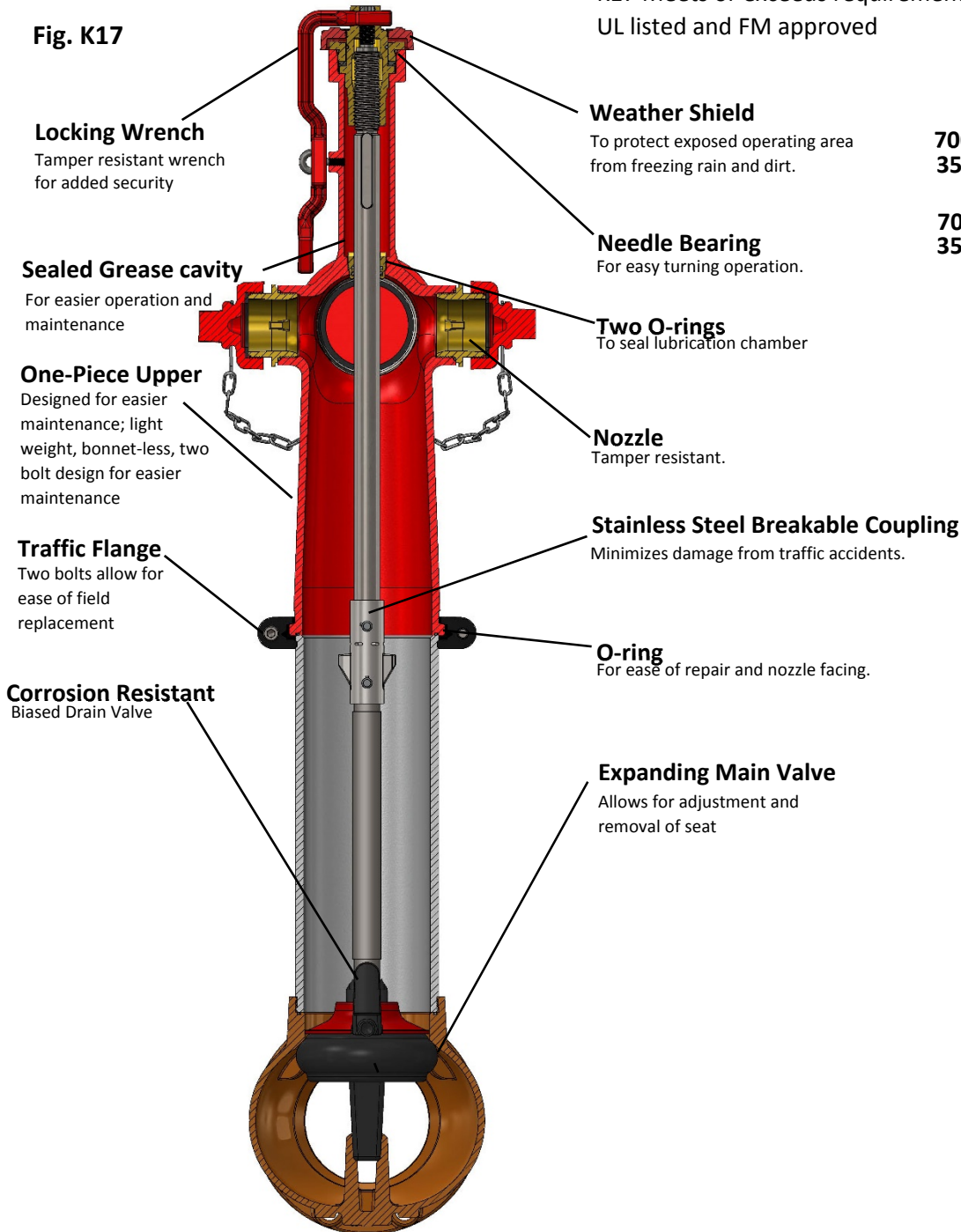


# The Kennedy K17 Hydrant

Fire hydrants have been used in fire protection for over 100 years. A.W.W.A. C502 was developed in 1913 as a standard for the manufacture and use of dry barrel hydrants. Kennedy has established itself as a leader in the industry with manufacturing experience dating back to 1905. Many of the early hydrants are in use today.

K17 Meets or exceeds requirements of A.W.W.A. C-502 and is UL listed and FM approved

**Fig. K17**



**Locking Wrench**  
Tamper resistant wrench for added security

**Weather Shield**  
To protect exposed operating area from freezing rain and dirt.

**AWWA**  
**700 psi test pressure**  
**350 psi working pressure**  
**UL/FM**  
**700 psi test pressure**  
**350 psi test pressure**

