ROGER BELL_WEST

TIN SOLDIER

Justa bella quibus necessaria.

    (Wars are just to those to whom they are necessary.)

    Quoted by Edmund Burke, *Reflections on the Revolution in France*
(1790)

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Introduction and Definitions

This is a game about mecha combat on the company scale. It arises from the author's experiences playing and dissatisfaction with a variety of games, principally BattleTech. In particular, it is designed to take advantage of the BattleTech 'Mech design system, allowing a wide variety of units to be available for play after conversion to these rules.

It is assumed that you will have some BattleTech map boards. Any hex maps would probably do. Given the nature of the game, terrain-heavy maps are recommended at first.

One *element* is a single unit of manoeuvre, represented by a single token on the board: one 'Mech, one vehicle, one infantry squad/section.

A *unit* is a higher organisational level, consisting of multiple elements or multiple units.

This game is primarily about 'Mechs, though other vehicles and infantry are also supported. Rules apply to all classes of element unless noted otherwise. For this purpose, *Vehicles* are non-'Mech vehicular elements; *Infantry* are non-vehicular elements.

All rounding is to the nearest integer, up on 0.5, unless otherwise stated.

This initial edition of the game is designed to support 'Mechs, vehicles and infanty, using the original BattleTech technology base (the "Introductory" rules level, or the original BattleTech and CityTech boxed games), with some support for later items; be aware that it may be absent or may only exist in stub form. It is intended that full support for advanced technologies will be added in an incremental process. Until then, go carefully: here be dragons.

Text in this style constitutes explanations and examples; it may be used to illustrate rules but does not form part of the rules.

Thanks

Thanks go to jeff1414, David Damerell, Ashley Pollard and Dave Devereux, for playtesting and useful comments on earlier drafts.

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Version

This is version 0.28 of the rules.

Summary

This description is intended for new players to get some idea of how the system works.

Each element has a card in the Sequence Deck, which is shuffled each turn and also has two jokers in it. Cards are turned over one at a time; when the card comes up, that element is activated. When the second joker comes up, the turn ends.

When an element is activated, it may perform any two actions chosen from among attack, move, cool off, enter cover, etc.; a commander may activate his subordinates. It's generally best to leave movement till last if possible.

Attacks need to roll to hit, then perhaps roll to get through armour, then roll to see how much damage they've actually done. Attacks can both reduce armour value and do damage to specific systems on the target.

Preparation

Determine available elements, skills, and command structure. A first-level commander has individual elements under him; a second-level commander has first-level commanders under him and may have individual elements too; in the latter case the elements and the commanders should be noted as being in different groups.[1]

Every element has a Gunnery skill, its competence at the use of its weapons. Crews for vehicles and 'mechs also have a Piloting skill (for ground elements this might be called Driving). Typical elements will have ranges of skill based on experience level:

Experience	Piloting	Gunnery
Green	10-14	10-18
Regular	10-18	18-20
Veteran	14-20	18-23
Elite	18-23	20-24

Assign one playing card to each element[2]. Make the Sequence Deck out of these cards and two jokers.

Each player should have available several[3] d20 and d6, and three d10 of different colours.

Tags should be available to mark elements with movement modes (1 or 2, 3 if the unit can jump) and with COVER and OVERWATCH status. More dice can help with this; the author uses d4 for movement tags.

[1] In the classic Inner Sphere company, each lance/platoon is led by a first-level commander, and the company is led by a second-level commander. The command lance will typically have another first-level commander to handle lance operations while the second-level organises the remainder of the company and calls in support. The second-level commander has several distinct groups of subordinates: his first-level commanders, his lance-mates (if he has no lance commander), and off-board assets.

The same principles can be applied to a Clan Star/Binary/Trinary setup, or to a ComStar Level II/Level III organisation.

[2] Typically, this might be by suits: one side gets Spades for its 'Mechs and Clubs for its support elements, while the other gets Hearts for its 'Mechs and Diamonds for its support. If you're feeling particularly bold, a deck of Tarot cards will let you play with six companies on the board.

[3] Lots, if using missile boats.

Turn sequence

Each turn, shuffle the Sequence Deck, then turn over one card at a time. When an element's card is turned up, that element is activated. Elements on Overwatch may be reactivated to interrupt another element's activation by attacking it; resolve the attack, then continue. Cards turned up should be visible, so that players can remind themselves of which elements have already been activated.

When the second joker is turned up, the turn ends immediately; all move tags are reduced by one level, and all heat-tracking elements may cool down by half their current heat dissipation value.

When an element is activated, remove any OVERWATCH tag it may have.

Off-board elements may not move, and may attack only via Overwatch and support fire.

Actions

During its activation, an element may take up to two actions in any order. *After* each action which is not a Move, decrease the move tag status by 1 (3 becomes 2, 2 becomes 1, 1 is removed).

Move

Make a move. If using ground movement, the move tag status increases by 1, to a maximum of 2 (if the tag was 3 before, it still becomes 2). If using jumping movement, the move tag status becomes 3.

Attack

See "Combat" below.

Enter Cover

'Mechs and infantry, but not vehicles, may take cover in any hex, using small pieces of terrain that are not directly represented on the

board. Cover status is maintained until the element next moves, or engages in hand-to-hand combat. Mark the unit with a "COVER" tag.

