AMTRON
VALVE MONITORING DEVICE

OUTSIDE SCREW & YOKE (OS&Y) GATE VALVE INSTALLATION

Kit Contents
1 x Amtron Valve Monitor
2 x 1/8" (3.175mm) Stainless Steel U Drive Pins
1 x 5/32" x 13/64" (4mm x 5mm) Samarium Magnet &
1 x Brass Shroud 25/64" x 13/64" (10mm x 5mm) or
1 x 15/64" x 25/64" (6mm x 10mm) Ferrite Magnet
2 x Right Angle Side Brackets
1 x Amtron Drilling Template
1 x AVMD Fitting and Wiring Instruction.

Tools Required
1 x Electric Drill
1/8" (3.175mm) Twist Drill Bit
5/32" (4mm) Twist Drill Bit
25/64" (10mm) Twist Drill Bit
Hammer
Centre Punch
1" x 12" Length of 80 grip Emery Cloth
Multigrips
Permanent Marker
Screwdriver (Phillips Head)
1 x Ohm Meter, Continuity Meter or Multi-Meter
1 x Cyanoacrylate Glue (Super Glue)
NB: For Stainless Steel Magnetic Spindles 1 x 5/16" (8mm) Twist Drill Bit.

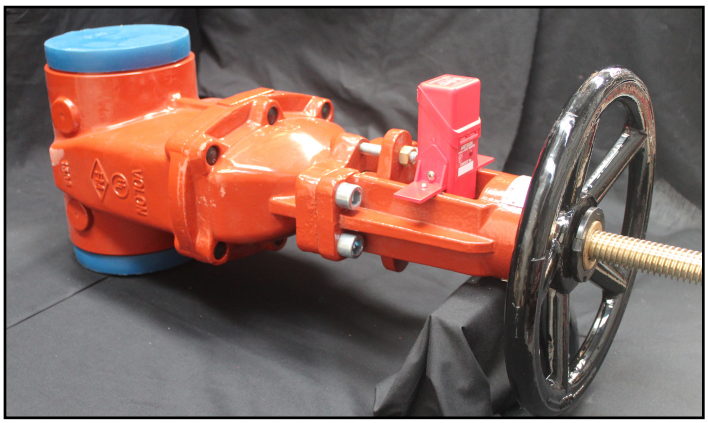

Fig 1: Amtron monitor mounted onto OS&Y (gate) valve

CAUTION

Before carrying out any work on the fire sprinkler or alarm system obtain authorisation from the building owner or representative that the opening or closure of the valve will not cause any flooding or other damage from water flow.

DETERMINE SPINDLE MAGNETISM

1. Check if the valve spindle is magnetic or non magnetic by touching the supplied magnet to the valve spindle. If the magnet is attracted to the spindle it is magnetic, therefore, please follow the "install magnet into MAGNETIC spindles" instructions on pg 3. If spindle is not magnetic, continue to step 2.

INSTALL MAGNET INTO NON MAGNETIC SPINDLES

2. Rotate the handle to completely open the valve. Close valve ¼ of a turn.
3. By grasping the end of the spindle with multi grips rotate the spindle to its maximum point in the clockwise direction.
4. Vertically mark the centreline of the valve spindle in permanent marker midway between the packing gland and the underside of the handle (above pre existing groove on some OS&Y valves). *Refer to fig 2.*
5. By grasping the end of the spindle with multi grips rotate the spindle to its maximum point in the anti-clockwise direction. Again vertically mark the centreline of the spindle in permanent marker.
6. With permanent marker centre point between the two vertical lines on the spindle – this is the *Magnet Location Point.*
7. Fully open valve and check the *Magnet Location Point* is central on the spindle.

NOTE

Installation must be performed in according to all applicable local and national standards including the NFPA 72 & 70 by suitably qualified personnel.

The Amtron VMD must be installed and maintained for OS&Y valves in compliance with this document and all local and national standards. Please read all instructions carefully before installation.

Local environmental, service and installation conditions can significantly reduce the service life of the Amtron VMD at the responsibility of end user or installation contractor.

Maintenance and proper operation condition of the Fire Protection System and Amtron devices is the responsibility of the owner.

The supplied magnet must be embedded in the spindle of a valve in strict conformance with the supplied installation instructions

Magnet Location Point

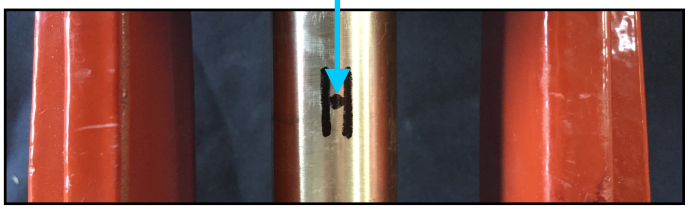

Fig 2: Two vertical markings on spindle with Magnet Location Point between the two.

