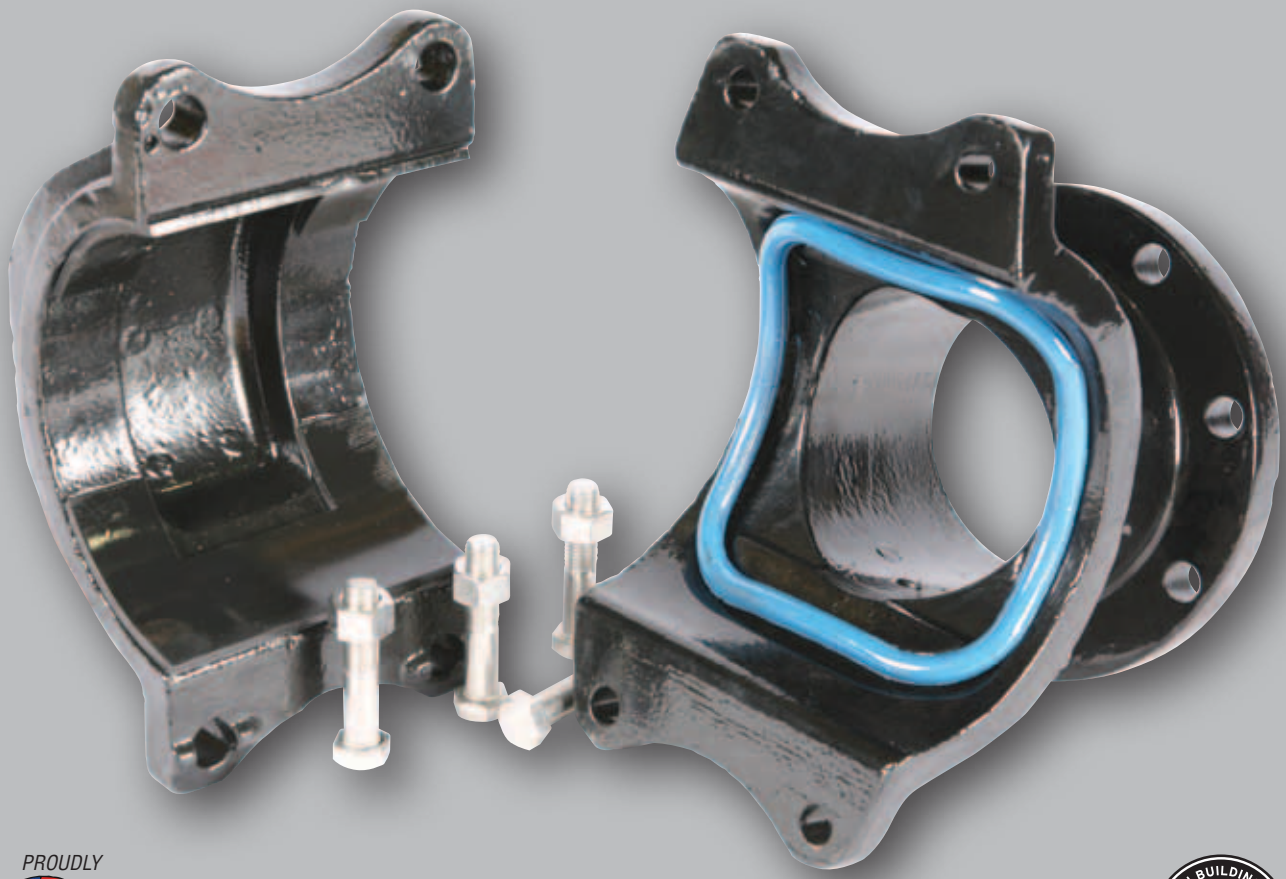
Kennedy Valve

920SS SQUARESEAL TAPPING SLEEVE

for Cast Iron Pipe



PROUDLY

MADE IN THE USA

U.S. GREEN BUILDING COUNCIL MEMBER

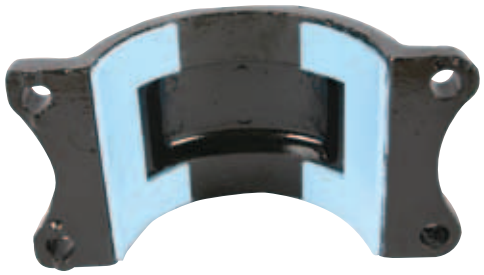
Updated 12/15/09

Tap cast iron mains under pressure

KENNEDY SQUARESEAL Tapping Sleeve

Outlet half of sleeve

Back half of sleeve



I-beam design

Protects Pipe
The Kennedy SQUARESEAL™ tapping sleeve is engineered to guard against pipe failure under all conditions. Tested to 750 PSI with and without severe bending stresses.

