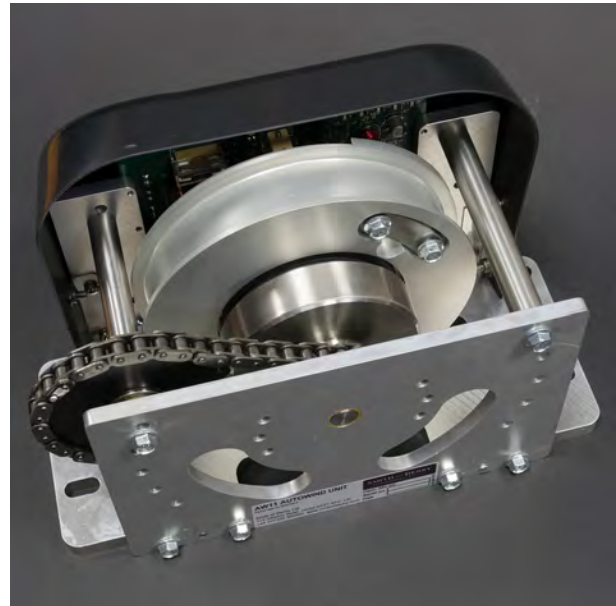


AW11 Autowind Units

Turret clock conversion to automatic winding

Document ref: AW11 I+O+M

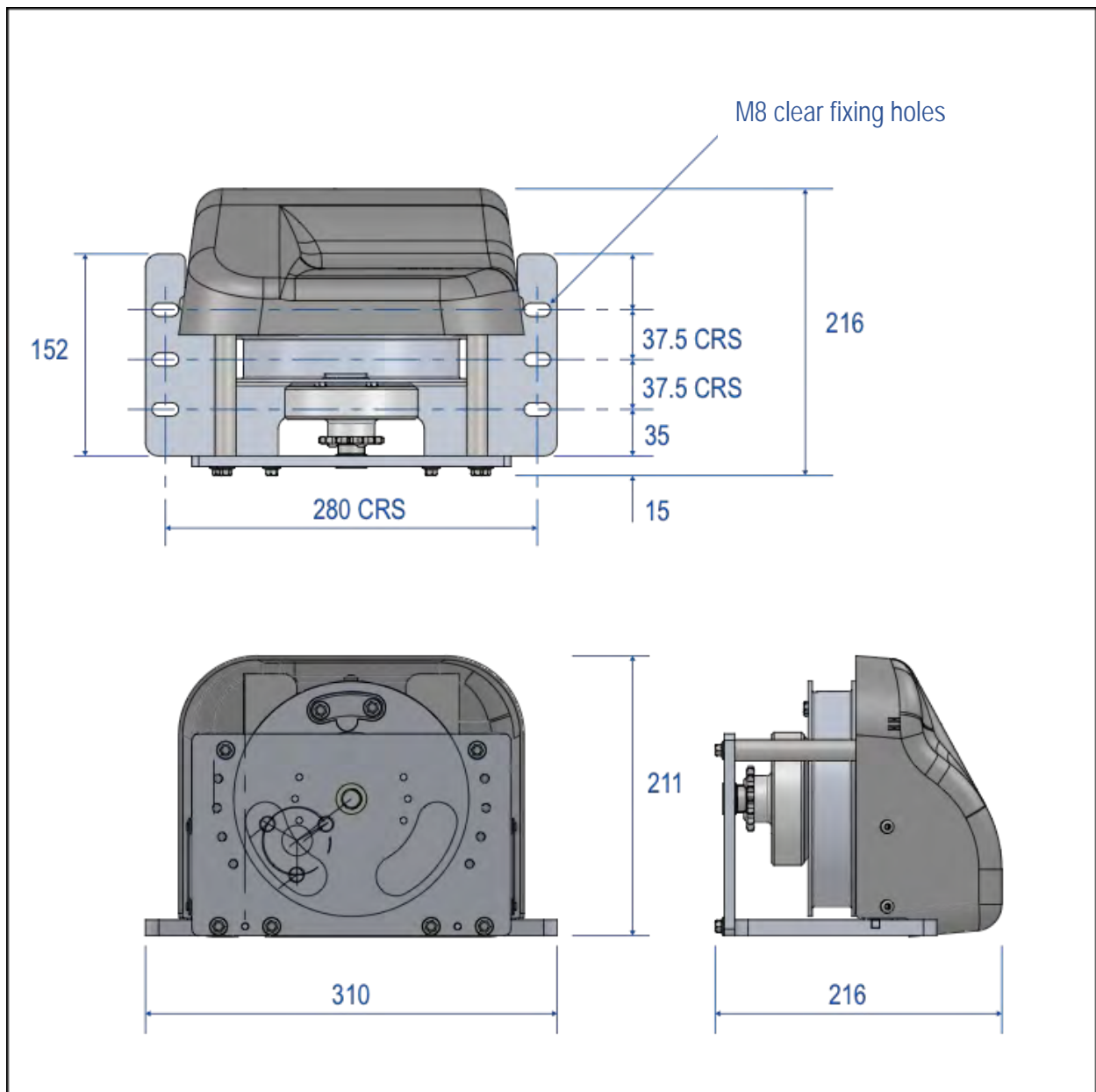
