



Practical Practices PP02-04K

Working with the XV Control System

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September of 2004 marked the two-year anniversary of the XV™ Control System. Thanks to all of you who have used and embraced the XV as your controller of choice for pre-engineered systems.

The two-year anniversary provides us an opportunity to review aspects of setting up the XV Control System. Please include this document in each installer's and service technician's library of technical documentation. This document does not replace the addenda and information in the Design, Installation, Operation and Maintenance (DIOM) Manuals for the Kidde Pre-engineered Systems. Please see DIOM Manuals, **220423** for industrial dry chemical; **83-100036-001** for Automotive Paint Booths and **87-122000-001** for commercial kitchen (wet chemical) systems.

With the introduction of the XV Control System, Kidde Fire Systems launched a dual-detection line controller for pre-engineered systems. The availability of two lines can often help in the design and installation of a system that utilizes mechanical detection (thermo-bulb links and fusible links); however, often, only one mechanical detection line is required.

In addition, the XV Control System can be released electrically and manually. The electrical actuation can be installed in addition to the mechanical detection, or it can be installed **instead** of the mechanical detection.

This document will focus on cabling and setting the XV Control System. Future documents will supply additional information on working with the XV.

Working with the XV Control System

The XV provides two mechanical detection lines. Both lines are spring loaded, providing tension on a cable that goes into and through the protected area. Kidde Thermo-bulb links (KG series) or fusible links are available in a variety of fixed temperatures and response times.

The links, being under tension, separate when the fixed temperature is reached or exceeded, allowing the spring(s) in the XV to pull the cable through the conduit and corner pulleys, releasing the system.

The required cable is "7 X 7" stranded, 1/16-inch diameter cable, Kidde part number **219649**. This is a spool of 500 feet. Use only Kidde crimps, part number 214951. The crimps are available in packages of 50 each, part number **60-9197288-000**. Use only Kidde Positive Action Crimp Tool, part number **253538**. See Bulletin 03-64K and the associated document, "Crimping Cable with Kidde Cable Crimp Tools" for the proper cable crimping technique.

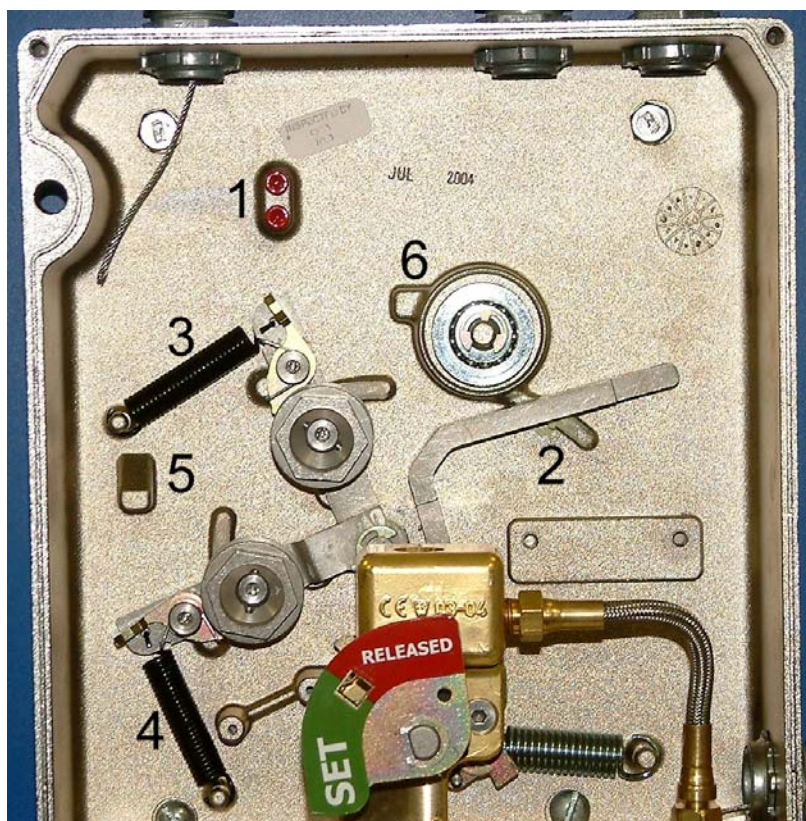


Figure 1. XV in Released Position

1.	Lockout screws in storage pad
2.	Latch
3.	Spring and beam for Detection Line 2
4.	Spring and beam for Detection Line 1
5.	Stop for Detection Line 1
6.	Stop for Detection Line 2

In Figure 1, no detection lines are attached to the detection beams. Both beams (3, 4) are in the released position, engaging the latch (2). The detection line springs are painted black for the purpose of this document.