**Sealed Grease cavity**  
For easier operation and maintenance

**Needle Bearing**  
For easy turning operation.

**One-Piece Upper**  
Designed for easier maintenance; light weight, bonnet-less, two bolt design for easier maintenance

**Two O-rings**  
To seal lubrication chamber

**Nozzle**  
Tamper resistant.

**Traffic Flange**  
Two bolts allow for ease of field replacement

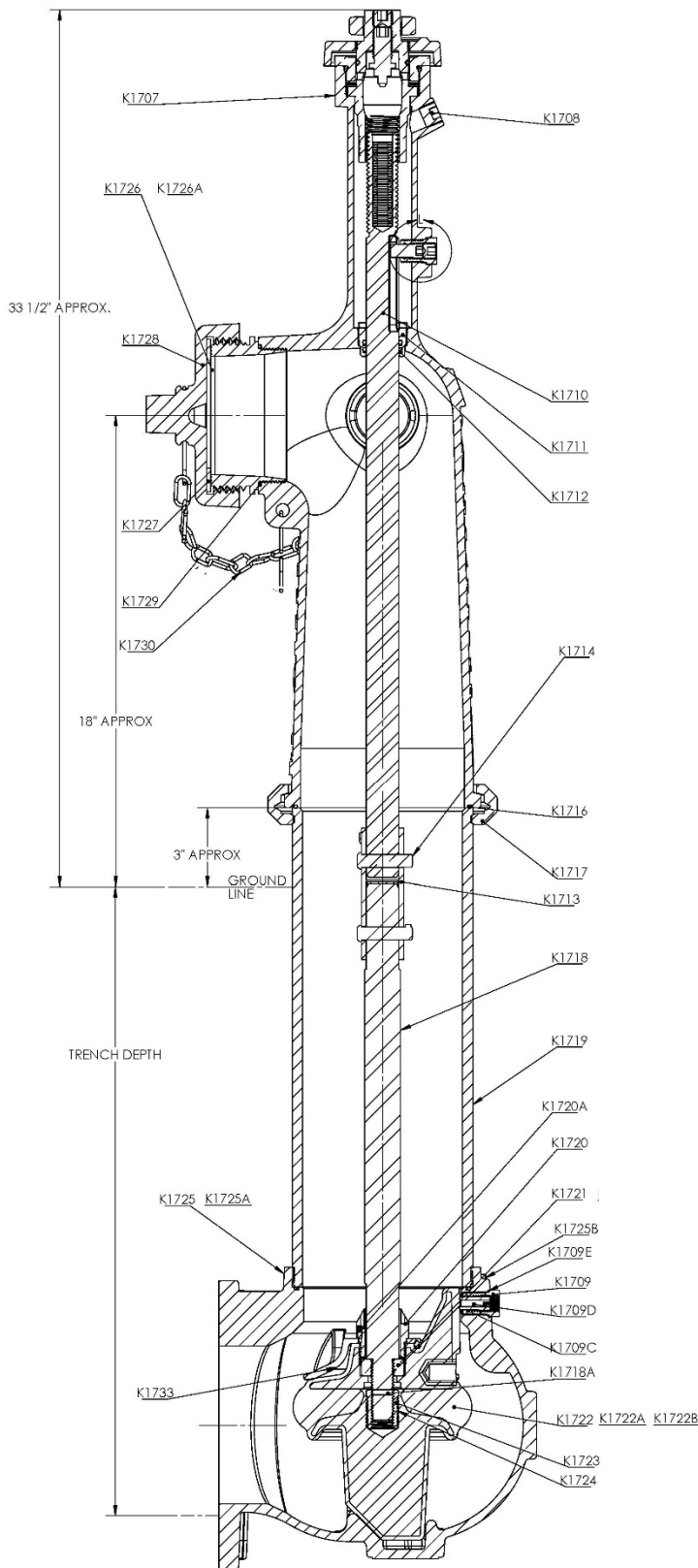
**Stainless Steel Breakable Coupling**  
Minimizes damage from traffic accidents.

**O-ring**  
For ease of repair and nozzle facing.

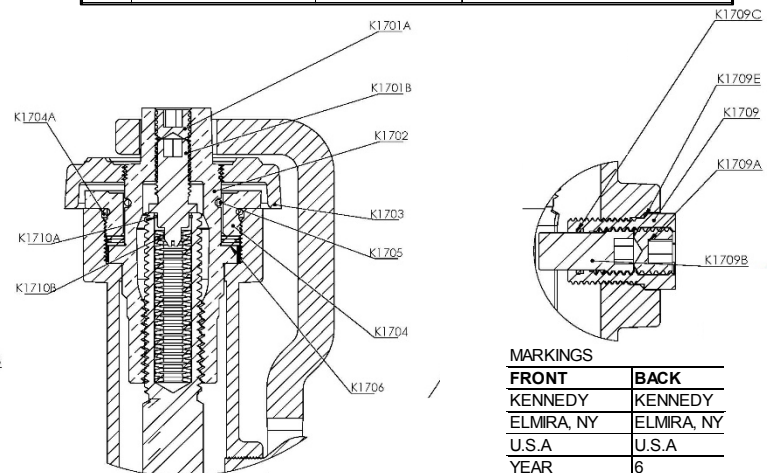
**Corrosion Resistant**  
Biased Drain Valve

