



Called 3ply

"Mains without Maintenance"

"Century"

ASBESTOS CEMENT

PIPE

KEARSBEY & MATTHEWSON COMPANY

AMSTERDAM

"CENTURY" ASBESTOS-CEMENT PIPE

Warranty

Our products are carefully inspected for manufacturing defects; however, it is not always possible to detect hidden defects. Our products are warranted only to the extent that we will replace without charge, products proved to have manufacturing defects within six months of the date of delivery thereof and provided we have been given an opportunity to inspect the product alleged to be defective and the installation or use thereof. No warranty is included against any expense for removal, re-installation or other consequential damages arising from any defect. Owing to the widely varying conditions under which our products are installed and used we cannot be and are not bound, and no person is authorized to bind us, by any further warranty whatsoever, express or implied.

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**KEASBEY & MATTISON
COMPANY AMBLER, Penna.**

ASBESTOS . . . A UNIQUE MATERIAL

Asbestos has been known for centuries. Many of its qualities are so remarkable that it is small wonder they were noticed and recorded by the ancients. Marco Polo reported seeing asbestos cloth at the court of Kublai Khan in China. Asbestos was used by the Greeks for candle wick, and by the Romans for wrapping the bodies of their honored dead before cremation.



A sample of the mineral Asbestos, clearly showing its remarkable fibrous structure.

These early uses took advantage of two outstanding features of asbestos—its resistance to fire, and its durability. But only in the last century was a third unusual quality of this material discovered and put to important use. Asbestos is one of the few known minerals which can be successfully used as a reinforcing agent in Portland cement. Cement also is an ancient and durable material. Many of the viaducts which added to the fame of the Roman Empire, and which remain in good condition today, were made of cement.

Asbestos fibres are finer than silk and sufficiently flexible to be spun and woven. They are immensely strong, possessing an exceptionally high tensile strength.

In Asbestos-Cement, these strong, pliable, durable fibres are mixed with Portland cement to form a homogeneous mass of uniform strength. It is of such material, scientifically processed in each manufacturing step, that "Century" Asbestos-Cement Pressure pipe is made.

Over 30 years of experience has convinced engineers the world over that *Asbestos-Cement Pipe, once laid, may be forgotten.*

[2]

DEVELOPMENT OF ASBESTOS-CEMENT PIPE

For years, engineers in this country received reports of a revolutionary new kind of pipe that was being widely and successfully used in Europe. It was said to have great durability, and to require none of the maintenance that had long been accepted as a costly matter-of-course in the distribution of water throughout a community. It was made of asbestos and Portland cement, a combination which had already earned a high reputation in other fields for durability and low maintenance.

The experimental manufacture of Asbestos-Cement Pipe was begun in Europe in 1913, and within three years was established on a commercial basis. It was first used for the conveyance of sea water, an especially severe form of service. Progress was rapid, and by 1921 seamless Asbestos-Cement Pipe was generally accepted for many important water mains and other pressure services throughout Europe. In the same year, the manufacturing process was first patented in the principal industrial countries of the world.

In the United States very rapid progress has been made in the acceptance and use of Asbestos-Cement Pipe, and although this position has been aided materially by the experience accumulated in European countries since 1913, the extent of the progress made can be ascribed mainly to the inherent and permanently good qualities which make Asbestos-Cement Pipe so eminently suited for water conveyance.



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Advantages You Obtain with "Century" Asbestos-Cement Pipe

MEETS GOVERNMENT SPECIFICATIONS

"Century" Pipe is made in accordance with and conforms to U. S. Federal Specification SS-1-351 covering asbestos-cement pipe; which recognizes this material as suitable for purchase by all U. S. Government agencies.

DURABILITY In the type of service for which this pipe is used, long life is a primary consideration. The two ingredients of which it is made—Asbestos and Cement—have been known and used since antiquity for projects that were built to endure. Archaeological discoveries in recent years prove that these products of nature have lasted through the centuries.

STRENGTH The Special Process builds exceptional strength into "Century" Asbestos-Cement Pipe. The rigid quality-control which is a feature of K&M manufacture is your further assurance of high strength and uniformity alike. It is noteworthy that in common with other asbestos-cement products this pipe strengthens with age.

NON-CORROSIVE Corrosion, usually an external enemy, first weakens and finally destroys ordinary pipe. This means water works, in many instances, are faced with the recurrent necessity of replacing part or all of a line. "Century" Asbestos-Cement Pipe being non-metallic cannot corrode.

NON-TUBERCULATING Tuberculation, the enemy from within, first increases friction and later reduces flow area in ferrous pipe. The flow area is fully maintained and friction is kept at a minimum in "Century" Asbestos-Cement Pipe, for, being non-metallic, it cannot tuberculate, thus insuring against increased pumping costs as the pipe ages.

[4]

TIGHT JOINTS "Century" Flexible Couplings are immediately and permanently tight, with the result that there is no problem of leakage. This means reduced pumping costs and prevents loss of water and revenue over the years.

ECONOMY In addition to reducing transportation costs because of its light weight, "Century" Asbestos-Cement Pipe is easily and economically handled and laid. Its extreme durability means extra long life with minimum replacements. Its immunity to tuberculation, corrosion and electrolysis not only goes far to insure maintenance-free service but consistently low pumping cost as well.

EASE OF LAYING The light weight of "Century" Asbestos-Cement Pipe, and the speed with which joining is accomplished both contribute to ease and low cost of laying.

SMOOTH BORE Formed on a smooth steel mandrel, the pipe has an interior surface to match. The Williams and Hazen Constant "C" is conservatively placed at 140 for "Century" Asbestos-Cement Pipe. It will remain at its initial figure.