Single Seal
The SQUARESEAL is coated with heat fused polyester coating and uses one unique rectangular sealing ring cemented at the factory into a groove in outlet half of sleeve. Minimizes unbalanced pressure forces by permitting water to surround pipe at critical tap area.

Easy Installation
Back half remains on pipe without temporary support. No caulking, lead strips, or gaskets of any kind needed. Requires only simple wrenches to tighten bolts for complete installation. A ¼" NPT plug is included for pressure testing.

Reduces Inventory Requirements
Back halves of Kennedy sleeves have cemented-in neoprene pads with only two variations. Either Fig. 920, with back half coated black, or Fig. 921, with back half coated red, will accommodate all classes of pipe as indicated in tables on page 3.

Direct Pipe Support
The I-beam design of the SQUARESEAL back half provides rugged strength. Has elastomer bearing pads for direct pipe support.

Saves Time
The SQUARESEAL uses only 4 bolts on most sizes, maximum of 6 bolts on largest. Can be installed by one man.

Tapping Valves

Kennedy Tapping Valves are available to the standards of both AWWA C-509 (Full-Bodied Cast Iron) and AWWA C-515 (Reduced-Wall Ductile Iron). The water-way will accommodate full sized cutters. The flange end has a machined pilot boss to match the counter bore in all styles of tapping sleeves per MSS-SP-60. The opposite end is mechinical joint and will accommodate adapters for all standard tapping machines.

The C-509 Tapping Valve is available in sizes 4" through 12", specify figure number 8950SS and the C-515 is available in sizes 4" through 24", specify figure number 7950SS. (30" and larger sizes are normal MJ x Flange Valves).

