



Smart Hydrant Solutions

INSTALLATION INSTRUCTIONS

PRIOR-TO FIELD WORK

- Access to the Sentryx website is required to complete this installation. If you do not have a user account or cannot log in, please contact your site administrator. [Alerts from the Sentryx platform will be provided for coverage strength feedback in the "Field Work" section. To receive alerts, you need to create a Sentryx account (with current email address and cell number provided), select email and/or text alerts, and bring an electronic device to receive these alerts into the field.]

FIELD WORK

For Retrofit Kit

- Signal Strength:
 - Prior to disassembly of installed hydrant, confirm cell coverage at site of installation.
 - Ensure the hydrant is depressurized. Remove pumper cap and install new pumper cap assembly on the pumper nozzle.
 - Open the Sentryx application and log in.
 - Hold the phone close to the Pumper Cap. (See image)
 - If the pumper cap assembly does not establish a connection (i.e. no Sentryx alert is provided within 5 minutes), select a different location.
 - Once a connection is established, the Sentryx platform will send out an email and/or text message (Depending on initial configuration) displaying the signal strength.
 - If message indicates a strong signal and proper cap orientation, proceed through instructions below.

CAUTION

COMPLY WITH ALL REQUIRED INDUSTRY, SITE, STATE, AND FEDERAL SAFETY REQUIREMENTS
DO NOT DROP NEW HYDRANT LOWER STEM OR NEW PUMPER CAP ASSEMBLY. DAMAGE MAY OCCUR.

THE ANTENNA ON THE STEM CAN BE DAMAGED BY A FORCEFUL IMPACT FROM A SEAT WRENCH – UTILIZE CARE.

Smart Hydrant Solutions
IS DESIGNED TO WORK WITH MUELLER OEM PARTS ONLY.



Note: Caution: Changes or modifications not expressly approved by Mueller Systems, LLC could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Model: Gateway Generation 4 - (FCC ID: SM6-SH-GW-V4) (IC ID: 9235A-SHGWW4)

Model: Stem Generation 4 - (FCC ID: SM6-SH-SEN-V4) (IC ID: 9235A-SHSENV4)




For complete Smart Hydrant Solutions It is just as important to confirm the location's signal strength prior to installing a complete Smart Hydrant Solutions Super Centurion. However, the Pumper Cap Assembly will already be installed on the hydrant.

HYDRANTFLUSHING

- Depending on the location of the hydrant, conditions of piping, hydrant lateral, etc. prior to depressurization it is recommended to flush the hydrant until water is clear prior to the insertion of Smart Hydrant.

DE-PRESSURIZATION OF HYDRANT

**WARNING**

DO NOT REMOVE ANY BOLT(S) HOLDING THE HYDRANT TOGETHER BEFORE THE HYDRANT IS DE-PRESSURIZED.

DISASSEMBLY OF HYDRANT WITH PRESSURIZED WATER ACTING AGAINST THE MAIN VALVE COULD RESULT IN EJECTION OF HYDRANT PARTS AND DEBRIS, HIGH-PRESSURE WATER STREAM, OR OTHER DANGEROUS CONDITIONS THAT COULD CAUSE SERIOUS BODILY INJURY OR DEATH.

FOLLOW ALL COMPANY POLICIES AND OSHA REQUIREMENTS FOR LOCK-OUT/TAG OUT TO ENSURE THE HYDRANT IS DEPRESSURIZED BEFORE DISASSEMBLY AND DOES NOT INADVERTENTLY GET REPRESSURIZED.

1. Before removing any bolt(s) holding hydrant together, shut off the appropriate gate or isolation valve(s) to isolate hydrant from main water source.
2. Loosen – BUT DO NOT REMOVE – one nozzle cap two turns and check for water under pressure inside the hydrant – bleed off any pressure, then remove the nozzle cap completely.
3. Open hydrant main valve completely.
4. A continuous flow of water, no matter how slight, indicates hydrant is not properly isolated from the main water supply. This issue must be corrected before any hydrant disassembly can proceed, i.e. the water to the hydrant MUST be stopped.