Note: The latch (2) is not a set/reset tool. Attempting to set the detection beams (3, 4) with the latch can cause damage to the latch or to the latch post.

Detection lines must be cabled in and set (ratcheted) or locked out in order to set the XV and insert the cartridge (not shown).



Figure 2. Photograph of XV in Set Position.

1.	Lockout screws in storage pad	4a	Spool / crimp for Detection Line 1
2.	Latch	5.	Stop for Detection Line 1
3.	Spring and beam for Detection Line 2	6.	Stop for Detection Line 2
3a.	Spool / crimp for Detection Line 2	7.	Lockout pad for Detection Line 1
4.	Spring and beam for Detection Line 1	8.	Lockout pad for Detection Line 2

Cable crimps in centers of spools (4a and 4b) have no pigtails or loops. Beams (3 and 4) are in contact with the stops (5 and 6). Detection lines are attached to both of the detection beams (3 and 4) and the lines are ratcheted up. Ratcheting the detection lines allows the latch (2) to swing into the horizontal position.

Note: The latch (2) is not a set/reset tool. Attempting to set the detection beams with the latch can cause damage to the latch or to the latch post.

When the system is armed, Latch (2) is **horizontal**.

Locking Out A Detection Line

For many pre-engineered systems, only one mechanical detection line is required. When only one detection line is required, the installer must decide which of the lines will be used and which will remain unused. The unused detection line must be locked out. Figure 7 shows a system in which Detection Line 2 is utilized and Detection Line 1 is locked out.



Figure 3. XV With Detection Line 1 Locked Out

System cam/flag is not armed

1.	Lockout screw storage pad (1 lockout screw removed)
2.	Latch
3.	Spring and beam for Detection Line 2 (set with cable)
3a.	Spring Post for Detection Line 2
4.	Spring and beam for Detection Line 1 (locked out)
4a.	Spring Post for Detection Line 1 (spring removed)
5.	Beam stop for Detection Line 1
6.	Beam stop for Detection Line 2
7.	Lockout pad for Detection Line 1 (lockout screw inserted)
8.	Lockout pad for Detection Line 2 (not used, line set)

1. Ensure that nothing is armed or set in the XV. See Figure 1.
2. Decide which of the detection lines will be used. For this example, Detection Line 2 will be employed and Detection Line 1 will be locked out.
3. With the XV completely disarmed, remove the spring from its respective post (in this example, 4a [detection line 1]). It is permissible to remove the spring from the detection beam.
4. Push the detection beam (4) against its respective beam stop (5).
5. Using a 9/64 allen key (hex) remove one of the lockout screws from storage pad (1) and carefully thread into lockout pad (7).