LIGHT WEIGHT "Century" pipe is relatively light in weight. Transportation and labor costs are favorably affected, while machinery is unnecessary for handling except with the largest and heaviest pipe, or under exceptional conditions.

IMMUNE TO ELECTROLYSIS Being non-metallic, "Century" Asbestos-Cement Pipe is not affected by stray electric currents. In many localities this is an invaluable feature.

SALVAGE VALUE "Century" Asbestos-Cement Pipe has 100% salvage value. It is easily removed and may be re-installed as many times as desired. As its strength increases rather than decreases with age, it can be used over and over in its original pressure class.

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Installation Recommendations

The following pages are devoted to the necessary instructions for the installation of "Century" Asbestos-Cement Pipe. It is not intended to be a substitute for, nor to be superior to, competent engineering judgment based upon a complete understanding of special conditions.

Many familiar practices which apply to the installation of all pipe are included, because they apply equally well to the installation of "Century" Pipe. Since the installation of "Century" Pipe is easier, simpler and speedier than other types of pipe, there are also recommendations which apply specifically to the installation of "Century" Pipe.

HANDLING

Check the shipments against the packing tickets and report any error or damage to the transportation agent.

The Installation Manual and Gasket Locator will be found either in a bag or box, with the tag or box marked in large letters "Installation Booklet and Gasket Locator in this container."

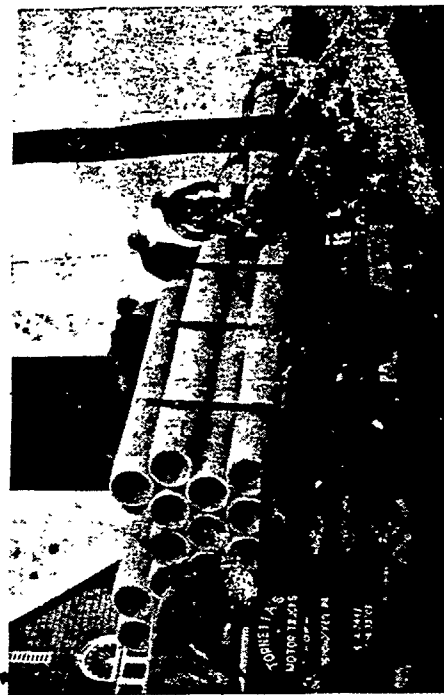
All pipe materials can be damaged by rough handling. "Century" Asbestos-Cement Pipe is no exception. However, its comparatively light weight makes handling easier and cuts down the possibility of mishap. Pipe should be rolled or lifted. It should not be thrown, slid, dropped, rolled together hard, or crashed.

Pipe should be stacked on high level ground and supported on heavy planks placed about 3 feet from each end.

For pipe sizes over 6", rope or skids should be used in handling. Only in unusual cases will machinery be necessary.

Keep earth and foreign matter out of pipe interior. The coupling ends must be protected from damage and kept clean to assure quick assembly of permanently tight joints. If pipe is distributed along the trench it should, where possible, be placed on the side opposite the excavated earth.

[6]



Distributing Pipe from Truck directly along trench.

ALIGNMENT AND GRADE

The pipe should be laid to the line and grade established by the engineer or other authority in charge of the installation.

TRENCHING

The trench should be 18" wide for pipe sizes up to and including 8". For larger size pipe the trench should be one foot (1') wider than the diameter of the pipe.

The recommended minimum depth of cover is three and one-half (3½) feet. Due consideration must be given to frost line, surface and traffic loads and type of back fill.

Where conditions permit, the trench should be excavated to a flat bottom cut true and even at the established grade. The pipe should be laid upon firm trench bottom and shallow holes scooped out for the couplings, thereby providing a bearing for the barrel of the pipe along its full length.

Where excavation is below grade, correction should be made with suitable material carefully tamped.

Large boulders and rock should be removed to a depth of 6" below grade and the holes filled with suitable material carefully tamped.

[7]

Trenching (continued)

Where trench conditions are rocky, or the manner of excavation leaves an uneven bearing for the full length of the barrel of the pipe, additional excavation should be made and the trench refilled to a flat bottom at the proper grade with suitable material carefully tamped to provide a bearing for the pipe.

When the use of blocks is necessary, two wooden blocks or two dirt pads should be placed under each pipe approximately one-fifth of the length from the pipe ends. For 10' pipe the distance is 24". For 13' pipe the distance is 31" and for 18' pipe it is 43". This spacing gives the pipe the best support and allows the backfill to be properly compacted under the pipe. The blocks should be on firm soil and leveled across the bottom of the trench. The blocks should project at least 1" above the trench bottom. Block sizes should be as given in the following table:—

Pipe Size	Lumber
to 6"	2" x 4" x 10"
8" to 12"	2" x 6" x 12"

Support and protection should be provided for existing pipe-lines, electrical conduits, or other structures.

JOINING—Preparation:

"Century" Pipe is readily and speedily joined in the trench. For convenience and to obtain the greatest speed in laying, the parts of the "Century" Coupling should be placed on the pipe ends before lowering the pipe into the trench. This is done as follows:—

1. Raising
Block the pipe a few inches off the ground.
2. Cleaning
Clean off dirt or mud that may be sticking to the coupling area end of the pipe.
3. Follower Ring
Place the coupling follower on the pipe back from the end.

[8]

Joining (continued)

4. Locating the Gasket

Gaskets are easily placed on the pipe ends by hand. Correct location is given in the table below.