**Expanding Main Valve**  
Allows for adjustment and removal of seat

# K17 Hydrant Technical/Dimensional Data (AWWA-UL/FM)



DETAIL	PART	MATERIAL	ASTM SPEC (OR AS STATED)
K1701A	STEM LOCK SET SCREW	STAINLESS STEEL	A276 (410)
K1701B	STEM LOCK SET SCREW	STAINLESS STEEL	A276 (410)
K1702	OP NUT	BRONZE	B584 C86300/C86700
K1703	DIRT SHIELD	CAST IRON	A126 CLASS B
K1704	LOCK NUT	BRONZE	B584 C87850
K1704A	O-RING	RUBBER	D2000
K1705	O-RING	VITON	D2000
K1706	ROLLER BEARING ASSEMBLY	STEEL	
K1707	UPPER BARREL	DUCTILE IRON	A536 GRADE 70-50-05
K1708	1/2" NPT PIPE PLUG	LOW CARBON STEEL	
K1709	BUSHING	NI-ALUMINUM BRONZE OR DUCTILE IRON	ASTM B150 C63000 OR ASTM A536 GR 70-50-05 OR GR. 65-45-12
K1709A	STEM PIN SET SCREW	STAINLESS STEEL	A276 (410)
K1709B	STEM PIN	STAINLESS STEEL	A276 (410)
K1709C	O-RING	BUNA RUBBER	D2000
K1709D	ADJUSTABLE DRAIN VALVE	ALUMINUM BRONZE; MANGANESE BRONZE; STAINLESS STEEL	ASTM B150 C62300 OR C62400; ASTM B138 C67300; ASTM A276 S30400; B505 C95400
K1709E	O-RING	BUNA RUBBER	D2000
K1710	UPPER STEM	STAINLESS STEEL	A276 S30400 OR S31600
K1710A	RETAINING RING	STEEL	SAE 1070-1090 HIGH CARBON STEEL
K1710B	SPRING PACK	SPRING STEEL	-
K1711	O-RING	BUNA-N RUBBER	D2000
K1712	STEM BUSHING	DUCTILE IRON OR ALUMINUM BRONZE	ASTM A536 GR 70-50-05 OR 65-45-12 PLATED; OR ASTM B505 C95400
K1713	BREAKING COUPLING	STAINLESS STEEL	ASTM A743 CA 15 (410S)
K1714	COUPLING PINS	STAINLESS STEEL	302HQ OR 410SS
K1715	BARREL COUPLING BOLTS	STEEL (ZINC PLATED)	ASTM A 307/SAE GRADE 2 OR 410S.S.
K1716	O-RING	BUNA-N RUBBER	D2000
K1717	BARREL COUPLING	DUCTILE IRON	A536 GRADE 70-50-05
K1718	LOWER STEM	CRS OR STAINLESS STEEL	ASTM A 108 CRS OR ASTM A 276 S30400 OR S31600
K1718A	LOWER STEM THREAD LOCK	NYLOC	
K1719	LOWER BARREL	DUCTILE IRON	ANSI/AWWA C151/A21.51
K1720	DRAIN VALVE RETAINING NUT	ALUMINUM BRONZE OR MANGANESE BRONZE	ASTM A 536 GR 70-50-05 OR 65-45-12; ASTM A 276 S30400; ASTM B505 C95400 OR C86300
K1720A	DRAIN NUT SET SCREW	STAINLESS STEEL	
K1721	LOWER STEM COLLAR	ALUMINUM BRONZE OR S.S.	B505 C95400 OR ASTM A 276 S30400
K1721A	LOWER STEM COLLAR PIN	HARDENED STEEL	ASME B18.8.2
K1722	MAIN VALVE RUBBER ASSEMBLY	EPDM RUBBER	KENNEDY VALVE COMPOUND # 101
K1722A	DRAIN VALVE	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12
K1722B	BOTTOM PLATE	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12
K1723	BOTTOM PLATE BUSHING	NI-ALUMINUM BRONZE OR MANGANESE BRONZE	B505 C95500HT OR ASTM B150 C63000 OR B505 C86300
K1724	BOTTOM PLATE PIN	STAINLESS STEEL	18-8 STAINLESS
K1725	ELBOW	DUCTILE IRON	ASTM A536 GRADE 70-50-05
K1725A	O-RING	BUNA-N RUBBER	D2000
K1725B	ELBOW SET SCREWS	STAINLESS STEEL	18-8 STAINLESS
K1726	HOSE/STEAMER NOZZLE	BRONZE	ASTM B584 C 87850/C86700/C86300
K1726A	NOZZLE RETAINING SCREW	STAINLESS STEEL	18-8 STAINLESS
K1727	NOZZLE GASKET	NEOPRENE	D2000
K1728	NOZZLE CAP	CAST IRON	A126 CLASS B
K1729	O-RING	BUNA-N RUBBER	D2000
K1730	NOZZLE CAP CHAINS	ZINC PLATED STEEL	A108
K1731	WRENCH	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12
K1732	EYE BOLT	ZINC PLATED STEEL	
K1733	BAFFLE	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12



MARKINGS	
FRONT	BACK
KENNEDY	KENNEDY
ELMIRA, NY	ELMIRA, NY
U.S.A	U.S.A
YEAR	6
K17	350 CWP
UL/FM	PN16
AWWA	DN150
	DI
	PATENTS

**Figure K17**  
6" MVO

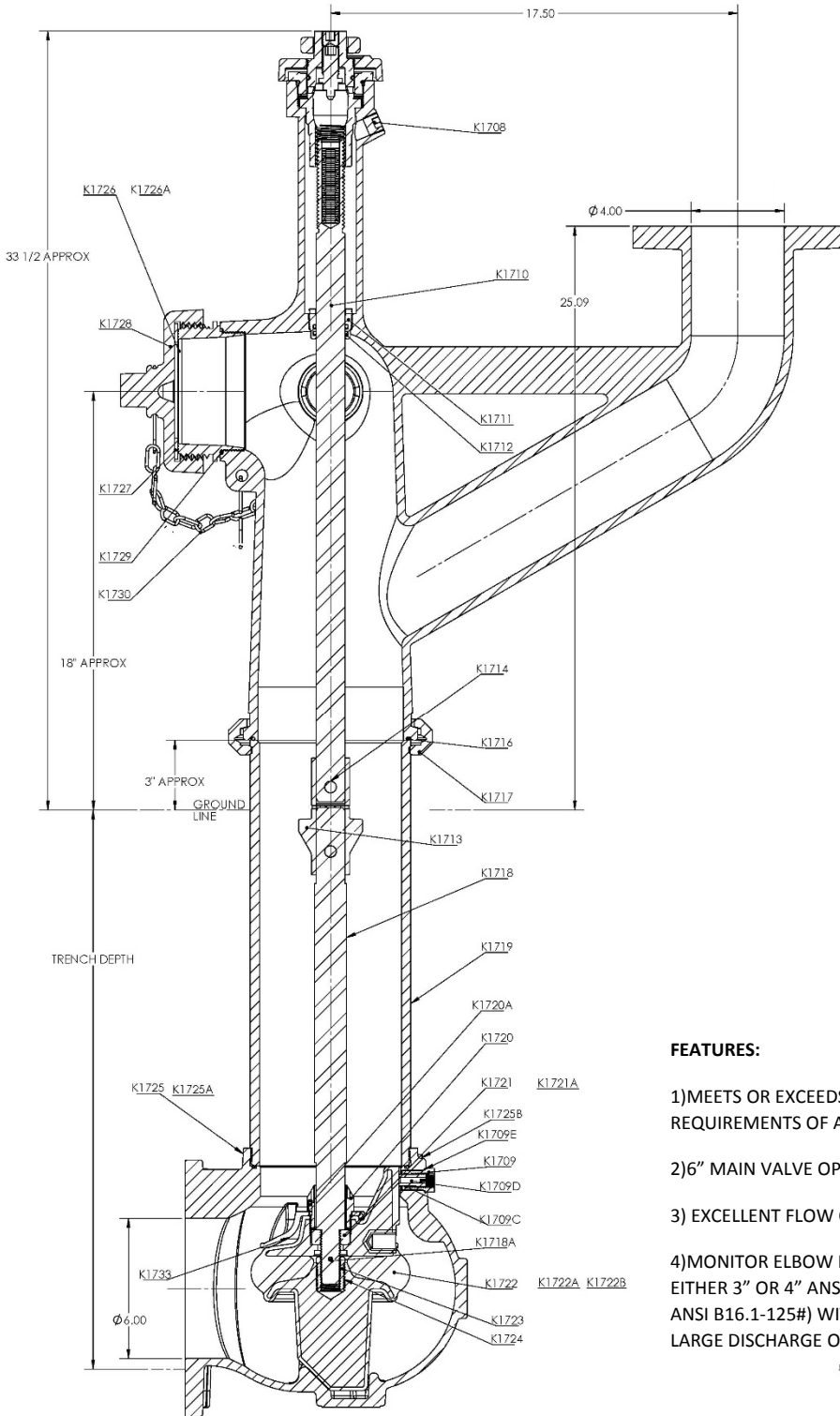
Available with 6" ANSI FLG, 6" MJ, 6"  
ANSI Flanged Straight Shoe

