Fortress Interlocks

XMA Installation and Maintenance Instructions

XM

XMS

The **XMA** is an expansion module for use with the **mGard** Range that includes the **DM**, **XM**, and **BM** products. All **mGard** products are designed to work as modular, mechanical key exchange systems. These devices often form the link between isolation devices and access locks. A number of combinations of isolation / access keys are possible. This product is also available in full stainless steel (**XMSA**). **XM**, **DM** and **BM** installations may be surface or panel mounted using the optional M-BOB Adaptor. It follows that the **XMA** must be surface or panel mounted as per the existing installation.

The **XMA** is available with a choice of CL or ML lock mechanisms. All CL / ML locks can be supplied with stainless steel spring-loaded dustcovers and colour coding as optional extras. **XMSA** is available with a choice of CLS or MLS lock mechanisms. All CLS / MLS locks are supplied with stainless steel spring-loaded dustcovers as standard and colour coding as an optional extra.

IMPORTANT: This product is designed for use according to the installation and operating instructions enclosed. It must be installed by competent and qualified personnel who have read and understood the whole of this document prior to commencing installation. Any modification to, or deviation from these instructions invalidates all warranties. Fortress Interlocks Ltd accepts no liability whatsoever for any situation arising from misuse or mis-application of this product.

IF YOU HAVE ANY QUESTIONS OR QUERIES OF ANY NATURE WHATSOEVER PLEASE CONTACT THE SUPPLIER WHO WILL BE PLEASED TO ADVISE AND ASSIST.

XMA Construction
Body Housing: Die-cast zinc body with pearl bronze finish.
Internals: All stainless steel.
Lock Mechanism: CL / ML lock types are of die-cast zinc body with stainless steel contact surfaces.
Key: Stainless steel.
M-BOB: Die-cast zinc with pearl bronze finish.

XMSA Construction
Body Housing: Full stainless steel.
Internals: All stainless steel.
Lock Mechanism: CLS / MLS lock types are of all stainless steel.
Key: Stainless steel.

Functionality

Sequencing
The **mGard** system is extremely flexible in terms of its sequencing possibilities. Two basic types of operation are possible.

Sequential Operation
The key in any given module interacts only with module(s) immediately adjacent to it. This dictates the order in which keys are inserted and removed.

Non-Sequential Operation
Turning one key can free or trap a number of the keys in a group simultaneously. Therefore, the order in which keys are inserted or removed from the group is not always essential. However, all keys in a group must be either trapped or removed to allow the keys working against them to be freed or replaced.

The two types can be used separately or combined to create very complex key exchange systems.

The number of exchange sequences possible using the Fortress Patented Modular Key Exchange System is massive. Many combinations of sequential and Non-sequential sequences can be configured in the same product. On purchasing an **XMA** there are a variety of possible modifications to an existing installation that a customer may wish to make. These instructions aim to cover the most common ones but for more unusual sequences it may be necessary to seek advice from your supplier. It is not practicable to cover all permutations and combinations in this document.

Expansion of BM, BMS, DM and DMS Products:
Due to the complexity of these products, please contact your supplier about your specific require-ments.

Expansion of XM and XMS Products:

A maximum of 10 **XM** modules can ge joined to make an **XM** assembly. A maximum of 5 **XMS** modules can be joined to form an **XMS** assembly. If your application necessitates the joining of a number of modules that exceeds these limits, please contact your supplier for guidance.

Please refer to the diagram on the following page for guidance during this operation.

Adding an extra secondary key, (e.g. making a 1 in, 6 out into a 1 in, 7 out).

1.Ensure that the all necessary backup measures are in place to perform the role of the key exchange system whilst it is out of commission.
2.Remove the **XM** product that is to be extended from its mountings.

3.Ensure all secondary keys are present and trapped. Turn the unit upside down on a suitable working surface with the control (primary) key to the left and the secondary keys to the right.

4.To commence the extension of the **XM** assembly, first of all the end cover must be removed. For older **XM** products, it may be necessary to remove the M3 countersunk screw from the base of the assembly, far right. The use of this screw has now been discontinued.

5.For both **XM** and **XMS** products,remove the two cap head screws from the sides of the end module, far right.

6.Withdraw the end cover from the assembly by pulling to the right.

7.Now withdraw the small, stainless-steel trap-door from the final **XM** or **XMS** module by sliding it to the right. Ensure that the assembly is not righted whilst this cover plate is removed, otherwise the cam may fall out.