Issue date: 21 December 2017



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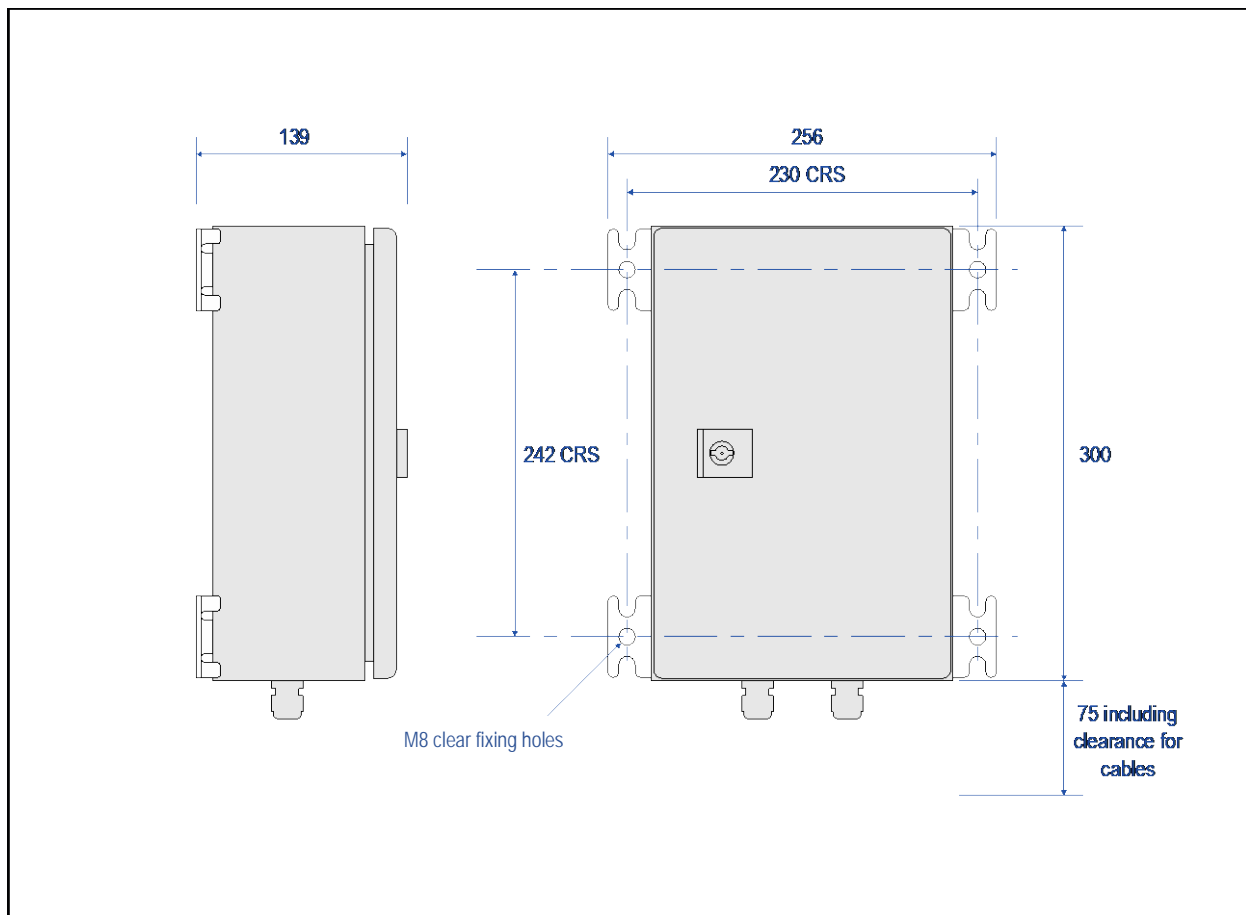
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1 Data and dimensions