Updated 12/15/09

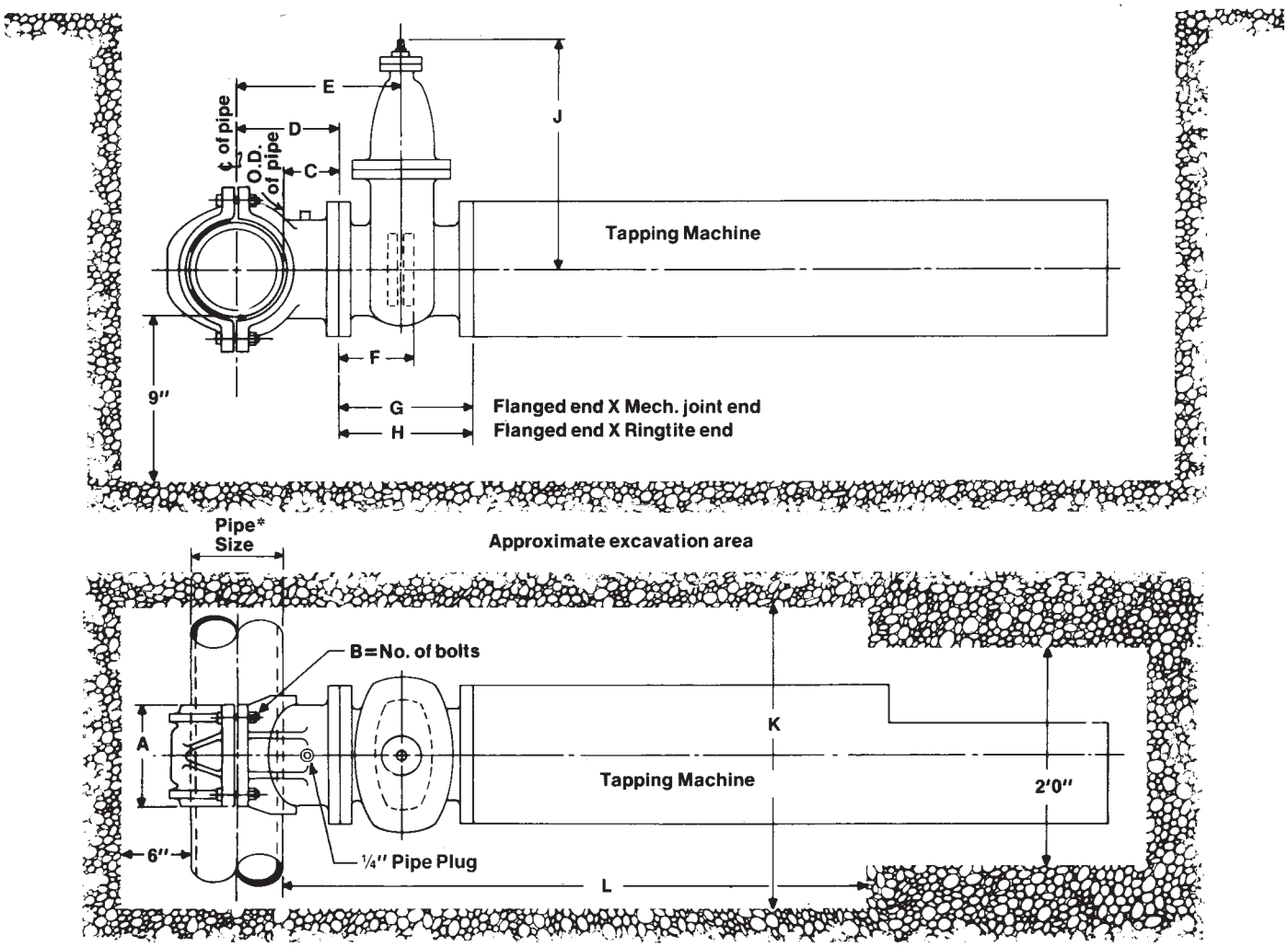
Dimensions

Dimensions in inches and millimeters

Sleeve Size	A	B	C	D	E	F	G	H	J	K	L
4 x 3 100 x 75	10¼″ 260	4	5⅛″ 130	7 13/16″ 198	11 13/16″ 300	5 1/16″ 129	8 9/16″ 217	9⅜″ 238	12 13/32″ 315	3′-0″ 914	3′-0″ 914
4 x 4 100 x 100	10¼″ 260	4	4⅞″ 124	7 9/16″ 192	12 1/16″ 306	5 51/64″ 147	10 1/32″ 255	10⅜″ 264	13 5/16″ 338	3′-0″ 914	3′-0″ 914
6 x 3 150 x 75	12½″ 318	4	5¼″ 133	8⅞″ 226	12⅞″ 327	5 1/16″ 129	8 9/16″ 217	9⅜″ 238	12 13/32″ 315	3′-0″ 914	3′-0″ 914
6 x 4 150 x 100	12½″ 318	4	5″ 127	8⅝″ 219	13⅛″ 334	5 51/64″ 147	10 1/32″ 255	10⅜″ 264	13 5/16″ 338	3′-0″ 914	3′-0″ 914
6 x 6 150 x 150	13″ 330	4	5⅛″ 130	8¾″ 222	14⅜″ 365	7 1/16″ 179	11 13/16″ 300	12 1/32″ 306	17 19/32″ 447	3′-0″ 914	3′-0″ 914
8 x 3 200 x 75	14⅞″ 378	4	5¼″ 133	9⅞″ 251	13⅞″ 353	5 1/16″ 129	8 9/16″ 217	9⅜″ 238	12 13/32″ 315	3′-6″ 1067	3′-6″ 1067
8 x 4 200 x 100	14⅞″ 378	4	5″ 127	9⅝″ 245	14⅛″ 359	5 51/64″ 147	10 1/32″ 255	10⅜″ 264	13 5/16″ 338	3′-6″ 1067	3′-6″ 1067
8 x 6 200 x 150	15¾″ 400	4	5¼″ 133	9⅞″ 251	15½″ 394	7 1/16″ 179	11 13/16″ 300	12 1/32″ 306	17 19/32″ 447	3′-6″ 1067	3′-6″ 1067
8 x 8 200 x 200	16⅛″ 410	4	5½″ 140	10⅛″ 257	15⅞″ 403	7 15/32″ 190	12 23/32″ 323	13 3/32″ 333	21 1/32″ 542	3′-6″ 1067	3′-6″ 1067
10 x 3 250 x 75	18⅜″ 467	4	6½″ 165	12⅜″ 315	16⅜″ 416	5 1/16″ 129	8 9/16″ 217	9⅜″ 238	12 13/32″ 315	3′-6″ 1067	3′-6″ 1067
10 x 4 250 x 100	18⅜″ 467	4	6½″ 165	12⅜″ 315	16⅞″ 429	5 51/64″ 147	10 1/32″ 255	10⅜″ 264	13 5/16″ 338	3′-6″ 1067	3′-6″ 1067
10 x 6 250 x 150	18⅜″ 467	4	5½″ 140	11 5/16″ 287	16 5/16″ 414	7 1/16″ 179	11 13/16″ 300	12 1/32″ 306	17 19/32″ 447	3′-6″ 1067	3′-6″ 1067
10 x 8 250 x 200	19⅜″ 492	6	7¾″ 197	13⅝″ 346	19⅜″ 492	7 15/32″ 190	12 23/32″ 323	13 3/32″ 333	21 1/32″ 542	3′-6″ 1067	3′-6″ 1067
10 x 10 250 x 250	19 ⅛″ 492	6	6¼″ 159	12⅛″ 308	17⅞″ 454	8 25/32″ 223	14 1/32″ 357	—	25 1/32″ 644	3′-6″ 1067	3′-6″ 1067