UL Listed/FM approved

Kennedy/ K17 2

# K17 Monitor Hydrant Technical/Dimensional Data

(AWWA-UL/FM)



PARTS LIST			
DETAIL	PART	MATERIAL	ASTM SPEC (OR AS STATED)
K1701A	STEM LOCK SET SCREW	STAINLESS STEEL	A276 (410)
K1701B	STEM LOCK SET SCREW	STAINLESS STEEL	A276 (410)
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K1703	DIRT SHIELD	CAST IRON	A126 CLASS B
K1704	LOCK NUT	BRONZE	B584 C87850
K1704A	O-RING	RUBBER	D2000
K1705	O-RING	VITON	D2000
K1706	ROLLER BEARING ASSEMBLY	STEEL	
K1707	UPPER BARREL	DUCTILE IRON	A536 GRADE 70-50-05
K1708	1/2" NPT PIPE PLUG	LOW CARBON STEEL	
K1709	BUSHING	NI-ALUMINUM BRONZE OR DUCTILE IRON	ASTM B150 C63000 OR ASTM A536 GR 70-50-05 OR GR. 65-45-12
K1709A	STEM PIN SET SCREW	STAINLESS STEEL	A276 (410)
K1709B	STEM PIN	STAINLESS STEEL	A276 (410)
K1709C	O-RING	BUNA RUBBER	D2000
K1709D	ADJUSTABLE DRAIN VALVE	ALUMINUM BRONZE; MANGANESE BRONZE; STAINLESS STEEL	ASTM B150 C62300 OR C62400; ASTM B138 C67300; ASTM A276 S30400; B505 C95400
K1709E	O-RING	BUNA RUBBER	D2000
K1710	UPPER STEM	STAINLESS STEEL	A276 S30400 OR S31600
K1710A	RETAINING RING	STEEL	SAE 1070-1090 HIGH CARBON STEEL
K1710B	SPRING PACK	SPRING STEEL	
K1711	O-RING	BUNA-N RUBBER	D2000
K1712	STEM BUSHING	DUCTILE IRON OR ALUMINUM BRONZE	ASTM A536 GR 70-50-05 OR 65-45-12 PLATED; OR ASTM B505 C95400
K1713	BREAKING COUPLING	STAINLESS STEEL	ASTM A743 CA15 (410SS)
K1714	COUPLING PINS	STAINLESS STEEL	302HQ OR 410SS
K1715	BARREL COUPLING BOLTS	STEEL (ZINC PLATED)	ASTM A 307\SAE GRADE 2 OR 410S.S.
K1716	O-RING	BUNA-N RUBBER	D2000
K1717	BARREL COUPLING	DUCTILE IRON	A536 GRADE 70-50-05
K1718	LOWER STEM	CRS OR STAINLESS STEEL	ASTM A108 CRS OR ASTM A 276 S30400 OR S31600
K1718A	LOWER STEM THREAD LOCK	NYLOC	
K1719	LOWER BARREL	DUCTILE IRON	ANSI/AWWA C151/A21.51
K1720	DRAIN VALVE RETAINING NUT	DI OR STAINLESS OR ALUMINUM BRONZE OR MANGANESE BRONZE	ASTM A 536 GR 70-50-05 OR 65-45-12; ASTM A 276 S30400; ASTM B505 C95400 OR C86300
K1720A	DRAIN NUT SET SCREW	STAINLESS STEEL	
K1721	LOWER STEM COLLAR	ALUMINUM BRONZE OR S.S.	B505 C95400 OR ASTM A 276 S30400
K1721A	LOWER STEM COLLAR PIN	HARDENED STEEL	ASME B18.8.2
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K1731	WRENCH	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12
K1732	EYE BOLT	ZINC PLATED STEEL	
K1733	BAFFLE	DUCTILE IRON	ASTM A 536 GRADE 70-50-05 OR 65-45-12

### FEATURES:

- 1) MEETS OR EXCEEDS ALL REQUIREMENTS OF AWWA C-502
- 2) 6" MAIN VALVE OPENING
- 3) EXCELLENT FLOW CHARACTERISTICS
- 4) MONITOR ELBOW IS AVAILABLE WITH EITHER 3" OR 4" ANSI DRILLING (PER ANSI B16.1-125#) WITH THE SAME LARGE DISCHARGE ORIFICE.