1.1 Overall dimensions of the AW11 units

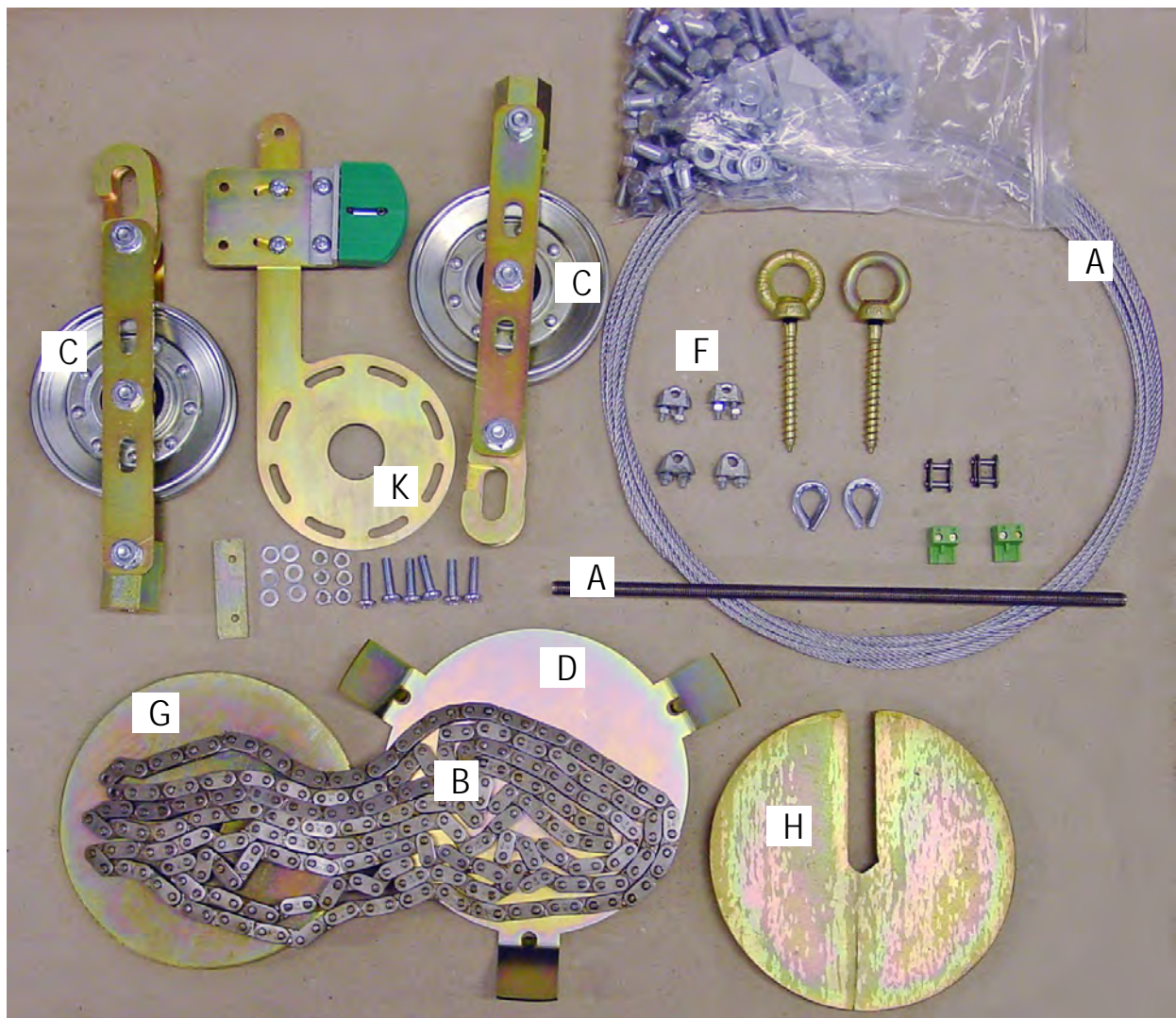
1.1.1 AW11 unit weight: 9.8kg



1.2 AW11 power/battery pack cabinet dimensions