12 x 3 300 x 75	20¾″ 527	4	6⅝″ 168	13½″ 343	17½″ 445	5 1/16″ 129	8 9/16″ 217	9⅜″ 238	12 13/32″ 315	3′-6″ 1067	3′-6″ 1067
12 x 4 300 x 100	20¾″ 527	4	6⅝″ 168	13½″ 343	18″ 457	5 51/64″ 147	10 1/32″ 255	10⅜″ 264	13 5/16″ 338	3′-6″ 1067	3′-6″ 1067
12 x 6 300 x 150	20¾″ 527	4	5½″ 140	12 7/16″ 316	18 1/16″ 459	7 1/16″ 179	11 13/16″ 300	12 1/32″ 306	17 19/32″ 447	3′-6″ 1067	3′-6″ 1067
12 x 8 300 x 200	21½″ 546	6	7⅞″ 200	14¾″ 375	20½″ 521	7 15/32″ 190	12 23/32″ 323	13 3/32″ 333	21 1/32″ 542	3′-6″ 1067	3′-6″ 1067
12 x 10 300 x 250	21½″ 546	6	6⅜″ 162	13¼″ 337	20⅛″ 511	8 25/32″ 223	14 1/32″ 357	—	25 1/32″ 644	3′-6″ 1067	3′-6″ 1067
12 x 12 300 x 300	22″ 559	6	4¾″ 121	11⅝″ 295	19 1/16″ 484	9¾″ 248	15¼″ 387	—	29 15/32″ 749	3′-6″ 1067	3′-6″ 1067

*(See Note For Pipe Size)

Updated 12/15/09



***Note: Pipe Sizes**

Dimensions in inches and millimeters

Fig. 920		Fig. 921	
Size of Main	O.D. of Main	Size of Main	O.D. of Main
4″ 100	4.80 ±.06 122 ±1.5	4″ 100	5.00 ±.06 127 ±1.5
6″ 150	6.90 ±.06 175 ±1.5	6″ 150	7.10 ±.06 180 ±1.5
8″ 200	9.05 ±.06 230 ±1.5	8″ 200	9.30 ±.06 236 ±1.5
10″ 250	11.10 ±.06 282 ±1.5	10″ 250	11.40 ±.06 290 ±1.5
12″ 300	13.20 ±.06 336 ±1.5	12″ 300	13.50 ±.06 343 ±1.5

Fig. 920 Tapping Sleeve — Color Code: Both outlet half and back half painted black. Suitable for use on the following pipe:

- Federal specification WW-P-421 class 150 & 250
- A.W.W.A. specification class A
- A.W.W.A. specification class B in the 8″, 10″ & 12″ sizes

Fig. 921 Tapping Sleeve — Color Code: Outlet half painted black, back half painted red. Suitable for use on the following pipe:

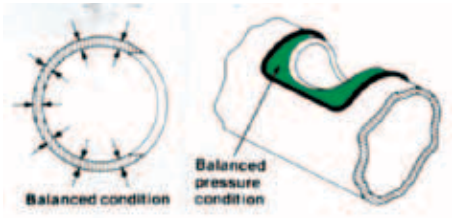
- A.W.W.A. specification classes C and D
- A.W.W.A. specification class B in the 4″ & 6″ sizes

The Tapping Sleeve Story

Tapping sleeves for installation on water mains under pressure have been available for many years. The 920SS Tapping Sleeve can be installed by one man in a matter of minutes.