8.Note the type of cam in the end module that is now visible in the absence of the trap-door. Select the cam from the two different types supplied with the **XMA** module that matches the type in the assembled **XM** module. Do not remove the cam from the assembled **XM** module.

9.Note the position of the cam lobe in the assembled **XM** Module. Insert the matching cam into the new **XMA** module in exactly the same position as that seen in the assembled **XM** module. Remember that if the key is present in the assembled **XM** Module, then this should be reflected in the **XMA** module and vice versa.

10. With the **XMA** module now being an exact copy of the assembled **XM** module on the far right of the stack, the units can be re-assembled. Replace the stainless steel trap-door in the base of the assembled **XM** module by sliding it back in from the right.

11. Add the **XMA** module to the end of the stack by attaching it where the end cover was previously assembled. Insert the pozi-drive screw in the base of the **XM** module, where it overlaps the new **XMA** Module and loosely tighten. Now loosely tighten the two cap head screws in the sides of the module. Fully tighten the pozi-drive screw followed by the cap head screws to secure the **XMA** module to the pre-existing one.

12. Slide the supplied stainless steel trap-door into the base of the **XMA** module and attach the end cover to it, securing with one cap head screw in each side of the module.

13. Check that the extended assembly provides the desired functionality, with reference to the detailed mechanical function test description in the commisioning section of this document. It is most important to ensure that the primary/control key can not be removed without the presence of all secondary keys and that none of the secondary keys can be removed unless the primary/control key(s) is inserted and turned. Please note that it is normal not to use all the parts supplied with the **XMA** module.

14. If all safety checks are successful, the product can now be remounted. Additional fixing holes will be necessary, as the new **XMA** module should have its own set of fixings.

Adding an extra primary key, (e.g. making a 1 in, 6 out into a 2 in, 6 out).

Follow steps 1-3 of the procedure for adding an extra secondary key.
1.To commence the extension of the **XM** assembly, the stack must be split at the joint between the last primary module and first secondary module. Normally there is only one primary module so this split is likely to be after the first module on the left. The position of this split is easily recognised since all secondary modules should have keys in, whilst primary modules have not.

Remove the relevant M3 pozi-drive countersunk screw from the stated joint on base of the assem-bly. Now remove the two cap-head screws from the sides of the module on the same joint and pull the modules apart. If it is not possible to separate the modules after following this procedure, the product is configured with a non-standard sequence. Please contact your supplier for further guidance on your specific key exchange sequence.

2.The assembly is now split into primary and secondary sections. Working on the primary section of the assembly, withdraw the small, stainless-steel trap-door from the floor of the primary module by sliding it toward the exposed end. Ensure that the assembly is not righted whilst this cover plate is removed, otherwise the cam may fall out.

3.Note the type of cam in the module that is now visible in the absence of the trap-door. Select the cam from the two different types supplied with the **XMA** module that matches the type in the assembled **XM** module. Do not remove the cam from the assembled **XM** module.

4.Note the position of the cam lobe in the assembled **XM** Module. Insert the matching cam into the new **XMA** module in exactly the same position as that seen in the assembled **XM** module. Remember that if the key is not present in the assembled **XM** Module, then this should be reflected in the **XMA** module and vice versa.

5.With the **XMA** module now being an exact copy of the assembled **XM** module, the units can be re-assembled. Replace the stainless steel trap-door in the base of the original **XM** module by sliding it back in from the open end.

6.Attach the new **XMA** module by slotting it into the end where the trap-door has just been fed in. Insert the pozi-drive screw in the base of the **XM** module, where it overlaps the new **XMA** Module and loosely tighten. Now loosely tighten the two cap head screws in the sides of the module. Fully tighten the pozi-drive screw followed by the cap head screws to secure the **XMA** module to the pre-existing one.

7.Slide the supplied stainless steel trap-door into the base of the new **XMA** module.

8.Now connect the secondary modules on to the back of the newly added **XMA** module. Follow the previous procedure, fitting the countersunk screw first followed by two cap head screws.

Follow steps 13 onwards of the procedure for adding an extra secondary key.

Mounting
Tools and Fixings Required
2 off Cap head / hexagonal head bolts for each module.
Front of Board mounting:
M6 x 25 or ¼" x 1"
Back of Board mounting:
M6 x 55 or ¼" x 2¼"
Suitable driver for above.