Enter Overwatch

Overwatch sets an element on alert, ready to attack when an enemy element appears (interrupting the other player's turn) or when indirect fire is requested. This status lapses automatically when the element does attack or when it is next activated. Mark the unit with an "OVERWATCH" tag. A unit may be in Cover and Overwatch at the same time.

Mount/Dismount

An Infantry element may board a friendly vehicle capable of carrying it, or leave a vehicle on which it was being carried.

Command

A commander may activate one of his subordinates, who immediately takes a full normal activation; or may activate *all* of his direct subordinates in one group, optionally including himself, to take a single action (such as "Move" or "Attack"; it must be the same action for all of them, though the details may differ).

Call Fire

An element may call in indirect fire from a single friendly element or unit on the board, or support fire from a single friendly element or unit off-board. A unit may be considered to consist of all friendlies in a single group: all members of a specific lance, all off-table assets, or simply all available elements. All called elements must participate if able, which will cancel their Overwatch status.

Request Orders

This is a special class of action that sacrifices the element's entire activation in order to activate its immediate commander, who must not have been activated already this turn. That commander then takes an activation as normal, though at least one of the actions must be a Command which includes the element which requested orders.

When this is done, remove the commander's card from the unused portion of the sequence deck and re-shuffle the remaining cards.

Cool Down

The unit drops its heat level by its current heat dissipation score.

Do Nothing

The unit takes no action, but its move tag status still drops by one[4].

[4] For 'Mechs and infantry this should probably only be done as the first action in an activation; if you want to move then pause, you can usually Enter Cover.

Movement

A unit may move into the hex directly in front of it or directly behind it (but may not move backwards if it has a movement tag). Each hex entered costs one movement point (MP), more in adverse terrain. An element may turn one hexside for one MP. Infantry elements have no facing.

Terrain	Walker	Wheel	Track	Hover	Foot
Rough	+1	+2	+1	+0	+0
Rubble	+1	n/a	+2	+0	+0
Light Woods	+1	n/a	+1	n/a	+1
Heavy Woods	+2	n/a	+2	n/a	+1
Water depth 1	+1	n/a	n/a	+0	n/a
Water depth 2+	+3	n/a	n/a	+0	n/a
+/-1 level	+1	+2	+1	+1	+1
+/-2 levels	+2	n/a	n/a	+3	+2
Building 1-3	+1	+1	+1	n/a	+0
Building 4-5	+2	+2	+2	n/a	+0
Building 6-7	+3	+3	+3	n/a	+0
Building 8+	+4	+4	+4	n/a	+0

No element using Walker, Wheel, Track, Hover or Foot modes may change elevation by 3 or more levels across a single hexside.

A Walker or Foot element that has MP at all may move one hex forward as the sole movement during its movement action, assuming that the hexside is one that it would be able to cross if it had more MP.

A Wheeled, Tracked, Hover or VTOL vehicle that starts and ends its movement on Paved terrain, and does not leave Paved terrain during that movement, may spend an additional movement point (two points if moving at top speed).

A biped 'Mech may go prone for 1MP, or get up for 2MP plus a piloting check (if failed, it takes no damage but remains prone). A quad may go prone for 1MP or rise for 1MP plus a piloting check at +10.

A Jumping element (including both jumping 'Mechs and jump-

pack-equipped infantry) pays one MP per hex entered, plus one MP per level change up, and may end its movement with any facing. If the direct path from starting to ending hex crosses higher terrain, it must pay the MP to climb to the maximum elevation it encounters.

VTOL movement costs one MP per hex entered regardless of terrain. Such vehicles must keep track of altitude, which should always be at least one greater than the altitude of the terrain; if altitude equals terrain altitude (including the height of woods), they have landed (if in a clear or paved hex) or crashed. Each altitude level change, up or down, costs one MP.

WiGE vehicles spend five MP in a single action to enter that mode, which puts them one level above the terrain. In subsequent activations they must spend at least five MP to remain in WiGE mode, and are treated as Hover vehicles for terrain costs, though they are always considered to be one level above the terrain (they cannot climb higher) and do not spend MP to change altitude. If they are activated but do not spend the five MP, they ground at the end of the turn; in a clear or paved hex, they move thereafter as hover vehicles with one MP until they take off again. Grounding in any other hex means a crash.

Water vehicles pay one MP per hex entered and may not enter water shallower than Depth 1. Submarines have a depth in the same manner that air units have altitude.

'Mechs generate one heat from a walker move, and the higher of three and the number of hexes moved for a jump.

No more than two elements may occupy the same hex at the same altitude (and only one of them may be a 'Mech), though elements may violate this limit to pass through friendly elements.

Piloting Checks

Any time an element must make a Piloting Check, take its current piloting skill and apply any situational modifiers. Roll a d20; a roll equal to or lower than the target number is a success, anything higher is a failure (which means a fall unless otherwise stated).

Skids

Any 'Mech or vehicle that turns while moving at top speed on Paved terrain must check for skidding for each turn it makes. This is a standard piloting check; if the element fails, it is displaced one further hex in the direction it was moving before the turn, and a 'Mech must make a further piloting check or fall. If an obstruction (such as a building or another element) is in that hex, both the skidding element

and the obstruction take damage equal to the other's Mass multiplied
by the number of hexes the skidding element had moved; displace-
ment may occur (if the stacking limit in the hex is exceeded); any
'Mechs involved fall down.