1.2.1 Power supply: 230V AC fused at 5A.

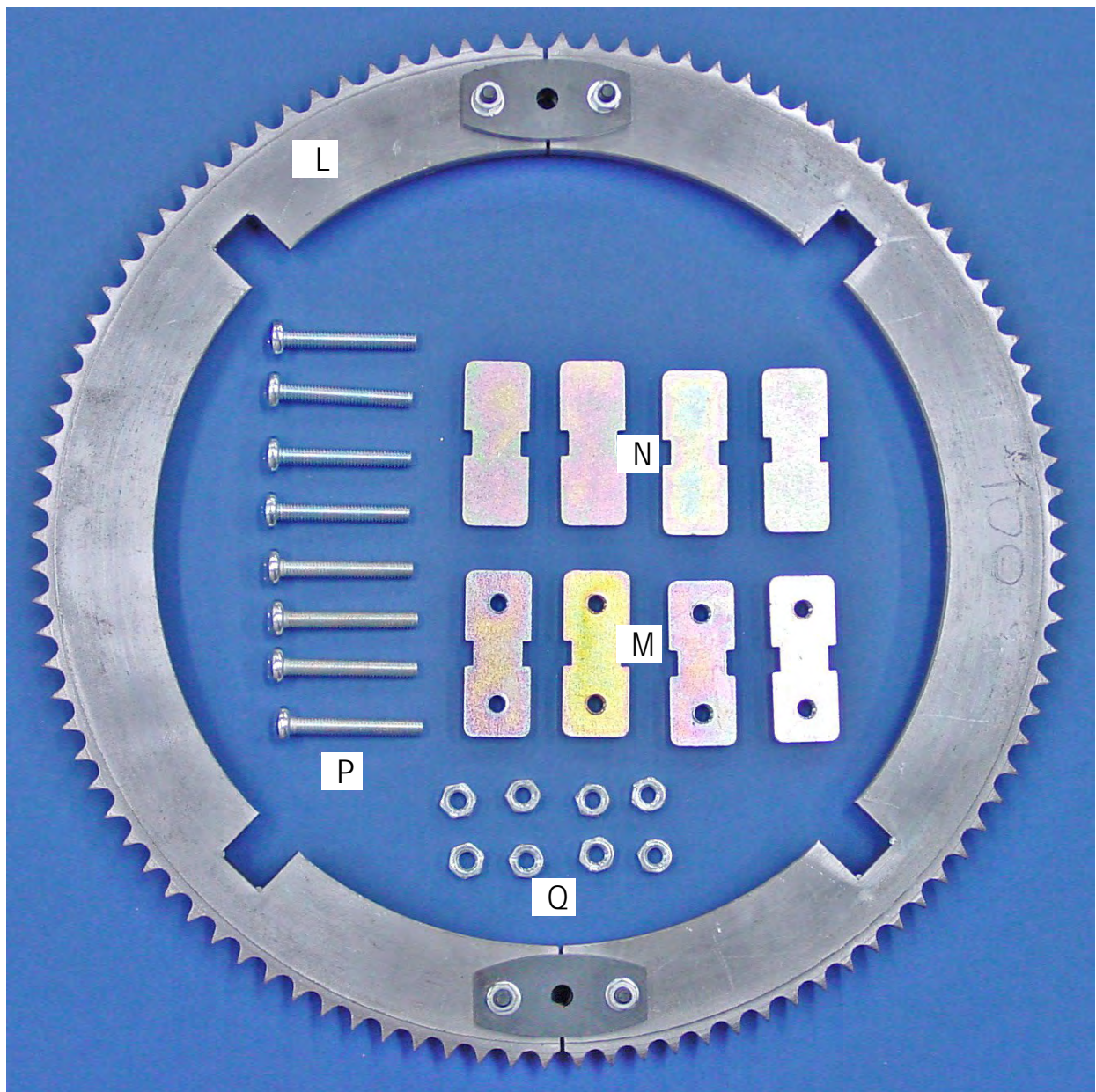
1.2.2 Weight of cabinet with battery: 8.2kg.