EQUIPMENT & TOOLS NEEDED:

PPE:

- Hard hat
- Safety shoes
- Safety vest
- Safety glasses
- Work gloves

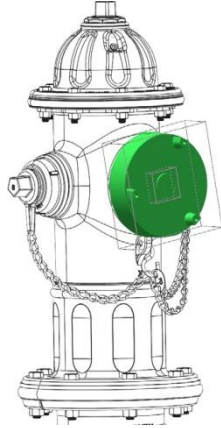
Tool:

- A-367 brass sleeve
- A-311 operating wrench
- A-359 seat wrench*
- 1/4" hex-key wrench
- Cell Phone/App
- Dianna 2100 Grease
- Mueller hydrant lubricating oil
- Thred Gard[®] Anti-Seize

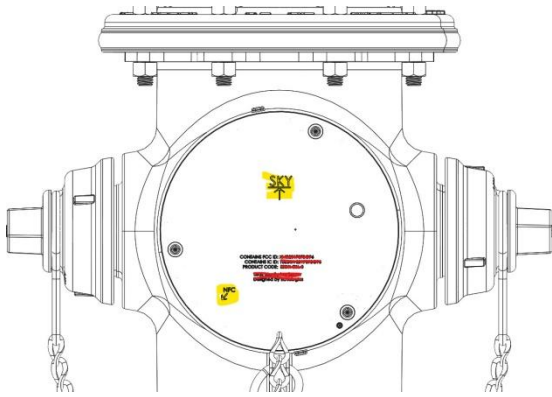
***Review the Seat Wrench Operating Manual (F14285) for more seat ring removal information.**

Pumper Cap Installation:

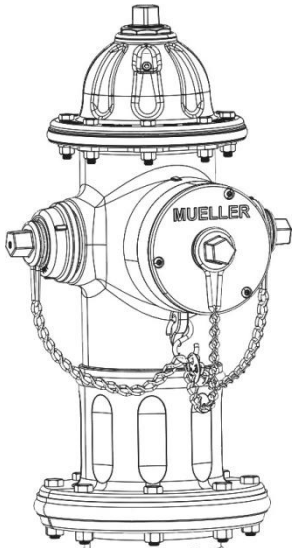
1. Confirm the hydrant is de-pressurized as described in steps 1-4 on page 2.
2. Use Hydrant Wrench to remove existing Pumper Cap.
3. Install Inner Pumper Cap with plastic plug and tighten.



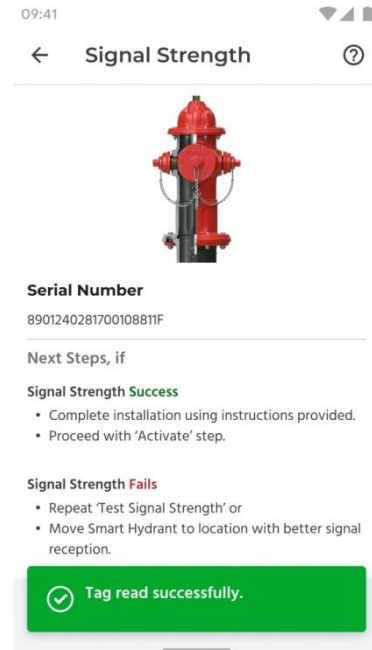
4. Place Sealed Electronics. Note Sky should be pointing towards the sky and as parallel as possible to the ground. Also note the location of the NFC antenna shown by the words NFC and arrow.



5. Place outer cap and tighten with washer and nut. Outer Pumper Cap can be rotated in 60 degrees increments.



6. After the Pumper Cap and electronics have been installed, the phone app can be used to checked reception. App will use existing cellular modem and network to determine cellular reception in the area.



Smart Stem Installation:

The following instructions apply to the installation of the Smart Hydrant Solutions Retrofit Kit. For the complete hydrant, install the same way as a Super Centurion Fire Hydrant (Reference AWWA M17).

CAUTION

MUELLER CO. RECOMMENDS FOLLOWING AWWA M-17 MANUAL FOR INSTALLATION, FIELD TESTING AND MAINTENANCE OF FIRE HYDRANTS.

1. Confirm the hydrant is depressurized.
2. Place the hydrant in the closed position.
3. Remove hold-down nut (Turn opposite of the opening direction), anti-friction washer and operating nut from bonnet.



4. Lubricate outside of brass sleeve and slide over threaded stem end to prevent O-ring damage.



5. Remove bolts (8) from bonnet and remove bonnet. remove brass sleeve.

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6. Remove O-ring from upper barrel. Slide slotted end of A-359 over top of stem and engage the pin in upper stem. Turn "T" head tightening wrench against stem*.



7. Pull up on seat wrench to be sure the main valve is completely closed. [The main valve must be closed, or the upper valve plate will be damaged]. Lower support arm onto top flange of the upper barrel and tighten thumb screw to hold the main valve in the closed position.
8. Unfasten main valve assembly by turning seat wrench counterclockwise.
9. Remove the seat wrench from upper stem.
10. Pull up and remove upper & lower stem, main valve assembly and seat ring from hydrant barrel as a unit.