Displacement

An element may displaced by a skid, a push or charge attack, or
the entry of another element into its hex. Normally the direction
of movement is obvious: as the element was travelling before it at-
tempted to turn, or away from the intruding element.

   If the displacement is on the level, a 'Mech must check piloting
or fall. If it is down at least one level, the 'Mech falls automatically.
If it is up one or more levels, the 'Mech stays where it was (and so
potentially does its attacker, if any), but must check piloting or fall.

   It is possible that a displaced element may cause further displace-
ments.

Falls

When a 'Mech falls, determine how many levels it has fallen (zero if
it has fallen because of weapons fire; if it was displaced from another
hex, the different in heights between the two hexes). Add one if the
'Mech is a quad, two if it is a biped; subtract one if the fall is into
water. If the result is greater than zero, multiply by the 'Mech's Mass
number and apply the result as a single hit (randomly to front or
back armour). The 'Mech is now prone.

Combat
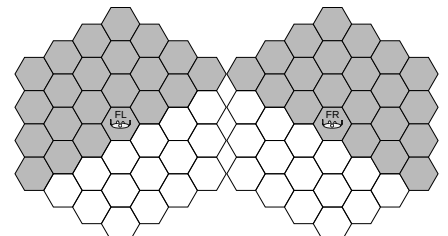
Hitting the Target

Choose Target

A target is normally a single element: one infantry platoon, one vehicle, or one 'Mech.

Line of Sight

A clear line of sight must be traceable from firer to target. Terrain obstructs line of sight if it is higher than both units; if it is higher than and adjacent to the attacker; or if it is higher than and adjacent to the target. For this purpose, a 'Mech is one level higher than the terrain in which it is standing; a prone 'Mech is at the terrain level. Woods rise two levels above their terrain; they do not block line of sight, but make hitting harder.

Firing Arc

- Weapons with an F arc may fire into the front 120° (the hexrow to the front left, the hexrow to the front right, and anywhere between them).

- Weapons with a B arc fire into the rear 120°, centred on the hex behind the element.

- Weapons with an FB arc, either FB(L) or FB(R), may fire into either F or B arcs.

- Weapons with an L arc may fire into the left 60° (the hexrow to the front left, the hexrow to the rear left, and anywhere between them). Weapons with an R arc may fire correspondingly on the right side.

- Weapons with an FL arc may fire into F or L arcs. Weapons with an FR arc may fire correspondingly into F or R arcs.
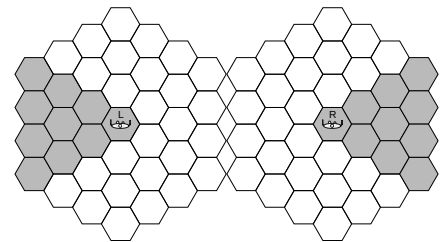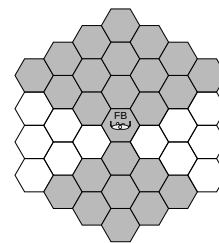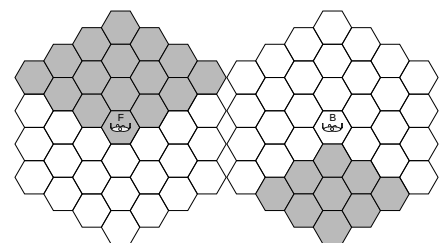
- Weapons with an FX arc may fire into the front 240° (F, L and R).

- Weapons with an X arc may fire in any direction.

Range

The range is the number of hexes from attacker to target, counting the target's hex but not the attacker's.

A target may not be engaged if it is more distant than the weapon's effective range unless the attacker has undamaged sensors. If it is closer than the weapon's minimum range or outside effective range, a penalty is applied.

If firing vertically in the same hex, add one to range for every full three levels of elevation difference. Otherwise, when targets are at different levels, calculate the elevation bracket by taking the horizontal range, halving it rounding down, and adding 3; add one to the effective range for every full multiple of this in elevation difference[5].

Choose Weapons

Choose one or more weapons to fire. They must all have the same to-hit number, range and damage characteristics[6].

A prone biped 'Mech may fire weapons with F, B, or FX arcs, and if both arms are undamaged one of FL, FR, FB(L) and FB(R). A prone quad may fire normally.

Calculate the total heat generated (the heat per weapon multiplied by the number of weapons) and add it to the 'Mech's heat track. (Vehicles do not track heat.)

Calculate to-hit number

Add attacker's gunnery skill and, if the target is a 'Mech, subtract one-third of its Piloting skill. Then apply modifiers:
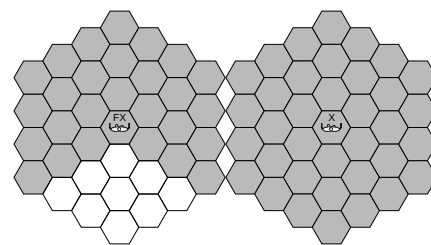
[5] For example a 'Mech shooting a VTOL that's eight hexes away on the map finds that the elevation bracket is 7, so if there are fewer than 7 levels of elevation difference there will be no modification to range; if the VTOL is 7-13 levels higher, the effective range is nine hexes; and so on.