1.3 Additional components supplied

1.3.1 Ancillary parts

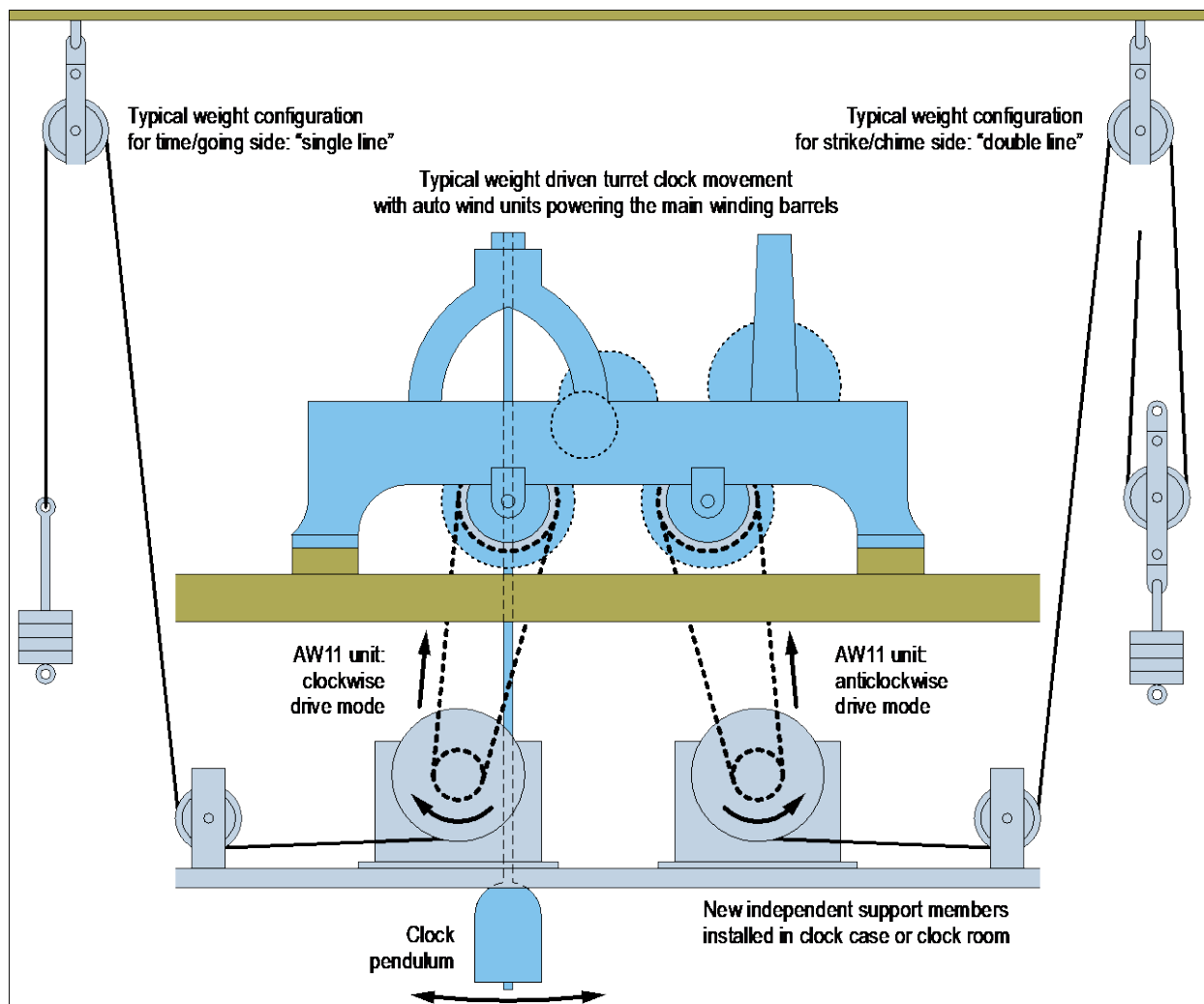
- A 3mm steel cable
- B 5 metres of 3/8 inch pitch chain (DIN 06 B-1)
- C 2-off weight pulleys
- D 1-off weight stand
- E 1-off M8 studding weight bar
- F 5-off cheese weight
- G 5-off slip weights
- H 1-off pack fixing screws, nuts and bolts
- I 1-off chain tensioner