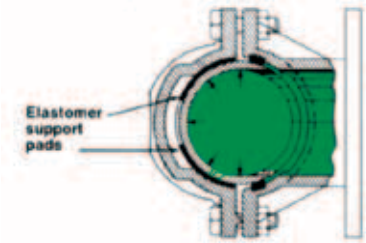
Ease of installation is a welcome bonus. Tapping sleeve installations face known stress conditions, and the first consideration in any design must be complete assurance against pipe failure. This was the paramount philosophy behind the development of the SQUARESEAL sleeve.

The initial problem confronting any tapping sleeve is the unbalanced pressure condition created by the removal of a pipe section. Before the pipe is tapped it is subject to equal pressure in all directions, tending to keep it round. This condition changes when a section of the pipe is removed. Internal pressure now tries to force the remaining weakened walls out of round, and some means of countering this unbalanced condition must be provided.



Conventional sleeves meet the problem by permitting water to surround the outer pipe walls within the sleeve. This provides opposing forces of equal magnitude, a balanced condition. Unfortunately, this solution to the problem has an inherent disadvantage, the need for seals at both ends and at both sides of the sleeve. This results in a heavy and cumbersome device with dozens of loose parts, and installation time is costly.

An obvious answer to the size and weight problem would be a single round seal positioned around the tap. However, this would prevent water from surrounding any portion of the weakened pipe, leaving the dangerous unbalanced pressure condition.



The Kennedy SQUARESEAL sleeve solves both of these problems in a unique but simple fashion. It makes use of a single seal, but one that is *rectangular* in shape. This permits balancing water pressure to cover the tapped half of the pipe right where the need is critical, and also eliminates the need for multiple bolts and gaskets.

The remaining unbalanced forces are now located in the back half of the main pipe, opposite the tapped half, and are supported by the positive wedging action of the elastomer pads located in the rugged I-beam back half casting.

Of the other stresses a tapping sleeve must handle, the most difficult is that condition common to all tee connections. A branch line of slip-joint pipe cannot transmit force back to the tee connection. This generates an unbalanced condition with water pressure against the tee's back wall unopposed by an equal pressure opposite. This unbalanced condition can cause severe pipe deflection and is the reason for the blocking behind tees in every well engineered system.

This same condition is another reason for the rugged I-beam design of the SQUARESEAL back half, and for the elastomer pads to support the pipe just where the maximum bending stress is centered. Conventional sleeves *cannot* provide this needed direct support.

In addition, the Kennedy SQUARESEAL sleeve has been designed to utilize still one more force to aid in support of the pipe. With only the outlet half subject to water pressure, there is always a substantial force pushing the sleeve away from the main. This force is directly opposed to the normal pipe movement at a tee connection, and wedges the elastomer support pads firmly against the main.

Exhaustive tests of both full and reducing sizes have proved the ability of the SQUARESEAL sleeve design to protect pipe under the most severe conditions. In many of these tests the tapped pipe and sleeve assemblies were suspended between two supports some six feet apart. The tapping sleeve outlets were set up with slip-joint connections to permit pipe deflection as the pressure was increased. The assemblies were pressurized all the way to 750 PSI, at which time the pipes split from the *support ends* due to the tremendous crush load.

For example, at this pressure there was an unbalanced force of 28,800 lbs., and a bending moment of 42,000 foot-lbs. at the tapped hole acting on an 8" Class 22 cast iron pipe. Despite the severity of these and other tests, and despite our continued endeavors to do so, we were never able to split the pipe within the sleeve!

The beauty of the phenomenon that permits all of the unbalanced pressure forces to be enclosed by the rectangular seal, is that it permits the manufacture of a small and easy to install sleeve of unparalled efficiency.

We are pleased to be able to offer installers a device that can save many hours of installation time with complete safety.

Kennedy Valve

A DIVISION OF McWANE, INC.

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2009

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Updated 12/15/09