This is of course a gross oversimplification, and a more accurate calculation would be $\sqrt{r^2 + \left(\frac{e}{5}\right)^2}$. But doing this at the table is prohibitive in time.

[6] For example, an LRM-5 and an LRM-20 may be fired together in a single attack, but an AC/5 and a Medium Laser may not, even though they do the same damage.

Situation	Modifier
Attacker has a move tag 1	-2
Attacker has a move tag 2	-4
Attacker has a move tag 3	-6
Attacker prone	+4
Accuracy	+/-var
Attacker is overheated	-var
Per hex inside Minimum Range	-2
Per hex outside Effective Range	-1
Indirect Fire	-2
Each intervening Light Woods	-2
Each intervening Heavy Woods	-4
Target has a move tag 1	-MP
Target has a move tag 2 or 3	-MP
Target in Cover	-3
Target prone, adjacent hex	+2
Target prone, otherwise	-4
Target shut down	+6
Target is a building	+10

MP for target's movement is the full MP value of that movement mode.

A pinpoint weapon gains +2 Accuracy if the direct path from firer to target is not subject to ECM, and if the relevant guidance system (Artemis or Apollo) has not been destroyed.

An "intervening" hex is one that lies on the straightest line between attacker and target, including the hex the defender occupies, but not including the hex the attacker occupies. If there is a choice of straightest lines, use whichever hex favours the target.

Roll to hit

If the to-hit number is 1 or higher, sum the Shots values of all weapons and roll that many d20; each one equal to or less than the to-hit number represents a single hit. Each roll of 20 is a miss, however good the odds.

Mark off the ammunition expended. (One shot per weapon if "Shots" is a single value; shots equal to the number fired if it is variable.)[7]

[7] An Archer fires both its LRM-20 racks; Shots is 20, but it marks off two boxes on the ammunition track, not forty.

Indirect/Off-board Fire

Any LRM launcher may be used for an indirect fire attack; this requires a separate designator element. Put the launcher element on Overwatch; the designator later takes a Call Fire action, which re-

quires line of sight to the target and calls in fire from a single Over-watching element (or from a single unit of multiple elements, such as a support lance or artillery battery; only those elements actually on Overwatch can participate, but they must if they are able).

Calculate the to-hit number from the designator to the target as normal, and add the launcher's movement modifiers and a further -2[8].

[8] Note that the launcher's range is irrelevant.

Special Cases

Streak missile systems roll to hit once per weapon, not once per shot. If they hit, all individual missiles hit. If not, the weapon does not fire.

Mêlée Attacks

A 'Mech may use a single type of physical attack in a single Attack action. All physical attacks have a maximum range of 1 hex, and use Piloting rather than Gunnery skill. An element that makes, or is struck by, a mêlée attack loses any Overwatch or Cover status it might have had.

Punch If a 'Mech has two punches available, it may deploy both.

Kick If a kick does critical damage, do not roll for location: it will always strike leg actuators.
A 'Mech that misses with a kick, or that is hit by a kick, must immediately make a Piloting check to avoid falling. Apply any falling damage after the damage from the kick.

Push The 'Mech must have at least one undamaged arm. If it is suc-cessful, it enters the enemy's hex, and the enemy is displaced one hex away from it. If that displacement cannot take place, because the new terrain is higher, return the 'Mechs to where they started.

Charge Any 'Mech may charge. This attack must be executed imme-diately after a movement action in which the 'Mech moved next to its target. If it hits, the 'Mech does damage equal to its Mass num-ber, multiplied by the number of hexes it moved in that activation, and takes damage equal to the target's Mass number multiplied by the same number of hexes.
A successful charge displaces the target 'Mech one hex away from the attack.
If the charge misses, the attacker falls: a target 'Mech may choose an adjacent hex to move into (immediately and without spending MP, though it may not make an elevation change it normally could

not and it still loses Overwatch and Cover status), leaving the attacker in the original target hex, or may stay where it is and leave the attacker one hex short. Target vehicles remain in place, and the attacker is left one hex short.

Charging Jump The charging jump, in which a 'Mech leaps onto another target, is usually a desperation measure. As with charging, it must be executed immediately after a movement action in which the 'Mech moved (in this case, jumped) next to its target. The damage is the number of hexes moved in the jump, doubled, multiplied by the 'Mech's Mass number; this is done both to attacker and to target.
If the attacking 'Mech misses, it still takes the damage to itself. Any critical damage to the attacker, hit or miss, will strike leg actuators.

Damage

Three things need to be kept track of: armour hits (which reduce armour protection for future attacks), critical hits (damage to specific components), and hazard dice (which may generate critical hits).

Determine attack facing: the front or rear half of the figure.

If the damage per shot is equal to or greater than the armour value, each shot has done one critical hit; in addition, divide the total damage done by the armour value, rounding down. Each full multiple adds one hazard die and one armour hit[9].

If the damage per shot is less than the armour value, divide armour value by damage, rounding down. For each shot that hits, roll a d6 (the armour bypass roll); each one that *exceeds* the armour-/damage value, or is a 6, adds an armour hit[10]. If the target number was 1-2 (i.e. the armour rating was less than three times the damage value), it also adds a hazard die.