1.3.2 Sprocket parts

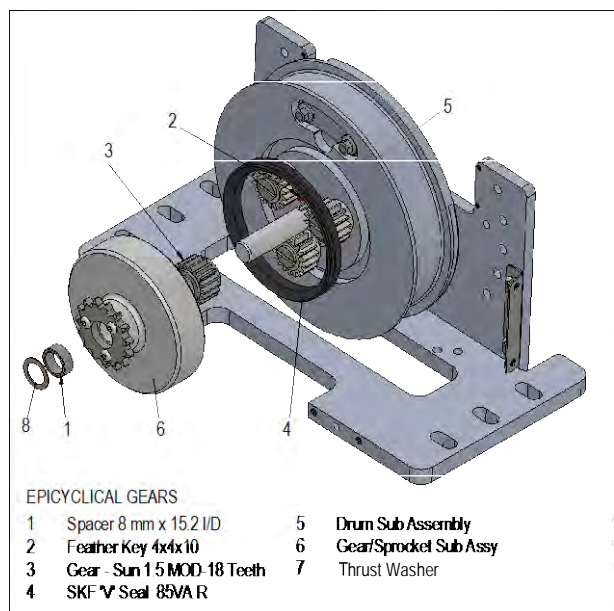
- J Split sprocket assembly
- K 4-off barrel clamp plates
- L 4-off barrel pads (if required)
- M 8-off M6 x 30mm POZI PAN BZP
- N 8-off M6 nuts BZP

2 How the system works



2.1 Principle of operation

- 2.1.1 The AW11 units are "off the clock" self-winding units. They use their own barrel and weight, rewound by a DC motor with battery backup. This weight drives the clock via chain and sprockets.
- 2.1.2 During the automatic winding, power to the clock is maintained via epicyclic gears within the AW11 barrel.
- 2.1.3 In the event of a mains power failure the clock will remain running as long as the battery retains sufficient charge.



2.1.4 A spiral groove in the rear of the AW11 winding drum guides a trigger. As the clock uses weight power the drum rotates, which guides the trigger through a rewind sensor.

2.1.5 When the AW11 rewinds the weight, the drum moves the trigger back and through a stop sensor and the cycle repeats.

2.1.6 Sensors are provided to enable the AW11 to drive in either direction.

2.2 Benefits

2.2.1 Once fitted with AW11 unit/s, the clock will no longer require regular manual winding.

2.2.2 As the AW11 rewinds frequently, the weightfall/height required is much less than that needed by the clock in its original form. This may enable the weight to be contained within the height of the clock room.

2.2.3 The AW11 units own weight will normally be smaller and lighter and therefore safer than the original clock weights which are removed from service and will be stored on site.

2.3 Applications

2.3.1 One AW11 unit is required for each drive train: going/timekeeping, hour striking and quarter chiming.

2.3.2 The same model AW11 is suitable for slow moving gear trains such as going/timekeeping and for faster moving clock gear trains which run then stop, such as hour striking, quarter chiming and tune playing. Reduction gears may be incorporated in the chain drive if required.

2.3.3 The AW11 unit is adaptable to drive virtually any type of historic weight driven tower clock, of both cage and flatbed types. It may be installed above, below or to the side of the clock depending on clock design and site conditions.