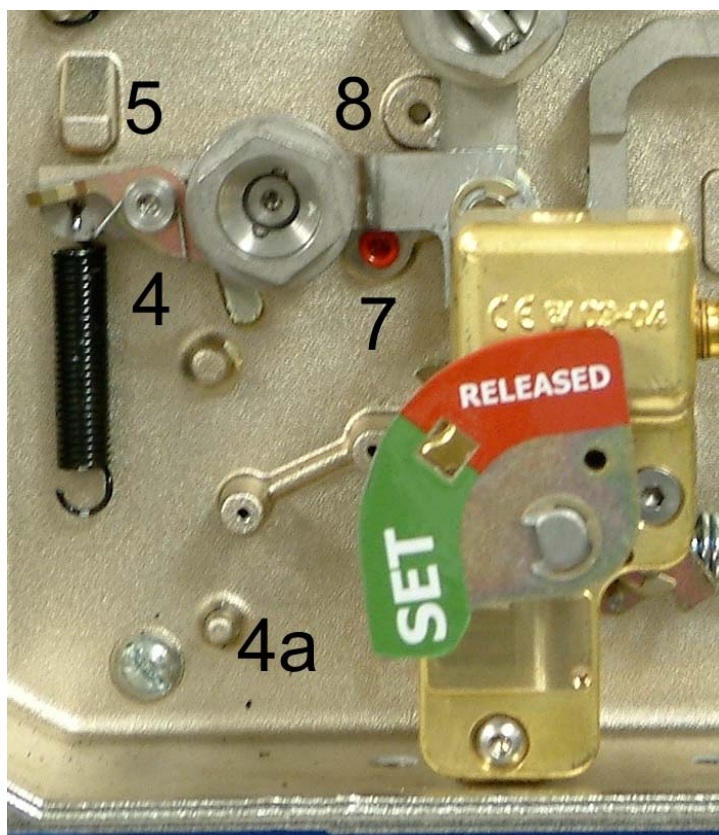


Figure 4. Closeup of Locked Out Detection Line 1.

See also Figure 3

To lock out Detection Line 2, use the same procedure but substitute appropriate devices and locations.

Note: Never lock out a detection line that is being used in a fire protection system. Refer to the appropriate DIOMs for instructions on disabling the system for service, repair and maintenance.

Cabling In The Pull-To-Trip Remote Manual Release

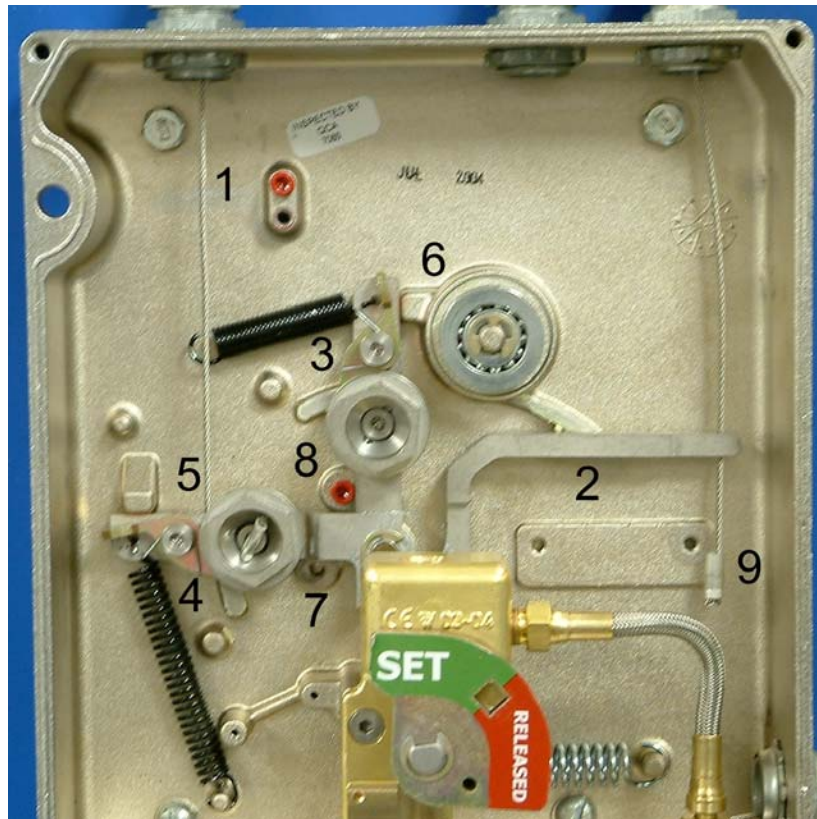


Figure 5. XV With Remote Manual Release Cabled In

XV configured with Detection Line 2 locked out

System cam/flag in **armed** position

1.	Lockout screw storage pad
2.	Latch
3.	Spring and beam for Detection Line 2 (locked out)
4.	Spring and beam for Detection Line 1 (set with cable)
5.	Beam stop for Detection Line 1
6.	Beam stop for Detection Line 2
7.	Lockout pad for Detection Line 1 (not used, line set)
8.	Lockout pad for Detection Line 2 (lockout screw inserted)
9.	Remote Manual Release Cable and crimp through latch (2)

Ensure that the cable crimp for the remote manual release is 1/2-inch below the latch (2) when latch is **horizontal** (set). No loops or pigtails on the cable/crimp.