Reduce the target's armour rating by the total number of armour hits.

If the target has a split armour rating (shown e.g. as 10/5), apply the same process to the second armour value, but don't reduce it; i.e. track only hazard dice and criticals, ignoring armour hits[11].

For each hazard die, roll a d20; on an 8 or less, one critical hit is scored, and another hazard die is added[12].

For each critical hit, roll d1000 on the target's critical table to determine what is hit; tick off one box on the appropriate entry[13]. If all boxes in an area have already been ticked, roll the d1000 again until damage is scored.

If a star would be crossed off, the 'Mech is destroyed.

[9] A *Spider* with front armour 6 is hit by two PPCs, each with damage 10, so that's two critical hits. In addition, 20÷6 rounds down to three hazard dice and three armour hits.

[10] An *Atlas* with front armour 37 is hit by the same two PPCs. 37÷10 rounds down to 3: the player rolls two d6 (one per PPC), and each one that comes up 4+ adds an armour hit.

[11] A *Buster* HaulerMech, with armour rating 10/5, is hit by a PPC. It takes one critical hit, one hazard die and one armour hit (10 damage against 10 armour) plus one critical hit and two hazard dice (10 damage against 5 armour).

[12] On average, you can expect two critical hits per three hazard dice.

[13] A *Stinger*, with back armour 4, is hit there by a PPC (a single attack with damage 10). Damage exceeds armour, so one critical is done automatically. 10÷4 rounds down to two armour hits (the back armour becomes 2) and two hazard dice. The attacker rolls two d20: 2, 12 makes one critical and one more hazard die. Another roll of 6 adds another critical. A final roll of 17 gives no more criticals. In total, three criticals are scored. Three location rolls

If a blacked-in damage box is crossed off, there is no special effect.
Effects described below apply when a square damage box is crossed off.

Whenever MP is reduced by 1, if the vehicle has more than 8 MP natively, use $^1/_8$ of its MP as the reduction amount. If a unit's MP reach zero, it is unable to move ('Mechs will fall over).

If a weapon has the "Heat" characteristic, it adds as many points of heat to its target as it did damage.

Engine ('Mech) Reduce heat dissipation by 5. It can become negative. When all boxes are gone, 'Mech is destroyed.

Jump Jet Reduce Jump MP by 1.

Sensors -2 penalty to Gunnery, and no attacks may be made beyond a weapon's Effective Range. When all boxes are gone, the element cannot fire weapons, but it can still make physical attacks.

Gyro -6 penalty to Piloting. Make an immediate piloting check (including that penalty), or fall. When all boxes are gone, 'Mech falls and cannot stand.

Life Support The 'Mech is more vulnerable if it overheats. See Heat below.

Weapons One weapon of the relevant type is lost; defender chooses which if there is more than one.

Heat Sink Reduce heat dissipation by 1 (2 for a double heat sink).

Arm Actuators When the first actuator is lost, weapons on the corresponding arm are restricted to the F arc. For the left arm, that means weapons with FL or FB(L) arcs; for the right arm, FR or FB(R).
Weapons from that arm fire at -2 per actuator hit and may not be fired in the same activation as other weapons of the same type elsewhere on the 'Mech.
Mêlée attacks with that arm are prohibited.
When all actuators on an arm are lost, weapons on that arm may no longer be used at all.

Leg Actuators For a biped: Kicking attacks are prohibited. Walker MP are reduced by 1 (Jump MP are unaffected). Piloting is reduced by 1. Make an immediate piloting check (including that penalty), or fall. When all boxes are gone, 'Mech falls and cannot stand.
For a quad, these effects only apply on every *second* leg actuator hit.

Ammunition If no ammunition of this type remains, there is no special effect. otherwise, the element takes ten hazard dice and loses a proportionate amount of ammunition (e.g. if one of two boxes is lost, half the original ammo load is also lost).

Motive System -1 MP, -1 to Driving skill.

Engine (Vehicle) -1 MP

Crew The first hit stuns the crew: the vehicle's next action may only be a standard move. The second hit kills the crew.

Infantry/Cargo The cargo (or infantry elements) is/are destroyed.

Turret The first hit jams the turret; on the vehicle's next action, it may only fire turret weapons in the direction in which it last fired. The second hit locks the turret; the same applies for the rest of the game. The third hit blows off the turret and destroys the vehicle.

Stabilizer Double penalties from the attacker's movement for the rest of the game.

Environment

Environmental factors can change gameplay significantly. It is recommended that they not be used while learning the system.

Fire and Smoke

A roll of 19-20 when attacking a target in woods or jungle terrain, or a deliberate firestarting attempt in such terrain, may start a fire. Fire starting is automatic for heat-inflicting weapons; otherwise the target number to start a fire is 5, modified thus:

Situation	Modifier
Energy weapon	+7
Non-deliberate	-4
Jungle	-2

Roll a d20; a roll of the target or below starts a fire.

A heat-tracking unit that leaves a fire hex during its movement gains 2 heat; if it is in a fire hex during the heat phase, it gains 5 heat. Any vehicle that ends its movement in a fire hex must make a piloting roll or suffer a single hazard die. Infantry units are destroyed if they are ever in a fire hex.

A fire can spread: for each fire hex, roll d20 at turn end for each hex that is downwind of it (the three adjacent hexes on the downwind side), and flammable . On a 1-5, that hex catches fire.