Pipe Size	Pipe End to Nearest Gasket Edge	Pipe Size	Pipe End to Nearest Gasket Edge
2"	3/8"	8"	15/16"
3"	1/2"	10"	1"
4"	5/8"	12"	1 1/8"
6"	3/4"		

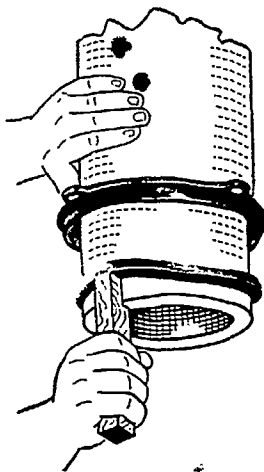


Coupling Parts Being Placed in Position



Coupling Parts in Position

[9]



Gasket Being Placed on Pipe With Aid of Special Wooden Gauge

To facilitate the accurate location of the gaskets, special wooden gauges are furnished with each initial order. These gauges are made of hard wood, $\frac{3}{4}$ " cross section and the end is recessed the correct distance to properly locate the gasket. Each gauge is stamped with the size pipe with which it is to be used. A complete turn around the pipe will locate the gasket.

5. Repeating

Repeat all operations 1-4 on the other pipe end.

6. Middle Ring

Roll the gasket back on one end of the pipe in order to allow placing of the middle ring on the pipe end. Place the middle ring on this end.

[10]

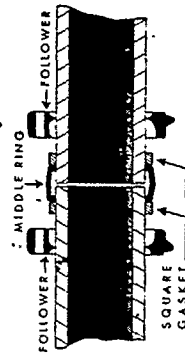
JOINING—Completion

7. Bolts

Bolts should be placed in a bucket or other suitable container so that they may be moved along as joints are assembled. Now the top of trench preparation is complete and the pipe with all accessories is ready for lowering into the trench.

After several lengths of pipe have been prepared in the manner described, lower the pipe with the coupling parts in position into the trench. The joint is then completed as follows:—

1. Bring the pipes together leaving $\frac{1}{2}$ " clearance between the ends. This is easily done by holding any $\frac{1}{2}$ " gauge piece over the end of one pipe, bringing the other pipe up against the gauge piece, and removing the gauge piece after the pipe has been brought up against it. The $\frac{1}{2}$ " clearance at the pipe joints is a precautionary requirement to maintain flexibility in the pipe line and to prevent buckling of the line, if any movement occurs after the line is installed.
2. Slide the middle ring from its position on one pipe end over the joint until it rests against the gasket on the other pipe. The middle ring should be free to turn on both pipe ends and not bind on either.
3. The gasket which was rolled back to permit placing the middle ring on the pipe end should now be rolled up against the middle ring. Be sure that the gaskets seat snugly against the middle ring and are not twisted (see below).



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Joining (continued)

4. Bring the follower rings up against the gaskets, insert bolts through the followers in same direction and tighten bolts on opposite sides of the pipe alternately with a wrench. Draw the bolts tight, but do not force, so that all nuts are turned approximately the same number of threads on the bolts. This completes the joint.

Table of Wrench Sizes

Pipe Size	Wrench Socket Size
2" 4"	5/8"
3 to 6"	13/16"
8 to 12"	1"

NOTES ON THE "CENTURY" COUPLING

It is possible that through rough handling an occasional middle ring of the "Century" Coupling may become "out of round" to the extent that it may not fit on the pipe. As these rings are made of malleable iron it is a simple matter to hammer them back into shape without damage.

The "Century" Coupling is a flexible one. It is designed and made to withstand far greater internal pressure than will be found in practice in the pipe lines in connection with which it is used. However, the "Century" Flexible Coupling is not a mechanical lockjoint. It is not designed or made to prevent the pipe from pulling apart under pressure. The recommended method of blocking dead ends and bends, and the weight of the backfill will hold the pipe in place. (See section head "Backfilling.")

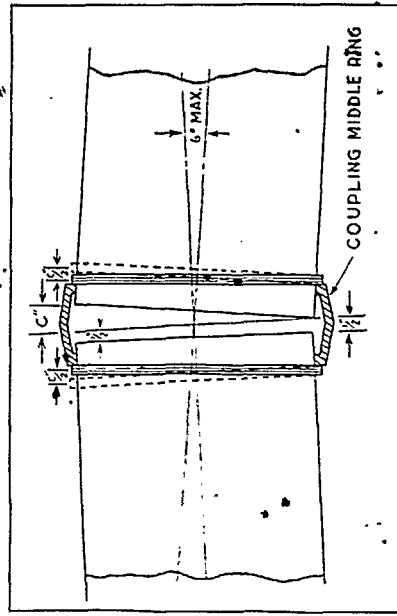
When "Century" Couplings are used to connect "Century" Asbestos-Cement Pipe and other type pipe, they should fit on the plain pipe end so that not more than 1/8 of an inch clearance appears all around.

CURVED LINES

The "Century" Coupling is designed to permit a 6 degree deflection from one pipe to the next (which means an offset of 16" per 13' length) and still make a perfectly safe joint. This feature permits the installation of pipe lines on large radius curves without the use of special bends. The use of pipe in lengths shorter than standard will permit curves of shorter radius. In making such installations with deflected full length pipe, lay each pipe in its final deflected position before completing the joints. Be sure to obtain the 1/2" clearance between pipe ends where the edges of the pipe are nearest.

A correction on the gasket on each pipe must be made before completing the joint. This correction is determined in the following manner:

1. Determine the width of the opening at the widest point and subtract one-half inch from this. (C in sketch.) This gives you the extra space over normal on the outside edges.
2. The gasket on each pipe section is then moved, at the



outer edge, one-half this distance toward the pipe edge. (C/2 in sketch.)