*Review the Seat Wrench Operating Manual (F14285) for more seat ring removal information.

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11. Unscrew lower valve nut and remove.



12. Remove lock washer, stem seal, lower valve plate, main valve, seat ring and upper valve plate.
13. Remove lower stem from upper stem.



14. Straighten stainless steel lock washer.
15. Clean, inspect and replace any damaged parts (Super Centurion main valve can be reversed to provide a new seal). Replace drain valve facings if damaged.



16. Reassemble main valve assembly to new lower stem (Reverse steps) with newly provided brass lower valve nut and tighten to 90-115 ft-lbs.



17. Assemble the new lower stem via the stem coupling to the upper stem.



18. Bend edges of lock washer over one flat on the lower valve plate and one flat on the brass lower valve nut.



19. Inspect and lubricate with grease top and bottom seat ring O-rings (replace if necessary). Mueller Co. recommends the use of Thred Gard® Anti-Seize on threads.



20. Lower main valve into the barrel. Carefully align main valve assembly with seat ring then thread clockwise into the base of the hydrant. Hand tighten at first to avoid cross threading.



21. Reassemble wrench to upper stem. Pull up on seat wrench to ensure main valve is completely closed, lower support arm, and tighten thumb screw, while maintaining main valve in the closed position. Turn main valve assembly clockwise to 100-190 ft-lbs.
22. Remove the seat wrench from the upper stem.
23. Attach brass sleeve to upper stem and lubricate outside to protect O-ring seals from thread damage.
24. Check the condition of the upper barrel O-ring (Flat gasket for pre-1997 Centurion hydrants). Replace if necessary.
25. Place the bonnet assembly on top of the upper stem, slide it down to top of upper barrel, and hand tighten bolts (8). Remove brass sleeve.



26. Check condition of wiper ring and O-ring seals (on the outer diameter and inner diameter of the hold down nut) and bonnet O-ring.
27. Reassemble operating nut, anti-friction washer (on top thrust collar of operating nut), bonnet O-ring, hold down washer, and hold down nut (hand-tighten to secure in place).
28. Torque bonnet bolts (8) to 40-80 ft-lbs.
29. Torque the hold-down nut to 200-300 ft-lbs with the A-311 hydrant wrench.



⚠ CAUTION

ALWAYS FILL THE OIL RESERVOIR WITH THE BONNET INSTALLED, THE HYDRANT IN ITS NORMAL UPRIGHT POSITION, AND THE MAIN VALVE FULLY CLOSED.

FILLING THE HYDRANT WITH OIL UNDER ANY OTHER CIRCUMSTANCES CAN RESULT IN OVERFILLING AND CREATE A PRESSURE LOCK. THIS COULD DAMAGE THE SEALS OR BONNET OR PREVENT PROPER HYDRANT OPERATION.

30. Remove the oil plug with a 1/4" hex-key wrench. Pour 1 bottle of Mueller hydrant lubricant into the oil reservoir until the bottle is empty or the oil is level with the hole. [Do not pour oil outside the oil reservoir]. Reinstall the oil plug in the bonnet and tighten to 5-10 ft-lbs.

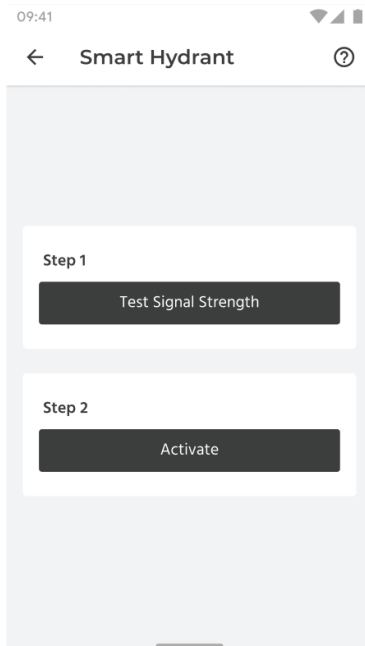


31. Remove the pumper cap and install the new Pumper Cap Assembly.

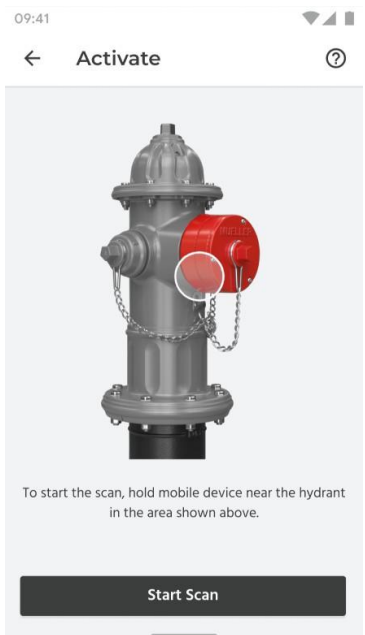
32. Rotate operating nut to ensure the main valve is closed.
Turn on water from gate valve.