Each fire hex generates smoke in the three hexes downwind of it. This smoke can drift (see Weather below). Each smoke hex dissipates on a d20 roll equal to or less than 2 plus the number of hexes the smoke is drifting.

Darkness

Dusk or Dawn gives -2 to all ranged attacks. A unit at heat 25+ experiences an additional +2 to be hit.

Well-Lit Night gives -4 to all ranged attacks. A unit at heat 20+ experiences an additional +2 to be hit.

Dark Night gives -6 to all ranged attacks, -2 to all melee attacks. A unit at heat 15+ experiences an additional +2 to be hit. Piloting rolls are at -2 for any unit that moves twice in an activation.

Pitch Black gives -8 to all ranged attacks, -4 to all melee attacks. A unit at heat 10+ experiences an additional +2 to be hit. Piloting rolls are at -4 for any unit that moves twice in an activation.

Weather

Light Fog gives +1 movement cost to enter any hex.

Heavy Fog gives +2 movement cost and -2 to all energy weapon attacks.

Light Rain gives -2 to all weapon attacks.

Heavy Rain gives -2 to all weapon attacks and -2 to all piloting rolls.

High Wind gives Foot Infantry -1 movement point. Smoke drifts one hex per turn.

Gale gives -2 to all missile attacks, -1 movement point to all infantry. Smoke drifts one hex per turn.

Strong Gale gives -4 to missile attacks, -2 to gun attacks; -2 movement points to all infantry. -3 to piloting rolls (-6 for air units). Smoke drifts two hexes per turn.

Storm gives -6 to missile attacks, -4 to gun attacks. Infantry may not deploy. -6 to piloting rolls (-12 for air units). Smoke drifts three hexes per turn.

Violent Storm prevents missile use; -6 to gun attacks, -4 to energy attacks. -8 to piloting rolls (air units and infantry may not operate). Smoke cannot thicken.

Hurricane Force prevents missile and gun use; -6 to energy attacks. -10 to piloting rolls (only 'Mechs may operate at all). Smoke cannot thicken.

Gravity

If a battlefield has gravity substantially different from 1G, divide all movement point allowances by the local gravity and round to the nearest whole number. Exceeding normal movement allowance in Walker or Jumper mode requires a piloting roll to avoid a fall; any critical damage is taken to the leg actuators.

Multiply all falling damage by the local gravity.

Apply -1 to all direct-fire ballistic and missile (but not energy) attacks per 0.1G difference from 1G.

Atmosphere

Unbreathable atmospheres prohibit the deployment of unsealed units (BattleMechs and combat vehicles are considered sealed). Loss of life support destroys the element (while the pilot may survive in an environment suit, he can no longer operate the element).

Infantry

An infantry section (or squad) typically consists of seven men, with four sections making up a platoon. Each section is rated for Gunnery skill; Piloting is irrelevant. A standard infantry section uses bullet-firing or energy rifles; a heavy-weapons section may be equipped with machine guns, short-range missiles, or flamers. A section may be jump-mobile, and/or have anti-'Mech training.

Activation

A standard infantry section is activated normally. A heavy-weapons section gets only a single action in its activation.

Movement

An infantry section has one Foot MP; a jump-mobile section also has 3 Jump MP.

Attacks

Infantry sections are not penalised for their movement when attacking (but are still harder to hit if they have moved).

Infantry sections may enter the same hex as enemy elements and attack them there.

Standard sections roll one d20 per trooper, and do 1 anti-infantry damage per hit.

Heavy-weapons sections use attack statistics for the Machine Gun, SRM-2, or Flamer. Multiply the weapon's Shots statistic by the number of troopers firing, and roll that many dice to attack. The SRM-2 will normally allow only one attack without reloading. A heavy-weapons section may discard its heavy weapons at any time and become a standard section on its next activation, but may not later pick up those weapons.

An anti-'Mech section that is in the same hex as an enemy 'Mech may attack its legs; roll one attack per trooper, doing four damage

per successful hit (any critical hits strike leg actuators).

Alternatively, an anti-'Mech section that is in the same hex as an enemy 'Mech or vehicle may swarm it; roll a single die to hit, +2 if the section is jump-capable. If this is successful, the infantry unit has successfully boarded the target (and will be carried with it during its future movement). For each *subsequent* Attack action taken by the section, the target automatically takes the full non-missile damage (including Machine Guns and Flamers) of each surviving trooper, against front or back armour at the attacker's discretion.

A swarmed 'Mech may try to dislodge its attackers with Punch attacks at -8; if one hits, the infantry unit is dislodged and takes Punch damage. Entering water of Depth 1 or more will destroy the infantry element, though if the entry is to an adjacent hex (i.e. walking rather than jumping) the infantry may remain on the last hex before the water.

A swarmed vehicle may try to dislodge its attackers with evasive manoeuvres by taking two successive Move actions; make a Piloting skill roll at -8, +MP, and if successful the infantry is dislodged. The vehicle may in any case spend its normal MP (not doubled for two actions).

If a swarmed 'Mech becomes prone, the infantry element is dislodged into the 'Mech's hex, and takes a 7-point hit.

When a swarmed element is hit, the infantry element also takes the damage.

