile Field Base (p. 330, *TO*).

Class C: Adding one or more components to a location where nothing was removed in the same refit. Moving a component to another location (a move takes precedence over Class B).

Class D: Adding CASE or CASE II to a location that previously had neither. Adding a component (excepting armor) which mandatorily occupies critical slots in multiple locations on that unit (e.g. null-signature system, any item requiring 13+ contiguous slots on a standard 'Mech). Changing gyro weight and/or type, or the weight of an existing turret.

Factory Refits

These refits are long and involved processes that can only be performed at the proper factory,

Class E: Refurbishment (see p. 189). Changing cockpit type (as well as ejection and console additions/changes; treat as blown-off head). Changing engine type and/or rating (unless done via a refit kit; see p. 189).

Class F: Adding a new turret. Changing internal structure type or myomer type (the last two have base replacement times of 360 minutes). Altering fixed components on an Omni unit.

<<<Begin Table>>>

Customization Table*

Class	Type	Time Multiplier	Modifier
A	Field	2	+2
B	Field	3	+3
C	Facility	5	+3
D	Facility	8	+4
E	Factory	9	+4
F	Factory	10	+5

*If the work is done via a refit kit, halve the time multiplier and apply an additional –2 modifier.

<<<End Table>>>

Large Spacecraft

DropShips, JumpShips, WarShips, and Space Stations can only be customized in repair bays (p. 334, *TO*) of sufficient size to accommodate the vessel.

Omni Technology

Omni units can have their fixed equipment altered, or removed to make more pod space, by following the procedures outlined above. However, any such change is a Class F refit.

Players can adapt a standard weapon or other component to make it Omni-compatible (or the reverse: converting a poddable item to a standard item). To make an item Omni-compatible, that type of item must be legally pod-mountable to begin with (a list of inapplicable technologies may be found on p. 275, *TO*). The process costs one-quarter of the item's base cost, and is a Class D refit. The time required is equal to what is necessary to replace the item in question. Each item must be adapted separately.

A non-Omni unit cannot have OmniPod space installed via customization: you cannot turn a non-Omni unit into an Omni unit with these rules.

Refit Kits

Refit kits are standardized packages, carefully selected to be compatible with a specific unit, and paired with extensive supporting documentation to make installation relatively straightforward.

Refit kits are sourced like any other component, but are not available for DropShips, JumpShips, WarShips, or Space Stations. A kit's cost is equal to the cost of its components plus 10 percent. The Availability Rating is equal to the highest Availability of the kit's contents. The default Quality Rating is D, though other Ratings are possible.

A refit kit halves the time multiplier of the refit the kit is meant to enable (do not round). It also applies a –2 skill check modifier to the task, and the automatic Quality Rating drop for performing work of Class C or higher is ignored. Lastly, a refit kit that includes an engine drops the class for engine work from E to D.

While the parts contained in a kit can be used in any regular fashion, the special benefits of a kit only work with the specific unit it was designed for, when performing the specific refit intended.

Refurbishment

In spite of the best efforts of technical teams, a unit tends to degrade over time. This process can be reversed via refurbishment. Old parts are renovated or replaced, new or updated software installed, and so on.

Refurbishment is a Class E refit. The base time required is a week for a vehicle, battle armor unit or ProtoMech, two weeks for a 'Mech, aerospace fighter or Small Craft, a month for a DropShip or JumpShip, or three months for a WarShip or Space Station. The cost is equal to 10 percent of the unit's base value (not modified for quality).

Successful refurbishment improves the unit's Quality Rating (see p. 167) by one level, or the Quality Rating of each individual component if players are using this depth of detail. It is not possible to go beyond a rating of F.

Modifying a WVR-6R Wolverine to the WVR-6M standard involves replacing the AC/5 and its ammunition, which are in the right arm. As such, any work to the right arm is going to be Class B, while adding anything besides armor elsewhere is going to be at least Class C. Knowing this, we can determine the scope of the refit:

- *Adding one ton of armor (A)*
- *Adding a large laser and a medium laser to the RA (B)*
- *Adding two heat sinks in locations other than the RA (C)*
- *Moving the SRM 6 ammo bin (C)*
- *Moving four jump jets (C)*

The highest class of work in this refit is C, making this a Class C facility-level refit. Consulting the Master Repair Table for each individual item affected, and treating each removal, relocation, and addition as a replacement, the time required is 1,100 minutes. This is multiplied by 5 for being Class C, resulting in a base of 5,500 minutes to perform the refit. If using a refit kit, the time multiplier would only be 2.5; this total can also be affected by taking extra time, or making it a rush job.