If using through holes:
•1 off Drill Ø6.5 (or Ø5/16").
•2 off M6 (or ¼") Full nuts per module.
If using threaded holes:
•1 off Drill Ø5 (or Pilot Drill for chosen ¼" Thread).
•1 off M6 (or ¼") Tap and wrench

Mount this unit well away from sources of vibration or use anti-vibration mountings in order to avoid the effects of vibration, shock and bump. Mount the unit only in its correctly assembled condition to flat steel plate of minimum thickness 3.0mm or 6.0mm if aluminium. **XM/XMS** can be mounted in any orientation, observing the following rules:

1.Locate the unit so that all the locks are within easy reach.
2.Mount the unit to the panel using the chosen fixings.
3.Tighten the fixings to a Torque of 8 to 10Nm (5.9 to 7.4 lbf.ft)
4.All fixing screws must be permanently prevented from removal, either by vibration or by personnel using standard tools.

All fixings must be used.

Commissioning
Mechanical Function Test
Assuming Standard Sequencing:
1.Start with the primary key(s) inserted and turned fully clock wise.
2.Remove the first secondary key.
3.Check that the primary key remains trapped in position.
4.Remove the remaining secondary key(s)
5.Check that the primary key is trapped in position upon removal of each secondary key.
6.Insert and turn all of the secondary key(s)
7.Check that the primary key(s) can only be removed when all the secondary key(s) are inserted.
8.Check that the secondary key(s) can not be removed once the primary key(s) have been removed.

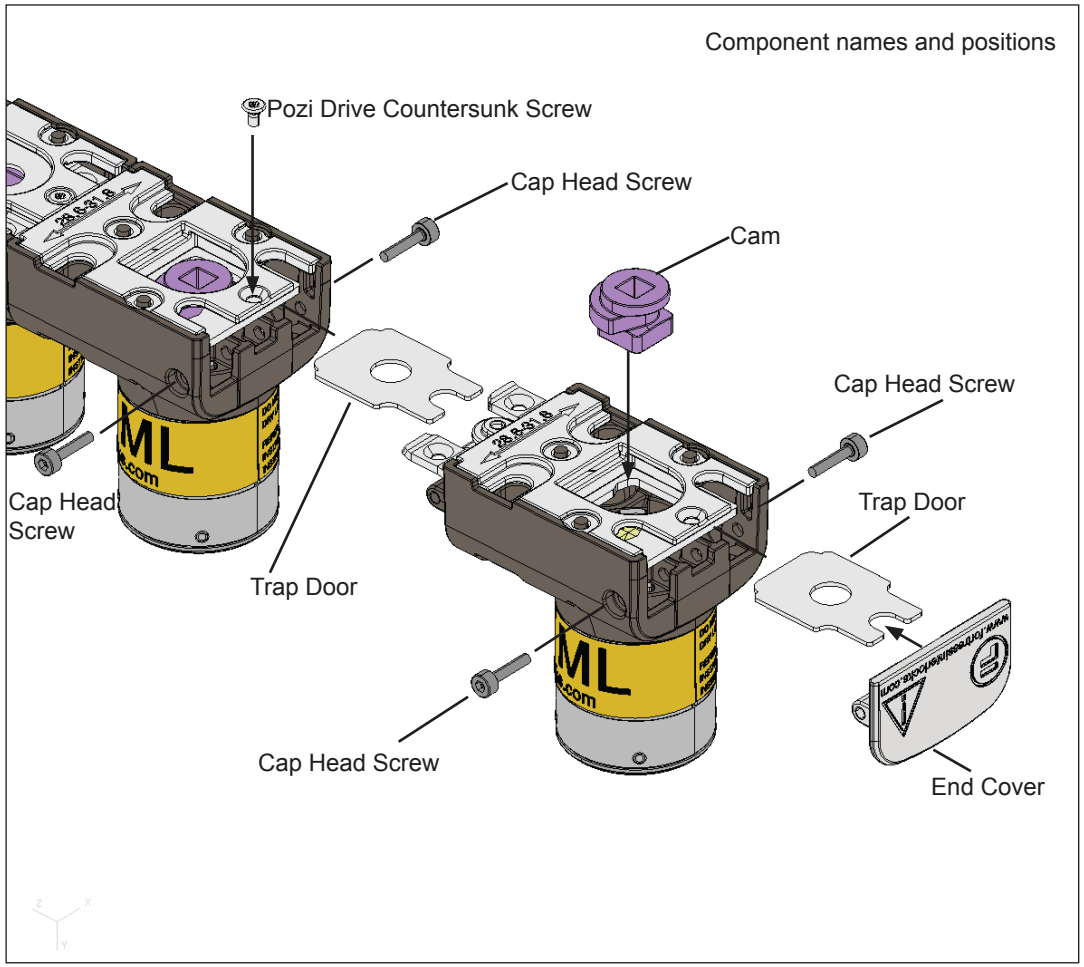
Service and Inspection
Regular weekly inspection of the following is necessary to ensure trouble-free, lasting operation:
1.Secure mounting of components.
2.Debris and wear.
3.All locks should be lubricated with WD40.