Damage

Infantry elements do not have useful levels of armour. Anti-Infantry weapons kill one man per point of damage, other attacks kill one man per shot that hits. If an infantry element is in Clear terrain and not in Cover, double the damage it takes.

Buildings

A building occupies a single hex; buildings in multiple adjoining hexes are treated as distinct structures. Buildings are rated by their Mass number, and by a number of floors; if details of a building are unspecified, treat it as having Mass 4 and two floors. Since a building is intrinsically immobile, there is a +10 bonus to hit it.

An element that can reach it may safely stand on top of a building if its Mass is less than or equal to the building's Mass. The top of a building is regarded as Paved terrain. If that Mass is reduced below the unit's Mass, the unit falls into the building (treat as a fall equal to the building's height, plus a building entry).

A 'Mech or vehicle may enter a building; element and building each take damage equal to the element's Mass. A 'Mech must make a piloting check or fall.

Infantry units may enter buildings without penalty, and may climb or descend inside them (1 MP per floor).

Any element inside (but not on top of) a building is treated as being in cover.

When a building is hit, treat its armour value as four times its Mass. If damage is done, however, each critical subtracts one from the building's Mass; when it reaches zero, the building collapses, and the hex becomes Rubble. Any element inside it takes damage equal to the building's original Mass.

When an element is inside a building that is hit, subtract the building's Mass from the damage done; the element takes that damage.

Heat

A 'Mech in Depth 1 water adds 3 to its dissipation; in Depth 2 water it adds 6.

As a 'Mech takes actions, add up the heat it has generated: from movement, from weapons fire, and from any heat-causing weapons or situations. If its heat dissipation value is positive, when it takes a Cool Down action, subtract that value. At the end of the turn, subtract half the dissipation value.

If the resultant heat total is negative, make it zero.

For each full five points of heat, subtract one Walker MP and apply -1 to hit for all attacks. If the unit is fitted with Triple-Strength Myomer, it gains 2 MP when its heat is 5 or above[14].

If total heat reaches or exceeds 25 at the end of a turn, the 'Mech has shut down; it will fall over if not already prone, will be easier to hit, and may not take any actions except Cool Down until it is restarted (this happens automatically once its heat drops below 25).

If the 'Mech that shuts down has lost life support, it may not be restarted until its heat has reached zero.

If the 'Mech has zero or negative heat dissipation (from engine damage or loss of heat sinks), it may no longer take a Cool Down action; if dissipation is negative, it adds heat at the end of each activation and each turn. Once it shuts down from overheating, it may not be restarted at all.

[14] So a TSM unit with 5 MP normally would have 6 MP at heat 5, 5 MP at heat 10, and so on.

Converting BattleTech units

This section may be ignored if the conversion software is being used.

Speed

Walk becomes Walker, Jump remains Jump.

Armour

Add up all front armour, multiplied by odds of its being hit, to get front armour value. Ditto back. Round total to nearest integer[15].

Location	Front	Back
LL/RL	4	4
LA/RA	5	5
LT/RT	5	0
LT(R)/RT(R)	0	5
CT	7	0
CT(R)	0	7
H	1	1

For vehicles:

Location	Front	Back
Front	16	0
Left/Right	8	8
Rear	0	16
Turret	8	8

[15] So a point of LL gives 4/36 to front and back; a point of CT gives 7/36 front, nothing back.

Weapons

Shots is normally 1 and Damage is the weapon's medium-range damage value; for a cluster weapon Damage is the individual missile's damage (e.g. 1 for an LRM, 2 for an SRM), and Shots is the number of missiles, or the total damage divided by the Damage value (e.g. 20÷1=4 for an LRM-20, 12÷2=6 for an SRM-6).

Minimum Range is the BattleTech Minimum Range +1 (i.e. it's the shortest range at which no penalty is assessed). Effective Range is the

weapon's Long Range.

Accuracy is -2 times the weapon's to-hit bonus at medium range (e.g. +4 for a pulse laser).

If infantry will be used, note which weapons are anti-infantry-capable (the AI tag). LB-X and HAG cluster shot is also considered anti-infantry.

Rear-firing weapons have a B arc. Weapons on an arm with no lower arm actuator have FB(L) or FB(R). Other arm weapons have FL or FR. Head-mounted weapons have FX. Turret-mounted weapons have X. Side-mounted weapons have L or R. Other weapons have F.

Punches are only available to biped 'Mechs with Lower Arm Actuators; they have an FL or FR arc. Kicks have an F arc, FB for quads.

Criticals

For 'Mechs, turn all damageable items into a weighted list by multiplying their critical slots by the weight for their location (see under Armour above). For example, a Machine Gun in the centre torso will take up 1×7=7 slots; a PPC in the left arm will take 3×5=15.

Vehicle systems are more complex. Take all weapon and equipment crits for a vehicle (use the numbers that would apply if they were fitted to a 'Mech), and scale them to fit into 94 slots. Then add the motive system:

Type	Slots
Tracked, Naval	8
Wheeled	14
Hovercraft, Hydrofoil	17
WiGE	18

For vehicles only: add 17 slots for a nuclear engine, 12 for one that needs a fuel tank (plus 5 for the fuel tank). Add 19 for the driver, 52 for the stabilisation gear, 11 for the commander, 22 for the crew, 15 for sensors, and 19 for turret mechanism (if present).