### MARKINGS

FRONT	BACK
KENNEDY	KENNEDY
ELMIRA, NY	ELMIRA, NY
U.S.A	U.S.A
YEAR	6
K17	350 CWP
UL/FM	PN16
AWWA	DN150
	DI
	PATENTS

Available with 6" ANSI FLG, 6" MJ, 6" ANSI Flanged Straight Shoe

UL Listed/ FM approved

**Figure K17**  
6" MVO

# Ordering Information

## K17 Hydrant

When ordering, indicate the following:

1. Quantity and threading details of hose nozzles.
2. Threading details of steamer nozzle.
3. Size and type of inlet connection (mechanical joint, flanged)
4. Depth of bury (from bottom of pipe to ground line).

## Parts

When ordering parts, indicate the following:

1. Part number
2. Part description
3. Type of hydrant

**ELBOW** – We must have the size and type of connection to main.

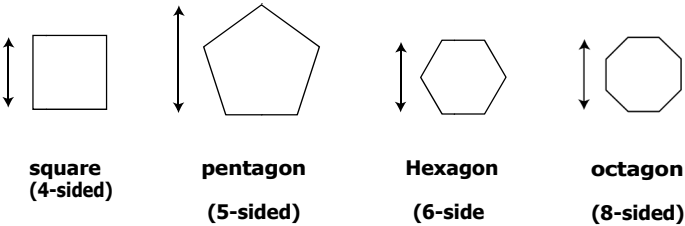
**OPERATING STEM NUT** – Give direction to open (cast on cap) and size and shape of operating nut. 4-sided nut give flat to flat dimension. 5-sided nut give point to opposite flat dimension. 6-sided nut give flat to flat dimension to eliminate any doubt as to where the measurement was taken. \*

Note: Hydrants are UL/FM approved for 1½P and 1¼" sq. nut sizes.

**CAP** – Give direction the hydrant opens. This is indicated by an arrow cast on the cap. Indicate the direction the arrow points.

**NOZZLE CAP GASKET** – Indicate size of nozzle and whether hose or steamer.

**NOZZLE** – Give exact threading details, outside (major) diameter, pitch diameter, root (minor) diameter and exact number of threads per inch (TPI) or send in a gauge or sample in good condition



6. Color (National standard yellow will be furnished unless otherwise indicated).
7. Size and shape of operating nut.
8. Direction to open.

K17 Weight

K17 Weight (lbs)	Depth of Trench										
	2'0"	2'6"	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"
	175.4	192	208.6	225.2	241.8	258.4	275	291.6	308.2	324.8	341.4

**NOZZLE CAP CHAIN** – Tell us the nozzle type, hose or steamer.

**NOZZLE CAP** – Exact threading and nut size and shape.

**UPPER BARREL** – Furnish all information cast on the barrel and the number of hose and steamer connections.

**STEM** – Furnish the direction the hydrant opens as cast on the cap and furnish the depth of trench (distance from groundline to bottom of connecting pipe). If the stem can be measured, complete overall dimensions including diameter will help. The diameter should always be measured on the smooth (unthreaded) portion. \*

**LOWER BARREL** – Furnish depth of trench (distance from groundline to bottom of connecting pipe) or dimension from flange face to flange face (overall). The outside and inside diameters are also, a help.

## National Standard Hose Coupling Thread Specifications (NST)

<b>A. nominal inside diameter</b>		2½"	3"	3½"	4"	4½"
<b>number of threads per inch</b>		7½	6	6	4	4
<b>B. Major diameter nozzle thread</b>	<b>Max.</b>	3.0686	3.6239	4.2439	5.0109	5.7609
	<b>Min.</b>	3.0366	3.5879	4.2079	4.9609	5.7109
<b>C. Pitch diameter nozzle thread</b>	<b>Max.</b>	2.9820	3.5156	4.1356	4.8485	5.5985
	<b>Min.</b>	2.9660	3.4976	4.1176	4.8235	5.5735
<b>D. Minor diameter nozzle thread</b>	<b>Max.</b>	2.8954	3.4073	4.0273	4.6861	5.4361
<b>E. Diameter pilot nozzle</b>		2.8500	3.3540	3.9730	4.6100	5.3570
<b>F. Length of thread – nozzle</b>		1"	1⅛"	1⅛"	1¼"	1¼"
<b>G. Face to start of second turn</b>		¼"	⅝"	⅝"	⅞"	⅞"
<b>H. Major diameter coupling thread</b>	<b>Min.</b>	3.0836	3.6389	4.2639	5.0359	5.7859
<b>i. Pitch diameter coupling thread</b>	<b>Max.</b>	3.0130	3.5486	4.1736	4.8985	5.6485
	<b>Min.</b>	2.9970	3.5306	4.1556	4.8735	5.6235
<b>J. Minor diameter coupling thread</b>	<b>Max.</b>	2.9424	3.4583	4.0833	4.7611	5.5111
	<b>Min.</b>	2.9104	3.4223	4.0473	4.7111	5.4611
<b>K. Depth of coupling</b>		⅝"	1⅛"	1⅛"	1¾"	1¾"