There are no user serviceable parts in an **XMA/XMSA** module. If damage or wear is found, the whole module must be replaced.

Disposal
The **XMA/XMSA** does not contain any certified hazardous materials so should be disposed of as industrial waste.

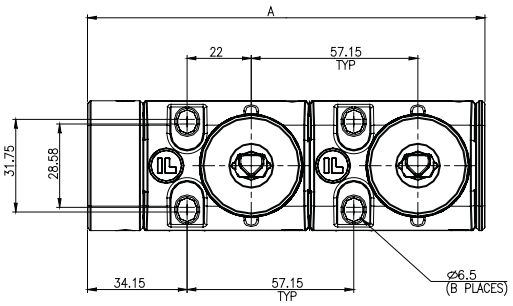
Liability coverage is voided under the following conditions:

1.If these instructions are not followed.
2.Non-compliance with safety regulations.
3.Installation not performed by authorised personnel.
4.Non-implementation of functional checks.

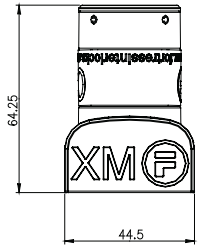


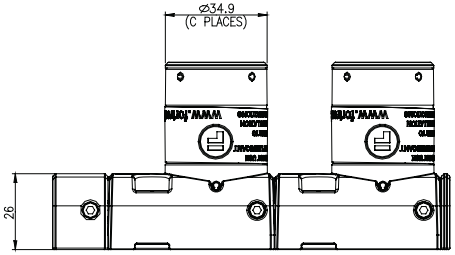
XM Drawing

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
XM2	136.3	4	2
XM3	193.45	6	3
XM4	250.6	8	4
XM5	307.75	10	5
XM6	364.9	12	6
XM7	422.05	14	7
XM8	479.2	16	8
XM9	536.35	18	9
XM10	593.5	20	10



ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES





Part Numbering

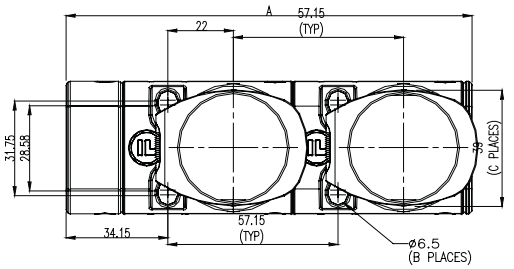
The **XM** uses a logical part numbering system:-
Example: XM3-CLIS

XM: Generic Product Type (E**x**change **M**odule)
3: Number of CL/ML Lock (**2** to **10**) or **A** for Add-On Module to convert a DM/BM to an XM.
- *Separator.*
CL: Lock Type (**CL** / **ML**)
I: Stainless Steel CL / ML **I**nternals
S: Dustcover Option (**S** for Stainless Steel or **N** for no dust cover)

M-BOB: Back of Board Mounting Adaptor

XMS Drawing

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CLS LOCKS
XMS2	136.3	4	2
XMS3	193.45	6	3
XMS4	250.6	8	4
XMS5	307.75	10	5



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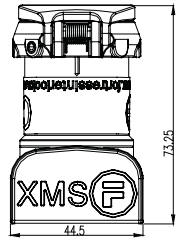

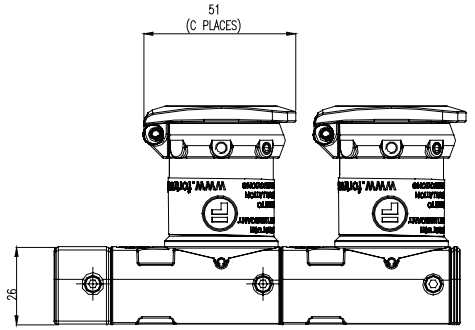

Part Numbering

The **XMS** uses a logical part numbering system:-
Example: XMS4-MLSS

XMS: Generic Product Type (E**x**change **M**odule **S**tainless Steel)
4: Number of CL/ML Lock (**2** to **10**) or **A** for Add-On Module to convert a DM/BM to an XMS.
- *Separator.*
ML: Lock Type (**CLS** / **MLS**)
S: Full **S**tainless Steel CLS / MLS
S: **S**tainless Steel Dustcover as standard.

M-BOB: Back of Board Mounting Adaptor