<The following is just explanation / verification for playtesting purposes – won't be in the final>

Times for the Wolverine example given above

All values below are replacement times from the Master Repair Table

[60 min] Jump Jet moved (Left Leg -> Left Torso): 60 minutes
[120 min] Jump Jet moved (Left Leg -> Right Torso): 60 minutes
[180 min] Jump Jet moved (Right Leg -> Right Torso): 60 minutes
[240 min] Jump Jet moved (Right Leg -> Left Torso): 60 minutes
[360 min] SRM 6 Ammo Bin moved (Right Torso -> Left Torso): 120 minutes
[480 min] Removing AC/5 (Right Arm): 120 minutes
[600 min] Removing AC/5 Ammo Bin (Right Arm): 120 minutes
[680 min] 16 Armour added: 80 minutes
[770 min] Heat Sink added (Left Leg): 90 minutes
[860 min] Heat Sink added (Right Leg): 90 minutes
[980 min] Large Laser added (Right Arm): 120 minutes
[1100 min] Medium Laser added (Right Arm): 120 minutes

Example #2

Modifying a JVN-10N Javelin to a JVN-11A involves swapping in a new armour type (ferro-fibrous), which is a Class A refit. It also involves replacing all its RT- and LT-mounted weapons, ammunition, and heat sinks. As such, any work to those locations is going to be Class B, while adding anything besides armour elsewhere is going to be at least Class C. The scope of the refit is:

- *Adding one ton of armour – also switching it to ferro-fibrous doesn't make it more complicated (A)*
- *Adding three medium lasers to the RA (C)*
- *Adding two medium lasers to the RT (B)*
- *Adding two medium lasers to the LT (B)*
- *Adding double heat sinks to the RT and LT (B)*

[120 min] Removing SRM-6 (Right Torso): 120 minutes
[240 min] Removing SRM-6 Ammo Bin (Right Torso): 120 minutes
[360 min] Removing SRM-6 (Left Torso): 120 minutes
[480 min] Removing SRM-6 Ammo Bin (Left Torso): 120 minutes
[570 min] Removing Heat Sinks (Right Torso): 90 minutes
[660 min] Removing Heat Sink (Left Torso): 90 minutes
[750 min] Removing Heat Sinks (Engine): 90 minutes
[1070 min] Removing 64 Armour: 320 minutes
[1515 min] 89 Armour added: 445 minutes
[1635 min] Medium Laser added (Right Arm): 120 minutes
[1755 min] Medium Laser added (Right Arm): 120 minutes
[1875 min] Medium Laser added (Right Arm): 120 minutes
[1995 min] Medium Laser added (Right Torso): 120 minutes
[2115 min] Medium Laser added (Right Torso): 120 minutes
[2235 min] Medium Laser added (Left Torso): 120 minutes
[2355 min] Medium Laser added (Left Torso): 120 minutes
[2445 min] Double Heat Sinks added (Right Torso): 90 minutes
[2535 min] Double Heat Sink added (Left Torso): 90 minutes
[2625 min] Double Heat Sinks added (Engine): 90 minutes

The highest class of work in this refit is C, making this a Class C facility-level refit. Consulting the Master Repair Table for each individual item affected, and treating each removal, relocation, and addition as a replacement, the time required is 2,625 minutes. This is multiplied by 5 for being Class C, resulting in a base of 13,125 minutes to perform the refit. If using a refit kit, the time multiplier would only be 2.5; this total can also be affected by taking extra time, or making it a rush job.

Example #3

Modifying a MAD-3R Marauder to the MAD-5D standard involves replacing all its arm- and RT-mounted weapons, its LT-mounted ammunition, and ripping out the leg- and engine-mounted heat sinks. As such, any work to those locations is going to be Class B, while adding anything besides armour elsewhere is going to be at least Class C. However, it's the engine swap that's the main issue. Knowing that this is a Federated Commonwealth standard, we can assume that the work is being done via refit kit. Even then, it's still a Class D refit. The scope of the refit is:

- Adding 2.5 tons ton of armour (A)
- Adding an ER PPC and medium pulse laser to the RA (B)
- Adding an ER PPC and medium pulse laser to the LA (B)
- Adding a large pulse laser to the RT (B)
- Adding two jump jets to the RL (B)
- Adding two jump jets to the LL (B)
- Adding a Streak SRM-2 and ammo to the LT (B)
- Adding two double heat sinks to the RT (B)
- Adding two double heat sinks to the LT (B)
- Adding a 300XL engine via refit kit (D)