## **Product/Capability**

## **Listing Suggested Specifications**

- Hydrants shall be UL listed and FM approved.
- Hydrants shall conform to A.W.W.A. Standard C-502 latest revision and as specified herein.
- Hydrants shall be of the adjustable compression type, closing with line pressure.
- Hydrants shall be of the traffic model breakaway type, with two bolt design.
- Hydrant upper shall be of one-piece construction.
- Hydrant stem coupling shall be of stainless-steel construction.
- Hydrant shall possess a self-locking operating nut wrench.
- Operating nut shall be of one-piece bronze construction.
- A dirt shield shall be provided to protect the operating mechanism from grit buildup and corrosion due to moisture.
- A thrust roller bearing shall be supplied between the operating nut and stem lock nut to facilitate operation.
- Nozzles shall be of the tamper resistant, thread-in type with O-ring seals and stainless-steel retaining screws.
- An O-ring shall be provided to seal between the upper and lower barrels.
- The main valve shall be adjustable of EPDM rubber.
- Hydrant drain valve shall momentarily force flush with each operation. Drain way shall be of bronze. Drain valve facing shall be of EPDM rubber.
- The Hydrant shall experience a pressure drop of less than 2.0 psi when flowing 1000GPM

For all your valve requirements, contact a Kennedy Distributor near you or:

## **Kennedy Valve**

Division of McWane

1021 E. Water Street Elmira, New York 14902-1516 607-734-2211

FAX: 800-952-4771

*Kennedy/ K17 5*



## Installation

1. When hydrants are received from manufacturer they should be handled carefully to avoid breakage and damage to flanges. Keep hydrants closed until they are installed. Protect stored hydrants from the elements, if possible.

2. Before installation of hydrants clean piping and elbow of any foreign matter.

3. Install hydrants away from the curb line enough distance to avoid damage from or to overhanging vehicles. A setback of 2 ft. from the curb line to the point on the hydrant nearest the curb is recommended. The pumper outlet nozzle should face the street. Make sure that the outlet nozzles are high enough above the ground line for hose attachment and that there are no obstructions to prevent operation. In setting up a hydrant, the elbow should be placed on a flat stone or other solid foundation. It is good practice to brace the side of the base opposite the inlet to oppose the stress due to pressure tending to force the hydrant off the end of the lateral. Hydrants must be firmly supported underground all around the standpipe, especially where there is no concrete sidewalk to help support them. This is particularly important since the proper working of the Safety Breakable Section in severe impact depends upon unyielding support of the underground standpipe.

4. The bottom and lower part of the hydrant should be surrounded with broken stone or coarse gravel so that water released from the standpipe by the drain valves may escape quickly. The stone-filled area should contain a volume of water at least twice that held by the hydrant barrel.

5. Both drainage stone and earth fill above the stone should be tamped to give firm support to the hydrant barrel.

6. It is recommended practice to install an auxiliary or secondary gate valve in the lateral between the hydrant and the main. This permits inspection and repair of hydrant without shutting down mains. Check the hydrant and auxiliary valve for perpendicular setting.

7. After the hydrant is installed and the line as well as the hydrant have been hydrostatically tested, the hydrant should be flushed and then checked for proper drainage.

A. A nozzle cap should be removed, then the hydrant opened fully. This will flush out any dirt or sediment which may have accumulated during installation. After the hydrant is flushed, close it, replace the nozzle cap, then open the hydrant again and inspect all joints for leaks: Close the hydrant again, remove a hose cap and/ or steamer cap to test your hose thread for proper fit.

B. Before replacing the hose cap and/or steamer cap, check the inside of the hydrant for drainage. This can be accomplished by placing the palm of the hand firmly over the nozzle outlet. Drainage rate should be sufficiently rapid to create a suction.

Note: In certain areas ground water stands at levels above that of hydrant drains. In such cases it is recommended that hydrant drains be plugged at the time of installation. If drains are plugged, hydrants in service in cold climate areas should be pumped out after usage. Mark such hydrants to indicate the need for pumping out after usage.

## Operation

The K17 hydrant requires a minimum of torque to be operated. It is possible to damage the hydrant by forcing it beyond the limits of the operating nut travel with excessive torque; therefore, the following steps are recommended:

1. CHECK DIRECTION OF OPENING as marked on the dirt shield.

2. TO OPEN, DO NOT FORCE THE HYDRANT IN THE

OPENING DIRECTION BEYOND FULL OPEN as indicated by sudden resistance to turning. If water does not flow when the hydrant is open, it is probably due to a closed valve upstream from the hydrant.

3. WHEN USING HYDRANT, hydrant should be opened full. Partially opened hydrant may allow substantial leakage through the drain valves. This may prevent the hydrant from draining properly when it is shut down. Operation of hydrant in this manner over a period could also undermine the hydrant and/or the water main.

4. TO CLOSE, turn the operating nut. Approximately 2 ½ turns before the hydrant closed, there will be a slight increase in the torque required to close the hydrant, continue to close the hydrant until a sudden stop has been felt. Always shut off hydrant slowly. In old water mains where corrosion has taken its toll, or even on new mains where high pressure is maintained, closing the hydrant too rapidly could cause a water hammer resulting in damage to the main. IT IS NOT NECESSARY to **OPEN** or **CLOSE** the hydrant with great force. When that position has been reached, back off the operating nut in the opening direction one quarter turn to take the strain off the operating parts of the hydrant and to make it easier to open the hydrant when needed again.

## Maintenance

It is recommended the hydrant be inspected twice yearly, in the spring and fall. In extremely cold weather it is advisable to inspect hydrant after each use. Maintenance and adjustments are easy and economical with the K17 Hydrant. All parts which are susceptible to damage or rough treatment can be reached without excavation or expensive equipment. The main valve can easily be replaced by one man. Inspection or renewal are practical without disturbing the standpipe, pavement or mains. Inspection should cover the following points:

1. Physical examination noting condition of operating nut, nozzle caps and drains, and general appearance.

2. Use an Aquaphone and listen for leakage through main Valve To check for leakage at seals loosen one hose cap one half turn.

3. Check ease of operation while fully opening hydrant. When all the air has escaped through the hose cap and the hydrant is full, re-tighten the hose cap and check for leakage at joints, packing or seals, and outlet caps.