3. The gasket remains in its usual place on the inside edge. Then straighten the gasket by making a corresponding correction between these two points. (See sketch.)

4. This makes the gaskets parallel and will center the coupling middle ring over the opening and the coupling over the joint.

Remember that locating the gaskets correctly will center the coupling on the joint and facilitate and speed the assembly.

The following table shows the amount of offset in inches of subsequent pipe ends from a straight line for pipe lengths and degrees of deflection.

OFFSET IN INCHES OF PIPE ON CURVES

Degree of Deflection	Length of Pipe in Feet				
	5'	6 1/2'	Std. for 2" 10'	Standard for 3" to 12" 13'	Optional for 6" and 8" Class 150 18'
1°	1.0"	1.3"	2.0"	2.7"	3.8
2°	2.1"	2.7"	4.2"	5.4"	7.5
3°	3.1"	4.0"	6.2"	8.1"	11.3
4°	4.1"	5.4"	8.3"	10.9"	15.1
5°	5.2"	6.8"	10.5"	13.6"	18.9
6°	6.2"	8.0"	12.5"	16.2"	22.8

The following table gives the radius of curvature possible with different pipe lengths and degrees of deflection at the joint.

RADIUS OF CURVATURE IN FEET

Degree of Deflection	Length of Pipe in Feet				
	5'	6 1/2'	10'	13'	18'
1°	287	374	574	747	1030
2°	143	186	285	371	515
3°	96	124	191	249	343
4°	72	93	143	186	248
5°	57	74	114	149	206
6°	48	62	95	124	171

CUTTING PIPE IN THE FIELD

For field cutting a buck saw or a two-man saw with "tuttle tooth" blade is recommended. This type of blade consists of two cutting teeth adjacent to two cleaning teeth, throughout the length of the blade.

On large installations a portable electric saw with a carbide-tipped blade is recommended. In an emergency a coarse tooth hack saw or a well-sharpened wood saw may be utilized, but they will dull quickly due to the abrasiveness of the pipe to be cut.

All saws should be kept sharp and "set" wide.

Never cut Asbestos-Cement Pipe with a cold chisel or pipe cutter.

Using the Factory square cut end as a guide, it is a simple matter to mark the pipe for cutting in the field. To insure a straight cut, turn the pipe when saw has cut through wall.

All the pipe ends are accurately manufactured to fit "Century" Flexible Couplings. In addition, each shipment will contain one 6'6" marked section of pipe for each 500 feet or fraction thereof of pipe. These marked sections will fit the coupling at any point and can be easily identified by black painting on the ends.

If the project necessitates considerable field cutting, all of these specially marked sections or others suitable for cutting should be set aside until needed for this purpose. To determine whether a length of pipe can be cut at any point and joined with a "Century" Coupling, select one which appears to have the same O. D. throughout its entire length. If the coupling middle ring slides easily over the entire length, the pipe can be cut and joined at any point, just as in the case of the specially marked sections.

All short lengths are marked with the actual length in feet and inches.



Cutting "Century" Pipe With Two-Man Saw

CONNECTIONS TO CAST IRON PIPE AND FITTINGS

Connections to bell ends of Cast Iron pipe are made by yarning with dry unbraided jute or other suitable material and pouring with a self-caulking compound, the same as in joining two lengths of bell and spigot cast iron pipe. Lead joints if properly caulked may be used.

Class D standard cast iron bell end pipe and fittings can be readily adapted to all sizes of "Century" Pipe in Class 100; to all sizes in Class 150 up to and including 8" and 4" Class 200. Enlarged bell end cast iron fittings are used with sizes 10", and larger in Class 150 and for all sizes in Class 200, except 4".

When ordering enlarged bell end and cast iron fittings the inside diameter of the bell end should be at least one (1) inch greater than the outside diameter of the "Century" Pipe as shown on Page 24. This will give a $\frac{1}{2}$ " spacing for pouring the joint compound.

Where "Century" pipe is joined to cast iron pipe, fittings, valves, or hydrants with a rigid poured joint a short piece of "Century" pipe, preferably 12" to 18" in length should be joined into the cast iron bell openings. In no case should this nipple be over 30" in length. This allows a "Century" Flexible Coupling to be used, thus to the poured joint to insure maximum flexibility.

Connections to plain ends of cast iron pipe can be made with a "Century" Flexible Coupling provided outside diam-

Fitting "Century" Pipe to Cast Iron Connections



All work on surface



Lower left place



Bolt them together

eter of the iron pipe approximates outside diameter of "Century" Pipe. Test with middle ring as described on Page 15.

Coupling is assembled in same manner as when joining the lengths of "Century" Pipe. Clearance between coupling and pipe should not be more than $\frac{1}{8}$ " all around.

If outside diameter of Cast Iron pipe is such that a "Century" Coupling cannot be used, a cast iron bell and plain end adaptor having a bell for the outside diameter of the iron pipe and a plain end for the outside diameter of the "Century" Pipe, or an adaptor having a spigot end and a plain end of proper outside diameters can be used.

PROVIDING FOR FUTURE CUT-IN CONNECTIONS

To provide for future cut-in connections, use short lengths of coupling section pipe to eliminate unnecessary excavation when the future cross or tee is installed.

The length of the short piece inserted in the line is determined by the laying length of the future "special" to be inserted, plus a reasonable working distance between coupling and "special." Approximately 12" to 18" should be allowed between existing coupling and the inside of the bell of the special to be inserted.