2.4 Conservation

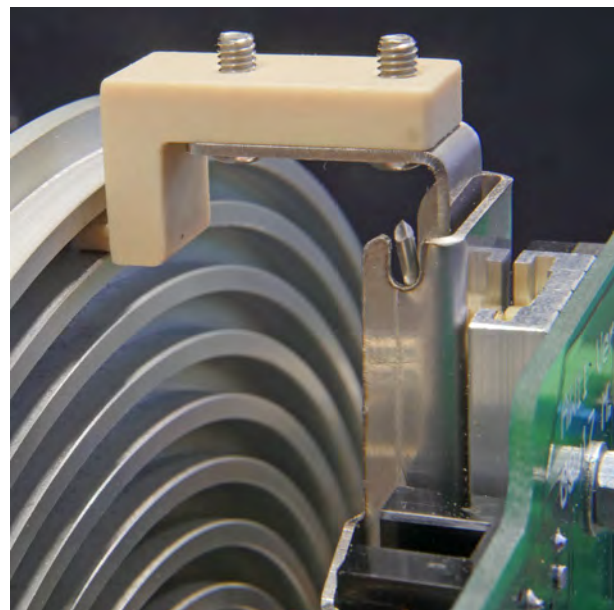
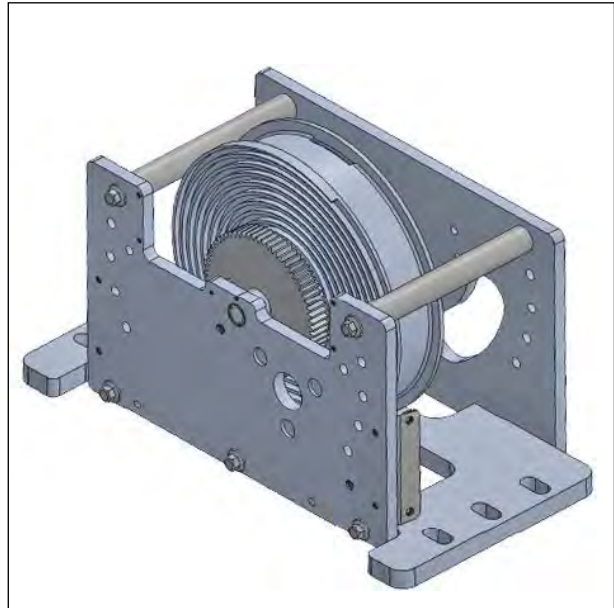
2.4.1 No damage or alteration to the clock will result from the fitting of the autowind units or sprockets.

2.4.2 All items which need to be attached to the clock will be clamped and therefore removable at any future date with no detriment to the clock.

2.5 Caveats

2.5.1 The clock will not be a better or worse timekeeper than it was before autowinding was installed. Seasonal temperature changes and wind speed can affect timekeeping. The addition of a Smith of Derby PAR (Pendulum Arrest Release) system will provide accurate timekeeping.