4. Close hydrant and remove one nozzle cap. Observe drainage.

5. Open hydrant completely, flush hydrant and observe flow. Care should be taken that the water coming from hydrant will not cause any damage to surrounding area.

6. Close hydrant slowly to insure tight closure.

7. Clean and lubricate all nozzle threads. Replace caps, tighten with spanner wrench, then back off slightly so that the caps will not be excessively tight, but have sufficient frictional resistance to prevent removal by hand.

8. Lubricate stem threads through the opening covered by a pipe plug (K1708). Always use factory specified food grade oil.

9. Clean the exterior of the hydrant and repaint, if necessary.

10. Be sure any auxiliary valves are in the wide-open position.

11. Keep complete records on inspection and location of all hydrants in the system.

## Problems and Solutions

Various problems which occur in the field are described below with hints on how to solve them.

**Stem Binding:** Rap the hydrant dome with hammer or spanner wrench. This often will unbind the stem.

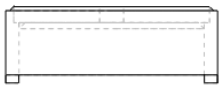
**Poor Drainage:** It is possible dirt or pebbles may have plugged the drain hole. Presence of water or ice standing in barrel can be checked using a plumb bob.

To correct:

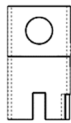
1. Screw nozzle caps on tightly to prevent leakage.
2. Open hydrant slowly until you hear water entering barrel of hydrant. This will allow water to enter the hydrant with drain valve in an open position. When enough pressure builds up in the barrel any dirt or foreign objects causing the blockage should be forced out.
3. After a few minutes, resume turning the operating nut until the hydrant is fully opened.
4. Slowly shut off hydrant.
5. Remove one of the nozzle caps.
6. Observe through nozzle port to make sure water in barrel is receding. Drainage should be sufficiently rapid to create a suction if palm of hand is placed over a nozzle outlet during drainage.
7. Check again for seat leakage with the Aquaphone.  
Poor Shutoff: DO NOT exert extra torque forcing hydrant to close. Trouble may be a stone lodged between the seat and the main valve. Forcing closure may damage the hydrant. Stones or other foreign objects are the usual causes of this problem. To correct this problem, remove one or both nozzle caps and open hydrant fully to flush out any foreign material.  
Care should be taken that water coming from hydrant will not cause any damage to surrounding area. Attach a canvas apron if necessary, to direct the flow into the street.  
Shut off hydrant slowly until fully closed. Put your ear to nozzle opening to hear if water has stopped coming through main valve.

## Removing Nozzles

Instructions to remove threaded nozzles:



K1735-Steamer Install Tool



K1736-Nozzle Install Tool

1. Remove nozzle cap (K1728).
2. Remove nozzle retaining screw (K1726A) using a 1/4" Hex Allen Wrench and turning counter-clockwise. It is recommended to use a new coated set screw when re-installing.
3. Insert nozzle removing wrench (K1736) into nozzle (K1726) and engage nozzle lugs with slots in wrench. Hose nozzles have internal lugs, steamer nozzles have slots on the outside which accept the steamer nozzle socket (K1735)
4. Use a 1" diameter bar to turn the nozzle wrench in a **clockwise\*** direction and remove the nozzle. Note: Nozzles are held in upper with a **left-hand thread**.
5. Remove the old nozzle "O"-Ring (K1729)
6. Inspect the nozzle seating surface in the upper barrel (K1707) and remove any dirt or sediment.

7. Lubricate the new "O"-Ring and place on nozzle.
8. Insert new nozzle and use nozzle wrench (K1736) and 1" diameter bar to turn nozzle. Apply approximately 300 ft\*lbs in for both the steamer and hose nozzle in the counter-clockwise direction. Ensure O-ring is seated in counterbore.
10. Install new coated set screw(K1726) into upper barrel tapped hole. Apply 15 ft\*lbs. of torque.
11. Inspect nozzle cap gasket (K1727) and replace if necessary.
12. Install nozzle cap and tighten.

## Directions for repairing breaking couplings on K17



K1737-Main Valve Wrench

1. Turn off water supply
2. Remove broken barrel couplings(K1717) and stem breaking coupling(K1713)
  - A. Remove the broken stem breaking coupling (Item K1713) from the lower stem and remove the lower coupling pin (K1714)
  - B. Remove the broken barrel couplings (K1717) rings. Lay the hydrant upper on the ground.
3. Remove stem from hydrant upper.
  - A. Unscrew the upper stem (Item K1710) from the operating nut (Item K1702) by holding the stem stationary and turning the operating nut in the direction to open.
  - B. Remove broken upper stem breaking coupling (Item K1713) and the upper coupling pin.
4. Install new stem coupling.
  - A. Place the new stem breaking coupling (K1713) on the upper stem and secure with the upper coupling pins provided (K1714).
  - B. Slide the upper stem and coupling assembly over the lower stem. Push in the lower coupling clevis pin and fasten with the bridge pins.
  - C. The keyway must face in the opposite direction of the intended direction of the pumper nozzle. Tighten or loosen the main valve with the main valve wrench (K1737) until the stem is in the proper orientation.
5. Reassemble hydrant.
  - A. Remove the stem pin (K1709B) by unscrewing it from the barrel. Do not discard.
  - B. Check the "O"-Ring (Item K1716) on the bottom of the hydrant upper barrel. Replace if damaged
  - C. Set the hydrant upper barrel over the stem and orient the nozzles in the direction required. Re-install the stem pin (K1709B) ensuring proper engagement within the slot in the upper stem. If engaged properly, the upper barrel will be able to rotate a few degrees, but not able to rotate a full revolution.
  - D. Close the hydrant to draw down the upper barrel onto the lower pipe. Ensure the upper barrel O-ring (K1716) is covered by the lower barrel.
  - E. Place barrel coupling rings (K1717) over upper and lower barrel. Tighten the socket head bolts (K1715) evenly.
6. Cycle open and close the valve to ensure proper function. Close valve to stop and turn on water supply.