8. Position the central hole in the provided Amtron Drilling Template over the *Magnet Location Point* on the valve spindle. Ensure the template is square at right angles to the spindle.
9. To locate side bracket points mark four horizontal lines on the yoke along the top and bottom edges of the drilling template as seen in Fig 3 (BLUE LINES). Remove template.

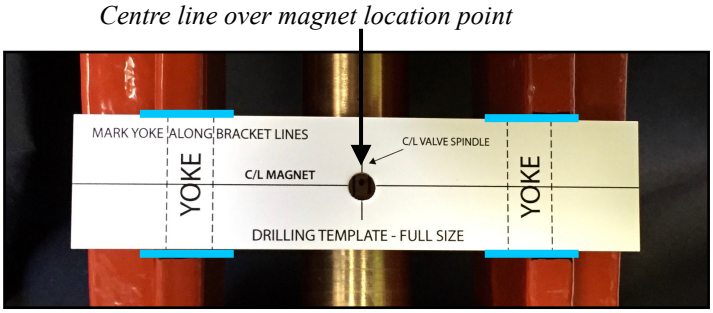

Fig 3: Mark bracket lines in permanent marker on both yokes as seen in BLUE

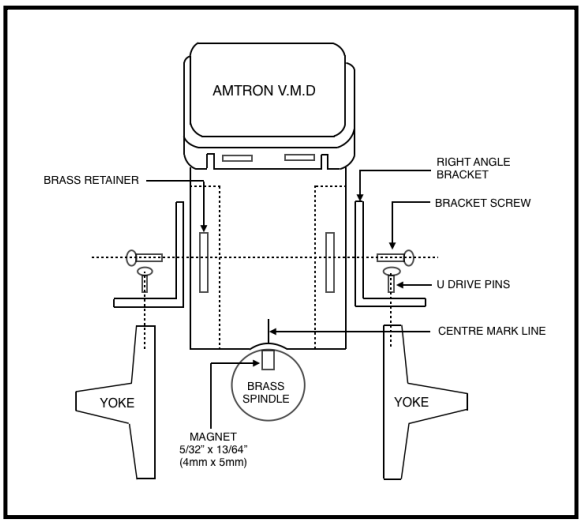

Fig 4: Amtron VMD components for OS&Y installations

10. Centre punch the *Magnet Location Point*; create a large enough dimple to guide the tip of the drill and prevent the drill tip from wandering.
11. Using a 5/32" (4mm) drill bit, drill a hole in the valve spindle to the magnet depth 19/64" (7.5mm) & clean off burrs with emery cloth. N.B: For MAGNETIC spindles please follow "install magnet into MAGNETIC spindles" on pg. 3
12. DO NOT USE GLUE YET. Insert magnet in spindle hole. To prevent the magnet fouling on the packing material **ensure magnet falls 3/64" (1mm) below spindle surface**. Remove the magnet.
13. Place a few drops of super glue (cyanoacrylate glue) into the magnet location hole, insert the magnet in the hole ensuring YELLOW DOT FACING UP (PROXIMAL). Clean off excess glue with emery.

INSTALL MONITOR ONTO VALVE

14. Attach right angle side brackets to valve monitor.
15. Position monitor over the spindle by aligning the right angle side brackets with the prior made lines in permanent marker on the yoke. Ensure the bottom of the monitor is just touching the valve spindle, it may be necessary to loosen the side bracket screws to slide the monitor body until it falls on the spindle. Ensure the Amtron monitor is sitting square. Tighten side bracket screws.
16. It is EXTREMELY important to ensure the valve monitor is located centrally over the spindle. The Amtron monitor has a centre-mark line and a curved recess on the base, when located correctly the recess will sit on the apex of the spindle and the centre-mark line will fall centrally on the spindle. *Refer to Fig 4.*
17. Drill a 1/8" (3mm) hole through the side bracket and make a small drill indentation into the valve yoke. Remove the monitor from the valve and drill down into the yoke to the depth of the provided U drive pins. Re align the monitor on the valve and secure monitor to yoke by partially hammering one U drive pin through the bracket hole.
18. Square up the unfixed right angle bracket to the markings on the yoke and drill through the bracket and the yoke to the depth of the U drive pins. Drive the U pins completely into the yoke by alternating hammer strikes on either drive pin.
19. TEST MONITOR FUNCTION. See "Testing instructions" on Pg. 3.
20. PHYSICAL INSTALLATION COMPLETE continue to "Environmental Recommendations" on Pg. 3 & "Wiring Access & Termination" on Pg. 4.