Things to watch for when working on cabling the XV Control System

There are two sets of engaging mechanisms in the XV. The latch has a post that is engaged by the trigger/cam/flag assembly. This is what keeps the cam/flag armed.

The detection beams interact with the latch via cam surfaces. When the detection beam is released, it pushes on the latch. The post on the latch swings away from the trigger, releasing the cam/flag. The cam pushes the puncture pin into the cartridge releasing the nitrogen into the actuation lines, thereby activating the agent cylinders.

The engagement of either detection beam and the latch is immediate. Any movement will push on the latch. This can result in partial engagement of the trigger and latch-post. This might allow the release of the system when uncalled for.



Figure 6. Latch Slightly Moved (not horizontal)

In this photograph, the latch is not horizontal. Yet, the system is armed. With the latch in this position, shock or vibration could cause an unwanted release of the system.

Note that the cable/crimp for the remote manual release is against the latch. The latch can also be pushed by a detection beam that is improperly set.

1. Ensure that remote manual release cable is at 3/8 to 1/2 inch below the latch.

2. Ensure that the latch is horizontal.
3. If the latch cannot be set into the horizontal position, check to ensure that the detection beams are in contact with their respective posts.

A detection beam that is locked out (disarmed) may have a little play. It might be necessary to rotate the cam/flag clockwise so that the latch can fall into place.

Reviewing the Cabling of the XV Control System

1. When locking out a line (disarmed) **remove** the spring from its respective post before attempting to lock it out.
2. **Never** attempt to use the latch as a setting or arming mechanism for the XV Control System.
3. When ratcheting up the XV, ensure that the detection beam(s) is in contact with its respective stop. **Do not overtighten.**
4. When cabling in the remote manual release, ensure there is 3/8 to 1/2 inch of cable between the horizontal latch and the crimp. Also make sure there are no pigtails or loops. If the detection beam relaxes slightly and moves off of the beam stop, ratchet one click at a time until it remains in contact.
5. Double-check the beams and ensure they are in contact with the stops.
6. Double-check the latch to ensure it is horizontal. If the detection beams are properly set and the remote release is properly cabled, the latch should be horizontal. If it is not, carefully rotate the flag clockwise. That will allow the latch to drop into its proper place.

Following the instructions in the DIOMs and respective addenda will be very helpful in the consistent installation and implementation of the XV Control System.



Ordering information

Part Number	Description
87-120099-001	XV Control System Includes: (1) 87-120042-001 SVA (1) 87-120044-001 Test Cartridge (2) 87-120039-001 Microswitch Kit (1) 87-120043-001 System Cartridge (1) 87-120058-001 EMT Connector Kit
87-120045-001	High Pressure Hose (Required for cylinder mounted Control System)
87-120042-001	System Valve Actuator (SVA)
83-100034-001	Electric Actuator Kit, 24 VDC
87-120039-001	Microswitch Kit, SPDT
87-140047-001	Alarm / Release Microswitch Kit, SPDT
60-9197288-000	Cable Crimps, Package of 50 of part number 214951
219649	Cable, 7 x 7 strand, 1/16 diameter, 500 feet
253538	Positive Action Crimp Tool
87-120058-001	EMT Connector Kit (three adapters and O rings)
87-120043-001	System Cartridge
87-120044-001	Functional and Leak Test Cartridge (not for discharging cylinders or operating Actuation Delay)
83-100035-001	Actuation Delay, required for Automotive Paint Booths (ships with 87-120045-001 high pressure hose)
87-122000-001	DIOM for WHDR Commercial Kitchen Systems
220423	DIOM for Industrial Dry Chemical Systems
83-100036-001	DIOM for Automotive Paint Booth Protection