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## Main Valve replacement:

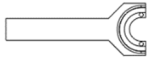
### 1. Shut off Water Supply.

A. Shut off water supply to hydrant by closing the gate valve controlling flow of water to the hydrant. Remove a nozzle cap and open the hydrant a maximum of three turns.

### 2. Removal of Hydrant Upper.

- A. Remove the stem pin(K1709B) fully from the bushing(K1709) after first removing the set screw (K1709A)
- B. Remove the barrel coupling bolts(K1715) with a 3/8" Allen wrench or socket.
- C. Remove the barrel couplings (K1717)
- D. Turn the operating nut (K1702) in the direction to open and hold the barrel to keep it from rotating as the operating nut unscrews and lifts the cap. Turn until the operating nut walks off the stem (K1710).
- E. Lift the upper barrel (K1707) straight up and off. The main valve (K1722) and stem assembly should drop to the bottom of the elbow after removal.

### 3. Removal of Stem and Main Valve Assembly



K1738-Drain Nut Wrench

- A. Slide the seat removing wrench over the upper stem (K1710) and down into the upper barrel. Slide the wrench over the lugs of the breaker coupling(K1713)
- B. Turn the seat removal wrench in the counter clockwise direction until the main valve(K1722) can pass through the elbow. This will take approximately 6 turns. After approximately 3 to 5 turns, the force required to turn the wrench will decrease considerably, this does not guarantee the main valve is able to be removed. Continue to turn the wrench, in effect "stretching" the main valve to a smaller diameter.
- C. Access the upper stem through the hole in the seat removal wrench. Lift upwards to remove the main valve. If considerable resistance is still felt, loosen the main valve an additional turn, and lift upward again.
- D. Remove the seat removal wrench and lift the entire main valve/stem assembly out through the lower pipe.
- E. To fully remove the main valve, first loosen the set screw(K1721A) in the drain nut (K1721).
- F. Loosen the drain nut with the drain nut wrench(K1738). If the main valve was "stretched" during removal, rotate it relative to the lower stem(K1718) in the clockwise direction until resistance is no longer felt. Secure the lower stem in a vise if possible when performing this step.
- G. Once the drain nut is removed, rotate the main valve in a counter-clockwise direction to un-screw it from the lower stem.

### 4. Inspect and Replace, if Necessary, Hydrant Components.

### 5. Reassemble Hydrant.

A. Inspect and clean the threads of the drain valve nut and lower stem with a wire brush.

B. Install the new main valve on the lower stem. Installation is the reverse of disassembly. Tighten the drain nut approximately ½ turn. Make sure to screw on the new main valve in a hand-tight arrangement. Ensure the baffle (K1733) is installed. Tighten the drain nut set screw (K1721A)

C. Lower the full stem assembly into the lower barrel. Make sure the "fin" of the main valve is facing opposite the inlet pipe. Allow the main valve to drop into the bottom of the elbow.

D. Slide the seat removal wrench over the stem and lugs of the breaker coupling.

E. Turn the wrench approximately 4 ¾ turns to "expand" the main valve. This will correlate to approximately 170 ft\*lbs.

F. Remove the wrench and check the position of the slot in the upper stem. This slot must face opposite the intended direction of the steamer face. If slot is in the wrong position, further tighten or loosen the main valve until it is. Use the seat removal wrench to adjust the stem position.

G. Double check the O-rings in the bottom of the neck of the upper barrel(K1712). Replace if damaged. Double check the O-ring at the bottom face of the upper barrel (K1716). Wipe any debris with a clean rag, replace if damaged.

H. Install the upper barrel by guiding the upper stem through the stem bushing(K1711). The slot in the upper stem will be within the neck portion of the barrel by the time the upper stem contacts the op nut.

I. Turn the op nut and allow the threads to catch. Draw the upper barrel down until the bottom face contacts the upper face of the lower barrel.

J. Rotate the upper barrel until the bushing (K1709) is aligned with the slot in the stem. Peer through the hole in the bushing to locate this position. Screw in the stem pin(K1709B) until a sudden stop is reached. Back off the screw ½ turn. The stem pin must sit deep within the bushing and engage the slot in the stem. Verify engagement by rotating the upper barrel, it should not be able to turn more than 1/16 rotation without feeling resistance.

K. Re-install the backing set screw(K1709A). Tighten firmly.

L. Remove the op nut set screw(K1701A), back off the op stop(K1701B) as far as it can from the top side of the pentagon (it cannot come out this way). A 3/8" Allen wrench or socket can be used to accomplish both.

M. Draw up the main valve into the closed position, tighten until some resistance is felt. Check the O-ring (K1716) on the bottom face of the upper barrel, ensure that it is completely covered by the mating face of the lower barrel.

N. Install barrel couplings(K1717) and tighten bolts (K1715) to approximately 50 ft\*lbs.

O. Further close the hydrant until the pentagon is aligned enough to allow the locking wrench(K1731) to slip over the op nut and eyebolt in the neck of the upper barrel.

P. Tighten the Op nut stop (K1701B) with a 3/8" Allen key or socket until a sudden stop is felt. Do not torque against this stop, once a sharp increase in resistance is felt, immediately stop tightening. Then tighten the backing set screw (K1701A) to approximately 125 ft \*lbs.

Q. Ensure a nozzle or steamer cap is removed (K1728) and open the gate valve upstream. Check for any leaks through the main valve. If this is the case, close the gate valve, back



off the stop (K1701B) and further close the main valve, making sure to maintain alignment with the locking wrench.

R. Cycle hydrant to check for free operation.

S. Close hydrant wait for hydrant to drain, then reinstall nozzle cap and tighten