Fig 5: Amtron VMD mounted onto OS&Y valve

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TESTING MONITOR FUNCTION AFTER INSTALLATION

ENSURE MONITOR LID IS ON, OTHERWISE MONITOR IS IN ALARM MODE
DO NOT MEGGER

Normally OPEN function

1. Using a multimeter set to OHMs, Connect the red wire (C-) from the monitor to the positive connection of the multimeter, and the white wire (NO+) from the monitor to the negative connection of the multimeter.
2. When closing and then reopening the valve your multimeter should change reading from; a reading of infinity to short circuit as the valve is CLOSED, and back to infinity as you OPEN the valve.

SPECIAL APPLICATION: INSTALL MAGNET INTO MAGNETIC SPINDLES

In order to ensure the correct function of the monitor with magnetic spindles one needs to encase the magnet in the provided brass shroud. This prevents the loss of the magnetism into the spindle.

1. Complete steps 2-10 of the "Install magnet into Non Magnetic Spindles" instructions.
2. Using a 5/32" (4mm) drill bit, drill a hole in the valve spindle to the magnet depth 19/64" (7.5mm) & clean off burrs with emery cloth.
3. Using a 5/16" (8mm) drill bit, widen the 4mm hole in the valve spindle. Do not drill deeper than the prior made depth of 19/64" (7.5mm). Clean off burrs with emery cloth.
3. Coat internal surface of the provided brass shroud with super glue (cyanoacrylate glue), quickly insert magnet YELLOW DOT FACING UP (PROXIMAL) into brass shroud and hold for a few seconds to allow glue to set.
4. **DO NOT use super glue in spindle hole yet.** Insert magnet & shroud into drilled spindle hole. To prevent the magnet fouling on the packing material **ensure magnet falls 3/64" (1mm) below spindle surface**. Remove the magnet.
5. Half fill hole with super glue (cyanoacrylate glue), insert the magnet in the hole ensuring YELLOW DOT FACING UP (PROXIMAL). Clean off excess glue with emery.
6. Continue to the "Install Monitor onto Valve" section from step 14.

ENVIRONMENTAL RECOMMENDATIONS

The Amtron Valve Monitoring Device housing is both NEMA 4X (IP65) & NEMA 6P (IP67) rated and capable, however, suitable conduit and cabling is required. Failure to install according to the following recommendations may cause water ingress damaging to the internal components resulting valve monitoring malfunction and voiding Amtron VMD product warranty.

NEMA 4X: To protect the internal electrical elements of the monitor from water or dust ingress (NEMA 4X & IP 65 rating) the wire access point MUST be thoroughly sealed with either one of the following:
1: a weatherproof electrical conduit fit onto a conduit connector with a waterproof sealant (must adhere to cables, conduit & conduit connector) fully sealing off the wire access point. A drain hole is also to be made in the conduit at a level lower than the wire access point to allow water drain off.
2: an IP65 approved gland connected to the monitor housing.

NEMA 6P: NEMA 6P or IP67 rating: These ratings can only be achieved through the installation of the (SPECIAL ORDER) Amtron VMD 502X-IP67, 501X-IP67, 505X-IP67 or 514X-IP67 models which come supplied with NEMA 6P (IP67) rated conduit and cabling, and the internals of the monitor fully sealed to prevent any water (up to 1 m fully submerged) or dust ingress. To further enhance thread seal, apply teflon tape to male thread of wire access point.

TEMPERATURE: -10°C (14°F) to 55°C (131°F)
RELATIVE HUMIDITY: 5-95% Non Condensing

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ELECTRICAL WIRING ACCESS AND TERMINATION

Dry contact switching (N/O, C):	Model 501X / 505X	NO POWER REQUIRED TO OPERATE MONITOR
LED version (current switching):	Model 502X / 514X	FIP POWER REQUIRED FOR LED CIRCUIT ONLY

501X & 502X provide Class A Security (AS4118.1.4, AS2118.1 & AS2419.1) / Enhanced Security (FM 3135)
505X & 514X provide Class B Security (AS2118.1 & AS2419.1) / Standard Security (FM 3135)