2.5.2 The clock will still require regular attention, cleaning, maintenance and regulation.



3 Site assessment and calculations

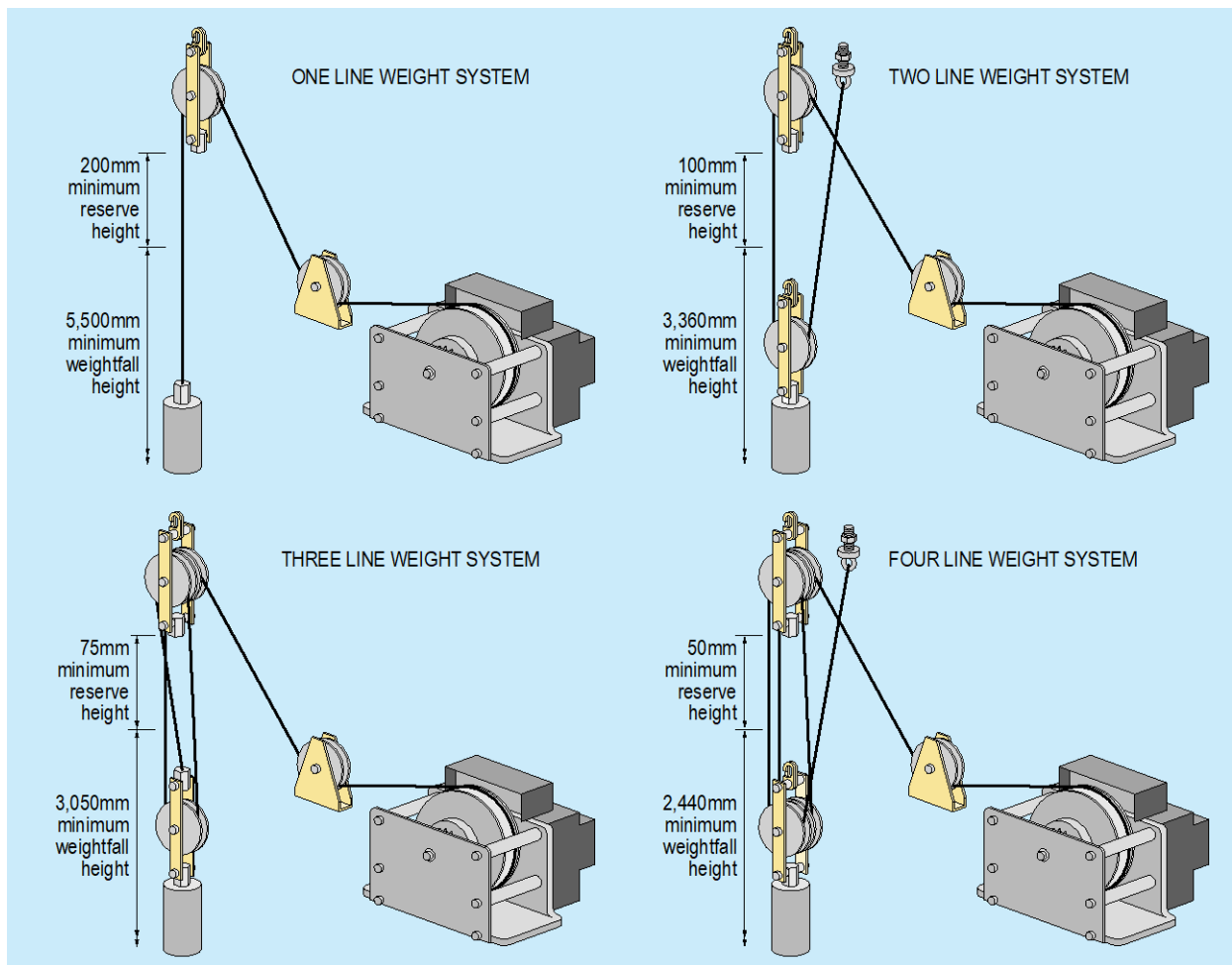
3.1 Clock and site conditions

- 3.1.1 Inspect clock movement for any maintenance problems.
- 3.1.2 Ask the client for their input on clock timekeeping and reliability.
- 3.1.3 Check the condition of the clock room and cabinet. Any ingress of dirt, water or evidence of pests must be rectified prior to AW11 installation.
- 3.1.4 Assess the likely location of the AW11 unit/s and their support frames.
- 3.1.5 Assess the likely run-off direction of weight cables and pulley locations.
- 3.1.6 Assess the location of the power supply cabinet.
- 3.1.7 Check the presence of a reliable 230V 5A power supply and that it conforms to current electrical regulations.
- 3.1.8 Check that all the following voluntary, aesthetic and regulatory constraints can be met:
 - Not actually drilling into the clock, or altering its state or configuration.
 - Not interfering with the proper working of the clock.
 - Not removing some part of the clock to make space for the units.
 - Being able to maintain the clock without first having to remove the autowind units or supports.
 - Allowing adequate access to the units for set-up and maintenance purposes.
- 3.1.9 Whilst making a site survey, please refer to later chapters in this book.

3.2 Gear trains

- 3.2.1 Count the number of turns or parts of a turn each barrel takes to complete its longest operation
- 3.2.2 If a quarter chime barrel, note at the longest chime sequence.
- 3.2.3 If a strike barrel – note at 12 o'clock for the full 12 blows.
- 3.2.4 If a tune player barrel – note at the full length of the longest tune.
- 3.2.5 Accurately measure the diameter of the clock barrel at various angles at the point the sprocket ring gear is to fit.
- 3.2.6 Measure the space between the clock barrel and the nearest object above or below it to give a maximum size sprocket ring gear that may be fitted.

3.3 Weight system



3.2.7 The barrel of the AW11 units will wind 4m maximum of weight cable.

3.2.8 Maximum weight cable capacity of the AW11 barrel using standard 3mm diameter cable is ?laps:

- up to 9 full working laps
- plus 1 lap safety overwind.

3.2.9 If height is a limiting factor, weight cables may be run 2, 3 or 4-line as shown.

3.2.10 Changing a single line to run 2 line doubles the weight required, triples it for 3 line and quadruples it for 4 line.

3.2.11 **WARNING:** with the weight fully wound by the unit, there must still be a **MINIMUM RESERVE** height for the weight to continue upwards in case of a switch failure. **NOTE:** The dimensions show **MINIMUM** reserve heights