[120 min] Removing AC/5 (Right Torso): 120 minutes
[240 min] Removing AC/5 Ammo Bin (Left Torso): 120 minutes
[360 min] Removing PPC (Right Arm): 120 minutes
[480 min] Removing PPC (Left Arm): 120 minutes
[600 min] Removing Medium Laser (Right Arm): 120 minutes
[720 min] Removing Medium Laser (Left Arm): 120 minutes
[810 min] Removing Heat Sinks (Right Leg): 90 minutes
[900 min] Removing Heat Sinks (Left Leg): 90 minutes
[990 min] Removing Heat Sinks (Engine): 90 minutes
[1350 min] Removing standard fusion engine: 360 minutes
[1550 min] 40 Armour added: 200 minutes
[1610 min] Jump Jet added (Right Leg): 60 minutes

[1670 min] Jump Jet added (Right Leg): 60 minutes
[1730 min] Jump Jet added (Left Leg): 60 minutes
[1790 min] Jump Jet added (Left Leg): 60 minutes
[1880 min] Double Heat Sinks added (Left Torso): 90 minutes
[1970 min] Double Heat Sinks added (Right Torso): 90 minutes
[2060 min] Double Heat Sinks added (Engine): 90 minutes
[2180 min] Large Pulse Laser added (Right Torso): 120 minutes
[2300 min] ER PPC added (Right Arm): 120 minutes
[2420 min] ER PPC added (Left Arm): 120 minutes
[2540 min] Medium Pulse Laser added (Right Arm): 120 minutes
[2660 min] Medium Pulse Laser added (Left Arm): 120 minutes
[3020 min] XL fusion engine added: 360 minutes

The highest class of work in this refit is D, making this a Class D facility-level refit. Consulting the Master Repair Table for each individual item affected, and treating each removal, relocation, and addition as a replacement, the time required is 3,020 minutes. This would be multiplied by 8 for being Class D, but the refit kit halves that modifier, dropping that to x4. The result is a base of 12,080 minutes to perform the refit. This total can be affected by taking extra time, or making it a rush job.

Typical Usage Case Scenarios

The following assumes all current SO errata is in play (which lowers base TNs as well as some era modifiers). All times would be quadrupled in these scenarios, due to the Extra Time modifier.

1. **Mad Max Customization:** No customization in the 3rd War era should be more than Class C. Low-intensity warfare means that units usually have all the time in the world (I think in general that's a safe assumption for almost any customization: it's not something you tend to do when time is of the essence, though there's the Grey Death Legion exception to keep in mind). On the other hand, access to facilities and parts are major bottlenecks in this era (the latter in particular is what is going to prevent a lot of ideal customizations from ever happening at all, but on the other hand inspiring a lot of "make do" changes). As such, I've assumed that only a veteran unit would be able to contractually secure access to better maintenance facilities. I've included refit kit values, but they would be very much the exception rather than the rule in this era.

Basic Merc: Regular Techs (6), Basic Facility (0), 3rd War era (+2 for Mercs), Extra Time (-3).

Refit TNs would thus range from 7 (Class A or B) to 8 (Class C) for a customization, and from 5 (Class A or B) to 6 (Class C) for customization with a refit kit.

Veteran Mercs: Veteran Techs (5), Maintenance Facility (-2), 3rd War era (+2 for Mercs), Extra Time (-3).

Refit TNs would thus range from 4 (Class A or B) to 5 (Class C) for a customization, and from 2 (Class A or B) to 3 (Class C) for customization with a refit kit.

You could throw up to two additional tech teams on this, for another -2, but I don't think that's a reasonable assumption in this era, where expertise is short and regular maintenance is also probably taking extra time.

2. **The Clan Invasion:** The full range of Classes opens up. Refits start to abound, and refit kits become the norm, so that I'm assuming them as part of the default values.

Basic Merc: Regular Techs (6), Basic Facility (0), Clan era (+1 for Mercs), Extra Time (-3).

Refit TNs would thus be 4 (Class A or B), 5 (Class C), 6 (Class D-E), or 7 (Class F) for customization with a refit kit.

Veteran Mercs: Veteran Techs (5), Maintenance Facility (-2), Clan era (+1 for Mercs), Extra Time (-3).

Refit TNs would thus be 1 (Class A or B), 2 (Class C), 3 (Class D-E), or 4 (Class F) for customization with a refit kit.