Combine multiple items into a single one with multiple checkboxes. Two PPCs become a single "PPC" entry with the sum of their weights and two boxes. All Leg Actuators become a single item (8 boxes on a biped 'Mech, 16 with half harmless on a quad), as does each set of Arm Actuators (2-4 on each side). Some items have fewer checkboxes than this might indicate:

Item	Checkboxes
Engine	3
Sensors	2 (4 for a vehicle) (+1 for a Torso-Mounted Cockpit)
Gyro	2 (+1 for a Heavy-Duty Gyro)
Life Support	1
Crew	2
Turret	3
Vehicle engine	Lower of movement points or 8
Vehicle motive system	Lower of movement points or 8

Once you have this list, convert it into a table; most designs seem to have around 200-240 critical entries. The supplied sheets scale this up to a range of 1-1000.

Other stats

A 'Mech's, vehicle's or building's Mass number equals tonnage÷10 (round down, minimum 1). For 'Mechs, punch damage is the same number, kick tonnage÷5 (again rounded down).

Using the conversion software

Preparation

You will need a Perl installation with the modules XML::LibXML, PDF::API2 and ODF::lpOD. (Under Debian, install the packages libxml-libxml-perl, libpdf-api2-perl, libodf-lpod-perl.)

You will also need data files from `http://www.solarisskunkwerks.com/` (an excellent piece of 'Mech design software for BattleTech). Specifically, from the main package you will need Equipment.ods (found under Build/Docs when the archive is extracted); the master list of units, downloaded separately, should be extracted under a directory "elements".

To convert the equipment list, run

```
mkequipment Equipment.ods
```

and, after some time, under a "data" directory you should find the files AmmoMechOnly.xml, Equipment.xml, PhysicalWeapons.xml and WeaponsMechOnly.xml.

You will also need a fonts directory, which should include Webdings.ttf (available from `http://prdownloads.sourceforge.net/corefonts/webdin32.exe?download`). I cannot legitimately redistribute the Century Gothic typeface used in the example sheets, but I am sure the enterprising player can find a suitable substitute.

Operation

To generate record sheets, build an XML file that describes the unit. Examples are included in the software package, derived from Worktroll's Army Report series. You should have one <unit>, including one or more <element>s. <unit> may have name, faction, date and experience attributes; <element> should have file (a pointer to the SSW file from the master list), and may have name (pilot name) and piloting and gunnery skill levels.

If piloting and gunnery levels are not specified, but unit experience is, they will be generated randomly.

To generate sheets, run

```
cvt  unitfile.xml
```

and the result will be placed in unitfile.pdf.

By default these will be single A6 sheets. To render elements 4-up onto A4 sheets, use cvt -4 unitfile.xml.

Notes

Every author is prone to write in the style of what he has read most recently. The influences I'm aware of here, apart from classic BattleTech, include the anime series *Dougram* (clearly one of the major influences on the original game) and the wargames *Stargrunt II* and *Chain of Command*.

I am well aware of the implausibility of giant walking tanks and am not attempting to be realistic in this regard - but this implausibility seems no reason not to speculate on realistic tactics for such units.

As for BattleTech itself, I've been playing it nearly since day one - I don't believe the original Battledroids ever actually made it to the UK, but I started with the Warhammer-cover boxed set - but dropped out soon after the first wave of advanced technology, and particularly the Clans, came in. I liked the original conception of a universe in which technological progress was moving backwards, and the Clans just seemed like munchkin bait (as well as obvious villains in what had been a pleasingly shades-of-grey universe).

However, a few years ago I took up interest in the game again, prompted by MegaMek. The genesis of *Tin Soldier* came from observing the MegaMek damage resolution log, and realising just how much calculation and checking was done with no actual need for human intervention. Surely there ought to be a simpler way of getting interesting results?

I've played Battleforce and Quick Strike, but for my taste they lose the flavour of the game by rolling all the weapons together. What I wanted was something less abstracted than that, but still fast. In reflection, I realised that what I cared about was the installed base of 'Mech and vehicle designs, several thousand of them, much more than the specific rules of play. The answer might be not to build a simplified BattleTech, but to come up with an entirely new game, which would nonetheless be able to use those designs. I'm a sysadmin and programmer; creating record sheets from an existing database of units via an algorithmic process seemed as though it shouldn't be too much trouble.

My principal objections to BattleTech as a game are the slowness of play (largely caused in the movement phase, especially by choosing which unit to move next), the ratio of complexity to result (particularly in the long process of attack resolution), and the short weapon ranges. I have tried to shift much of the complexity into the element conversion process, with record sheets that are frankly not intended to be filled in by hand and which can codify at least some of the many subtleties of 'Mech design into a relatively simple format.

While I have maintained the 30m hex scale of BattleTech, I do regard the time scale (classically ten seconds) as rather more flexible; one Tin Soldier turn might be ten seconds, or might be as much as thirty. In theory there might be time for a little tin god (no, not Victor) to move and fire multiple times; the soldiers here are careful, perhaps even hesitant, about exposing themselves to hostile fire.

Extending weapon ranges has made cover from terrain far more important; the "infinite featureless plain" beloved of armchair tacticians is a distinctly challenging field of battle compared with wooded hills or concealing rocks.