- The Amtron Anti Tamper Valve Monitors have a common case design across the models range, however, wiring and terminations vary between the models.
- LED models (502X & 514X) are supplied as a dry contact (NON-LED) model - No power needed to drive monitoring. To ACTIVATE THE LED - Cut the LED circuit link on top of the black compound within the Amtron Valve Monitoring Device. See Fig 6.
- Dry contact switching models are intended for switching a maximum of 200mA at 30V DC - 21V DC voltage.
- LED models connect to a Fire Indicator Panel in exactly the same way as a two-wire smoke or heat detector.
- Terminal connections are made as follows: panel + = NO+ & panel - = C-.
- If panel alarm is ON yet NO LED illuminated on the monitor check link is cut and also reverse the polarity of the wiring to the monitor.
- In an alarm state both the Fire Indication Panel (FIP) and the LED on the individual activated monitor, will latch up and the alarm can only be reset at the FIP once the valve is fully open.
- Supplied terminal set up wires are only for monitor function testing and are replaced with fire panel connections.

Note: AS4118 Appendix 4 (d) (iii) states that a disconnection from the Fire Alarm Panel, or, EOL resistance substation should initiate an alarm thus the Amtron VMD & Fire Alarm Panel must to be programmed to activate an alarm by the installer.

NOTICE

DO NOT MEGGER
ENSURE THE LID IS FIRMLY ON MONITOR BODY: OTHERWISE THE MONITOR IS IN ALARM

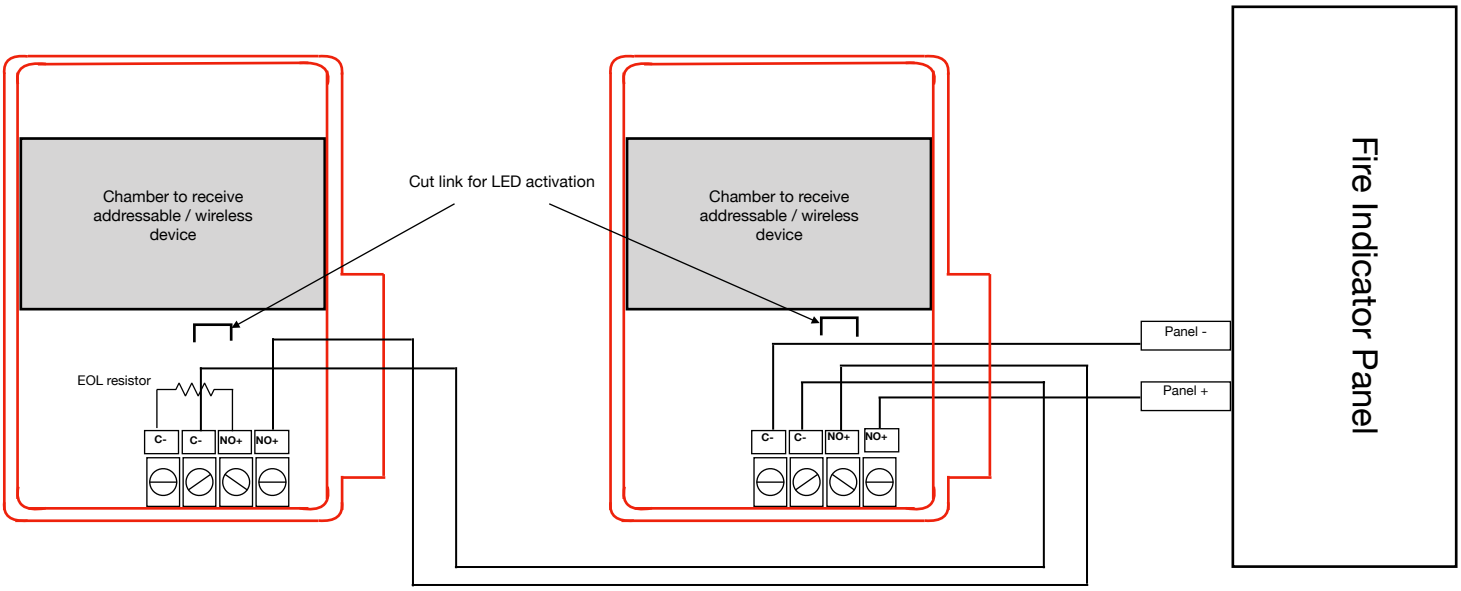

Fig 6: Electrical Wiring for Amtron LED indicating valve monitor models 502X & 514X.

NOTICE

Connections and conduit must be suitably selected for the environment for which the Amtron VMD is to be used in. Installation must be according to the manufacturers fitting instructions, environmental recommendations and all local and national standards by appropriately qualified personal. Amtron VMD takes no responsibility for installation and/or wiring.