To install a "special" in a "Century" line where provision for cut-ins has been made, the following steps are taken:

1. Uncover short length of pipe where "special" is to be placed.
2. Unbolt couplings and remove short length.
3. Lay "special" midway between existing pipe and measure the distance between the inside of the bell and the end of the existing pipe.
4. Cut the piece of "Century" pipe removed from the line to the proper lengths allowing $\frac{1}{2}$ " clearance at the joints when the line is reassembled.
5. Place "special" in position on good foundation, have bell holes dug to allow working room to yarn and pour joints.
6. Reassemble and tighten "Century" Flexible Coupling so there is no danger of not being able to assemble couplings after poured joints are made.

Future Connections (continued)

7. Yarn and pour joints of "special," with self-capping compound.

Where conditions make it difficult to pour joints in the trench, this may be done on the surface and the entire unit with "Century" Coupling parts in place lowered into the trench and assembly completed in the usual manner as in original installations. Care must be used in cutting the short pieces of "Century" Pipe to the right length allowing for $\frac{1}{2}$ " clearance at the joints and to avoid damaging the unit when lowering into the trench.

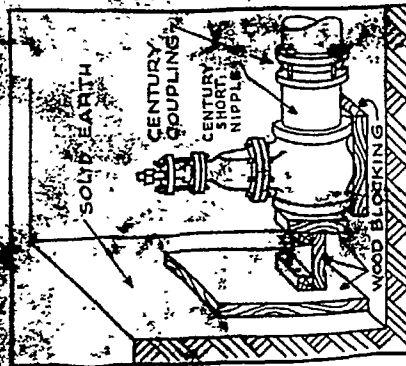
RAILROAD CROSSING—These should be made in accordance with the recommendations of the railroad authorities.

THRUST BLOCKING

Line should be thrust blocked at bends, tees, caps, valves and hydrants to prevent movement of lines under pressure.

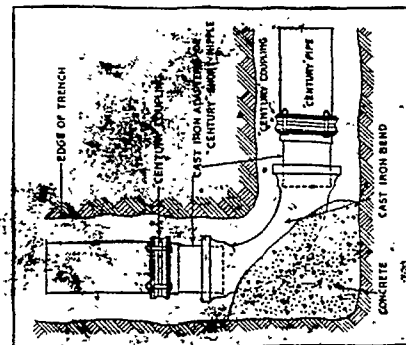
Place blocking between solid ground and fitting to be anchored, and in such manner that pipe and fitting joints will be accessible for repairs.

Blocking should be concrete, of a mixture calculated to have a compressive strength of not less than 2000 pounds per square inch. Other approved materials may be used.



Showing method of temporarily blocking dead end by use of timber.

[18]



Cast Iron All Ball Bend

[19]

SERVICE CONNECTIONS

"Century" Pipe should be drilled and tapped for corporation stops with standard tapping equipment in the same manner as other kinds of pipe. Only Mueller type thread is recommended. The maximum size recommended is $\frac{3}{4}$ " for 4" and 6" pipe and 1" for 8" pipe and over.

In tapping the pipe with the standard equipment do not force the drill through the pipe wall. Unless the drill is dull very little pressure will be sufficient to lead the drill into the pipe wall. If the drill is forced through the pipe wall a punching instead of a cutting action will result and chipping will occur. Water poured into the body of the tapping machine will act as a lubricant and will facilitate the drilling.

Special combined drills and taps with Mueller type thread are available for use with "Century" Pipe. The use of this type drill and tap is recommended.

Drilling, tapping and inserting stops may be done either dry or under pressure. Tighten but do not force corporation stop.

Service clamps, saddles, tapping sleeves and similar accessories are available for use with "Century" Pipe for outlets larger than recommended above.

Copper or lead goose necks are recommended between corporation stop and service line. Swing bells must not be used to connect the service line to the corporation cock when taken directly from the barrel of the "Century" Pipe. Swing bells may be used when iron service clamps, saddles, or tapped couplings are used.



Drilling and tapping dry pipe for a corporation stop



Corporation stop with goose neck

[19]

"CENTURY" END CAPS (Test Caps)

"Century" End Caps, for Asbestos-Cement Pipe, are made of flexible iron and are available for 4" to 12" pipe including Class 150 only. The dimensions of end caps are the same as for the standard "Century" Couplings.

The end cap is drilled and tapped off center with standard iron pipe threads. End caps are available for 4" and all other sizes.

The end cap is made of one end cap, one follower ring, soft iron, and the necessary number of bolts. End caps are sold as a complete unit. No iron pipe plug is furnished. The end cap is placed as far on the pipe end as possible, and blocked off with a cap or substantial timber to resist end thrust.

Dimensions of "Century" End Caps

Size in Inches	Class	Overall Diameter (Outside of Flange) Inches	Diameter of Bolt Circle Inches	Inside Diameter of End Cap Inches	Inside Diameter of End Cap Inches	Blowing Time in Seconds	No. of Bolts	No. of Bolts	Bolt Size	Shipping Weight of Complete End Cap Pounds
4	150	3.75	7.35	1.61	1.61	1	3	3	1/2 x 3/4	13
6	150	11.00	9.5	1.95	1.95	2	4	4	3/4 x 1	24
8	150	13.25	11.875	2.375	2.375	3	5	5	1 x 1 1/4	37
10	150	15.75	14.25	2.75	2.75	4	6	6	1 1/4 x 1 1/2	55
12	150	18.25	16.75	3.1	3.1	5	6	6	1 1/2 x 1 1/2	73



Complete End Caps



End Cap Assembled

[20]

SERVICE COUPLINGS

"Century" Flexible Couplings with long middle rings are installed in the same manner as the standard coupling except that the space between pipe ends should be slightly greater than the tapped hole. The middle ring is drilled and tapped at the factory. Their use permits service connections to be taken off at the coupling, eliminating the necessity of drilling and tapping the pipe proper. Service couplings are available on special order for use on 2", 3" and 4" Class 100 and 150, tapped 1/2" to 1", Mueller type tapered thread or standard iron pipe thread. They also can be obtained for sizes 2", 3", 4", and 6" Class 150 only, tapped from 1 1/4" to 2", iron pipe thread only. Orders should specify size of tap and type of thread. When desired for future services they are plugged, or a corporation stop in the "off" position is installed.