Activate Smart Hydrant on Sentryx

1. With a minimum of 20 psi pressure, the sensor will come online. At this point the new stem is communicating to the new Pump Cap Assembly using the radio internal to the Hydrant (2.4Ghz).
2. Open the Smart Hydrant App. Click on *Activate* and follow steps on the screen.



3. Hold the phone near the location in the picture below.



4. The "success" / confirmation email and/or text may take up to 5 minutes to arrive. If feedback does not come, complete the activation steps again. If there is no response 5 minutes after the second attempt, confirm:
 - a) Hydrant main valve is CLOSED
 - b) Gate valve is Open
 - c) Water has been drained below the antenna near the top of the lower stem (Necessary for the stem to communicate with the Pumper Cap Assembly)



- d) System water pressure is 20 psi or greater.
- e) Retry Step 3.

If "success" feedback is not received within 5 minutes, contact Customer Service. (Once installation has been completed, auto-locating of hydrant using GPS will automatically begin. Device location can take up to 72 hours to complete.)

5. Unscrew one hose nozzle cap slightly to bleed air. Open hydrant fully.
6. Tighten hose nozzle cap when water starts flowing and check all flange connections for leaks.
7. Turn operating nut in closing direction to make sure main valve is fully closed, then turn in opening direction approximately ¼" turn to relieve tension on operating mechanism. Remove hose cap to aid in the draining of the hydrant. (Draining hydrants only). After hydrant is drained, replace, and tighten hose cap.
8. At this point the Smart Hydrant has been successfully installed. The Smart Hydrant will take pressure and temperature readings and transmit them over a cellular network. Please adjust settings as needed on the Sentryx web interface.

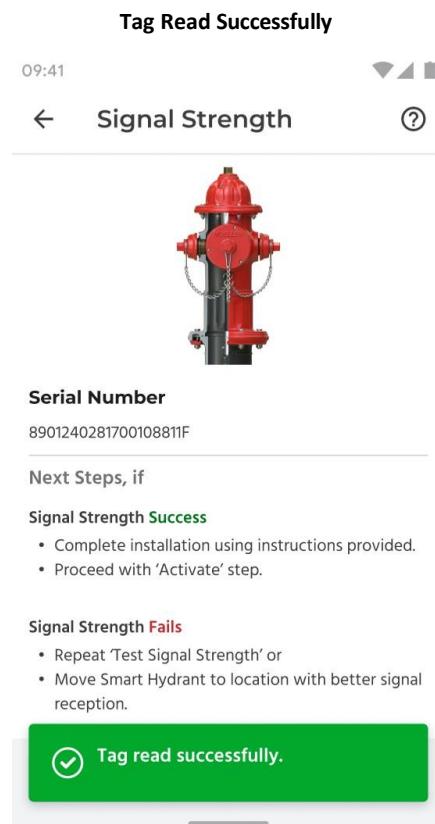
CAUTION

DO NOT EXCEED 290PSIG ON PRESSURE SENSOR. IN THE EVENT THAT THE SYSTEM PRESSURE WERE TO EXCEED 290PSIG, ACCORDING TO THE MANUFACTURER'S SPECIFICATION, THE SENSOR MAY ENDURE OVERPRESSURES UP TO 420PSIG; HOWEVER, THE SENSOR WILL ONLY RECORD PRESSURES UP TO 290PSIG.

APPENDIX A

WARNING

FOR WEAK SIGNAL STRENGTH CONSIDER MOVING SMART HYDRANT TO AN ALTERNATE LOCATION WITH BETTER CELLULAR COVERAGE. INSTALLATION AT CURRENT LOCATION MAY CONTINUE; HOWEVER, POOR TRANSMISSION OF CELLULAR SIGNAL, POSSIBLE LOSS OF DATA, POOR BATTERY LIFE, AND POTENTIAL CHALLENGES RECEIVING OVER AIR UPDATES MAYBE ENCOUNTERED WITH CURRENT LOCATION.



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For customer support or to report any product issues, please call 1.800.423.1323 or email techservices@muellerwp.com.

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FCC Warning

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- Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

ISED Statement

- English: This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

- French: Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

L'appareil numérique du CIEM conforme canadien peut - 3 (b) / nmb - 3 (b).

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 2.5 du CNR - 102 et conformité avec RSS 102 de l'exposition aux RF, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs RF et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé.

Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.