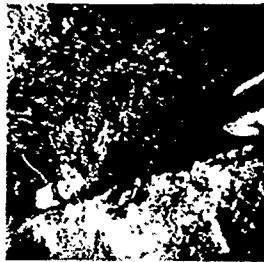


Plugged Service Coupling

PARTIAL BACKFILLING FOR TEST

Before testing, the line should be backfilled in 4" layers directly over and on both sides of the pipe for the full width of the trench and not less than eight inches above the top of the pipe. Be careful to use earth free from rock, boulders, frozen lumps or other unsuitable material.

The backfill should be thoroughly tamped under and on each side of the pipe to provide solid bearing. If possible, leave the joints exposed for examination under test, but if conditions are such that the exposed coupling area will be filled with water, snow, or other objectionable matter so as to cause the bed of the pipe to become unstable, the trench should be completely backfilled. Balance of backfill may contain coarser materials, and should be thoroughly tamped or puddled. Flooding the trench may also be employed but be careful not to float the pipe.



Partial Backfill Coupling Exposed

[21]

EXPELLING AIR BEFORE TEST

Before filling the line with water, tap the line, if necessary, at the points of highest elevation to expel air. After releasing the air, all taps shall be tightly plugged. At high points, couplings may be loosened to expel air.

HYDROSTATIC TESTS

For partial or total backfill, the line shall be slowly filled with water, taking care to expel air as mentioned before. It is necessary to test the completed line to 50% above the normal operating pressure.

Make test between varied sections if possible.

Pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner.

While test pressure is being maintained, thoroughly inspect all exposed pipes, fittings, valves, hydrants and joints for leaks. If all joints are tight and pressure gauge falls off slightly this is probably due to trapped air and gauge will hold steady after approximately 48 hours.

If leakage is evident at a coupling it has been improperly installed.

Disassemble the joint, inspect thoroughly for improper assembly or foreign matter lodged under the gasket or within the coupling. Tighten joints or if self-coupling, cone and will sometimes seep in the early stages of their life, but will "take up" as they age. This may take approximately two weeks.

FINAL BACKFILL

After the test has been completed to the satisfaction of the authority in charge, the trench may then be backfilled in the usual manner, after the exposed sections, including the couplings, have been partially backfilled in the same manner as the barrel of the pipe. Large stones, debris or other objectionable material should not be thrown into the trench.

SALVAGE

After a period of service "Century" Pipe and couplings can be reclaimed in entirety. It can be used again on the same pressure class installation as it was originally designed for. Its walls are not weakened by corrosion, or decay. "Century" Pipe actually increases in strength with age.

INSTRUCTIONS FOR "RETURNED MATERIAL"

It is suggested that at least three full lengths of Pipe and three complete Couplings of each size, and class installed be retained for use in emergency extensions or repairs.

Returned materials will not be accepted for credit at our factory unless permission for their return has first been obtained from our District Office nearest you.

ONLY STANDARD FULL LENGTHS OR STANDARD SHORT LENGTHS OF PIPE AND/OR COMPLETE COUPLINGS MAY BE RETURNED FOR CREDIT. CUT OR BROKEN PIPE OR PARTS OF COUPLINGS ARE NOT RETURNABLE FOR CREDIT.

On receipt of permission from the Keasbey & Mattison District Office having jurisdiction the materials to be returned should be properly boxed, bagged or crated if necessary and shipped according to instructions, with freight prepaid.

We will not be responsible for damage suffered in transit.

Upon receipt at the factory returned materials will be inspected, and if found in salable condition credit will be issued, less a service charge. The report of the factory Inspection Department as to the acceptability of the returned material shall be final.

Dimensions and Weights of "Century" Asbestos-Cement Pipe

CLASS 100					
Pipe Size Inches	Standard Length Feet	Wall Thickness Inches	Outside Diameter Inches	Wt. Lb. per Lin. Ft. Pipe Only	
3	10	.41	3.10	3.10	
4	10	.46	3.89	4.70	
6	10	.51	4.96	6.54	
8	10	.57	6.02	10.89	
10	10	.63	7.09	14.37	
12	10	.68	8.16	21.05	
14	10	.74	9.23	28.15	
16	10	.80	10.30	35.65	
18	10	.86	11.37	43.65	
20	10	.92	12.44	51.15	
22	10	.98	13.51	59.15	
CLASS 150					
Pipe Size Inches	Standard Length Feet	Wall Thickness Inches	Outside Diameter Inches	Wt. Lb. per Lin. Ft. Pipe Only	
3	10	.46	3.22	3.51	
4	10	.51	3.91	5.26	
6	10	.57	4.98	7.23	
8	10	.63	6.05	10.60	
10	10	.69	7.12	13.97	
12	10	.75	8.19	18.34	
14	10	.81	9.26	22.71	
16	10	.87	10.33	27.08	
18	10	.93	11.40	31.45	
20	10	.99	12.47	35.82	
22	10	1.05	13.54	40.19	
24	10	1.11	14.61	44.56	
26	10	1.17	15.68	48.93	
28	10	1.23	16.75	53.30	
30	10	1.29	17.82	57.67	
32	10	1.35	18.89	62.04	
34	10	1.41	19.96	66.41	
36	10	1.47	21.03	70.78	
38	10	1.53	22.10	75.15	
40	10	1.59	23.17	79.52	
42	10	1.65	24.24	83.89	
44	10	1.71	25.31	88.26	
46	10	1.77	26.38	92.63	
48	10	1.83	27.45	97.00	
50	10	1.89	28.52	101.37	
52	10	1.95	29.59	105.74	
54	10	2.01	30.66	110.11	
56	10	2.07	31.73	114.48	
58	10	2.13	32.80	118.85	
60	10	2.19	33.87	123.22	
62	10	2.25	34.94	127.59	
64	10	2.31	36.01	131.96	
66	10	2.37	37.08	136.33	
68	10	2.43	38.15	140.70	
70	10	2.49	39.22	145.07	
72	10	2.55	40.29	149.44	
74	10	2.61	41.36	153.81	
76	10	2.67	42.43	158.18	
78	10	2.73	43.50	162.55	
80	10	2.79	44.57	166.92	
82	10	2.85	45.64	171.29	
84	10	2.91	46.71	175.66	
86	10	2.97	47.78	180.03	
88	10	3.03	48.85	184.40	
90	10	3.09	49.92	188.77	
92	10	3.15	50.99	193.14	
94	10	3.21	52.06	197.51	
96	10	3.27	53.13	201.88	
98	10	3.33	54.20	206.25	
100	10	3.39	55.27	210.62	
102	10	3.45	56.34	214.99	
104	10	3.51	57.41	219.36	
106	10	3.57	58.48	223.73	
108	10	3.63	59.55	228.10	
110	10	3.69	60.62	232.47	
112	10	3.75	61.69	236.84	
114	10	3.81	62.76	241.21	
116	10	3.87	63.83	245.58	
118	10	3.93	64.90	249.95	
120	10	3.99	65.97	254.32	
122	10	4.05	67.04	258.69	
124	10	4.11	68.11	263.06	
126	10	4.17	69.18	267.43	
128	10	4.23	70.25	271.80	
130	10	4.29	71.32	276.17	
132	10	4.35	72.39	280.54	
134	10	4.41	73.46	284.91	
136	10	4.47	74.53	289.28	
138	10	4.53	75.60	293.65	
140	10	4.59	76.67	298.02	
142	10	4.65	77.74	302.39	
144	10	4.71	78.81	306.76	
146	10	4.77	79.88	311.13	
148	10	4.83	80.95	315.50	
150	10	4.89	82.02	319.87	
152	10	4.95	83.09	324.24	
154	10	5.01	84.16	328.61	
156	10	5.07	85.23	332.98	
158	10	5.13	86.30	337.35	
160	10	5.19	87.37	341.72	
162	10	5.25	88.44	346.09	
164	10	5.31	89.51	350.46	
166	10	5.37	90.58	354.83	
168	10	5.43	91.65	359.20	
170	10	5.49	92.72	363.57	
172	10	5.55	93.79	367.94	
174	10	5.61	94.86	372.31	
176	10	5.67	95.93	376.68	
178	10	5.73	97.00	381.05	
180	10	5.79	98.07	385.42	
182	10	5.85	99.14	389.79	
184	10	5.91	100.21	394.16	
186	10	5.97	101.28	398.53	
188	10	6.03	102.35	402.90	
190	10	6.09	103.42	407.27	
192	10	6.15	104.49	411.64	
194	10	6.21	105.56	416.01	
196	10	6.27	106.63	420.38	
198	10	6.33	107.70	424.75	
200	10	6.39	108.77	429.12	
202	10	6.45	109.84	433.49	
204	10	6.51	110.91	437.86	
206	10	6.57	111.98	442.23	
208	10	6.63	113.05	446.60	
210	10	6.69	114.12	450.97	
212	10	6.75	115.19	455.34	
214	10	6.81	116.26	459.71	
216	10	6.87	117.33	464.08	
218	10	6.93	118.40	468.45	
220	10	6.99	119.47	472.82	
222	10	7.05	120.54	477.19	
224	10	7.11	121.61	481.56	
226	10	7.17	122.68	485.93	
228	10	7.23	123.75	490.30	
230	10	7.29	124.82	494.67	
232	10	7.35	125.89	499.04	
234	10	7.41	126.96	503.41	
236	10	7.47	128.03	507.78	
238	10	7.53	129.10	512.15	
240	10	7.59	130.17	516.52	
242	10	7.65	131.24	520.89	
244	10	7.71	132.31	525.26	
246	10	7.77	133.38	529.63	
248	10	7.83	134.45	534.00	
250	10	7.89	135.52	538.37	
252	10	7.95	136.59	542.74	
254	10	8.01	137.66	547.11	
256	10	8.07	138.73	551.48	
258	10	8.13	139.80	555.85	
260	10	8.19	140.87	560.22	
262	10	8.25	141.94	564.59	
264	10	8.31	143.01	568.96	
266	10	8.37	144.08	573.33	
268	10	8.43	145.15	577.70	
270	10	8.49	146.22	582.07	
272	10	8.55	147.29	586.44	
274	10	8.61	148.36	590.81	
276	10	8.67	149.43	595.18	
278	10	8.73	150.50	599.55	
280	10	8.79	151.57	603.92	
282	10	8.85	152.64	608.29	
284	10	8.91	153.71	612.66	
286	10	8.97	154.78	617.03	
288	10	9.03	155.85	621.40	
290	10	9.09	156.92	625.77	
292	10	9.15	157.99	630.14	
294	10	9.21	159.06	634.51	
296	10	9.27	160.13	638.88	
298	10	9.33	161.20	643.25	
300	10	9.39	162.27	647.62	
302	10	9.45	163.34	651.99	
304	10	9.51	164.41	656.36	
306	10	9.57	165.48	660.73	
308	10	9.63	166.55	665.10	
310	10	9.69	167.62	669.47	
312	10	9.75	168.69	673.84	
314	10	9.81	169.76	678.21	
316	10	9.87	170.83	682.58	
318	10	9.93	171.90	686.95	
320	10	9.99	172.97	691.32	
322	10	10.05	174.04	695.69	
324	10	10.11	175.11	700.06	
326	10	10.17	176.18	704.43	
328	10	10.23	177.25	708.80	
330	10	10.29	178.32	713.17	
332	10	10.35	179.39	717.54	
334	10	10.41	180.46	721.91	
336	10	10.47	181.53	726.28	
338	10	10.53	182.60	730.65	
340	10	10.59	183.67	735.02	
342	10	10.65	184.74	739.39	
344	10	10.71	185.81	743.76	
346	10	10.77	186.88	748.13	
348	10	10.83	187.95	752.50	
350	10	10.89	189.02	756.87	
352	10	10.95	190.09	761.24	
354	10	11.01	191.16	765.61	
356	10	11.07	192.23	770.00	
358	10	11.13	193.30	774.37	
360	10	11.19	194.37	778.74	
362	10	11.25	195.44	783.11	
364	10	11.31	196.51	787.48	
366	10	11.37	197.58	791.85	
368	10	11.43	198.65	796.22	
370	10	11.49	199.72	800.59	
372	10	11.55	200.79	804.96	
374	10	11.61	201.86	809.33	
376	10	11.67	202.93	813.70	
378	10	11.73	204.00	818.07	
380	10	11.79	205.07	822.44	
382	10	11.85	206.14	826.81	
384	10	11.91	207.21	831.18	
386	10	11.97	208.28	835.55	
388	10	12.03	209.35	839.92	
390	10	12.09	210.42	844.29	
392	10	12.15	211.49	848.66	
394	10	12.21	212.56	853.03	
396	10	12.27	213.63	857.40	
398	10	12.33	214.70	861.77	
400	10	12.39	215.77	866.14	
402	10	12.45	216.84	870.51	
404	10	12.51	217.91	874.88	
406	10	12.57	218.98	879.25	
408	10	12.63	220.05	883.62	
410	10	12.69	221.12	887.99	
412	10	12.75	222.19	892.36	
414	10	12.81	223.26	896.73	
416	10	12.8			

Recommended "Mueller" Single and Double Flat Strap Service Clamps (Saddles) Tapped for Either Mueller Corp. Stops or I. P. Thread

Century Pipe Size Inches	Century Pipe Class	Cast Iron Pipe Size Inches	Single Strap Saddle I.P. Thread	Double Strap Saddle I.P. Thread	Single Strap Saddle Mueller Thread	Double Strap Saddle Mueller Thread	Maximum Outlet Recommended Inches
2	100	2	H-10454	H-10497	H-10476	H-10512	3/4
2	130	2	H-10455	H-10498	H-10477	H-10519	3/4
3	100	3	H-10456	H-10499	H-10478	H-10520	3/4
3	150	3	H-10456	H-10499	H-10478	H-10520	3/4
4	100	4	H-10458	H-10501	H-10480	H-10522	1
4	150	4	H-10459	H-10502	H-10481	H-10523	1
6	100	6	...	H-10505	...	H-10526	1 1/2
6	150	6	...	H-10506	...	H-10527	1 1/2
8	100	8	...	H-10509	...	H-10530	1 1/2
8	150	8	...	H-10510	...	H-10531	1 1/2
10	100	10	...	H-10512	...	H-10533	2
10	150	10	...	H-10513	...	H-10534	2
12	100	...	...	...	...	...	Non-available
12	150	...	...	...	...	...	Non-available

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INSTALLATION ENGINEERING

The purpose of this booklet is to give you all the necessary information for properly laying "Century" Pipe under the great majority of practical field conditions encountered.

If, however, there are special problems in your case, or other reasons for requiring additional information, just write your K&M representative or the District Office explaining the circumstances.

Kearney & Mattison Company District Offices

350 HANNA BUILDING
CLEVELAND 15, OHIO
TELEPHONE: CHERY 3131

STATE 1308
1509 WALNUT STREET
PHILADELPHIA 2, PA.
TELEPHONE: KINGSLEY 5-2125

1515 PETROLEUM BUILDING
HOUSTON 2, TEXAS
TELEPHONE: PRESTON 7209

919 RHODES HAVERLY
BUILDING
ATLANTA 3, GEORGIA
TELEPHONE: WALNUT 1131

58 SUTTER STREET
SAN FRANCISCO 4, CALIF.
TELEPHONE: EXHROOK 2149

ROOM 1202
100 W. MONROE STREET
CHICAGO 3, ILLINOIS
TELEPHONE: RANDOLPH 6653

30 ROCKEFELLER PLAZA
NEW YORK 20, N. Y.
TELEPHONE: CIRCLE 70642

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KEASDEY & MADISON COMPANY has been a pioneer in the Asbestos and Magnesia industry for more than seventy-two years. Started as a two-man business in 1873, K&M is today a national institution with nationwide facilities.

This wealth of manufacturing experience is your assurance of quality in all K&M products. In addition to "Century" Asbestos-Cement Pipe, K&M manufactures a complete line of Asbestos and Magnesia Insulations, Packing, Asbestos Textiles, Sprayed "Limpest" Asbestos Paper, Asbestos Corrugated Sheets, Asbestos-Cement Roofing Shingles, Siding and Decorative Wallboards.

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